hcf highest common factor
Newsletter of The Australian Association of Mathematics Teachers Inc.
March 2016

From the President

I hope that 2016 has been well and truly launched in a positive way for all members. What are your goals for maths education this year? Mine are linked with what I want for my students: more opportunities to them to pose questions for themselves, not just answer the questions on the worksheets or the tests; more chances to 'learn by doing and exploring' rather than 'learn by copying'. Also more time for discussion and argument, to build up reasoning to complement the mastery of techniques. Yes, it is important that students develop fluency in procedural skills, but the proficiencies of the *Australian Curriculum: Mathematics* also include understanding, problem-solving and reasoning. This is sounding like *Mathematics by Inquiry*. I urge you to learn more about this brand new project, funded by the Australian Government for $6.4 million over two and a half years, as a partnership between the Australian Academy of Science and AAMT. Here is a good place to start: www.science.org.au/learning/schools/resolve-mathematics-by-inquiry. As noted in AAMT's *eNews*, AAMT Life Member Dr Steve Thornton has been appointed as the project's Executive Director. Congratulations Steve, and AAMT members look forward to the information sessions soon to be held around the country.

Watch out for the launch of the Australian Academy of Science's *Decadal Plan for the Mathematical Sciences*. This plan includes a review of Australia's progress in mathematics and mathematics education; the challenges we face; and recommendations for action. You may agree with one of the key recommendations, that universities set mathematics prerequisites of at least intermediate level (a basic calculus-based course) for undergraduate programs in science, engineering and commerce. This is aimed (in part) at improving the success rate in science subjects at university. My experience is that many students who have not participated in intermediate level maths at school can achieve later success in mathematics with enough motivation and effort. I would like to see alternative pathways in place for students who have not had the opportunity to study intermediate maths at high school. At the same time, I can see that having prerequisites in place does send the important message that studying a higher level of maths at high school is a valuable preparation.

This is an exciting year for AAMT as it marks 50 years since the association was founded. In that time, the affiliated associations in each State and Territory have continued to provide excellent professional learning opportunities and advocacy for members. The role of AAMT is to provide a voice for teachers of mathematics at the federal level, and to campaign on national issues. We are represented on significant national committees of the Australian Academy of Science, the Australian Mathematical Sciences Institute, and the Australian Mathematics Trust, to name a few. In addition to representing the interests of teachers on these bodies, AAMT provides professional learning opportunities through its journals, the Connect with Maths online communities, and conferences. To make this all happen smoothly requires communication and good will across the country, and the association has been ably served in this by the members of the Council, its governing body. As I write this final column of my presidency, I remember and appreciate the willingness of all members of the Council to contribute to policy discussions

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and decisions in a positive and constructive way. It has been a privilege to work with you all. For Rodney Anderson (QAMT) and Christine Slattery (MASA), the next Council meeting will be the final one for their terms. Thank you both for your contributions to AAMT. You have been willing contributors to the work done between Council meetings and that has been much appreciated. We welcome Selina Blyton (MTANT), who replaces Matt Skoss, as Matt is no longer located in the Northern Territory, having taken on the important role of Manager: Mathematics by Inquiry Engagement. Welcome Matt, to your new role in Adelaide. In closing my last HCF column, I wish to acknowledge with many thanks the work of the AAMT staff, led by the tireless Will Morony. It has been a pleasure to count you all as colleagues. I look forward to being Immediate Past President, as so much is happening and AAMT is going to be very busy. From 30 April, Allason McNamara will be President and I wish her every success. Allason has contributed a great deal to her state association (MAV), and to mathematics education in Victoria, and will be an excellent leader for AAMT.

Mary Coupland, *President*
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From the CEO

I was contacted by a community radio station about a recent release of some data and analysis associated with recent PISA testing. The report provides data that highlights that an unacceptably high number of our 15-year-olds are "low performers in mathematics", by PISA's definitions, and goes on to make some suggestions about why this is the case, and what might be done about it. A short article by Sue Thomson from ACER provides more details and access to the full report: go to http://tiny.cc/acer_lowperformance.

Clearly, the current situation that many of our 15-year-olds are not achieving at a level required for effective participation in society is an important challenge. Students without sufficient skills will have limited options for work, further study and training; they will be challenged in their personal lives and limited in their contributions as engaged citizens. Teachers of mathematics are acutely aware of this. They are also acutely aware that the issues are complex and require sustained effort from governments, school systems, universities, teachers, and the wider community.

These were the sorts of things I was intending to say and elaborate on when interviewed. However, it turned out that the station that contacted me has a youth audience. While the interviewer was interested in the bigger picture issues, she stopped me in my tracks when she turned the discussion around with the following question:

"What should one of our listeners who may be struggling a bit with maths do about it?"

My response was that I would want them to know that "their mathematics teacher is their best friend." I explained that their teacher is the one who is in a position to help. Whilst they are all very busy, I don't know a maths teacher who would not try to find ways to help a student who genuinely sought their assistance.

I went on to say that some students go out of their way to hide that they do not understand the work, or can't do it. That isn't helpful at all—a key is for students to be honest with themselves and seek the teacher's assistance. Just as helping is a teacher' responsibility, so it is the student's responsibility to communicate when they are having problems and to want to try to address these.

On reflection, I think that 'friend' was not the most accurate term, but I was trying to use language that young people could relate to. It is certainly not about being their 'friend' and all that implies. The role is to be 'on their side', to show care for them as learners of mathematics and help them reach their potential. But it has to be a two-way thing: we need our students to be willing to signal that they need help, and to put in the time and effort. Parents and care-givers also have a role to play in encouraging their children, and expecting them to work to reach their potential.

Many parents who have the financial means see having a maths tutor as the solution. A couple of years ago, AAMT developed a *Position Paper on Tutoring*, along with some *Advice for Parents*. Both documents stress the importance of parents who want to support their child in mathematics to engage with the teacher as the first point of call, leaving seeking outside help (e.g., a tutor) as an option for later. At the start of the school year, it may be useful to refer parents to these support documents. They are available at www.aamt.edu.au/About-AAMT/Position-statements/Tutoring.

Will Morony,
Chief Executive Officer
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ICME delegation

The 13th International Congress on Mathematical Education (ICME-13) will be held 24–31 July 2016 in Hamburg, Germany. Any Australians planning to attend the congress are invited to become part of the 'official' AAMT delegation representing Australia. For more information, please email feedback@aamt.edu.au.

reSolve: Maths by Inquiry

The *reSolve: Maths by Inquiry* Project is a collaboration between the Australian Academy of Science and AAMT. Matt Skoss has recently relocated from Alice Springs to the AAMT office in Adelaide to take up the role of Manager: Engagement and Communication for the project. He works closely with the writing team based in Canberra headed up by Executive Director Steve Thornton and writers Bruce Ferrington, Kristen Tripet and Michael Klinkert.

The project is in its formative phase, planning briefing sessions in each State and Territory over the coming months, along with consultations with key senior staff in Government, Catholic and Independent sectors, to ensure that the project articulates effectively with system priorities and initiatives. Another key task in these early days will be to develop strategies with State and Territory associations that ensure members are able to inform the project by being actively engaged in the project from the beginning.

The first briefing occurred with South Australian educators on Monday 29 February, generating a lot of interest and spirited discussion. The briefing session for New South Wales is scheduled for Thursday 31 March, with sessions in the pipeline for other jurisdictions in the coming months.

As resources are developed, classroom teachers will play a valuable role in trialling lessons

reSolve: Maths by Inquiry SA briefing.

reSolve: Maths by Inquiry project writers (from left): Michael Klinkert, Bruce Ferrington & Kristen Tripet.

and professional learning modules, and offering feedback to the writing team. In time, 240 'champions' will be identified to play a lead role in supporting the implementation of *reSolve: Maths by Inquiry* across Australia.

The project will provide:

- teaching resources for rich mathematical experiences in the Foundation to Year 10 classroom;
- special topics that examine a real challenge in school mathematics, such as modelling, use of technology or proof;
- additional professional resources that support aspects of mathematical inquiry, including assessing higher order thinking and engaging students' mathematical thinking in STEM contexts.

Please feel welcome to register your interest with Matt Skoss at mskoss@aamt.edu.au.

Towards Educating Mathematics Professionals Encompassing Science and Technology (TEMPEST)

The TEMPEST project is concerned with evaluating and improving the quality of professional learning. The project goals are being addressed with the help of a growing team of Implementation Officers (IO).

The inaugural IO is Libbie Spohn. Based at the Launceston campus of the University of Tasmania, Libbie has been with the project since August last year.

Two IOs joined the project in February 2016. Ann Ruckert is based at the Mathematical Association of South Australia and Rachael Whitney-Smith at the Mathematical Association of Western Australia. In addition to their TEMPEST work, both Ann and Rachael have significant roles within their local associations as Professional Officers.

Please make your IOs welcome. They will be sharing quality professional learning with a wide variety of groups, and seeking feedback to further improve the standard of the offerings.

Maths Inside

What is a Zebedee? How can you cook a sausage using reflective cardboard? How fast are you moving while you are sitting still?

The Maths Inside team—University of Technology, Sydney working with AAMT—will be trialling classroom materials that dig deeply into science to discover the maths that sits inside. Through a selection of videos, teachers and students can meet clever and interesting scientists and explore the mathematics that these scientists use every day in their work.

Maths Inside will be looking for schools to trial the materials, which are aimed at Years 7–10 so please watch for future announcements.

Reframing Mathematical Futures 2 (RMF2)

Led by Professor Di Siemon from RMIT, the RMF2 project is now fully in its implementation stage. Schools around the country are building on previous work to develop algebraic, statistical and spatial reasoning in their Year 7–10 students, through targeted teaching and carefully developed resources. The first round of assessments is expected to take place late Term 1 or early Term 2.

Annual General Meeting

The Annual General Meeting of the association will be held at 4.00 pm on Saturday 30 April 2016 at: Ian Potter House, 9 Gordon Street, Acton ACT. The business of the meeting (as outlined in AAMT constitution) will be to:

- confirm the minutes of the 2015 AGM;
- receive the President's report for 2015;
- receive the Association's financial report and Auditor's report for 2015;
- appoint an Auditor for 2016;
- receive the Chief Executive Officer's report for 2015;
- elect the Treasurer 2016–17 (if more than one nomination is received);
- vote on the proposed change to the AAMT constitution (see below; the constitution is available at www.aamt.edu.au/About-AAMT/Constitution);
- any other business (please contact your Councillor if there are matters you wish to have discussed).

Under AAMT's constitution (adopted in 2012), all individual members, life members and nominated persons of institutional members are entitled to vote (either in person at the meeting or by proxy).

Motion to be put by the President to the AGM

That Clauses 3.1 to 3.16 of the AAMT Constitution be deleted and replaced by the following words:

3.1. Provide a coherent representative voice and advocate in government and policy forums on behalf of mathematics educators in Australia, for the purpose of advancing their professional standing.
3.2. Promote in the community the importance and value of education with particular reference to the teaching and learning of mathematics across all its domains.
3.3. Encourage and promote research into the teaching and learning of mathematics at all levels, so as to assist all learners to achieve their potential.
3.4. Provide high quality professional development and networking opportunities so as to build a community of teachers and school leaders of mathematics.
3.5. Provide quality activities, appropriate resources that engage students of mathematics at all levels, and online networks that support pre-service and in-service teachers to adopt innovative practices.
3.6. Link and support members and Affiliates through association activities, conferences and publications.
3.7. Pursue such other activities as the Council shall from time to time deem fit.

Worth a browse

The 2016 AAMT resource catalogue provides a listing of the resources available from AAMT. This year you will find the usual broad selection of quality professional reading, as well as some more quirky offerings (Egyptian Maths, anyone?).

Make sure you browse through the hard copy catalogue that you receive in your mail-out—and then hand it on to a colleague! Of course, all of the resources can be viewed with full descriptions and details on the AAMT webshop: www.aamt.edu.au/Webshop.

Connect with Maths

The Connect with Maths community is now 6000 members strong—a wonderful milestone and testament to the Australian mathematics education community. Community members come together from all regions of Australia to engage in rich conversations, access quality resources and participate in collaborative professional learning activities.

Friday 18 March was Connect with Maths Day. Teachers attended in person at the Victorian Space Science Centre as well as connecting online to watch live streams from presenters such as Burkard Polster, Robyn Jorgensen, Mike Askew, and AAMT Life Member Denise Neal among others. Videos of these presentations are available online.

Go to www.aamt.edu.au/Communities.

AAMT@50

AAMT is turning 50 and you're invited to the party! Among other celebrations, AAMT will be holding a conference 7–8 July 2016 in Adelaide. The conference will look at the history of the association and the future directions for mathematics education and the AAMT.

If you might be interested in attending this conference, please pre-register to help the AAMT office get an understanding of possible numbers (no compulsion to attend by completing this form) and you will be emailed more information when it is available. Go to https://www.cognitoforms.com/AAMTInc/AAMT50Preregistration