

# PME NEWSLETTER

November/December 2012

## **PME 36 in Taipei offers exceptional hospitality for a stimulating conference ....**

*Message from PME President João Filipe Matos*

It is now 5 months that Tai-Yih and his colleagues received PME36 in Taipei and created conditions for a stimulating conference where many opportunities to learn in mathematics education were brought in through a variety of presentations. The exceptional hospitality of the city together with the structure provided by the scientific program created the climate for PME participants to get engaged in discussion and analysis of important issues in mathematics education. I thank to all the people involved in the local organization and to the director and staff of the Wesley Girls High School where the conference took place.

We are now approaching PME37 by the hand of Aiso Heinze who is chairing the conference that will be held at Kiel University in Germany from July 28 to August 2, 2013. Mathematics Learning Across the Life Span, chosen as the theme of the conference is an important reminder that mathematics education is not restricted to school education but that it is part of our everyday starting in early childhood and continuing after school as life-long learning. We all tend to attribute learning (and especially mathematics learning) to the activity developed within the school system from kindergarten to university and to the experience lived in class. And we all agree how important it is that school provides the best opportunities to learn mathematics and develop a sense of its importance as part of our culture, how it is a fundamental part

of most of the models that rule the world, and how it serves multiple purposes in a variety of professional practices and private domains. But it is extremely important that as educators and teachers we recognize the relevance of understanding mathematics as part of our developing identities and the key role that mathematics plays in understanding the world, in reading the social world, and in adopting a critical stance for the future.



PME 37 in 2013 offers a forum for the analysis and discussion of mathematics education research and development in a variety of topics and creating new opportunities to share the results of research in the field and to address the emerging issues. It is in our hands as a community to make this a great conference and a special moment for the PME membership.

João Filipe Matos  
President of PME

## **PME Message from the Editors**

Welcome to our Newsletter of November/December 2012!

In this issue of the Newsletter we include summaries from the PME 36 Taipei Taiwan working groups and a warm invitation from conference chairs and organizers of PME 37 in Kiel, Germany.

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– Editors of PME Newsletter

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## PME 36 Working Session ....

# Learners' Values: Their Analysis and Development

### PME 36 Working Session I post-session report

submission by Wee Tiong Seah,  
Monash University, Australia

This Working Session focussed on the construct of values in the pedagogy of mathematics, and in particular, learners' values.

The activities of the Session were jointly organised by Annica Andersson, Alan Bishop, Philip Clarkson, and Wee Tiong Seah.

The organisation of the Working Session activities was guided by the following aims:

- To contrast and if possible synthesise ideas from colleagues' diverse research on students' values
- To hear about, and discuss the different methodologies being used by colleagues in researching this area, but chiefly
- To develop some international collaborative research projects for the next years

Given that the four co-organisers of this Working Session were affiliated to three different institutions across two continents, much of the organisation was conducted on-line. Nevertheless, all four members had found it useful to come together face-to-face for planning meetings at the conference venue prior to the Working Session.

This Working Session was perhaps the first open academic event bringing together an international group of researchers who are interested in values and valuing in mathematics pedagogy. More than 40 participants had registered their interest to attend with the Conference secretariat prior to the event. As such, the first 90-minute period began with personal introductions, with an emphasis on exploring linkages between personal research interests and the construct of values. Copies of key and recent research publications relating to values in mathematics pedagogy were distributed. Participants also benefitted from a guided discussion on related methodological issues, in which their rich and varied research experiences

stimulated new perspectives and ideas. This first period ended with a discussion of key themes which emerged from the sharing and discussion. These were:

- Valuing and (learner) choice
- Valuing and learner performance
- How values might be learnt
- Valuing as a process



The second 90-minute period began with a summary of the previous period's proceedings, for the benefit especially of participants who were not present in the first period. Each participant was encouraged to associate himself/herself with one of the four themes identified in the previous period. This allowed the gathering to be split into 4 subgroups, each of which was associated with one of the themes. For each group/ theme, a discussion on the conceptualisation of related research ideas as well as of potential research activities was jointly steered by one of the four co-organisers and the participant who had talked about the theme in the last

period. The co-organisers had been in communication with these participants between the two periods, so that they could plan for a fruitful group discussion session as well.

Time constraint was certainly a factor against the formulation of more concrete research plans. Nevertheless, each participant left the Working Session knowing that s/he is member of an email discussion group which continues the conversations and sharings that had begun with the opportunity to meet at the PME Conference, and potentially a member of a regional/international research team which might be formed in the coming months to action on research ideas.

The PME 36 Conference has provided colleagues in mathematics educational research who are interested in the construct of values and valuing with the space and opportunity to come together, to learn, to share, and to dream. The four co-organisers trust that this event is the genesis of creative developments in the years to come of this aspect of mathematics education research.

## PME 36 Working Session ....

# The Learning and Development of Mathematics Teacher Educator-Researchers

### PME 36 Working Session2 post-session report

submission by Merrilyn Goos,  
University of Queensland, Australia

This Working Session session was organized by Olive Chapman, University of Calgary Canada, Laurinda Brown of the University of Bristol UK, Jarmila Novotná of Charles University in Prague Czech Republic, and Merrilyn Goos of the University of Queensland Australia.

This Working Session built on WS05 on the same topic at the PME35 conference and Discussion Group 4 at PME34, all facilitated by the same team. The aim of the Discussion Group was to explore a range of theoretical perspectives on the learning and development of university-based mathematics teacher educators, a new field of study in which there had been little research to date.

In 2011, WS05 focused on research proposals and projects emerging from the Discussion Group. The aim of the 2012 WS was to provide opportunities for feedback on research that had been completed or was in progress and for participants to continue working together towards producing a publication.

This is the last Working Session on this theme as we are working towards an edited book on teacher change. We explained this to partici-



pants in the first session, which resulted in fewer people attending the second session.

The first 90 minute session was attended by around 30 participants, some of whom were new to this group. We introduced the first session by showing the questions that were addressed in the 2010 Discussion Group, together with a summary of the points that emerged from discussion of these questions.

We also reminded participants of the potential research themes that had been proposed in the 2011 Working Session. Each of the four WS02 coordinators then briefly described the research they had conducted in this area over the past twelve months. In the second half of this session, individual participants were invited to share their own research theme or question with the whole group. This process identified common interests

around which small groups were formed to explore potential research collaborations.

Although fewer people attended the second 90 minute session, the interest groups continued their work on comparing theoretical frameworks and methodologies, and sharing any results of research already under way.

The WS coordinators engaged with the small groups assisting them to sketch out manuscripts. We identified 4-5 potential author teams who may be invited to contribute chapters to an edited book on teacher change.

The coordinators were generally satisfied with the results of the Working Session in terms of participation and outcomes. However, several interested participants were unable to attend one or both of our sessions because they had a poster session scheduled at the same time. It would be good to see this programming issue resolved so that it does not adversely affect participation in Working Sessions at future PME conferences.



## PME 36 Working Session ....

### Multimodality in Mathematics

#### PME 36 Working Session 3 post-session report

submission by Laurie Edwards,  
Saint Mary's College of California, USA

This Working Session session was organized by Deborah Moore-Russo of the University of Buffalo, USA and Laurie Edwards of Saint Mary's College of California USA.

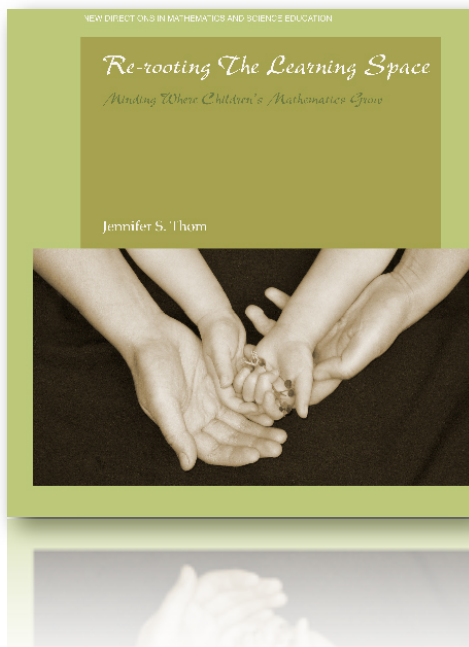
The central purpose of the Working Session was to examine mathematical thinking, learning and communication from the perspective of embodied cognition. The specific topics addressed during the two sessions included: gesture and semiotics, multimodality, conceptual integration and conceptual metaphor (in particular, the objectual metaphor that frames mathematic entities and symbols as objects) and graphing and other visual modalities.

The session was well-attended (about 20 participants), with approximately half of the participants being new to the group. We started with introductions of all participants, during which they shared briefly any research or theoretical work they were doing in the areas of gesture, multimodality and/or embodiment. We then presented some basic

definitions for terms such as multimodality and embodiment. We also asked the participants to share a question they had related to these themes. After organizing the questions into related topics, our plan was to have small groups discuss each topic. However, a participant posed an important question: what is the difference

between embodiment in the sense defined here, and embodiment when applied to, for example, concrete manipulatives. The participants, sitting in small groups, then discussed this question as well as the other ones collected for most of the session, and shared their thoughts at the end.

The following session, several participants gave brief, informal presentations, either of raw data involving gesture or other modalities, or transcripts or other research results. We collected names and e-mail addresses in order to send participants information about the Theory of Embodied Mathematics wiki (<http://tem.wikispaces.com>).



## New Book....

### Re-Rooting the Learning Space

Minding Where Children's Mathematics Grow

Jennifer S. Thom (2012)

"[A] systemic exploration into the embeddedness and co-emergence of theory and practice in mathematics teaching."

Sense Publishers

ISBN 987-94-6091-428-7



## PME 36 Working Session ....

# Factors that Foster or Hinder Mathematical Thinking

### PME 36 Working Session 4 post-session report

submission by Behiye Ubuz, Middle East  
Technical University, Ankara Turkey

This Working Session session was organised by Joao Filipe Matos University of Lisbon Portugal, Stephen Lerman of London South Bank University, UK, and Behiye Ubuz of Middle East Technical University, Turkey.

The aim of the Working Group “Factors that Foster or Hinder Mathematical Thinking” was to produce better (more effective, more detailed, more comprehensive) understanding of mathematical thinking and factors that foster or hinder its acquisition and development. This aim was achieved through the combined talents of more than 60 group members, contributing knowledge and ideas. Groups with around 4 members came together to discuss and study issues such as:

- What is the nature and structure of mathematical thinking?
- How are the different aspects of mathematical thinking related to each other?
- What are the factors that affect mathematical thinking processes?

To initiate the group discussions on these issues, we, group organisers, started with a short presentation with the 'conclusions' drawn from the survey we carried out on each issue above, analysing research reports on mathematical



thinking from previous PME proceedings, raising key questions that were unfolded into more specific questions.

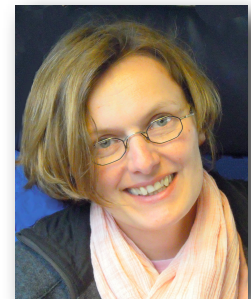
Upon completion of the discussion and study of each issue, groups came together as a whole and then shared the outcomes of their discussions with the whole group.

In the next PME (PME37), participants agreed that they would like to come together again with the aim of bringing out a book on the latest work on the issue of Mathematical Thinking in the community. We will propose such a group and we plan both to work on the book and to run sessions that will be of interest to people who did not attend the Working Group in Taipei.



## Mathematics Learning Across the Life Span Kiel, Germany Hosts PME37

*invited submission by  
Aiso Heinze and Beate von der Heydt*



We are happy to invite all PME members to attend the 37<sup>th</sup> Conference of the International Group for the Psychology of Mathematics Education (PME 37) which will be held at Kiel University from July 28 to August 2, 2013.

*Mathematics Learning Across the Life Span* has been chosen as the theme of the conference to stress that mathematics education is not restricted to school education. It already starts at preschool age and it continues after school in vocational education, in university education and during working life so that mathematics education really can be considered as a lifelong learning enterprise.

All these phases of mathematics learning across the life span are represented in the scientific activities of the PME community. Accordingly, it makes sense to reflect on PME research activities from this specific perspective and to discuss how different research projects contribute to the description, the explanation or the support of the development of mathematics knowledge, skills and attitudes from preschool age to adulthood.

The theme “*Mathematics Learning Across the Life Span*” also has a specific meaning for educational research in the host country and in particular for the IPN, the institute hosting the PME 37 in Kiel. In Germany, there is currently a strong development to address longitudinal research on competency development throughout the life span. In particular, research at the IPN in Kiel is involved in several nationwide projects addressing the learning of mathematics and science from kindergarten to adulthood.

The different phases of learning mathematics across the life span will be specifically addressed in the plenary ses-

sions of the PME 37. We are looking forward to presenting excellent plenary speakers at the PME 37 in Kiel:

Representing the host country, *Kristina Reiss* from the TUM School of Education in Munich will give an overview of mathematics learning across the life span, *Doug Clarke* from the Australian Catholic University in Melbourne is an expert on mathematics learning at preschool and primary school age and will present findings from his research, and *Iddo Gal*, the chair of the Numeracy Expert Group of the PIAAC study, from the University of Haifa, will illustrate the conception of the international adult study PIAAC and prepare the mathematics education community for the PIAAC results which will be published in October 2013.

Finally, in accordance with PME tradition, the retiring PME president *João Filipe Matos* from the University of Lisbon will finish his term of office with a plenary talk.

The plenary panel will also address the conference theme but in a very specific manner: *Peter Liljedahl* from Simon Fraser University in Vancouver will guide a panel discussion entitled “Education of Young Mathematics Education Researchers”. Here, the panelists *Marcelo Borba* (Brazil), *Andualem Tami Gebremichael* (Norway/Ethiopia), *Heidi Krzywacki* (Finland) and *Gaye Williams* (Australia) will contribute to the discussion about which education our young academics need in mathematics education research and which kind of learning opportunities (e.g. organized by the PME) should be offered.

## Mathematics Learning Across the Life Span: PME37... ....

With the PME 37 in Germany, the PME is coming back to its place of birth! The PME was founded during the ICME 3 that took place from August 16-21, 1976 in Karlsruhe (Germany). In the proceedings of the ICME 3, in the chapter “EWG 12: The Psychology of Learning Mathematics” by Efraim Fischbein, we find the following statement documenting the foundation of the PME:

The members of the working group decided to form a permanent international association affiliated with the ICMI, entitled 'The International Group for the Psychology of Mathematics Education' (IGPME).

Proceedings of the ICME 3 (1976), p. 311

The Local Organizing Committee from the Leibniz Institute for Science and Mathematics Education (IPN) is very proud to host the PME 37, though hosting a PME conference with an expected 700 participants in a medium-sized city like Kiel poses a challenge. Nevertheless, a medium-

sized city has also its advantages like, for example, short distances. Moreover, as a university city on the Baltic coast, Kiel combines academic flair with beautiful nature. It is characterized by its maritime location: international ferries, cruisers, and dockyard cranes form an integral part of the city center scenery and the nearby beaches and seaside amenities are an integral part of life in Kiel.

More detailed information about the PME 37 conference and the possibilities for registering and contributing is available at [www.pme37.de](http://www.pme37.de) or [www.pme2013.de](http://www.pme2013.de). The First Announcement gives an overview of all the important information on the different possibilities for presenting research results at the PME 37, on the conference venue, on travel and accommodation, as well as on the social program of the conference.

We hope to arouse your interest in the PME 37 and we are looking forward to welcoming you to Kiel next summer.







**First Meeting between the National Pedagogic University (Mexico) and the Faculty of Education of the University of Calgary (Canada)**

Mexico City, February 18 and 19, 2013

## Second Announcement

Investigating and implementing teacher professional development programs focused on promoting mathematical thinking of elementary and secondary school students

**Purpose:** This first meeting is to establish academic relationships among colleagues from the National Pedagogic University and the Faculty of Education of the University of Calgary, as well as from other educational institutions in Mexico and Canada.

**Discussion panels**  
**Keynote presentations**  
**Thematic presentations**  
**Poster presentations**

**Confirmed panellists and keynote speakers**

National Pedagogic University: Silvia Alatorre, Teresa Negrete, Elin Emilsson, Antonio Carrillo, Lucina García.

University of Calgary: Olive Chapman, Brent Davis, Sharon Friesen, Marlene Krickhan.

Professors, researchers, and students are invited to submit proposals in the thematic areas and poster presentations.

Submission deadline for thematic area and poster presentations: **January 15, 2013.**

The number of participants is limited. Please, register your attendance.

Further information at

[https://people.ucalgary.ca/~apprecia/UPN\\_UC/en](https://people.ucalgary.ca/~apprecia/UPN_UC/en)

**Organized by:** "Cuerpo Académico No. 78, Matemáticas, Educación y Tecnología; Área Académica 4 Tecnologías de la Información y Modelos Alternativos" from the National Pedagogic University; and the Faculty of Education of the University of Calgary.

