PME NEWSLETTER

June 2011

Conjecturing with Confidence....

Message from PME President João Filipe Matos

Being able to think mathematically in solving all kinds of problems is one of the most fundamental goals of teaching mathematics, but it is also one of its most elusive goals. However, it is at the heart of mathematics as Paul Halmos put it. For some people, taking a mathematical point of view when facing a specific problem situation, could be so natural as breading although I would say that most people would not recognize that they would be 'thinking mathematically' as it would be the case if working in the domain of mathematics.

Mathematics teacher educators have the responsibility of stimulating teachers and student teachers to work towards the development of mathematical thinking so that more and more students can get a deeper appreciation of what it means to think mathematically and to use mathematics. In general, all partners involved in mathematics education, at all levels, should assume that the ability to think mathematically and to use mathematical thinking to solve problems is a crucial goal of schooling.

Even if we observe different and divergent trajectories in decision makers' opinions regarding the place of schooling – and in particular of school mathematics – we recognize that the power of transforming students' ways of dealing with the social world resides, at the limit, in education and, at large, in mathematics education.

PME 35 in Ankara will address, in a variety of forms, the issue of mathematical thinking and I conjecture with great confidence that this will represent a strong step towards consolidation of knowledge and perspectives in the field. I look forward to meet you at PME35!

João Filipe Matos
President of PME

PME *Message from the Editors*

Welcome to our Newsletter of June 2011! PME 35 in Ankara Turkey is only weeks away.

In this issue of the Newsletter we highlight the plenary speakers and panelists of PME 35. We bring you the draft agenda for the PME AGM - always an interesting meeting - and worth attending if you are able to travel to PME 35 this year. And Behiye Ubuz, chair of the PME 35 Conference Chair, brings us more images and places to explore while we are in Ankara Turkey.

Cynthia Nicol <cynthia.nicol@ubc.ca>; Silvia Alatorre <alatorre.silvia@gmail.com>
Cristina Frade,<frade.cristina@gmail.com>; – Editors of PME Newsletter

PME 35 Plenary Speakers Get Personal

We invited all PME 35 plenary speakers to contribute to this issue by responding to the questions: How many PMEs have you attended? Where and when was your first PME? and How does your research life connect with the conference theme: Developing Mathematical Thinking?

Brian Doig

Lecturer in the School of Education, Faculty Arts and Education Deakin University, Australia.

Number of PMEs attended: I have been attending PME since New Hampshire last century (PME 10, 1986).

Part of my current research has a focus on assessment of children's informal mathematics, that is, the mathematical skills and concepts that they possess prior to formal schooling. This focus was prompted, in part, by the Talentenkracht (Curious Minds) project in the Netherlands. This project is looking at the informal mathematics and science that children possess.

Additionally, my earlier work in assessment of young children's mathematics provided me with evidence of how much educators were under-estimating the mathematical ability of these children. Further, it became obvious that standard assessment formats were not necessarily conducive to exploring a wide range of abilities. Many of the then current assessments had a focus on establishing a child's knowledge of school mathematics, which, while useful, could easily miss any broader talents.

I hope that the illustrations presented in my talk will show the extent of the thinking, both correct and wayward, that is being used by the very young.
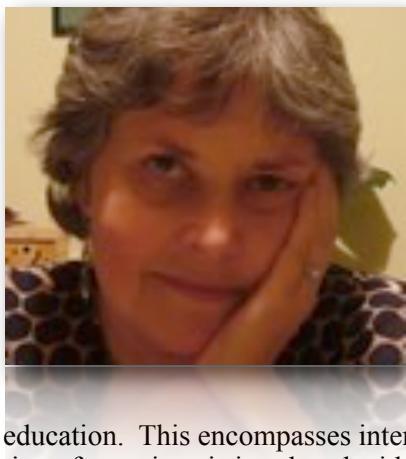
Janet Ainley

Professor of Education and Director of the School of Education, University of Leicester, UK.

Number of PMEs attended: 17 - I counted by sets of PME proceedings!

Year and place of first PME: PME 10, London, 1986.

The central theme of my research is how children and teachers make sense of the complexity of classroom activity, particularly in relations to mathematics statistics education. This encompasses interests in professional practice, in social and cultural influences, and in how the construction of meanings is interlaced with the available resources. In particular, my research has addressed the design of pedagogic tasks which exploit the potential of technologies to support mathematical thinking, and in which mathematical ideas are used in ways that have a clear purpose for the learners.

I contend that although school mathematics is traditionally contextualised with the intention of supporting mathematical thinking and making connections to the world beyond the classroom, the ways in which this is done often have the opposite effect, since the uses of mathematics are contrived and unrealistic. My research in the area of pedagogic task design attempts to address this paradox through an approach which is starts from a consideration of how and why mathematical ideas are useful.

PME 34 Plenary Speakers continued….

Konrad Krainer

Professor at the Alpen-Adria-Universität Klagenfurt

Number of PMEs attended: 9, (PME Ankara will be my 10th)

Year and place of first PME: PME 19 Assissi Italy 1991

My research life started with a diploma thesis on geometry teaching. One focus was put on the development of tasks in order to promote students' mathematical thinking. I used these tasks in a teacher professional development programme and realized that teachers were very interested to get such kind of information. Being at that time a part-time mathematics teacher and researcher, I intensified my interest in students' mathematical thinking. It culminated in my doctoral thesis which focused on the concept of angle. In particular, I was fascinated by students' interview answers and the insights into their thinking.

Again, I used this knowledge in teacher education and became increasingly interested in promoting teachers to understand and to support students' mathematical thinking. Our programme was highly successful for individual teachers. However, I realized that individual teachers' learning doesn't bring about change at a whole school. With the background of a two-year programme for organizational development I worked with teams of teachers, mathematics departments and some whole schools. The study of these interventions showed how important the issues of communication and context are. At the moment, I lead a nation-wide project for initiating and studying innvoations in mathematics and science teaching (IMST). Teachers are regarded as key stakeholders, both in reform and research.
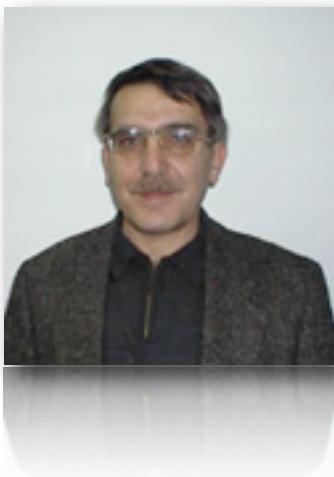
Ali Doğanaksoy

Associate Professor, Department of Mathematics, Institute of Applied Mathematics, Middle East Technical University Ankara Turkey

Number of PMEs attended: PME Newsletter Editors believe this will be Ali's first PME

Ali's research interests include differential geometry and cryptology.

Meet the PME 35 Plenary Panel

The theme for this year's plenary panel is the conference theme:
Thinking Mathematically

with Convenor Olive Chapman, University of Calgary, Alberta Canada.

Olive Chapman (convenor)

Dr. Olive Chapman is Professor of mathematics education and Associate Dean of Undergraduate Programs, Faculty of Education, University of Calgary. She is Editor-in-Chief of the International Journal of Mathematics Teacher Education.

Her research interests include prospective and practicing mathematics teacher thinking, learning, and change; mathematics knowledge for teaching; mathematical thinking/problem solving and contextual/word problems; inquiry-based mathematics pedagogy, and inquiry-based discourse to facilitate mathematical thinking.

Teacher thinking consists of teachers' beliefs, conceptions, perspectives, practical knowledge, and mathematical sense-making. Teacher learning generally involves learner-focused models of learning opportunities for teachers through the use of narrative inquiry, self-inquiry, and problem solving in a social, interactive context.

Uri Leron (panel member)

Dr. Uri Leron is Churchill Family Professor (Emeritus) of Science and Technology Education at the Technion – Israel Institute of Technology. He has a Ph.D. degree in mathematics (ring theory) from the Hebrew University in Jerusalem. Among his recent interests are implications to mathematical thinking of evolutionary psychology, the "rationality debate" in cognitive psychology, and neuroscience.

Dr. Leron has also been interested in mathematical proofs, constructionist uses of digital interactive environments, and computer science education. He has been Editor-in-Chief of the International Journal of Computers for Mathematics Learning (IJCML), Head of the Technion Department of Science Education, and has supervised some 20 graduate students for M.Sc. and Ph.D. degrees.

And more PME 35 Panel Speakers ......

Gabriele Kaiser (panel member)

Dr. Gabriele Kaiser is professor for mathematics education at the Faculty of Education of the University of Hamburg.

Her areas of research include modelling and applications in school, international comparative studies, gender and cultural aspects in mathematics education and empirical research on teacher education.

In October 2010 she took up the position as Vice Dean of the Faculty of Education being responsible for research and international cooperation. She is Editor-in-chief of ZDM – The International Journal on Mathematics Education (formerly Zentralblatt fuer Didaktik der Mathematik), published by Springer .

Carolyn Maher (panel member)

Dr. Carolyn A. Maher is Professor II of Mathematics Education, Director of the Robert B. Davis Institute for Learning at Rutgers University, and Editor of the *Journal of Mathematical Behavior*. Her earlier research has focused on long-term studies of the development of mathematical reasoning in learners over time, featured in a recently (2010) published book by Springer, *Combinatorics and Reasoning: Representing, Justifying and Building Isomorphism,* edited by Maher, Powell and Uptegrove. Her current work explores how using the Video Collection obtained from prior studies can help teachers recognize the forms of arguments produced by students in justifying their solutions to problems.

Frederick Leung (panel member)

Dr. Frederick Leung is a professor at the Faculty of Education, the University of Hong Kong.   His research interests have been comparative studies in mathematics education, and the influence of culture (and in particular the East Asian culture) on mathematics education (teaching and learning, curriculum, assessment, teacher education, and teacher knowledge).   Major research projects include the Hong Kong component of TIMSS and the Learners' Perspective Study (LPS), and a project on comparative study of mathematics teachers' knowledge in Germany, Korea, Hong Kong and other cities in China.   His panel contribution addresses the socio-cultural context of mathematics thinking.

PME 35 AGM Agenda *(Draft)*

PME 35 AGM Agenda
Draft

1. **Opening of the meeting**

2. **Adoption of the Agenda**

3. **Adoption of the minutes of the 2010 AGM held in Belo Horizonte, Brazil**

4. **Elections**

5. **Portfolio Reports**:
   Brief reports will be given by the President's Portfolio Group (PPG), the Vice President Portfolio Group (VPG), and the Secretary Portfolio Group (SPG).

6. **Treasurer Report**
   Operating Budget, Skemp Fund, Reserve Fund

7. **Communications Media**
   Updated website
   PME list-serv

8. **Printed and Online Proceedings**
   Research into options and copyright issues
   Vote on how to make printed and/or online proceedings available

9. **Other Items**

10. **ICMI Representative**

11. **Brief Report on Future Conferences**

MASTER AND DOCTORAL PROGRAMME 2011-2012

RESEARCH ON THE TEACHING AND LEARNING OF EXPERIMENTAL SCIENCES, SOCIAL SCIENCES AND MATHEMATICS

(taught in Spanish)

Coordinated by:

University of Huelva (Spain) (UHU). Departamento de Didáctica de las Ciencias y Filosofía

Other participating universities:

University of Extremadura (UNEX).

Departamento de Didáctica de las Ciencias Experimentales y de la Matemática

International University of Andalusia (UNIA) (La Rábida -Huelva).

The Master offers 3 paths: Experimental Sciences Education, Social Sciences Education and Mathematics Education. It includes subjects, which are shared by the 3 paths and specific subjects. The common subjects deal with professional development and research design. In the specific subjects, apart from introducing research lines and features in each area, one deals with contents, which are linked to the research domains that are being developed in the participating universities:

a) Teachers' Pre-service education, professional knowledge and development (Experimental Sciences, Social Sciences and Mathematics)
b) Problem solving (Experimental Sciences and Mathematics)
c) School research (Experimental Sciences and Social Sciences)
d) Environmental education (Experimental Sciences)
e) Didactic of heritage (Social Sciences)
f) Didactic of Geometry (Mathematics)
g) Mathematics knowledge for teaching (Mathematics)
h) Didactic of History (Social Sciences)
i) Scientific-cultural literacy and heritage (Experimental Sciences and Social Sciences)

The pre-registration is open for the University of Huelva (http://www.juntadeandalucia.es/organismos/economiainnovacionyciencia.html).

More information in http://www.uhu.es/noticieros/master-iea/ or contacting the Master Coordinator, Dr. José Carrillo (carrillo@uhu.es) or the Secretary of the Master (master.ieac@ddcc.uhu.es).

Ankara Turkey Host of PME 35

invited submission by Behiye Ubuz, PME 35 Conference Chair

I have been a member of PME since 1994 and eventually now have the honor to chair the PME35. While attending the previous PME's, I never imaged how much work was undertaken to host a PME. It is not an easy task. Working more or less 15 hours a day since September 2010 could give a clue how much time devoting is needed to host PME. This is perhaps the most difficult and unforgettable challenge as an academician in my life.

As chair of PME we do really face several situations on any given day. These challenges become a great opportunity for us. Chairs do not have the luxury of waiting for solutions to present themselves. We are charged to find the solution. By being an IC member between 2006 and 2010 and also IPC member for PME34, 2010 I had given all the equipment that I needed. I am very grateful to the PME community for accepting my proposal to host the conference at Orta Doğu Teknik Üniversitesi [Middle East Technical University], in Turkey.

PME 35 journey started with preparing and defending the bid. Later it carried on logo design, poster design, PME 35 advertisement CD to be presented at PME34, theme of the PME35, panel and panelists selections and invitations, web content preparation, preparing the announcements, handling the ConfTool including configurations, pre-registration, final registrations, sending invitations to reviewers, paper submissions, paper assignments to reviewers, and so forth. It is very hard to explain everything that I experienced. Everyone needs to experience this journey to understand it.

After 35 years, PME is for the first time in Turkey. It is important that PME35 is taking place in Turkey because growing number of mathematics educators in Turkey will have the opportunity to make a real contribution to mathematics education based on our needs and desire and they will have a chance to meet with such a distinguished group of mathematics educators and teachers from across the world.

The PME35 Organizing Committee is pleased with the more than 540 registrations in the conference – which matches our initial expectations. Our online agenda announces that there will be 2RF, 8DG, 5WS, 161RR presentations, 194 SO and 95 PP. This reveals that PME will continue planting a global vision and add people to the PME community.

Ankara host of PME 35 ....

I give thanks to Dr. Laurie Edwards for helping us settling the configuration of the computer manager, ConfTool and Dr. Bettina Roesken the administrative manager of PME for being with me anytime I need her. I am delighted to work alongside Dr. Joao Filipe Matos as president of PME. I really admire his presidency. I also would like to express my special thanks to International Program Committee members. Last but not least I am very grateful to Davut Cavdar for helping me in dealing with ConfTool and

Meriç Özgeldi for taking care of secretarial work. Thank you all for being with me.

I consider that PME conference organizers, and thus the entire community, should be grateful to Harald Weinreich who is the owner of Conftool. Thanks Harald for your prompt responses every time.

All our efforts as the PME35 organizing committee were to make the participants experience and live one of the best PMEs. Hope that all the

efforts will be visible to the participants. On behalf of the PME35 Organizing Committee, I wish all of you a smooth journey to PME35, this July.

Behiye UBUZ,
PME35 Conference Chair

The Local Organizing Committee will do its best to ensure that the participants will enjoy their stay in Ankara in the hope that their visit to Turkey will become a pleasant and memorable experience for everyone.

New Book

Online Distance Education

Marcelo C. Borba, **Graduate Program of Mathematics Education, UNESP, Rio Claro, Brasil;** Ana Paula dos Santos Malheiros, **Federal University of Itajubá/GPIMEM, UNESP** and Rúbia Barcelos Amaral Zulatto, **State University of Campinas/GPIMEM, UNESP**

This book addresses the discussion on online distance education, teacher education, and how the mathematics is transformed with the Internet, based on examples that illustrate the possibilities of different course models and on the theoretical construct humans-with-media. We will attempt to give the reader the sensation of experiencing one of the various distance courses in which we have participated, or a virtual community that does not have the structure of a course. And if the reader has not yet participated in any of these possibilities, we believe that the book may help, but not substitute, the experience of participating in a discussion list, a course, or a virtual community constituted by a specific interest.

Upcoming Conferences....

PME-NA

North American Chapter of the International Group for the Psychology of Mathematics Education

2011 Conference

Transformative Mathematics Teaching and Learning

Oct 20-23 Reno Nevada USA

http://www.pmena.org/

ICME - 12

The 12th International Congress on Mathematical Education July 8 - 15 2012 Seoul Korea http://www.icme12.org/

Submission of proposals for Topic Study Groups (TSG) to Organizers of TSG	November 1, 2011
Submission of proposals for Workshops and Sharing Groups to IPC Chair	November 30, 2011
Submission of proposals for Posters and Exhibition to IPC Chair	December 30, 2011