THE SCIENTIFIC PROGRAM

The scientific program includes the following activities:

**Plenary sessions**
- Plenary addresses
- Plenary panel

**Personal presentations**
- Research Forums (RF)
- Research Reports (RR)
- Short Oral Communications (SO)
- Poster presentations (P)

**Group activities**
- Workings Sessions (WS)
- Discussion Groups (DG)

The working language of the Conference is English. Papers for the proceedings are written and presented in English. However, colleagues, including the presenter, are welcome to contribute to discussions and questions following the presentation of a Research Report or a Short Oral Communication in their first language, provided that translation is possible by someone present in the session.

**Plenary Sessions**

The theme for the PME27 Conference is “Navigating Between Theory and Practice”. The plenary sessions will represent a variety of perspectives relevant to the PME community. There will be five invited plenary addresses and a plenary panel discussion. The plenary speakers and the plenary panel chair and members are noted below. Where available, the title is also provided.

- Nainoa Thompson, Polynesian Navigator and Educator (Polynesian Voyaging Society), Plenary Speaker
  - Title: Lessons of Learning & Texts of Teaching - the importance of understanding and capturing classroom practice.
- Dr. Jo Boaler, Stanford University (USA), Plenary Speaker
  - Title: Probing students' understanding of variables through cognitive conflict: is the concept of a variable so difficult for students to understand?
- Dr. Toshiakira Fujii, Tokyo Gakugei University (Japan), Plenary Speaker
  - Title: The Dialectics between Theory and Practice: Theoretical Issues and Practice Aspects from an Early Algebra Project.
- Dr. Nicolina Malara, University of Modena e Reggio (Italy), Plenary Speaker
  - Title: The Dialectics between Theory and Practice: Theoretical Issues and Practice Aspects from an Early Algebra Project.
- Dr. Barbara Dougherty & Dr. Joseph Zilliox, University of Hawai‘i (USA), Joint Plenary Speakers
  - Title: Voyaging from Theory to Practice in Teaching and Learning: A View from Hawai‘i
- Dr. Jarmila Novotná, Charles University in Prague (Czech Republic), Coordinator, Plenary Panel
  - Panelists: Agatha Lebethe (South Africa), Gershon Rosen (Israel), Vicki Zack (Canada)
  - Title: Teachers who navigate between their research and their practice

**Research Forums (RF)**

The goal of a Research Forum is to create dialogue and discussion, by offering PME members more elaborated presentations, reactions, and discussions on topics on which substantial research has been undertaken and which continue to hold the active interest of a large subgroup of PME. Two 90-minute slots will be devoted to each Research Forum. A Research Forum is not supposed to be a collection of presentations but to convey an overview of an area of research, its main current questions and perspectives.

For the PME27 Conference, the Program Committee and the International Committee selected the topics and coordinators of the Research Forum. Copies of Research Forum papers and pre-readings can be found on the conference website ([www.hawaii.edu/pme27](http://www.hawaii.edu/pme27)). The following Research Forums are being organized for PME27:

- RF1 Perceptuo-Motor Activity and Imagination in Mathematics Learning
Research Reports (RR)

Each Research Report is allotted a total time of 40 minutes: 20 minutes for the oral presentation and 20 minutes for discussion. Two types of papers are suitable for Research Reports: report of studies (observational, ethnographic, experimental, quasi-experimental, and case studies), and theoretical and philosophical essays. There are 176 research reports scheduled for presentation at PME27.

Short Oral Communications (SO)

Some research may more appropriately be communicated by means of a Short Oral Communication rather than by means of a full Research Report. Each communication is allotted a total time of 15 minutes: 10 minutes for the oral presentation and 5 minutes for questions or comments. When possible, the presentations are grouped by themes, and a discussion period of 15 minutes completes each group of presentations. There are 80 short orals scheduled for presentation at PME27.

Poster Presentations (P)

Poster Presentations are available for those whose work is more suitably communicated in a pictorial or graphical format, rather than through an oral presentation. There is no formal oral presentation associated with posters, although there will be a time allotted, after sufficient display time, during which presenters are available by their posters for informal discussion with conference participants. A poster may present research projects, software developments, curricular innovations, educational programs, etc., related to the Psychology of Mathematics Education. Approximately 86 posters may be displayed at PME27.

Pacific Island Scholars’ Posters

The Pacific Island Scholars, a group of 27 mathematics educators from across the western Pacific, have prepared specialized posters that depict their culture and issues relevant to mathematics education. The Pacific Island Scholars’ attendance at PME27 is financed through a grant from the National Science Foundation (0209393). Typically, the scholars are two college instructors and the mathematics specialist representing the nine Pacific island communities of American Samoa, the Republic of Palau, the Republic of the Marshall Islands (RMI), Guam, the Commonwealth of the Northern Mariana Islands (CNMI), and the Federated States of Micronesia (FSM) that includes the states of Yap, Chuuk, Pohnpei, and Kosrae. There are nine Pacific Island Posters in a special display area of the Convention Center.

Group Activities

The aim of the group activities is to achieve greater exchange of information and ideas related to the Psychology of Mathematics Education. There are two types of activities:

- Workings Sessions (WS)
- Discussion Groups (DG)

All types of groups are allotted the same amount of time for sessions during the conference: two 90-minute slots.
**Working Sessions (WS)**

This group activity has the aim to ensure that PME participants engage collaboratively in a joint activity. Each Working Session should be consistent with the aims of PME and ensure maximum involvement for participants. The sessions are designed to be hands-on experiences and activities. A brief description of the Working Sessions appears in the May PME News. The following working sessions are scheduled for PME27:

**WS1** Embodiment in mathematics: metaphor and gesture  
Laurie Edwards (USA), Janete Bolite Frant (Brazil) and Stephan R. Campbell (Canada)

**WS2** Exploring alternative interpretations of classroom data  
Coordinators: Chris Breen (South Africa) and Markku Hannula (Finland)

**WS3** Models and modeling working session  
Coordinators: Richard Lesh (USA), Guadalupe Carmona, Helen Doer (USA), Lyn English (Australia), Margret Hjalmarson (USA), Susan Lamon (USA), Richard Lehrer (USA), Thomas Post (USA), Judith Zawojewski

**WS4** Researching the teaching and learning of mathematics in multilingual classrooms  
Coordinators: Richard Barwell (UK), Anjum Halai (Pakistan), Mamokgethi Setati (South Africa)

**WS5** Symbolic cognition in advanced mathematics  
Coordinators: Stephen J. Hegedus (USA), David O. Tall (UK), Ted Eisenberg (Israel), and Gary Davis (Australia)

**WS6** The complexity of learning to reason probabilistically  
Coordinators: Hollylynne Stohl (USA) and James E. Tarr (USA)

**WS7** The design and uses of curriculum materials  
Coordinators: Yeping Li (USA) and Karen Fuson (USA)

**WS8** The role of syntax and technology in the development of algebraic reasoning in the early grades (K-8)  
Coordinators: John Olive (USA), Maria Blanton (USA), and Jim Kaput (USA)

**WS9** Understanding learning through teaching in the mathematics classroom  
Coordinators: Anne Cockburn (UK) and Fran Lopez-Real (UK)

**WS10** Videopapers: an emerging way to publish and conduct research and classroom analysis  
Coordinators: Daniel Cogan-Drew and Ricardo Nemirovsky (USA)
Discussion Groups (DG)

The objective of a Discussion Group is to provide the opportunity for people to work constructively together. They may begin with short synopses of research work, or five to ten pressing questions, or provocative prompts (such as a short video clip), which aim to elicit engagement on the part of all the participants. The main purpose is critical discussion. The group activities should not be a series of short oral presentations by a number of researchers.

A brief description of the Discussion Groups appears in the May PME News. The following Discussion Groups are scheduled for PME27:

DG1  Examining theses
    Co-ordinators: Helen Forgasz (Australia) and Kathleen Hart (UK)
    (A continuation from PME26)

DG2  Facilitating conceptual change in mathematics
    Co-ordinators: Erkki Pehkonen (Finland), Kaarina Merenluoto (Finland), and Marianna Tzekaki (Greece)
    (A continuation from PME26)

DG3  Fostering the mathematical thinking of young children: Pre-K-2
    Coordinators: Robert P. Hunting (USA) and Catherine A. Pearn (Australia)

DG4  Integrated mathematics and science: Setting a research agenda
    Coordinators: Karen Marrongelle (USA) and Brian Keller (USA)

DG5  Integrating equity and complex social problems in mathematics teacher education
    Coordinators: Vilma Mesa (Columbia) and Shari Saunders (USA)

DG6  Research on gender and mathematics from multiple perspectives
    Coordinators: Joanne Becker (USA) and Ferdinand Rivera (USA)

DG7  Semiotic and socio-cultural evolution of mathematical concepts
    Coordinators: Adalira Saenz-Ludlow (USA) and Norma Presmeg (USA)

DG8  Stochastical thinking, learning and teaching
    Co-ordinators: Michael Shaughnessy (USA) and Jane Watson (Australia)
    (A continuation from PME26)

DG9  The messy work of studying professional development: the conversation continues
    Coordinators: Catherine A. Brown (USA), Rebecca McGraw (USA), and Fran Arbaugh (USA)

DG10 The rise and fall of mathematics education research
    Coordinator: Anne Teppo (USA) and Carole LaCampagne (USA)

DG11 The role of mathematics education in social exclusion: reviewing the interface between psychological and sociological research paradigms.
    Coordinators: Peter Gates (UK), Tansy Hardy (UK), Robyn Zevenbergen (Australia), Mike Askew (UK), Stephen Lerman (UK)
Call for Research Forums  
PME28 (2004)  
Bergen, Norway

The goal of a Research Forum is to create dialogue and discussion, by offering PME members elaborated presentations, reactions, and discussions about topics on which substantial research has been undertaken and which continue to hold the active interest of a large subgroup of PME. A Research Forum is not supposed to be a collection of presentations but to convey an overview of an area of research, its main questions and perspectives. Two 90-minute slots are devoted to each Research Forum.

A Research Forum should:
- Focus on a topic that is of substantial interest within the work of PME
- Stimulate critical dialogue around this topic through the consideration of multiple perspectives
- Have a coherent structure to encourage intellectual debate
- Involve planned input to this critical dialogue from at least five researchers
- Include structural opportunities for interaction by the audience, and avoid the need for long presentations through the use of well-advertised prior readings

Research Forum proposals must be submitted more than a year in advance so that the International Committee can review it during their regular meeting at each PME conference; this review has to occur the year previous to the conference where the research forum, if approved, will take place. A detailed timeline appears below.

A Research Forum proposal must include the following sections:

1. A General Heading including the following information:
   - Title of the Research Forum
   - Name of the coordinator(s)
   - Names of the contributors and their roles

2. A General Framework section, describing briefly the field of research in mathematics education that the forum will focus on, the field’s main issues, findings and problems, including the theoretical and/or philosophical framework adopted for this Research Forum.

3. The goals, key questions, themes and focus of this Research Forum, the main strands of ideas that the coordinators identify in the theme chosen for the research forum and how the participants see themselves in relation to them. Some highlights on further work and research on the topic should be given.

4. The proposal must provide a description of the session dynamics including timing and plans for (reasonable) advanced reading and for audience interaction. The proposal should explicate how the forum is going to be more than a collection of papers to offer a critical overview of a field of research, and how the forum is to be organized so that the audience will have opportunities to participate and contribute.

5. How the space in the Proceedings will be structured and used (up to 30 pages).

6. It is the coordinators’ responsibility to ensure that Research Forum contributors adhere to the topic of the Forum. This applies to both the papers and the presentations.

The Research Forum review process for the 2004 PME28 conference Bergen includes the following steps:
- May 31, Year 2003: Proposal Submissions should be sent to the Executive Secretary of PME (see page 3)—Not to the Conference Secretariat—for review by the IC at its annual meeting in July 2003.
- August 15, 2003: Tentative approval or rejection by the International Committee, including requests for changes and improvements (it will be sent in writing to the coordinators and to the Program Committee Chair by the IC secretary).
A few years ago, the IC decided to implement a mechanism to encourage and support inexperienced researchers by offering them the possibility of an Early Bird Procedure for submitting a Research Report. Inexperienced researchers who do not have access to appropriate local support and would like to receive guidance from experienced PME researchers can submit their paper to the Early Bird co-ordinator. The co-ordinator will assign the paper to an appropriate mentor and make sure that the communication between the inexperienced researcher and the mentor flows satisfactorily. Please note that this procedure is meant to be a feedback to written reports. It is not meant as a support for conducting research.

The papers submitted should be accompanied by a statement in which the authors declare that they are researchers with little previous experience in writing research reports (or journal articles) and have limited access to experienced advice. The mentors will correspond with the authors and will guide them in strengthening their papers. In order to ensure a process, which will be beneficial to authors, proposals should be submitted to the co-ordinator at least six months before the deadline for submission of a Research Report (January of the year of the upcoming conference). The timeframe will allow for the search for an appropriate mentor, and will enable the process to be meaningful. In any case, this mentoring would not guarantee acceptance, as the papers will still undergo the regular PME reviewing procedures. People who wish to have a mentor to submit a Research Report for the PME28 Conference in 2004 should contact the co-ordinator before August 31, 2003.

The Early Bird co-ordinator for the PME27 and PME28 Conference is: Norma Presmeg.

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Potential Papers for  
Special Contributions and Special Issues for Special Issues  
of Educational Studies in Mathematics

During the Research Report review process for PME27, reviewers were asked to advise if a paper has sufficient potential to be expanded for possible inclusion in ESM journal highlighting PME research. The IC is exploring the possibility of submitting PME proposals for contributions in addition to proposals for a special issue of ESM highlighting PME research based at least in part on research reports identified this year. There were 17 such papers identified.