May 2016

PME Newsletter

International Group for the Psychology of Mathematics Education

Message from PME President Barbara Jaworski

40 years of PME: Celebrate with us in Szeged!

I am writing this piece for PME News following the Second IPC meeting in Hungary, where we have been preparing for the conference. This meeting has involved 4 members of the LOC and 4 from the IC. It is always a time of hard work because there is reviewing to complete, judgments to be made on paper acceptance, the timetable to be completed with papers allocated to sessions, Skemp fund allocations to be decided and many details finalized. It is nevertheless a good time in which LOC and IC members get to know each other and work well together.

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Message from the Editors

Welcome to our May 2016 Newsletter!

This issue is all about the upcoming PME conference which will take place in Szeged, Hungary in August 2016. To increase the anticipation all plenary speakers and plenary panel members will give an insight into their exciting and manifold research interests and explain how these are related to the conference theme: "Mathematics education: How to solve it?" We don't like to reveal too much but we think it will be a conference full of lively and stimulating discussions!

Enjoy reading the Newsletter! Take care!

Keith Jones (d.k.jones@soton.ac.uk) and Maike Vollstedt (vollstedt@math.uni-bremen.de)

Message from PME President Barbara Jaworski (continued)

I have to say that the local organizers have worked very hard to make the conference a success, and should like to thank Csaba Csikos and his team most sincerely.

Szeged is a delightful city with a magnificent cathedral – you can see a picture of it below. The cathedral is at the centre and most of the hotels we will use are close to it. The university is within 10-15 minutes walk from many of the hotels; however, we will all be provided with a card for local transport to use as we will.

The university itself is housed in a number of buildings, two of which we will use, positioned right next to each other. Our main building will be the university library, a new state of the art building; the other of a more traditional architecture, but beautiful nevertheless. The centre of the city is graced with wonderful architecture interspersed with parks and gardens, and a delightful promenade alongside the river.

The opening ceremony will take place in a large amphitheatre within the library building, and will have the usual programme of welcome addresses and cultural performances. In particular we shall be celebrating PME's 40 years, as part of which we will launch a new volume of PME Research.

The scientific programme will, as always, have Research Reports at its heart, together with Oral Communications, Poster Presentations, Plenary addresses, a Plenary Panel, Research Forums, Working Sessions and Discussion Groups. The plenary speakers are Alan Schoenfeld (USA), Rosa Leikin (Israel), Masataka Koyama (Japan) and the retiring President, Barbara Jaworski (UK). The Plenary Panel will again take the form of an 'Oxford' debate chaired by Helen Chick on the motion "It is impossible to teach mathematical problem solving" and will include Miriam Amit (Israel) Szilárd András (Romania) Markku Hannula (Finland) Berinderjeet Kaur (Singapore).

An important part of the conference programme is PME's Annual General Meeting (AGM) at which the International Committee (IC) and its officers report on the year that has passed. Each year, 4 members of the IC retire, and the AGM will include elections for 4 new members, plus, this year, the election of a new President to serve from 2016-2019. If you are interested in standing for one of these positions and would like further information, please feel free to email any member of the current IC. It is vital that we elect people to the IC who are prepared to work for PME and willing to give their time and expertise. Please encourage colleagues who are likely candidates to think of standing.

Before the conference itself, we shall again have a day devoted to early career researchers (the ERD), which will take place the afternoon before and morning of the conference. As I write, details are being prepared and will be found on the conference website; we invite PhD and Masters students and Post Docs to apply for a place.

Also on the website you will find details of the scientific programme, the final registration process and local details. By the time you read this, you should have received the results of the review process and be able to register for the conference.

The IC and LOC members welcome you to Szeged and believe that we shall again have an excellent PME conference.

Sincere wishes

Barbara Jaworski
Retiring President
May 2016

Introducing Plenary Speakers
PME 40 Plenary Speakers Get Personal

We invited all PME 39 plenary speakers and plenary panel members to contribute to this issue by responding to the questions:

- How many PMEs have you attended?
- Where and when was your first PME?
- How does your research life connect with the conference theme: "Mathematics Education: How to solve it?"

PME 40 Plenary Speakers

Barbara Jaworski

Professor of Mathematics Education in the Mathematics Education Centre, and Head of Department Loughborough University, UK

First PME attended
London, 1986
This year will be my 20th PME.

My main research focus is the teaching of mathematics at all levels and particularly how mathematics teaching develops. I have worked closely with school teachers over many years and developed close respecting relationships with teachers in exploring teaching together. It is clear to me that teachers and teacher educators have much to gain from each other in terms of knowledge and experience in teaching mathematics, and that both can operate effectively as researchers. Thus, in developmental projects in recent years, I have been involved in partnerships between educators (didacticians) and teachers to research and develop mathematics teaching. In my most recent employment I have been studying teaching at university level and working with mathematicians to consider teaching and teaching development.

A central focus of my research into mathematics teaching and its development has been the use of Inquiry. I have developed inquiry-based processes in mathematics itself, learning mathematics and teaching mathematics. This has led to theoretical development of inquiry in promoting teaching development with important links to collaboration and community building.

PME 40 Plenary Speakers (continued)

Inquiry in the classroom involves teachers using inquiry-based tasks with pupils, so that pupils (together with the teacher) can engage in inquiry in mathematics at an appropriate level. This builds on considerable scholarship in problem-solving in mathematics and the heuristics of problem solving. In this work I have been much influenced by the work of Polya, followed by scholars such as Alan Schoenfeld, John Mason, Leone Burton and Kaye Stacy. The use of inquiry in mathematical tasks builds on heuristic processes as pioneered by these scholars. Thus in my plenary talk in Hungary, I expect to start from ideas of problem solving and link these to inquiry in mathematics, learning and teaching and their development.

The conference theme is Mathematics Education: How to solve it? I expect to expand on the "it", and address key problematic areas in mathematics teaching: how research, based in problem solving, can enable us to address these problems which go beyond mathematics itself. I shall be suggesting that theory of inquiry can be seen to underpin the developmental process and be at the roots of how we address key educational problems.

Masataka Koyama

Professor of Mathematics Education,
Vice-dean of Graduate School of Education,
Hiroshima University, Japan

First PME attended
PME 8, Sydney, Australia, 1984
Number of PMEs attended: 20

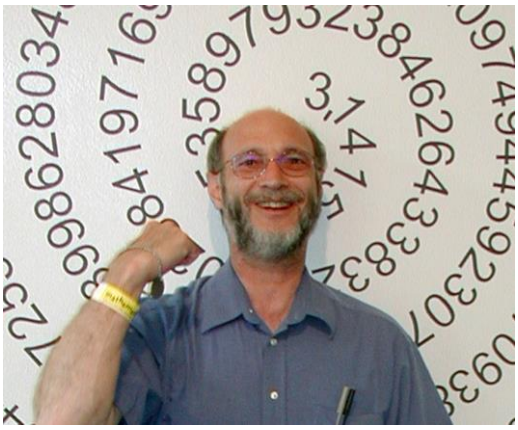
My major scholarly interests are students' mathematical understanding, international comparative study on students' mathematical attainments, mathematics teachers' professional development, and school mathematics curricula and textbooks. In my plenary speech at PME 40 conference, I pose one fundamental problems of "what and how can we do for students in enhancing their mathematical ability and performance?" Then, we will try to find a better promising solution to the problem. For that purpose, I focus on the lesson study and adopt the same way in which George Polya reflected on his experience and described methods of mathematical problem solving. As a mathematics educator I will share my experience of two different types of lesson study on primary school mathematics, and propose the dynamic cycle driven by the dialectic cycle of two complementary reflections in lesson study for promoting both mathematics teachers' and mathematics educators' professional development that may contribute to enhancing the students' mathematical ability and performance.

Alan Schoenfeld

Professor of Education and Mathematics, University of California, Berkeley, USA

First PME attended
PME 4, Berkeley, 1980.
Number of PMEs attended: Maybe about 10

My roots are in Pólya's work, in understanding what it means to be an effective problem solver. The problem I've worked on for 40 years is, how do we build on Pólya's insights? I started by trying to understand problem solving, in concert with the development of a course in problem solving. This led to studies of tutoring, then teaching, and finally, the study of mathematics learning environments intended to support students in becoming effective mathematical thinkers and problem solvers.



My theoretical work has always been inspired by, and is aimed at, the improvement of instruction. That started with my problem solving courses and continues with the creation of instructional materials and professional development for teachers – and, of course, the study of how things work in the "real world" both as a laboratory for theory development and for the improvement of practice.

Roza Leikin

Professor of Mathematics Education and Gifted Education at the Faculty of Education, University of Haifa; President of the International Group for Mathematical Creativity and Giftedness; Senior Editor of the International Journal of Science and Mathematics Education; Head of the National Advisory Mathematics Education Council of the Israel Ministry of Education.

First PME attended
The first time I participated in a PME conference was in 1994 (18th PME) in Lisbon, Portugal, as a PhD candidate at the Department of Science and Technology Education in the Technion — Israel Institute of Technology.

Overall, I have participated in 11 PME conferences with 14 Research Reports and have organized three PME Research Forums: "Learning through teaching: Development of teachers' knowledge in practice" (2007);

"Mathematical gift and promise: Exploring and developing" (2009); and "Interweaving Mathematics Education and Cognitive Neuro-Science" (2015). The topics of these Research Forums reflect the main directions in my research.

My work aims to contribute to the advancement of theoretical, methodological and practical innovations intended to raise the quality of mathematics instruction to enable students developing their mathematical ability, creativity, and expertise. I consider varying levels of mathematical challenge to be a core element in the realization of students' mathematical potential and in the development of mathematics teachers' proficiency. In this context, my "Multiple Solutions" methodology is an effective tool in solving problems in mathematics education. Correspondingly, in my talk I

PME 40 Plenary Panel Members

Helen Chick (chair)

Associate Professor in Mathematics Education at the University of Tasmania in Australia

First PME attended

My first PME conference was in 2001, which was the 25th PME in the Netherlands. I have attended 9 PME conferences, and been involved in organizing two and on the IPC of a further two.

My research interests include understanding what kind of knowledge is used and needed by teachers in the process of teaching mathematics, and how to develop that knowledge. This knowledge concerns not only the knowledge of mathematics ('content knowledge'), but so-called 'pedagogical content knowledge' which is particularly concerned with the materials, analogies, explanation, examples and connections that teachers bring to bear when helping learners make sense of mathematical ideas. I have also become interested in the knowledge required of teacher educators, and the ways in which this is similar to and different from PCK. I also have an interest in elementary statistics education, and supervise students in a range of mathematics education topics. At this year's PME in Szeged I will be chairing the plenary panel debate, in which we shall receive humorous enlightenment about whether or not problem solving can be taught or if it's a mysterious gift that arises miraculously in an unpredictable "aha" moment.

Szilárd András

Associate Professor and Director of the Hungarian Mathematics and Computer Science Department, Babeş-Bolyai University, Cluj-Napoca, Romania

First PME attended
Szeged (2016)

For seven years I worked as trainer for gifted students in upper secondary. This period had a major influence both on my work at the university and on my research interest. My research focuses mainly on the connection of practice and theory with the following background questions: how can students reach a deep understanding of mathematical ideas and phenomena, in what extent can teachers foster this understanding and how can they develop the need of a deep understanding in their students by using specially designed artefacts, materials, etc. One of the main problems is to arouse and maintain (or increase) the curiosity of the learners in order to explore the path from their initial intuitive thoughts to highly polished mathematical ideas (and conversely) as part of an infinite loop of increasing awareness. I think that teaching mathematics is (or should be) about attracting people to this kind of journeys and about supporting learners along their path without destroying the joy of this repeated personal and inner pilgrimage. In my talk I would like to emphasize that in addition to benefiting from others' examples basically this learning renders personal understanding more difficult.

Berinderjeet Kaur

National Institute of Education, Singapore

First PME attended
I attended my first PME in 2002. It was held in England, East Angulia. Since then I have attended the following PMEs: Taiwan (2012), Vancouver (2014), Hobart (2015).

My research is best described as: 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. Secondary analysis of data from comparative studies in mathematics education e.g. PISA & TIMSS.

Markku Hannula

Professor of mathematics education
University of Helsinki

First PME attended:
Lahti, Finland (1997)
Number of PMEs attended: 15

The focus of my research has been mathematics-related affect (e.g. beliefs, attitudes, emotions, motivation, attention, identity and norms). Affect as my starting point, I have explores the embodied nature of affect, gender differences and cross-cultural differences related to it, and how affect relates to achievement and problem solving behaviour. In the plenary panel we will debate on teaching problem solving. For the purpose of the debate, I gather arguments about why it is impossible to teach problem solving.

Miriam Amit

Professor in the Department of Science and Technology Education, Director of the Kidumatica Project for Excellence and Creativity and the Academic leader of the University Program for Accessibly to Higher Education, Ben-Gurion University of the Negev, Israel.

First PME attended
My first PME was in 1987 in Montréal. I have attended about 21 PME meetings.

Research Interests

- Fostering and developing excellence and creativity in gifted and talented students from all social strata, particularly underprivileged and minority children.
- Exploring mathematical thinking: critical thinking, probabilistic thinking, non-routine problem solving and mathematical modeling of real life situations.
- Teacher education, professional development and practical utilization of research in educational practice, policy and national and international assessment.
- Ethnomathematics - Social, cultural and moral aspects of mathematics (and science) education around the world, including gender, language, equity issues.

Announcements

PME Announcements Forum on the PME Website

The IGPME website (www.igpme.org) is the main portal for all communication and information regarding PME. A useful feature for PME members is the Announcements Forum as this is place to post items of information for PME members such as job announcements, conference announcements, and so on. To access the Announcements Forum, please log in with your 'conftool' log-in details. You can then find the forum in the 'Communication' section. Since the previous PME Newsletter, the following items have been posted on the PME Announcements Forum:

- A professorship in mathematics education with a focus on elementary school is vacant at the University of Munich (LMU). http://www.igpme.org/index.php/forum/announcement-forum/144-professorship-in-mathematics-education

- The II International Conference on Mathematics Textbook Research and Development will be held from 7 to 11 May 2017, at the Federal University of Rio de Janeiro and at the Federal University of the State of Rio de Janeiro (UNIRIO), Brazil. http://www.igpme.org/index.php/forum/announcement-forum/136-ii-int-conf-on-mathematics-textbook-research

- Within the International Doctoral Programme "Reason" at the University of Munich 12 doctoral positions to pursue a project in the field of scientific argumentation and reasoning in mathematics or other disciplines are on offer. http://www.igpme.org/index.php/forum/announcement-forum/146-phd-positions-international-doctoral-programme