



Maths matters

The Improving Mathematics Education in Schools (TIMES) project

Janine McIntosh*

AMSI's education division, the International Centre of Excellence for Education in Mathematics (ICE-EM), has been undertaking wide ranging education programs at both school and tertiary levels since 2004.

In 2004, with a major grant from the Australian Government, ICE-EM was established as a division of AMSI to enhance the mathematical capabilities of all Australians. Our schools program provides textbooks, professional development and teacher resource materials developed by ICE-EM. To date more than 90 000 books have been sold. Schools who make a commitment to purchasing a class set of books also receive professional development conducted by AMSI staff.

In June 2007 BlueScope Steel Limited announced that they would support a mathematics project in collaboration with AMSI in the Illawarra region of New South Wales. The project was aimed at lifting standards in upper primary and junior secondary school mathematics. The multifaceted approach provided an integrated set of text material for each student and teacher in the participating schools, and assistance to teachers by way of professional development, teacher resource CD-ROMs and visits by ICE-EM staff. There has been universal enthusiasm and support from teachers participating in the project. In 2009 another cluster of schools joined the project, thanks to continuing support from BlueScope Steel.

In 2009, AMSI received Australian Government funding to the end of 2010 for a national collaborative project targeting school mathematics education — referred to as The Improving Mathematics Education in Schools (TIMES) project.

The TIMES Project will enable ICE-EM to extend our outreach program in schools and collaboratively develop materials to support teachers of mathematics in their work.

TIMES is managed by Janine McIntosh, and Michael Evans is the project director. They are joined in 2010 by three project officers. Antje Leigh-Lancaster will work with Wollongong and Gippsland schools. Mark Mudge will work with Sunshine Coast, Townsville and Geelong schools and Rob Moore will focus on the careers aspect of the project.

*Australian Mathematical Sciences Institute, 111 Barry Street, c/- The University of Melbourne, VIC 3010.

E-mail: janine@amsi.org.au

The TIMES project has four components:

1. *Outreach*. Working with teachers in schools has been shown to be crucial in supporting them and helping them to enhance their mathematics programs. The focus of the Outreach program is to help teachers understand what the big ideas in mathematics are, and how they are connected.

Building on the successful BlueScope/AMSI project, the TIMES project takes the schools cluster idea and extends it into regions where there is a demonstrated need.

Our regions in 2010 are

- Gippsland, Victoria
- Townsville, Queensland
- Mandurah, West Australia
- Geelong, Victoria
- Sunshine Coast, Queensland
- expansion in the Illawarra region, New South Wales

We have established the clusters in each region and we are making the TIMES Project known to AMSI member universities, regional department of education contacts and potential corporate partners in these areas.



Janine in action at a teachers' workshop.

A project officer will be allocated to work with each of the participating schools, building professional relationships with teachers in the school and meeting with them regularly to discuss issues related to the teaching of mathematics in their school:

- building an appropriate scope and sequence for the teaching of mathematics,
- targeting specific mathematical needs of students,
- sourcing information about the teaching of mathematics.

The project aims to bring primary and secondary schools together to strengthen the connections and approaches in relation to mathematics teaching. All teachers in the outreach cluster are invited to attend professional development sessions focussing on the development of mathematics-content knowledge.

Where possible, AMSI will second a teacher part-time in each region to provide continuing support and ensure local involvement over and above the visiting support from AMSI project staff.

2. *Modules.* The modules are stand-alone text based documents, typically 12 pages long, written for teachers. They are to be used as a source of information for planning lessons, building teacher confidence with the teaching of topics and as a stimulus for discussion about strategies and pedagogies. Each module covers related topics within the National Curriculum and is aimed at increasing teachers' knowledge and understanding of classroom mathematics. They are written in stages: K-4, 4-7, 7-8 and 9-10. Ninety modules are planned for 2010.

Teachers in outreach clusters are working with us to test the materials and towards the end of 2010 a CD containing all modules will be provided free of charge to every primary and secondary school in Australia. The modules will also be available online.

3. *Careers.* In 2010 AMSI will expand its careers materials portfolio to assist students to understand the place and importance of mathematics in career choices. One of the new project officers will take a lead role in the careers component of the TIMES project. An initial research and review process will establish key directions with a broad range of employer groups and key stakeholders involved in the process. Then we will broaden our current suite of careers products so that both 'careers in mathematics' and 'mathematics in your career' information is available to help students 'stick' with mathematics in preparation for whatever career they choose. The target is to provide careers awareness material both electronically via a careers website and by distribution of innovative material to every primary and secondary school.

4. *CSIRO Collaboration.* CSIRO and AMSI are jointly developing and operating a regular e-newsletter called Mathematics by Email. Based on the highly successful Science by Email, it is aimed at primary and secondary teachers, and students aged 10+ and their parents. AMSI will also be promoting the CSIRO Mathematicians in Schools program with its members, and encourages mathematicians everywhere to consider taking part. (See www.mathematiciansinschools.edu.au.)

Maths by Email is a new, *free* email newsletter for school students and their teachers. Each fortnight, Maths by Email delivers stories from the cutting edge of mathematics, and hands-on activities from all fields of mathematics. Maths by Email is packed with brainteasers, facts, web links and more.

Maths by Email demonstrates that mathematics is not just about arithmetic. Every issue focuses on important concepts. Activities allow readers to experiment with key ideas, and clear explanations cement their learning. All articles and activities are accompanied by links to further reading on the internet.

Maths by Email also illustrates that mathematics is a practical subject. Articles and activities highlight innovative applications of mathematics around Australia and the world. Maths by Email contains fun mathematics facts, and challenging brain teasers. It has links to curious and interesting online mathematics sites, and it has details on all the latest mathematics events. Maths by Email excites young people about mathematics topics, and gives teachers the tools and inspiration to ignite students' interest.

The first newsletter was published at the end of March 2010. To receive Maths by Email, sign up at www.csiro.au/mathsbymail.

Maths by Email is also on the lookout for mathematics stories and activities. Send all your press releases and story ideas to mathsbymail@csiro.au, and your mathematics could be read by thousands of children around Australia and the world.



Janine McIntosh is the TIMES Project Manager at the Australian Mathematical Sciences Institute. Her role at AMSI is to develop school mathematics material and to work with teachers to enhance the mathematics experiences of the children they teach. Janine is an experienced primary teacher who has also worked as curriculum writer for the VCAA and ACARA, and in mathematics education at the University of Melbourne. She is a member of the Maths Challenge committee of the Australian Mathematics Trust.