

Mathematics Education Special Interest Group

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In 2015 a new special interest group of AustMS was formed. The Special Interest Group in Mathematics Education (SIGME) has been established to provide Society members with an opportunity to share ideas and innovations that will enhance the quality of their teaching. It will also enable national collaborative research into university level mathematics education. We have seen, in recent years, increased interest amongst mathematicians in mathematics education, with record numbers of presentations (27) submitted to last year's ANZMC8 Conference and steady growth in mathematics presentations at the annual Australian Conference of Science and Mathematics Education. There has also been strong interest nationally in research projects in mathematics education, such as FYiMaths and Mathsassess¹. SIGME will provide a forum for AustMS members to contribute to, and be informed of, the current national discussions in university mathematics education.

Growing interest in undergraduate mathematics education

As universities increase their student intake, the diversity in student ability increases, posing challenges for effective teaching. Many institutions are finding that first-year students are disengaged and lack confidence, with consequent high failure rates and student attrition (Coupland, Stanley, Groen, Bush and Beames (2013); Rylands and Coady (2009)). While the reasons for this will vary across institutions, it is generally acknowledged that students often do not have the required background in mathematics to succeed in their chosen courses (King and Cattlin (2015)).

Mathematicians are also under pressure to develop new approaches to teaching to meet institutional initiatives in online learning, new teaching technologies and supporting student engagement, such as blended learning, flipped classrooms and online assessment. This can be a daunting and time consuming task, particularly when these innovations are difficult to adapt to the discipline specific challenges of mathematics (such as large student cohorts, dense curriculum and high level of abstraction). In recent fora, mathematicians have found that networking with

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¹The FYiMaths (www.fyimaths.org.au) and Mathsassess (www.mathsassess.org) projects were funded by the Australian Government Office for Learning and Teaching (OLT) from 2012–2014. They involved over 300 mathematicians and mathematics educators in workshops and seminars across Australia. These projects identified a wide range of approaches to undergraduate mathematics education and in particular the many adaptations to curriculum and teaching that are underway to address student diversity.

colleagues from across the country provides access to invaluable practical advice and current research to inform their practice.

Academics are keenly aware that in the new regulatory framework universities must meet academic standards for teaching and learning. These include requirements for students to graduate with particular learning outcomes. These measures often necessitate curricula and assessment review to ensure that content and learning outcomes are aligned and that assessment verifies that the outcomes have been achieved. Connecting with colleagues from other institutions provides opportunities to share experiences, to build expertise and to engage in the wider discussion about the impact of such issues on undergraduate mathematics.

The increased government attention on the declining mathematical skills of students and the detrimental impact this will have on the nation's future workforce capabilities (Chief Scientist (2013)) has increased public awareness of the importance of mathematics education and so it is timely that AustMS establish a group with an education focus.

Objectives and activities

The objectives of the Group are to:

- (a) contribute to, and participate in, discussion about university mathematics education issues including threshold learning outcomes, achievement standards, assessment practices, transition issues, using technology in the classroom and innovative teaching practices;
- (b) strengthen relations between the university and secondary mathematics education communities;
- (c) promote innovation in university mathematics teaching and learning by providing a forum for showcasing good practice;
- (d) promote research in undergraduate mathematics education through identifying challenges that require investigation and providing a forum for discussion;
- (e) foster inquiry and discussion of university mathematics education; and
- (f) provide opportunities for mathematicians to network, share experiences and discuss their current practices.

To further these objectives, the Group will organise and participate in a range of activities that will include:

- (a) conferences, meetings, seminars, lectures or other events for members of, and visitors to, the Group;
- (b) gathering and providing information on current issues in mathematics education;
- (c) sponsoring joint activities with other bodies concerned with the areas covered by the Group;

- (d) encouraging the interaction of mathematicians to become more involved in education innovation and research;
- (e) building a sense of community for mathematicians interested in improving the teaching of mathematics and those also involved in the scholarship of teaching mathematics; and
- (f) liaising with the Society's Standing Committee on Mathematics Education on issues which are of interest to the group and relevant to Society policy.

The group is open to all AustMS members as well as non-members who can elect to join the group separately. The AustMS membership form now includes the option to nominate for membership of this group. We are also asking those interested in joining to contact us to nominate for the group, so we can initiate communication and organise events as soon as possible. Please email Joann Cattlin (joann.cattlin@unimelb.edu.au) if you would like to join SIGME.

The Executive Committee has been established with an interim Chair, Dr Deborah King and interim Secretary, Joann Cattlin, with an interim Treasurer to be appointed at the 2015 AustMS meeting in Adelaide. The first full election of the committee will be held in January 2017.

Inaugural meeting

The group will meet for the first time at the AustMS 2015 meeting at Flinders University in September (date to be confirmed). We encourage all AustMS members with an interest in mathematics education to attend this meeting to help set the direction for the new group.

References

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- Rylands, L. and Coady, C. (2009). Performance of students with weak mathematics in first-year mathematics and science. *International Journal of Mathematical Education in Science and Technology* 40(6), 741–753.