



NEWSLETTER

International Group for the Psychology
of Mathematics Education

40

November 2016

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Message from PME President

Dear Colleagues from PME,

PME 40 marked a significant milestone in the history of our organization and Csaba Csíkos and his local organizing team put on a conference befit of this milestone. The venue was spectacular, the academic program stimulating, and the food and drink wonderful. Joining us to celebrate this milestone were more than 450 conference participants from 50+ countries. And to commemorate the anniversary the launch of the 2nd Handbook of Research on the Psychology of Mathematics Education, which celebrates the research of PME participants from 2005 to 2015.

Having now turned 40, PME is in very good shape. As an organization we are financially sound, we have excellent hosts secured for PME 41, 42, and 43, and we have already received a bid for PME 44. We have very good governance policies and practices, and good documentation of these. And our members and participants continually produce and present high quality research. This did not happen ex nihilo. We need to be thankful to my predecessors (presidents and all IC members) for the exceptional stewardship they have shown in caring for and growing PME in the its first 40 years.

(continued on page 2)



Message from the Editors

Dear PMEmbers,

Welcome to our November 2016 Newsletter! In this issue, we continue celebrating the 40th anniversary of PME and bring reports from the last conference in Szeged. Many exciting changes are happening in our community this year. To name some of them, we elected a new president Peter Liljedahl and four IC members: Yiming Cao, Einat Heyd-Metzuyanin, Miguel Ribeiro and Lovisa Sumpter. Also, funding opportunities for special projects and regional conferences were initiated. You can read about these changes and much more in the Message from the President and reports on the Szeged conference.

(continued on page 2)

Message from PME President (continued)

Turning 40 is not without its losses, however. As an organization, we can no longer boast a member who has attended every meeting and we have very few amongst us who attended any of the first five PME meetings. This means that we are at a point where we need to define ourselves and ask ourselves who it is we want to be as an organization to our members and to the field of mathematics education. We are now a mature enough organization that we can begin to think seriously about ourselves as something more than just an annual conference. At PME 40 the membership voted in a surplus funds policy that will allow PME to do just that. This surplus policy has now manifest itself into two distinct, but related initiatives - the Regional Conference and the IGPME Special Project, the calls for both of which are discussed in both the Policy Portfolio report and the Secretary Portfolio report and can be found at <http://www.igpme.org/index.php/communication/announcement-forum>. At the same time, you will also find a call for help in identifying university



libraries in developing countries who could benefit from receiving PME publications. Taken together, these three initiatives mark the next stage in PME's life as a global citizen in the field of mathematics education.

Having said that, the submission deadline for PME 41 is just around the corner. Berinderjeet Kaur and Ho Weng Kin (co-chairs of PME 41) will be hosting us at The National Institute of Education (NIE) in Singapore, July 17-22, 2017. I will be reporting about the venue in the next edition of the newsletter. In the meantime, the slate of plenary and panel speakers is complete and promises to provide the frame for another stimulating meeting. This is an exciting time for us all to be members of PME and I look forward to working together with you over the coming three years.

Peter Liljedahl

Message from the Editors (continued)

Our newsletter is changing as well: you have probably noticed our new design already. We are moving towards two issues per year: the first one will precede the annual conference and it will be published around May/June, the second issue will be brought to you around November/December. The newsletter team is getting back to the three-editor format with Igor' Kontorovich who is joining us from the southern hemisphere. Igor' recently completed his PhD in Israel and after a post-doc in Canada he joined the University of Auckland, New Zealand.

We hope that you enjoy this issue and find it informative and provoking. To help us with this challenging endeavor we encourage you to send us your contributions that might be of interest to the community. Interesting contributions might, for instance, be reports on projects that combine different methodologies, cultures or age groups, reports on experiences you made with innovative ways of

teaching or new study programs, or the introduction of a person that was given some kind of award. We thank Maïke Schindler, Achim Lilienthal and Miguel Ribeiro for their contributions to this issue. Contributions to the newsletter are welcome (please note that the editors reserve the right to make small editorial changes to contributions). We kindly ask you to hand in a picture along with your text. In the future you can use our new email adress to submit your articles: newsletter@igpme.org.

The newsletter could not be produced without the great help of Nir Shnap and Mareike Heldt for their wonderful work. We thank them very much!

Take care!

Maïke Vollstedt, Igor' Kontorovich & Keith Jones
(newsletter@igpme.org)

PME at 40

Marking 40 years of PME

Compiled by Keith Jones (UK)



As part of the opening ceremony at the PME-40 conference in Szeged, Hungary, some long-standing PME members presented their recollections of their first PME conference, the impact that made, and, if they chose, some issues for the future. Here is what they said.

Norma Presmeg

My first attendance at a PME conference was PME 4 in Berkeley, California, in 1980, where there were 79 participants. Since then I have had the privilege of attending 28 PME conferences, 26 of them in consecutive years. I started participating consistently at PME 12 in 1988 in Veszprem, Hungary, where there were 241 participants. The conceptual foundations were still squarely rooted in psychology and cognitive science, although there were already hints of the sociocultural 'revolution' that was to come. Mathematics education research was busy throwing off the psychometric orientation in which only statistical research was considered scientific, aided by seminal publications such as those of Krutetskii (1976), and later by Bishop (1988). In the decades that followed, not only did the number of participants at PME meetings increase dramatically (at PME 38 in Vancouver in 2014 there were 865), but the community would have to wrestle with the question of whether the name of PME should be changed: Psychology was no longer the dominant focus. For historical reasons the name was retained. Qualitative research became the preferred methodology during the 1990s, resonating with radical constructivism but following the trend away from psychometric research in general. It was only in the early 2000s that the pendulum swung back to a more central orientation, as we recognized that both quantitative and qualitative methodologies

have their place, because they serve different purposes, the former allowing for generalization, and the latter for depth of insight. The chapters in the first PME Research Handbook (Gutiérrez & Boero, 2006), which celebrated 30 years of PME research, clearly show that both kinds of methodology were considered important by then. Now, after another ten years, mixed methods clearly have their rightful place – as reflected in the second PME Research Handbook (Gutiérrez, Leder & Boero, 2016). PME has been my favorite conference through the years. I enjoy its international flavor, its mentoring of new researchers (I served as the Early Bird coordinator for many years), the immediacy of learning of new developments in research, since proposals submitted in January are available in the Proceedings by July (unlike the years that a journal publication might take). PME has matured and expanded along with our field—so much so that the International Committee now has to split into Portfolios to keep up with its enlarged role. My hope is that the organization can remain small enough to maintain its collegiality and immediacy in the future.

Gilah Leder

Turn the clock back to 1985. I was a relatively young academic looking forward to my first PME conference - being held in Noordwijkerhout in the Netherlands. The location was of particular interest. I was born in the Netherlands and had already visited the country a number of times since my family had moved to Australia. On these earlier occasions I had simply been a visitor returning briefly to the country of my birth; now it would be an opportunity to inspect and sample its academic life. I still remember the awe I felt when I thought about Leiden University, only an (admittedly long) stone's throw away from Noordwijkerhout. Here was an institution founded in 1575, with a well-deserved international reputation. In comparison Monash University, my academic home, was a not-yet-30 years old fledgling institution. Yet already it was developing its own particular ethos. And unquestionably its staff

and students were making their mark in educational research. As the conference days went by, I became increasingly aware of what PME membership was delivering: a unique opportunity to delve into the best of what mathematics education research had to offer- not through a single lens but from various perspectives embedded in overlapping yet different cultures. And how privileged I felt to have a deep and first-hand acquaintance with two different (national) backgrounds; to be comfortable in both. Many members of PME are of course in the same situation of having moved from one country to another, mastering different languages and customs. I guess during that PME conference I realized more clearly than ever before how enriching - both personally and professionally – belonging to more than one culture can be.

Janet Ainley

I count myself as a PME 'oldtimer'. I first attended PME in 1986 in London as a very inexperienced newcomer. As for many others, PME is the community in which I grew up as a researcher. That first experience was intoxicating, but there was also a slight sense of frustration; many, many presentations, but it seemed too little time to talk about ideas.

The memory I want to share is from the PME conference in Recife, Brasil, in 1995, where there were two extraordinary plenary sessions. Richardo Nemirovsky and David Carraher organised a plenary panel in which an extended extract of video data was shared, and three panellists invited to analyse it from different perspectives. Richardo and David took great care to make sure that the video and transcript were accessible to all participants so that they could share in the discussion. Later, Analucia Schliemann interrupted her plenary lecture to invite the audience to discuss an issue in groups and raise comments. In both cases, the surge of energy within the room was palpable.

As PME moves into its next decade, my thought for the future is to encourage PME to continue to seek innovative ways to ensure that the conference is not just a time to present and to listen, but also a time when we can work and learn together as a research community.

Fou-Lai Lin

My first PME was in 1987, at Montreal. Since then, I have attended 27 PME annual conferences. These have been the support platform of my professional development. To many of us, PME is an organic unity and developmental learning environment. Here I briefly look into the PME paradigm evolution.

My initial impression of PME was one of 'Constructivism-shock'. I was shocked by the plenary speakers who were all talking about their views of Constructivism.

Being a PME member since then, I have had the opportunity to listen to the transforming of the meaning of 'psychology' in PME to incorporate the social and cultural perspectives. Teacher education became a hot study area. Social constructivism was presented in many research reports. During the last decade, the STEM education trend also presented in PME. Transdisciplinarity perspective and maker education are discussed. Could it be an era of STEM-ism? The PME paradigm is evolving; we come from different societies with responsibility to resolve different societal issues in mathematics education. What we need to learn, though this might not be new, is the theory and implementing strategy that can effectively resolve the big issues in our societies!

Marty Simon

I am happy to be back in Hungary. My first PME was in Veszprem in 1988. PME has been perhaps the most important international research conference over the last four decades. It is for this reason I make the following proposal for the future of PME. Few academic research fields are consistently reflective about the quality of their research. Such introspection can be extremely important to the ongoing growth of the research domain. PME has the potential to provide leadership in this area, including: specifying indicators of quality /standards; creating structures for discussion of quality; determining where we need to improve; improving infrastructure for conference, journal, and grant reviewing.

I am recommending that PME create an ongoing structure for discussing issues of research quality in mathematics education, a structure that is represented at each PME annual conference.

Peter Liljedahl

My first PME was, like Gilah Leder's, in the Netherlands – but for me it was not until PME 25 in 2001 when Gilah gave her presidential address. I cannot quite remember the substance of that address (apologies, Gilah). Nor do I remember much from the other plenary addresses (apologies to Jan, Martin, Erna, and Paulo). What I do remember, though, was the sense that I was entering into a conversation that had been going on for many years, was ongoing, and would be ongoing for a long time. I also remember well some small details. There was a presentation in one of the Research Forums from which I took a task and a routine that I still use with my preservice teachers. I also remember a particular short oral (as it was called back then) that was, easily, the best short oral I have seen over the last 15 years. At the end of that presentation, I took so much out of it for my thesis work and my research that I actually think back on it as something much longer than a short oral. I went back and checked and it was, indeed, a short oral. Incidentally, my

Research Report at PME-40 in 2016 drew directly from the framework that I learned that day in 2001.

REFERENCES:

- Bishop, A. J. (1988). *Mathematical enculturation: A cultural perspective on mathematics education*. Dordrecht, The Netherlands: Kluwer Academic Publishers.
- Gutiérrez, A. & Boero, P. (2006). *Handbook of research on the psychology of mathematics education: Past, present, and future*. Rotterdam, The Netherlands: Sense Publishers.
- Gutiérrez, A., Leder, G., & Boero, P. (Eds.) (2016). *The second handbook of research on the psychology of mathematics education: The journey continues*. Rotterdam, The Netherlands: Sense Publishers.
- Krutetskii, V. A. (1976). *The psychology of mathematical abilities in schoolchildren*. Chicago, IL, USA: University of Chicago Press.



Photo left to right: Marty Simon, Janet Ainley, Norma Presmeg, Fou-Lai Lin, Gilah Leder, Peter Liljedahl (Photo credit: Susanna Oksanen)

Launch of the 2nd PME Research Handbook

Submitted by Angel Gutiérrez (Spain) & Gilah Leder (Australia)



The 2nd PME Research Handbook was launched at the PME-40 conference in Szeged, Hungary. As two of the editors who contributed to the launch, here we explain what is new in the handbook and how we made many of the decisions about the content and authors. It was, of course, an enormous pleasure to be part of the launching of the Second Handbook. We have to admit that there were times when the three of us (Angel, Paolo and Gilah, and perhaps especially Gilah), wondered if the process would end up with a final product. Achieve this we did, thanks to a truly collaborative effort from the PME community. So let us share with you at least part of the journey it took to get the handbook completed.

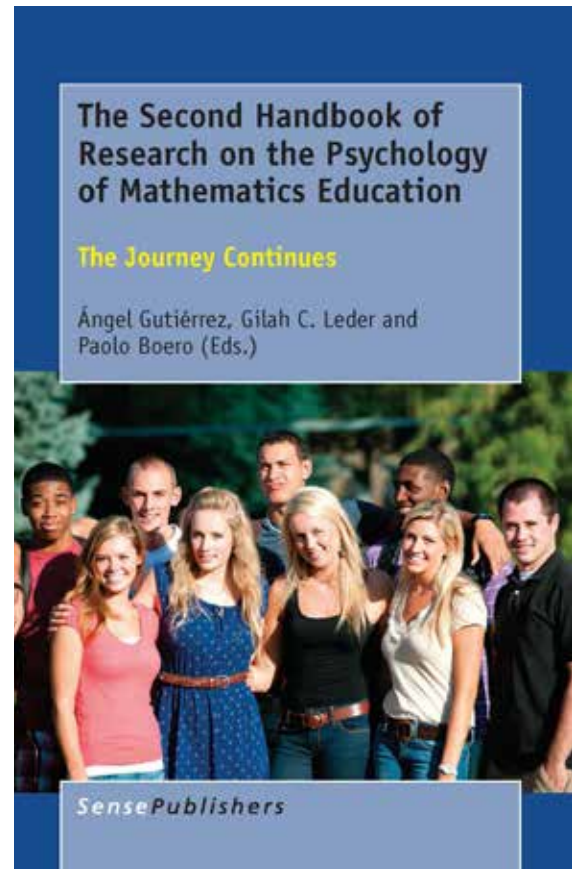


Deciding on the content

As a first step, the three editors (Angel, Paolo and Gilah) worked through the PME Proceedings over the last ten years: 2006-2015. It was not too difficult for us to reach a consensus about the topics to be included. Our final decisions are captured in the book.

Deciding on the authors

Here, too, it was not difficult to reach an agreement. Each chapter, it was agreed, should be co-authored. In most cases this meant two authors but occasionally there were three. These groupings, we firmly believed, should capture both complementary and overlapping perspectives of those who summarised the field. We also decided that anyone who had been an author for a chapter in the first handbook could not be an author in the second handbook. Thus the final team of authors should reflect the diversity of PME membership.



Reviewing

Each chapter would have two reviewers. To optimize continuity between the two handbooks, and where appropriate and possible, authors of the first handbook would be, and were, asked to act as one of the reviewers to the relevant chapter in the second handbook.

The team

Given the above decisions, a mammoth team was required to get the book off the ground. There were 14 chapters to be written by a total of 31 authors. The 14 chapters required 28 reviewers. All of these are busy academics. Would they meet the deadlines we imposed with a relentless stream of emails? Well, the answer is clear. They did. We guess this level of energy, expertise, and dedication is best interpreted as evidence of the high value attached by its members to PME as an organization, facilitator, and stimulant of international research in mathematics education.

The second Research Handbook: What is new in it?

It is reasonable to ask us what is new or different in the second Handbook with respect to the first Handbook, published ten years ago? The most relevant differences are the time covered and the scope of the chapters. The first Handbook synthesized 30 year of PME, from 1976 to 2005, and it aimed at presenting the evolution of the main ideas over the 30 years of time covered.

The second Handbook focuses only on past ten years, from 2006 to 2015. Its authors have made a much more detailed analysis of the research of PME to capture the diversity of approaches and results produced during these ten years.

The second Handbook is not an enhanced version of the first one. In other words, the first Handbook is not out-dated; both are useful and necessary reference books for current researchers. Our suggestion is to look at the Handbooks as two episodes of a saga, where know and understand the first part is necessary to understand the second part.

A new cycle in the life of PME

When I was checking the Authors index of the second Handbook, something attracted my attention: I expected to find quite a few references to authors that are 'classical' in our field, like Freudenthal, Hart, Kaput, and others who made very relevant contributions more than a decade ago. Yet I found much fewer references to those well-known authors in the second handbook compared to the first one. In contrast, most authors cited in the second handbook are 'newer', not so 'well-known' colleagues. I believe that this is a signal of generational renewal taking place in last decades in the PME community. The front cover, subtitle and dedication of the second Handbook were chosen to acknowledge such generational

renewal; a renewal that is necessary to guarantee the continuity of the PME Group in the future, based on incorporation of young researchers who will continue pursuing the PME Group's aim of working to improve mathematics education all over the world.

The book and some thanks

All three editors were honoured to be asked to edit the book. We are thrilled with the quality of the final product. Once again, we wish to stress what a collaborative effort it represents: more than 60 PME members – when the editorial team is also included.

Final words

We want to thank SENSE publishers for their professional expertise and support. We also offer our thanks to PME members for buying the book, reading it, recommending it to your university library, to your colleagues, to your students, and even to your friends. The Second Handbook of Research on the Psychology of Mathematics Education: The Journey Continues deserves a place on your bookshelf in your office and at your home!

[The Second Handbook of Research on the Psychology of Mathematics Education: The Journey Continues](#)

Ángel Gutiérrez, Gilah C. Leder and Paulo Boero (Eds.)

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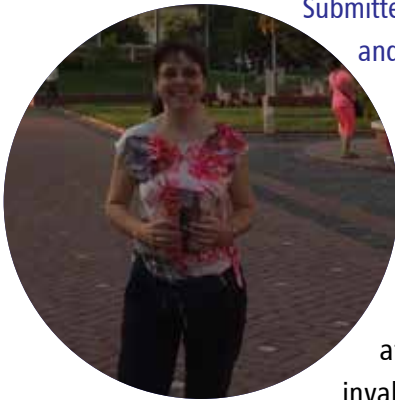
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PME Newcomers

Nerve-racing but Pushing-Forward

Submitted by Alison Godfrey (UK, left)
and Fay Baldry (UK, right)



PME40 was our first experience of an international conference. Professor Janet Ainley, a longstanding PME member, suggested that we should attend, as we could obtain invaluable feedback on our early research findings as well as benefiting from

attending a broad range of presentations. We are undertaking our PhDs part-time, alongside our jobs as lecturers in the School of Education, Leicester, where we work with primary and secondary postgraduate student teachers. We were excited at the prospect of meeting people whose work we have drawn on in both these roles, as well as the chance to engage with current research that we had yet to encounter.

Travelling as two colleagues together, and attending the early researcher's day, was a very supportive way to start the conference week. Having the information needed in advance, being welcomed by the banner at the University of Szeged, going straight into lunch and quickly meeting both other newcomers and members of the committee, all put us at our ease. The evening social for newcomers was a particularly friendly and welcoming part of the programme. In addition to the social events, one of the highlights from the early researchers' day was the session from Aiso Heinze about academic writing. Just coming to the end of our second years of part time PhDs, this was particularly useful in moving forward to writing our first papers.

The start of the full conference was rather more overwhelming due to the number of people; this made attending the early researchers' day feel particularly useful as we knew some delegates (including the soon-to-be president of PME). Without this networking would

have seemed far more daunting, and we soon found that colleagues were happy to engage in conversation and talk about their research and ours. In particular the others staying at the Mozart Hotel were very interesting breakfast companions!

We were rather anxious as our oral presentations were timetabled for the Saturday afternoon, at the end of the conference. We had hoped for an earlier slot so that we could relax; however, it transpired to be very helpful as we were able to become familiar with the format and expectations. The support of our supervisor ensured that we were thoroughly prepared and, although nerve-racking, we were confident that our presentations would communicate our research finding to-date. The questions posed at the end of the presentations were both very challenging and very useful; these really made us think about our research and suggested avenues to explore in more detail.

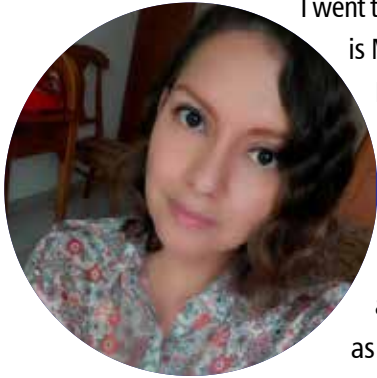
In addition to many very useful presentations, another highlight was the city of Szeged. We thoroughly enjoyed spending some time exploring, including climbing the tower of the Catholic Church used as the symbol of the conference. The Mozart Hotel was delightful and we were made very welcome in restaurants, shops and by the locals in general. It was great to see the conference banner in the city centre to welcome conference participants. We thoroughly enjoyed PME40 as our first international conference and this has inspired us to move forward

with our research and participate in future conferences. We were very pleased to present at the conference, and the oral presentations were an ideal way to induct new researchers like ourselves into the process. We look forward to attending again in the future.



Put a Face to Researchers

Submitted by Marisol Santacruz Rodríguez (Mexico)



I went to PME 40 and I loved it! My name is Marisol Santacruz Rodríguez and I am a Colombian PhD student at Cinvestav-IPN in Mexico. Although I have participated in other conferences, I often thought it was almost impossible to attend an academic event as important as PME, but I found that surprise is possible and a wonderful experience.

For that reason I want to invite my fellow doctoral students and young researchers to participate in future PME events.

I came for the first time to PME because the history of the conference, the academic quality of the speakers, the opportunity to meet researchers from many parts of the world – and it is all in the same conference. It is magnificent! I loved that people at PME had attended many PME conferences and remembered places, years, and people. It was like the meeting of a large family. I told people it was my first conference and everyone made me feel very welcome! The academic level of the contributions at PME is fantastic. Academics involved in investigating many interesting and current topics in Mathematics Education. My interest is the selection and use of digital resources for mathematics teachers in primary classes and at PME 40 I presented my doctoral research progress and was able to share with other students and researchers some of my results. It was an enriching experience because I received very good feedback from those attending my presentation; it is also a big challenge because I had to present in English and that made it more challenging but also more satisfying.

I participated in the early researchers' day prior to the main conference. This was an excellent opportunity to improve my skills as a researcher and interact with other young researchers from many parts of the world. I learned a lot, both on my research topic and of the bigger picture of international research in mathematics education.

One of the great things about attending the PME, as I said to my thesis supervisor, is that I could "put a face" to researchers whose work I have been reading and I could talk and share a coffee with them. It is wonderful to feel part of a community, identify with a group of people who share interests and work together.

It takes a lot of support for young researchers to participate in a conference like PME. For example, it helps to have help from your supervisor in the preparation of the paper and preparing to attend the conference. In my case, I had both forms of support and I am very thankful for that. I received good feedback on my work.

This time, because PME followed ICME, there was no excursion to know the host city in the company of those attending the conference. It would be great on these occasions if there could be organized opportunities to visit nearby tourist sites and have other spaces of interaction. That is my only suggestion.

Greetings to all participants of PME 40 and I hope to see you at future PME conferences. Thank you.



PME 40 REPORTS

Discussion Group Report Textbook Signatures: Exploring Possibilities



Submitted by Ban Heng Choy (Singapore), Mi Yeon Lee (USA) and Angel Mizzi (Germany, left)

AIM AND OVERVIEW OF THE SESSIONS

In this discussion group, we highlighted how the analyses of mathematics textbooks can provide a comparison of learning opportunities

among different countries and the challenges faced when we compare textbooks across different contexts. To highlight the distinctive features of textbooks across countries, Charalambous, Delaney, Hsu, and Mesa (2010) propose that textbooks within the same country may have a "textbook signature" - "uniform distinctive patterns" - in the textbooks (p. 146). We then presented our conceptualisation of textbook signatures and showed how concepts of gradients (Choy, Lee, & Mizzi, 2015) and fractions (Mizzi, Choy, & Lee, 2016) are presented in the textbooks from Germany, Singapore, and South Korea. In our first session, we explained how we developed analyses of the textbooks using our idea of textbook signatures. We then attempted to explore the following key questions during our two sessions:

- What are the strengths and areas for improvements of our current notion of textbook signatures?
- What criteria can be included in textbook signatures?
- How can we refine our notion of textbook signatures?

- Do analyses of different topics in the same textbook present different textbook signatures? If so, what are the implications for further research related to textbook signatures?
- Do different textbooks used in the same country generate similar textbook signature for the same topic?
- Do textbook signatures influence how mathematics is taught in the classrooms? (Charalambous et al., 2010)
- How do we draw implications for teaching and learning mathematics through textbook signatures?

SOME TENTATIVE ANSWERS

Our notion of textbook signatures generated quite a lot of interest among the participants and we had a good mix of experienced and early career researchers working in this area. All the participants agreed that our notion of textbook signatures is a useful way of representing textbook analyses visually. The highly visual form provides a birds-eye view of our analyses and suggests certain characteristics of the curriculum emphases in different countries. Most agreed that the textbook signatures highlight the type of conceptualisations of mathematical concepts clearly. A few participants also highlighted that the textbook signatures may signal certain pedagogy adopted by the different countries. We agreed that more work is needed to associate textbook signatures with how textbooks are used in the classrooms in order to make some connections between textbook signatures and pedagogy. The key weakness of our current notion lies in how we characterise the tasks. As observed by some of the participants, there is no information about the conceptualisations of the concepts targeted in the tasks in our textbook signatures. After

some discussion, one of the participants suggested the use of colours to codify the different conceptualisations and use colours to denote the different conceptualisations in our textbook signatures. We agreed that this method may be potentially useful. There are still a number of questions unanswered: For example, it is still unclear how we can associate the textbook signature with how textbooks are used in the classrooms. Also, we could not agree on whether an aggregate of textbook signatures is meaningful for countries with many textbooks. There are suggestions that we may need to explore clusters of textbook signatures for textbooks with similar patterns when analysing the wide variety of textbooks in certain countries. How this may be done remains unclear. Nevertheless, the two sessions provide us with some useful points to consider in our next iteration of textbook signatures.

MOVING FORWARD

At the end of the two sessions, we compiled a mailing list of participants who may be interested to continue this work with us.

We also explored the possibility of presenting some of our work in an upcoming conference on mathematics textbook research. (<http://www.sbm.org.br/icmt2/>).

References

- Charalambous, C. Y., Delaney, S., Hsu, H.-Y., & Mesa, V. (2010). A Comparative analysis of the addition and subtraction of fractions in textbooks from three countries. *Mathematical Thinking and Learning*, 12(2), 117-151.
- Choy, B. H., Lee, M. Y., & Mizzi, A. (2015). Textbook signatures: An exploratory study of the notion of gradient in Germany, Singapore and South Korea. In K. Beswick, T. Muir, & J. Wells (Eds.), *Proceedings of 39th Psychology of Mathematics Education conference* (Vol. 2, pp. 161-168). Hobart, Australia: PME.
- Mizzi, A., Choy, B. H., & Lee, M. Y. (2016). Textbook signatures: An exploratory study of the notion of fractions in Germany, Singapore, and South Korea. *Paper presented at the 13th International Congress on Mathematics Education*, Hamburg.



Photo taken in Szeged during the PME40 conference; photo credit: Marisol Santacruz Rodríguez (Mexico)

Discussion Group Report Observations on Observing Pedagogy: Further Discussion of Researching the Unobservable



Submitted by David Reid (Germany),
Annie Savard (Canada, left), Dominic
Manuel (Canada), Scosha Merovitz
(Canada) & Richard Barwell (Canada)

Our discussion group focused around
the following two guiding questions:
(1) What are the meanings of pedagogy?
(2) What are the methodological implications

of different meanings? Over 40 participants attended the first day of the discussion group while 15 participants attended the second day. During the first day, we invited the participants to discuss the guiding questions in their context in small groups and then report their findings. Since we had participants from multiple countries, we were exposed to the different visions of pedagogy, how some cultures do not have a specific definition of the term, and how others distinguish between pedagogy and didactics. Some of the key ideas that emerged from the discussions as to how pedagogy can be observed include that:

- We cannot observe, we can only perceive (make inferences) and recognize things we are familiar with;
- We can also "notice" things that are different using different frameworks, and from an insider/outsider perspective;
- What we see is influenced by the observer's identity; and institutional settings restrict or dictate what and how teachers teach, thus what we observe may not represent what the teachers want us to see.

We then presented as an example key features of the methodological framework from our study entitled *Observing Teachers: Mathematics Pedagogies in regions of Canada* (see <http://www.acadiau.ca/~dreid/OT/index.html>). Using an anthropological methodology (Tobin et al., 1989), the study aims to explore how middle school mathematics pedagogy differs across regions of Canada. Our methodology focuses

on researching pedagogy by observing teachers observe themselves as well as teachers from other regions teach via regional and linguistic focus groups (see Reid et al., 2015). Following the presentations, we challenged the participants to analyze a short transcript of Anglophone teachers from one region observing a lesson taught by francophone teacher from that same region, and look for evidence of pedagogy.

During the second day, we invited the participants to share the results of their analysis. Participants shared the challenges they faced in working with transcripts, such as: not knowing the context of the teachers, not fully understanding what is being said, and teachers not talking about the mathematics being taught. In addition, although some groups were able to extract excerpts that addressed the actions, the knowledge and the values, the participants still found it difficult to find evidence in what teachers say.

We concluded the second day by revisiting our guiding questions. The participants were invited to reflect once again on the questions. Although most of the ideas that emerged from the initial discussion were emphasized again, some participants suggested having multiple levels of pedagogy, and that working with different definitions of pedagogy will have intersecting ideas in common or will fall under different categories.

References

- Reid, D. A., Simmt, E., Savard, A., Suurtamm, C., Manuel, D., Lin, T. W. J. & Knipping, C. (2015). Observing Teachers: Using video to prompt and record reflections on teachers' pedagogies in regions of Canada. *Research in Comparative & International Education*, 10(3), 367-382.
- Tobin, J., Wu, D., & Davidson, D. (1989). *Preschool in three cultures: Japan, China, and the United States*. New Haven: Yale University Press.

Discussion Group Report: Aesthetics in School Mathematics: A Hands-on Approach



Submitted by Manya Raman-Sundström
(Sweden, left) & Esther Levenson (Israel)

This discussion group met twice during PME 42. The first meeting held on Friday, August 5. The second meeting held on Sunday August 7.

Day 1, August 5

The goal of the first session was to give a hands-on experience to the participants and stimulate discussion about aesthetics in mathematics as it pertains to school aged children. We began with a task:

Suppose you decided to write down all whole numbers from 1 to 999. How many times would you have to write the digit 7?

Participants were given about 10 minutes to work, and then we discussed solutions as a whole group. In particular, we compared one approach in which one systematically counts up all the 50,000 possibilities with another approach which considers the structure of a 5-digit number and reaches the solution directly. There was quite a bit of lively discussion about the different solutions and their merits. Next we gave participants a few more questions to work on in a similar fashion. Approximately 30 minutes were given to participants to write down as many explanations as they could for the following statements:

(1) The sum of two odd numbers is always an even number; (2) The sum of five consecutive natural numbers (positive whole) is always divisible by five. (3) Choose your own!

This activity, also, led to a lively discussion. Participants thought the questions were appropriate for young children, and could, in the right context lead to a positive aesthetic experience. The discussion questions presented were:

- Which explanations are most beautiful and why?
- Which explanations are most accessible for school children?

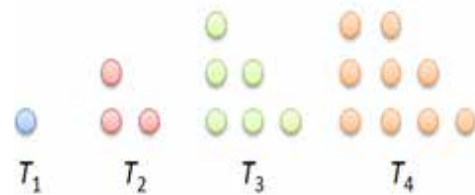
While we cannot say there was consensus, particularly because some people had seen the tasks before and some were thinking about them

for the first time, there seemed to be characteristics that distinguished the different tasks and their possibility for creating an aesthetic experience. Most exciting was the wide range of solutions, especially for task 2. Some participants drew figures to represent the five consecutive numbers so you could see instantly that one of them must be a multiple of 5. In one group there was a participant who had never thought about this question, and the feeling she got when another group member explained it to her was a feeling of exhilaration.

Day 2, August 7

We had a smaller group on the second day, but all participants were engaged and the discussion was rewarding. In this session we looked at data from fifth graders working on a task about triangular numbers:

A triangular number T_n is made of n rows of dots, increasing each row by one. How many dots would be in the n th triangle?



Early in the discussion we came to a problem of how to define aesthetic experience. The workshop leaders had hoped that this question would be a topic of discussion (it is a hard concept to nail down), but one of the workshop participants wanted to have a definition in order to be able to identify aesthetic experiences in the data. The transcript was read, like a play, with different participants reading different parts. There was agreement that students had some sort of positive experiences (for instance when they said "wow!") but the question of what exactly an aesthetic experience is, went unresolved.

In general, the participants agreed that the emergent field of aesthetics in mathematics education is an important field of study, especially for grade school students, and much work needs to be done in the future.

Working Session Report: The Ritual vs. Exploration Conceptual Dyad - Affordances and Open Questions



Submitted by Einat Heyd-Metzuyanin
(Israel)

Since Sfard and Lavie (2005) introduced the concepts of "ritual" and "exploration" in mathematical learning, there has been increasing use of this conceptual dyad. In this working session, our goal was to examine the affordances and limitations of this dyad, and to explore its connection with other prevalent dyads in the field. Ritual participation is participation aimed at pleasing others, whereas explorative participation is aimed at producing mathematical narratives for the sake of the activity itself (Heyd-Metzuyanin, 2015; Sfard & Lavie, 2005). The two types of participation differ from each other on several distinct characteristics. Ritual routines deal with mathematical symbols unrelated to the objects they signify, while explorative routines deal with mathematical objects. Ritual participation is made of following rigid routines that are weakly connected (or not connected at all) to previously established routines (often called blind rule following) while in explorative participation the learner applies routines flexibly and mathematical narratives are built logically upon previously established ones. This is linked to differences in authority structure: while ritual participation relies on external authority, explorations rely on one's own authority, combined with the authority of the discourse. In the past few years, there has been a proliferation of studies using the ritual vs. explorations conceptual dyad. It has been found useful for description of Israeli middle-school learners (Heyd-Metzuyanin, 2015), South African elementary school learners (Heyd-Metzuyanin & Graven, 2015) the instruction of pre-service teachers (Heyd-Metzuyanin, Tabach & Nachlieli, 2015) and more. Moreover, "ritual participation" has been paired with "ritual instruction" connecting learning and teaching practices. These recent developments have led us to organize this working session, where we wanted to expose conference members to this conceptual framework and to invite new ideas and contributions

to its development.

We started the first part of the Working Session by Einat Heyd-Metzuyanin introducing the ritual-explorative dyad and its theoretical roots. She then presented an analysis of a student who was participating ritually in the discourse of fractions, comparing it with the discourse of an advanced student whose discourse on fractions had explorative characteristics. Following this presentation, the participants were given a table summarizing the characteristics of ritual and explorative participation, and were invited to engage with analysis of two transcripts. One was of a low achieving student struggling with a word problem (taken from Heyd-Metzuyanin, 2013). The other was of a group of pre-service elementary teachers engaged in an algebra course (taken from Nachlieli & Tabach, 2015). The first excerpt, of the low achieving student, provided a clear example of a highly ritual form of participation. Participants of the WS were able to pick up the ritual characteristics of the girl's discourse on numbers pretty easily. The second excerpt, of the pre-service teachers, was more nuanced. Participants were not unanimous whether the transcript, which showed the students solving a problem of identifying a function, was clearly exemplifying ritual or explorative participation. This led, in the whole forum, to an interesting discussion around the question whether rituals and explorations are dichotomous, rest on a continuous line, or are actually intermingled with each other.

The first session was concluded by Talli Nachlieli's presentation. Nachlieli offered a widening view of the ritual vs. exploration dyad, by turning to 19th century piano pedagogues who engaged in a fierce debate around the right way to teach young pianists to play. While some of them endorsed a highly technical pedagogy, to the point of constraining the fingers of the child with a tool that would ensure very precise tapping of the keyboard, others vehemently rejected this approach and emphasized the goal of turning the student into a "musician". This debate was linked by Nachlieli to conflicts between ritual and explorative mathematical instruction.

In continuation of this widening lens, the second part of the WS aimed at exposing cultural links to rituals and explorations in the mathematics classroom. The session started by Mellony Graven presented the way

in which the ritual-vs.-explorative analysis was employed in a study of two elementary school learners in South Africa. One of the learners was mostly engaging ritually, while the other was more explorative. This study revealed the importance of the classroom, social and cultural environment of the two learners, pointing to ritual aspects of the classroom instruction and more generally of the culture of learning in South Africa. As a sharp contrast to the South African context, Einat Heyd-Metzuyanin presented some excerpts from Nadav Ehrenfeld's study (who unfortunately could not attend the conference) about adult Ultra-Orthodox Jews who study algebra for the first time at a pre-college course. She presented an excerpt showing the Ultra-Orthodox students' tendency for what may be seen as excessive exploration, evident in their reluctance to follow any rule blindly, even while the teacher signals that it is not the proper occasion to ask questions. This "excessive exploration" was linked to the students' background of Talmudic studies, where debate and original ideas are constantly encouraged, and no "right or wrong" answers exist.

Again, participants were invited after these two short presentations to work on one of two transcripts. The first included excerpts from the South African study (taken from Heyd-Metzuyanin & Graven, 2016), and dealt with a classroom where the teacher was teaching in a highly ritual manner. Participants of the Working Session found this transcript to be very clear in its ritual characteristics. The second transcript was taken from the Ultra-Orthodox classroom (Ehrenfeld, 2016). Here, there was some disagreement between the participants. Some thought the excerpt indeed exemplified "excessive exploration", in that the students were not willing to simply accept a new sign that the teacher was introducing ($f(x)$ instead of y). Others thought the Ultra-Orthodox students' actions were totally justified and that the topic should have been presented differently.

The working session was concluded with discussion of some alternative

theoretical explanations that could have been applied to the data, and how these relate to the ritual vs. explorative conceptual dyad. Participants were enthusiastic about continuing their engagement with this subject. This enthusiasm is currently leading us to explore the possibility of proposing a Special Issue on rituals and explorations to one of the journals in our field.

References

- Ehrenfeld, (2016). *Between mathematics and Talmud - the construction of a hybrid discourse in a Haredi classroom*. (unpublished M.Sc Thesis) nbhf, Ben-Gurion University.
- Heyd-Metzuyanin, E. (2013). The co-construction of learning difficulties in mathematics-teacher-student interactions and their role in the development of a disabled mathematical identity. *Educational Studies in Mathematics*, 83(3), 341-368.
- Heyd-Metzuyanin, E. (2015). Vicious cycles of identifying and mathematizing - a case study of the development of mathematical failure. *Journal of the Learning Sciences*, 24(4), 504-549.
- Heyd-Metzuyanin, E., & Graven, M. (2015). Between people-pleasing and mathematizing South African learners' struggle for numeracy. *Educational Studies in Mathematics*, 91(3), 349-373.
- Heyd-Metzuyanin, E., Tabach, M., & Nachlieli, T. (2015). Opportunities for learning given to prospective mathematics teachers: between ritual and explorative instruction. *Journal of Mathematics Teacher Education*, 19(6), 547-574.
- Sfard, A., & Lavie, I. (2005). Why cannot children see as the same what grown-ups cannot see as different? - Early numerical thinking revisited. *Cognition and Instruction*, 23(2), 237-309.
- Tabach, M., & Nachlieli, T. (2015). Classroom engagement towards definition-mediated identification: The case of functions. *Educational Studies in Mathematics*, 90(2), 163-187.

Working Session Report: Mathematics and Special Education



Submitted by Helen Thouless (UK)

The Mathematics and Special Education Working Session met twice during PME 40. Nine people from five continents attended these sessions, while another three people actively participate in our projects throughout the year. On the first day there were several new members to the group, so we introduced each other and explained the history and goal of the working session: to promote cross-disciplinary work that supports the learning of math by students with mathematical learning difficulties. We then discussed a project that we started at PME 38 and have recently

concluded. This is the special issue of Learning Disabilities Quarterly on the subject of the intersection between mathematics and special education that will be published later this year. As a result of this discussion we came up with a number of questions that we plan to deal with as we continue to work together and consider questions from an international perspective. On the second day of the working session we discussed our next big project to work on as a group. We decided that we will produce a book that teacher educators can use for teaching undergraduate and graduate students about the intersection between mathematics education and special education. As a group we are committed to working on this book project throughout this academic year and look forward to discussing our progress on this project at PME 41.

Seminar Report: Reviewing for the PME – A Primer for (New) Reviewers



Submitted by Anke Lindmeier (Germany)

Seminars are intended to provide specific courses for the professional development of PME members. The offer of a seminar on reviewing for the PME was triggered by the ongoing discussions on the specialties of reviewing for the PME, especially in contrast to review procedures for other conferences or journals. We delivered the seminar the second year in a row. The seminar was intended to provide information about the PME review process and give the opportunity to gain first experiences in providing a high-quality review. The seminar addressed especially the needs of new reviewers, although experienced reviewers were very welcome in order to facilitate knowledge transition within the PME community. The seminar included an introduction to the intentions and purposes of reviewing from a more general perspective, but also detailed aspects of the PME review practices. The goals were accordingly: Participants should (1) be informed about reviewing as an aspect of scientific quality management, (2) get to know about the most important differences in reviewing procedures

for journals and conferences as well as different types of contributions, especially in the PME context, (3) be able to differentiate the specific review categories of PME, and (4) be able to identify aspects of quality for a review. We offered the seminar two times in parallel to the group activities. Due to small, but substantive numbers of participants, we could adjust the pacing and focus of the seminar according to the needs of the participants. In general, we could identify three different kinds of motivation to participate: new reviewers in search for a reviewing primer (our main target group for the seminar), experienced reviewer in search for a refined understanding of the reviewing practices, and future prospective conference organizers in search for a comprehensive overview of reviewing practices. The needs of all of the three groups could be addressed in the seminar. As the professional development of the PME reviewers is an ongoing demand, we would suggest to keep offering this kind of seminars in future conferences. The scheduling in parallel to scientific group activities yields a potential conflict between professional development and scientific activities. If seminars become a more common element of PME conferences, the scheduling might be reworked and a specific time slot for seminars could be introduced.

Seminar Report: An Introduction to Electroencephalographic Research



Submitted by David Maximiliano
Gómez (Chile)

Research using neuroscientific methods such as electroencephalography (EEG) is becoming more common in the field of Mathematics Education.

However, as it often happens in the early stages of interdisciplinary

research, it is difficult to engage in fruitful discussions because it is unclear for educational researchers what is being measured by the new method, what are the restrictions that the use of the method imposes on empirical investigations, and how to adequately interpret the derived results and graphs.

The Seminar I presented in Szeged aimed at providing background concepts and information to answer these questions in the case

of EEG. The Seminar was delivered twice, with some 10-15 attendants each time. Attendants learned the basics of how the EEG can measure electrical brain activity, typical data analysis procedures, and how to read graphical representations of EEG results. The audience asked many questions about the meaning of these measures, leading to discussions of how these outcomes can be linked to educationally-relevant variables. Last but not least, we checked some design elements that Mathematics Education researchers should take into account when planning to incorporate an EEG study in their investigations.

Altogether, I am optimistic that this experience will prove useful for raising awareness in the PME community about the affordances and constraints that EEG, like any other research method, has. I look forward to future PMEs seeing more integrated research studies that can take the best of all traditions, as well as lively discussions of them and their contributions!

PME IC Reports

Vice-President Portfolio Group (VPPG)



Submitted by Anke Lindmeier (Germany), Vice-President of PME

The Vice-President Portfolio Group (VPPG) is currently composed by Csaba Csikos (Hungary), Mellony Graven (South Africa), Einat Heyd-Metzuyananim (Israel), and led by Anke Lindmeier (Germany).

The Vice-President Portfolio Group is working on issues of scientific matters. The VPPG took up corresponding tasks from the discussions of the last AGM and IC meetings and set an agenda for the upcoming year. One topic will be the review processes of the PME. The discussion was started, as PME faces a narrow review capacity in years with a high number of submissions. To be clear, this happens despite of a high number of members eligible for reviewing. However, reviewing Research Reports is sometimes perceived as constituting a high workload, so that some reviewers review less than the expected minimum of 3 contributions or are not willing to review. As one starting point to improve the review process, we will scrutinize the review criteria with the aim of keeping them as simple and easily applicable as

possible for a high-quality review process. Another starting point is to think about a modification of the rule for reviewer eligibility. We will present first ideas over the year.

We will further rework the group activity formats, pursuing the work that was begun in the last years. As presented at the AGM, there are good reasons to merge the formats of Working Sessions and Discussion Group what might help in making PME conference formats more coherent. At the moment, there is still the possibility to raise your voice in case you have any ideas about the further development of these two conference formats. We started a discussion in the IGPMO Open Forum (until end of November 2016) concerning this topic under <http://bit.ly/2dokY6v>.

As ongoing tasks we are involved in the negotiations of the future conference bids. Moreover, we monitor the Early Researchers Day through its evaluation. We look further forward to liaise with the submissions for special actions and Regional Conferences that we hope follow the recent call.

Let me speak a closing word as current vice-president of the IGPMO: It is my special concern to further the actions targeted at the ongoing professional within the IGPMO. Do you have any wishes, needs, or ideas concerning professional development – either for early or established researchers or anything in between? Please do not hesitate to send me an email so that we can further develop a culture of ongoing professional development within the IGPMO!

Policy Portfolio Group (PPG)



Submitted by Submitted by David M. Gómez (Chile)

The Policy Portfolio Group (PPG) is currently composed by Kim Beswick (Australia), Yiming Cao (China), Lovisa Sumpter (Sweden), and led by David M. Gómez (Chile).

The PPG works on internal and external affairs of PME, such as policy and membership. We had a very active year 2015-2016, in which important policies were prepared and approved by the AGM in Szeged, including the Surplus and Regional Conferences policies. The former allows PME to reduce its surplus in a responsible and fair manner to all its members, by allowing every member to propose actions that advance PME's goals and apply for funding for them. The latter, instead, provides a framework for PME members to propose

the execution of a PME regional conference, a small scale scientific event taking place in a region of the world that is underrepresented in PME, intended to increase links between local researchers in Mathematics Education as well as between these researchers and PME. Check the report of the SPG for instruction on how to submit proposals related to these two policies, we look forward to your enthusiasm and participation to help the PME community.

A permanent task of the PPG is to keep the historical record of all decisions and votes made by PME and its IC, in order to ensure their application and consistency. In addition, a main task for this year is to explore solutions and provide guidelines for issues that arise in the process of conference organization, related to budget constraints and supporting the attendance of researchers from countries that are underrepresented in PME. The organization of PME conferences is an enormous enterprise, in which guidelines built upon the experience of past organizers always prove highly valuable for future organizers.

Secretary Portfolio Group (SPG)



Submitted by Michal Tabach (Israel), Secretary of PME

The Secretary Portfolio (SPG) is currently composed by Berinderjeet Kaur (Singapore), Stanislaw Schukajlow (Germany), Oh Nam Kwon (South Korea), and led by Michal Tabach (Israel).

The main role of our group is to take care of communication within PME. This includes keeping contact with future PME organizers: the local co-organizer of PME 41 in Singapore is Berinderjeet Kaur who is a member in our group. We are in close contact to monitor the

progress of preparations and to be responsive to problems should they arise. We are also keeping in less frequent contact with the co-organizers of PME 42 in Umeå, Sweden, Ewa Bergqvist and Magnus Osterholm.

For this year we are planning to finalize the Wiki in which guidelines for PME conference organizers are kept as databased, hence make it easier to find whatever is looked for.

As we did in previous years we will report on the review process of the last PME40. A new responsibility relates to the call for regional conferences and call for IGPME special projects. Both calls were initiated following the vote which took place during the last annual general meeting at PME40. The calls may be found on the website - under communication, announcement forum: <http://www.igpme.org/index.php/communication/announcement-forum>. The call is open until Dec. 1st and we are expecting your inputs on these call.

Treasurer Portfolio Group (TPG)



Submitted by Cris Edmonds-Wathen
(Australia), Treasurer of PME

The Treasurer Portfolio Group (TPG) is currently composed by Keith Jones (UK), Kai Lin Yang (Taiwan) and Miguel Ribeiro (Brazil) and led by Cris Edmonds-Wathen (Australia).

The Treasurer Portfolio Group responsibilities include: managing the financial transactions of IGPME (e.g., making payments and deposits, responding to financial queries, issuing confirmations), maintaining records, advising on fiscal questions from present and future conference organizers, and preparing annual financial reports.

IGPME's banking is now solely with Barclays Bank UK. The Barclays Account requires at least one member of the IC (i.e., an officer of the organization) to be from the UK. This requirement is currently met by Keith Jones (for the current year). Cris Edmonds-Wathen (Treasurer) and Peter Liljedahl (President) are being added as signatories. Barbara Jaworski, the past President of IGPME, also continues as

a signatory as a temporary measure. We are seeking a permanent solution to the need to have at least one UK based signatory, and to have a physical address in the UK. Since the introduction of the surplus policy at PME 40, IGPME is now in a position to reduce its cash surplus on behalf of the members of the IGPME. Reducing the surplus is an important part of our role as a non-profit organization and in line with our goal of becoming a registered charity. The TPG will oversee the budgets of proposals under the surplus policy, including proposals for regional conferences.

IGPME will retain a minimum reserve fund of € 35,000 to cover pre-conference expenses in case of unforeseen circumstances. This is based on a review of past financial statements to estimate minimum operating expenses and a review of recent conference budgets regarding pre-conference expenses.

The TPG is looking to improve the guidelines for the bid procedures for prospective and actual conference bidders. Improving these procedures will make it easier for bidders to provide the required information at the right time, and easier for the IC to make decisions about bids. This includes looking at past conference budgets to understand more about the financial impact of having more or fewer attendees at a conference.

Tributes to the retiring president and to leaving IC Members

Barbara Jaworski

Submitted by Wim van Dooren (Belgium)

It is a tremendously difficult task to describe the many ways in which Barbara as president has contributed to IGPME as an organization and the PME conferences. Her presidency was a very productive one, in which many new policies and initiatives have been introduced. Just to mention a few, the Early Researchers' Day has become an established practice at PME conferences, we can organize Regional Conferences, a policy for spending surplus is in place, a technical support is in place, we have presentation guidelines, standing orders for meetings, etcetera. During Barbara's presidency, certain good practices on running meetings were also installed, including the monthly meetings of the Executive Committee and the Annual General Meetings being ran on time. Rather than listing all these, it seems better to describe how Barbara was as a president. From brief



survey among the IC members, it quickly became clear that everyone appreciated Barbara's calm and warm leadership style. She always saw it as a priority to make sure that everyone's voice was heard, even the voice of IC members who tend to be quieter in the larger group. The same goes for the attention to the fact that many IC members are not native English speakers, which should be respected. Also at the opening of PME conferences, she always explicitly asked to pay attention to the fact that so many members were expected to speak in their second, third, fourth ... language. On a personal note, I can also say that during the meetings of the International Committee and the Executive Committee, I learned a lot of new, more sophisticated English expressions. I can only suspect that Barbara will miss her presidency now that she has retired, but I am sure that PME will miss Barbara as a president. Barbara, on behalf of the IC, the EC and the entire PME community, a warm thank you for all you have done!

Marta Civil

Submitted by Anke Lindmeier (Germany)



Marta Civil was an essential member of the Policy Portfolio Group throughout her IC membership. She repeatedly took over the responsibility of summarizing the AGM and IC decisions, extract

them into our running document of IG PME policies, and hence lay the sound ground for the discussions within the IC. The IC profited extraordinarily from her reliable look on issues of equity and her valuable contributions on socio-cultural issues, also within the IG PME community. Sometimes, one could get the impression that Marta acted the role of a sensitive seismograph for the feasibility of technical innovations, so that the more technophilic IC members were given immediate feedback on the usability of new communication infrastructures. As former head of the policy portfolio group I thank you for your service within the IC on behalf of the IG PME!

Masakazu Okazaki



Submitted by Wim van Dooren
(Belgium)

Masakazu has been in the Vice President Portfolio group for the entire period of his membership of the IC.

While he was certainly not the loudest voice in the various discussions at the meetings, he was always closely involved in the ongoing work and intervened when

necessary. In the portfolio group, he has meticulously followed up and provided feedback on the various aspects that were worked on in the portfolio group. Masakazu has worked hard on the way the Oral Communication sessions (formerly known as Short Oral sessions) can be run in a meaningful way, assisting the chairs to establish coherence, smooth organization and a good discussion. During his membership, he also invested a lot of work in surveying the experience with the various group sessions (Discussion Groups, Working Groups, Research Forums), investigating possibilities to clarify their differences and optimize their organization. Masakazu, thank you very much for all your work in the IC!

Olive Chapman

Submitted by Barbara Jaworski (UK)

Olive was PME Treasurer from 2014-2016 inclusive. Her first move as treasurer was to recommend changing our accounting system to one on a cash basis, for consistency and clarity in preparing the financial statements. This means that only income received or expenses paid in a financial year will be accounted for in the financial statements of that year. The IC approved that a cash-basis accounting policy be formally adopted. At the time that Olive (who lives in Calgary, Canada) took on the role of treasurer, PME banked with Nordea Bank in Finland. During 2014-15 it became clear that it was no longer possible to continue this due to our not being able to meet the Finnish regulations. As a result of much discussion, the PME IC decided to transfer our accounts to Barclays in the UK. This



was a decision related to possibilities of PME's seeking charitable status in the UK. I think you can imagine the amount of work that Olive had to do in international communications between Nordea and Barclays, in ensuring that everything worked as well as possible for the PME accounts in the transfer, and in organising appropriate documentation, signatures etc. It was a huge task which she managed smoothly despite the many considerations. In 2015-16 PME operated its banking in the UK and this has worked well. I would like to take this opportunity to thank Olive again for giving her time and expertise to this important step in PME's financial security. As President at that time, I should also like to thank her most sincerely for the reassurance her careful handling of the finances brought to the decision-making processes on PME's behalf.

Wim van Dooren



Submitted by Babara Jaworski
(UK)

Wim van Dooren was a member of the Vice President's Portfolio Group (VPPG) for 3 years, focusing on scientific work within PME. One of the areas in which he gave a strong lead during this time was our new initiative of a Pre-Conference day for Early Career Researchers (the Early Researcher Day, ERD). Together with another IC colleague Wim introduced a set of guidelines for the ERD, which were used by colleagues organising the day. They also evaluated each ERD. Wim was also

responsible for introducing a new session at the PME conference - a colloquium - consisting of a set of three accepted Research Reports on a common topic. In Wim's 4th year on the IC he was elected Vice President and became Head of the VPPG. The tasks in which he engaged during this time are too numerous to report on them all. Amongst their many activities, the VPPG, led by Wim, continued to guide and evaluate the ERD. They introduced the idea of Regional Conferences in areas of the world under-represented in PME. The ERD and Regional Conferences were brought as motions at the 2016 AGM and received an overwhelmingly positive response – so both are now a part of PME's ongoing programme of events. Wim was an excellent VP, giving very considerable amounts of time, expertise and commitment, and supporting the President in all possible ways. I should like to thank him most sincerely for this work.

PME 41

The Local Organizing Committee of the 41st Annual Meeting of the International Group for the Psychology of Mathematics Education is pleased to invite you to attend the conference to be held in Singapore at the National Institute of Education from July 17 to July 22, 2017. "Mathematics Education Research – Learning, Instruction, Outcomes & Nexus?" has been chosen as the theme of the conference. The theme offers opportunities to reflect about what we have learned in the past, investigate the present issues, and more importantly, project the future directions in mathematics education research. The theme is inspired by the iconic Singapore



mascot, MERLION, which reflects the past and the present. The "Mer" or fish part indicates Singapore's origin as a fishing village; while the "Lion" part comes from the word "Singa-pura", which means Lion city. The first announcement of the conference is now available at math.nie.edu.sg/pme41. Note that registration and paper submission begins on December 1st, 2016. We welcome you to PME 41 and will try our best to make your visit and stay in Singapore an exciting, informative, and inspiring one.



Free Contributions

The Idea in Your Eye! How Mobile Eye-tracking Helps Research in Math Education and Robotics by Revealing People's Intentions.



Submitted by Dr. Maïke Schindler (Mathematics Education) and Professor Dr. Achim Lilienthal (Robotics); both Örebro University, Sweden

How do we know what people pay attention to? How can we know their intentions? How can we predict people's choices and next actions? In an interdisciplinary research project between mathematic education and robotics/computer science, researchers at Örebro University, Sweden, are since 2015 collaboratively inquiring into these questions using mobile eye-tracking goggles. One of the project's aims is to refine eye-tracking technology for the application in mathematics education research. Software is being developed to support qualitative and quantitative evaluation of experiments (in particular related to math creativity and math giftedness); to provide automatic data analysis functions; and to enable ultimately systems that can support teachers, e.g. by identifying the specific needs of pupils and making teaching suggestions.

The interdisciplinary setting enabled us to conduct first dual eye-tracking experiments: Pairs of students, both wearing eye-tracking goggles, collaboratively worked on mathematical

problems. The developed software then produced videos, which show the gazes of the two participants in their respective views of the world, several gaze-related indicators and a joint projection of both student's gazes on the task sheet. To understand to what part of the task the participants paid attention to at any time, the task sheet was tracked during the whole experiment.

We presented first results of our project work at the PME conference in Szeged¹ and at the Robot and Human Interactive Communication (RO-MAN) conference in New York in August 2016², and will showcase our research by carrying out live experiments at the Nobel museum in Stockholm in October 2016³.

Notes:

¹ Creativity in the eye of the student. Refining Investigations of mathematical creativity using Eye-tracking goggles. Maïke Schindler, Achim J. Lilienthal, Ravi Chadalavada & Magnus Ögren

² Intention Recognition and Intention Communication - New Tools for Robotics in Industrial Environments and Educational Research. Achim J. Lilienthal & Maïke Schindler

³ <http://www.nobelmuseum.se/en>



The Acknowledgement of an Outstanding Career: Marcelo C. Borba

Submitted by Miguel Ribeiro (Brazil)

Recently I moved to Brazil and I will be sending some different news about Brazil. The first one is about the achievement of one of our Brazilian colleagues: Marcelo C. Borba. He has achieved this year the highest ranking within the main research funding research agency of this country. His one of the two mathematics educators who have achieved the level of researcher 1A.

In the Brazilian system, researchers which develop significant work in their specific area are ranked in five different levels considering three dimensions: productivity in research articles and books, editorial work on journals, master and PhD supervision and leading responsibilities of research groups, and evaluation of deepness of a new original research project. In Marcelo Borba's case, his project is on a Freirean perspective on the use of videos in in-service teacher education. This top level is



reserved to those researchers revealing an outstanding record on each one of the previously mentioned dimensions. Complementary, to be considered to be included in this level, a researcher profile needs to extrapolate the domains of academic productivity (measured mainly in publications, financed research projects and master/PhD supervised), including additional aspects revealing a significant leadership in the area of intervention in Brazil and the ability to explore new scientific frontiers. In Marcelo's Borba case such extrapolation came, amongst others, in the form of the given support to the young researchers, and participation in national committees of different funding agencies in the country.

This is a remarkable achievement to the area of Mathematics Education, and a nice idea for PME: to have a former vice-president of our organization been recognized by the main institution of his country.

MISCELLANEOUS

Possible Project to Distribute Proceedings and Handbook to University Libraries in Developing Countries



Submitted by Peter Liljedahl
(President of PME)

With the publication of the 2nd Handbook of Research on the Psychology of Mathematics Education: 2005-2015, we have learned that Sense Publisher is willing to distribute a free electronic version of this handbook to any university library in a developing country. The PME-IC is also considering distributing a number of hardcopy versions of the 2nd Handbook to university libraries in developing countries. At the same time, we have a healthy archive of past proceedings that we are considering distributing to university libraries in developing countries.

But such distribution of electronic and hardcopy books cannot happen unless we have a list of interested recipients, as most of the universities that would be eligible to receive such books and proceedings are not currently connected to PME in a way that would facilitate such a transfer. As such, we are reaching out to our current membership to help us with this project. If you are currently collaborating with someone at a university in a developing country, or have contacts at a university you believe would be interested in receiving a copy of our 2nd Handbook or hardcopies of past proceedings please contact our Administrative Manager (Dr. Bettina Rösken-Winter) via email (info@igpme.org). Please include the name and location of the university as well as the name and contact information of a contact at this university. Please do so by December 1, 2016.

Based on the level of interest we receive in this project the IC will be able to decide if and how to proceed with this project.

New Section on IGPM Home Page

A new section is available on the IGPM homepage: Policy documents for members, <http://www.igpme.org/index.php/communication/policy-documents>. Here you can find policies as voted upon by the AGM; for instance, the Regional Conferences Policy and the Surplus Policy.



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:

Call for PME Regional Conferences: Following the guidelines for the use of surplus funds for organizing PME Regional Conferences as approved in the Annual General Meeting, the IGPME opens a call for proposals from its membership for furthering this goal. The proposal applies for the funding year 2018. The call will be renewed on an annual basis: <http://www.igpme.org/index.php/forum/announcement-forum/176-call-for-pme-regional-conferences-deadline-dec-1>

Call for IGPME Special Projects: Following the guidelines for the use of surplus funds as approved in the Surplus Policy in the Annual General Meeting, the IGPME opens a call for proposals from its membership for furthering its goals. The proposal applies for the funding years 2017 (for small projects) and 2018 (for large projects). The call will be renewed on a yearly basis: <http://www.igpme.org/index.php/forum/announcement-forum/175-call-for-igpme-special-projects-deadline-dec-1>

International Conference of the Mathematics Education for the Future Project: The conference will be held from September 10-15, 2017 in Balatonfüred (Hungary). The conference title is "Mathematics Education for the Next Decade: Heuristics and Challenges of Pólya and Lakatos" and focuses on innovation in mathematics, science, computing and statistics education. You can find more information and a call for papers here: <http://www.igpme.org/index.php/forum/announcement-forum/174-14th-international-conference-of-the-mathematics-e>

Topics in Category: Announcement Forum				
0 Replies	Call for PME Regional Conferences (Deadline Dec 1) Topic started 05 Oct 2016 09:46 by Anke Maria Lindmeier		14 Views	Last Post by Anke Maria Lindmeier 05 Oct 2016 09:46
0 Replies	Call for IGPME Special Projects (Deadline Dec 1) Topic started 05 Oct 2016 09:44 by Anke Maria Lindmeier		13 Views	Last Post by Anke Maria Lindmeier 05 Oct 2016 09:44
0 Replies	14th International Conference of the Mathematics E Topic started 02 Oct 2016 04:36 by Bettina Roesken-Winter		11 Views	Last Post by Bettina Roesken-Winter 02 Oct 2016 04:36