



NEWSLETTER

International Group for the Psychology
of Mathematics Education

June 2021

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Message from PME President

Dear Friends at PME,

Due to the pandemic, PME has decided to organize PME 44 only online. I am very sorry that the hard work done by Maitree Inprasitha and his team to organize the conference did not lead to the much-awaited event in Thailand. I was so much looking forward to it! Yet, this is very much their conference, as they have been responsible for defining the conference theme and the plenary program.

We are grateful for Zehavit Kohen and her team for volunteering to organize the virtual event. They have done an excellent job preparing the event, and the plans for the virtual event seem really exciting. I look forward to seeing you there!

Despite the uncertainties under the pandemic, we received a good number of submissions and they went through the usual peer review process. A big thank you to all the reviewers! As last year's conference was cancelled and only a brief virtual event organized, also the papers submitted and accepted last year will be presented this year.

As PME 44 will be a virtual event, the only reasonable solution was to organize the Annual General Meeting (AGM) for 2021 also online.

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Message from the Editors

Members' engagement and participation are the heartbeat of an academic community, and IGPME is not an exception. Naturally, many academics are drawn to the research side of things, and this is where the forthcoming virtual conference will be very useful (19-22 July, remember?). But additional opportunities to engage and participate also exist. For instance, a PME president and eight new trustees need to be elected at the next AGM. And don't forget about the possibility

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Message from PME President (continued)

Last year, we were not prepared to organize electronic voting at the AGM. Our solution then was for the Board of Trustees (International Committee) to appoint the retiring trustees for another year. They and another four trustees retire this year. Therefore, we must elect eight new trustees for PME. Please consider standing up as a candidate if you wish to work for PME.

In addition to electing new trustees for the Board, it is also time to elect a President Elect. It has been a good decision for the PME to have this overlap between presidencies. I was the first president elected through this process. Having the election year before my term gave me an invaluable opportunity to follow the work of the previous president and the board, allowing a smooth transition. Only members who have already served as members of the board (International Committee) can be elected as the President. Please express your support to people whom you would like to see in this position. More details about the AGM and electronic voting is in this Newsletter.

We all hope the pandemic to be over soon. What will the new normal look like for PME? The practices for organizing PME administration have shaped under this time, and some of the new practices will definitely continue. How about the conferences?

I would like to see virtual participation a possibility also in the future. That would make PME accessible to wider audiences and even lower our collective carbon emissions. Yet, I really miss the live and lively discussions face to face in the conference rooms, the lobbies, over coffee breaks, during excursion, and over informal dinners. I doubt that virtual meetings could ever fully substitute meeting in person. Another major change for PME has been to become a Charitable Incorporated Organization under UK laws. This new status requires us to review our administrative policies regularly, and it opens new opportunities for fundraising to support our activities. I invite people to participate in our policy meeting and the annual general meeting during the conference to discuss the future of PME conferences and PME as an organization.



Markku Hannula
President of the IGPME

Message from the Editors (continued)

to raise and discuss issues in IGPME's online forums (AGM forum, announcement forum, open discussion forum), write a contribution for the Newsletter, or engage in other ways.

Since the start of the pandemic, many people have been concentrating on themselves, their families, and core responsibilities. For many, us included, it was not easy to find the time and energy for "extras", which resulted in many activities being put on hold. This is also evident in the little number of forum posts, contributions to the Newsletter, and social activities.

Nevertheless, the pandemic situation seems to slowly improve in some places around the world due to the increasing availability of masks, test capacities, and vaccination programs. This is the time for all of us to start thinking about our IGPME in the post-COVID times.

As Markku mentions in his message from the president the pandemic has left us with many open questions, and we encourage PME members to use this Newsletter as starting point (and possibly also as medium?!) to discuss them. Further, as it is almost the time for our annual first virtual conference, we encourage you to take part in the scientific and social components of the conference, and bring back the lively and embracing spirit for which our community has been renowned.

See you at PME 44
Maïke Vollstedt, Igor' Kontorovich & Daniel Sommerhoff

PME 44 Virtual

Submitted by Zehavit Kohen (Chair of the Virtual Organizing Committee (VOC), Israel)

We are very excited about the upcoming, first, fully virtual PME conference. Many people have been working hard to make this happen, committed to continuing to preserve the unique, important hallmark of PME. Organizing a virtual event is challenging, whether it is choosing the "right" technology to ensure connectivity, or making decisions on how to maintain audience engagement. We invested a lot of effort to find solutions for the various questions related to holding a virtual conference, while striving to maintain the regular PME conference format as much as possible.

The Virtual Organizing Committee (VOC) comprises Einat Heyd-Metzuyanim (Executive representative, Israel), Ceneida Fernández (IC & IPC representative, Spain), Nisakorn Boonsena (LOC representative, Thailand), and Narumon Changsri (LOC representative, Thailand), and is chaired by me (Zehavit Kohen, Israel).

With the pandemic bringing about new obstacles that affect societies and economies around the globe, it also offers new opportunities for shaping social and professional gatherings. This is where the VOC comes in. The VOC is in charge of establishing the PME 44 virtual conference website and all services related to it, such as scheduling and running live sessions. The initial recommendation was to hold the conference in hybrid format. Yet, despite our hopes of being able to travel abroad and meet with our scientific community, in March 2021, it became clear that COVID-19 will stay with us. At that point, the topic of our periodic VOC meeting changed from "how to hold conference activities both onsite and online at the same time" to "what is the best format for a fully virtual conference". We collaborated with Thailand LOC, started making recommendations, and are happy to see all our dreams taking shape.

You are welcome to visit the conference website at

<https://virtualpme44.co.il/>

where you can see our homepage, the Schedule-at-a-Glance for the general flow of the conference, a link to registration, information about the plenary speakers, and contact details. As the date of the



event gets closer, registered participants will receive instructions on how to navigate the digital conference program, add sessions to their calendars, bookmark specific sessions, and more.

Given the switch to a virtual format, the sessions will look slightly different than usual. However, we are still aiming to preserve the structure of the conference and presentation formats as much as possible. Basically, there will be two presentation formats: 1) Live presentations at the scheduled session time, via Zoom. This format will be used for plenary lectures, plenary panels, working groups, seminars, and the national presentation; and 2) Sessions for which the lectures will be pre-recorded and broadcasted during the allocated presentation timeslot, followed by a live discussion. This format maximizes opportunities for interaction. Presenters will be able to answer questions via chat while their pre-recorded presentations are being broadcast, and conduct a fully live discussion at the end of the presentation or session. Pre-recorded presentations will be used for research reports, oral communications, colloquium, and poster presentations.

And here we are today, looking forward to the first virtual PME conference and hoping that our community will be able to successfully network via our screens, and maintain the spirit of PME!

PME has always been a place to meet old and new friends, and there is no reason for this year to be any different, even in a virtual format. That is why we have scheduled unique networking and social sessions. These sessions will be held each day of the conference during lunch breaks (except for the last day). Each session will last 50 minutes. Currently planned sessions include yoga class, knitting, scavenger hunt, hiking in the Italian Alps, and more. If you are interested in organizing a session, the VOC invites you to propose a topic or activity for a social or networking session by filling in [this form](#). We are open to any creative ideas!

The VOC also invites you to use hashtag #pme44 on your social media applications, such as Instagram, Twitter, and Facebook. We will have a social media page on our website showing all posts with #pme44.

In conclusion, I would like to thank the IC for their full support for the VOC recommendations, the VOC members for their cooperation on this challenging task, the Thailand LOC team for their continuous collaboration, and my university, the Technion - Israel Institute of Technology, for virtually hosting the PME 44 conference. The Technion has provided the VOC with the full interface required for holding a virtual conference, including setting up and operating

Zoom accounts, streaming live events and video recorded presentations, facilities for storing uploaded videos, and more.

I am looking forward to meeting you all (virtually) at the conference!

Best,
Zehavit

Agenda for PME Annual General Meeting

Submitted by Markku Hannula (President of the IGPME; Finland) and Richard Barwell (Policy Portfolio Chair; Canada)

The AGM will be held in virtual form during PME on:

July 22nd, 2021, 2pm Israel time

(7am Toronto time, 11am UTC, 1pm German time, 6pm Thailand time, 11pm Auckland (NZ) time, etc.)

In order to take part, you must be a PME member in 2021. If you have pre-registered for PME 44, either in 2020 or in 2021, you have automatically become a PME member for 2021 and are eligible to take part in the AGM.

For further information, please refer to the conference website <https://virtualpme44.co.il/>

Agenda

1. Opening of the meeting
2. Adoption of the agenda
3. Adoption of the minutes of the AGM held in 2020 Virtual Meeting
4. Elections: Eight new members of the IC + president elect, for further information see <http://www.igpme.org/organization/elections-in-2021/>
5. President's report
6. Portfolio Group reports – VPPG, SPG, PPG
7. Treasurer's report
8. Other items
9. Brief report on future conferences



PME Elections 2021: Call for Nominations

Submitted by Markku Hannula (President of the IGPME; Finland) and Richard Barwell (Policy Portfolio Chair; Canada)

PME members elect new members to the Board of Trustees (International Committee) each year at the Annual General Meeting (AGM).

Due to the virtual nature of the PME conference and AGM, the election will be held virtually. More information about how and when to vote will be announced nearer the AGM.

The 2021 AGM will be held virtually at 11am UTC on Thursday 22 July, during the virtual conference.

The following vacancies need to be filled:

- Eight (8) members of the Board of Trustees (International Committee) to join the Board immediately after the AGM. Four members will adopt 4-year terms and four members will adopt 3-year terms (to be determined by the Board after the election).
- One (1) President Elect to participate in Board meetings immediately after the AGM and assume the presidency of PME and become a trustee in July 2022 for a 3-year presidential term.

The PME constitution includes some parameters for the composition of the Board. In particular, no more than three members may represent the same country.

The current composition of the Board is as displayed in the table on the right (see <http://www.igpme.org/organization/international-committee/>), retiring members are highlighted in orange.

Office	Person	Country / Region
President	Markku Hannula	Finland
Vice-President	Einat Heyd-Metzuyanin	Israel
Secretary	Judy Anderson	Australia
Treasurer	Yasmine Abtahi	Canada
Policy	Richard Barwell	Canada
	Arindam Bose	India
	Yiming Cao	China
	Man Ching Esther Chan	Hong Kong SAR
	Anika Dreher	Germany
	Anthony Essien	South Africa
	Ceneida Fernández	Spain
	Tracy Helliwell	United Kingdom
	Jodie Hunter	New Zealand
	Maitree	Thailand
	Maria Mellone	Italy
	Miguel Ribeiro	Brazil
	Lovisa Sumpter	Sweden

Nomination process

If you are interested in standing for election for a regular Board member position or as president elect, here are the steps to follow:

- Download the nomination form from the PME website via http://www.igpme.org/ic_election_form-general_2021/
- Find two current researchers to propose and second your nomination. Note that you, your nominator, and your seconder must be PME members. You automatically become a PME member when you pre-register for a PME conference. If you have pre-registered for PME 44 in 2020, your membership covers both 2020 and 2021. You can become a PME member via ConfTool (<https://www.conftool.com/pme44/>). You must also be a PME member to be allowed to cast your vote in these elections.



- Complete the nomination form. You may also include a photo of yourself. Your completed nomination form will be posted publicly on <http://www.igpme.org/organization/elections-in-2021/>
- Submit your completed nomination form to the PME Administrative Manager Birgit Griese at info@igpme.org no later than one week before the AGM (15 July).
- For the position of president elect, you should prepare a 3-minute video summarising your reasons and vision for the future of PME. The video will be made available publicly on the PME website (<http://www.igpme.org/organization/elections-in-2021/>). It will also be shown at the PME AGM. Please send a link to the video to the PME Administrative Manager at info@igpme.org with your nomination.

Presenting your nomination:

- For a regular Board member position, your nominator should prepare a 60-second video (we suggest a simple zoom recording featuring the nominator speaking and the candidate) summarising their reasons for supporting your nomination. The video will be made available publicly on the PME website (<http://www.igpme.org/organization/elections-in-2021/>). It will also be shown at the PME AGM. Please send a link to the video to the PME Administrative Manager Birgit Griese at info@igpme.org with your nomination form.

If you have any questions, please contact the Administrative Manager Birgit Griese (info@igpme.org).

PME 45 Pre-submission Support

Submitted by Merrilyn Goos (Australia)

PME 45 in 2022 will be held in Spain. The PME pre-submission support for research reports and oral communications is intended for novice or inexperienced researchers who have limited access to expert advice and who would like to receive guidance from more experienced PME researchers. Applicants should submit their paper to the coordinator who is appointed by the International Committee. The coordinator will then assign the paper to an appropriate mentor and ensure that the communication between the mentor and novice researcher proceeds smoothly.

The PME pre-submission support coordinator is Prof. Merrilyn Goos, m.goos@uq.edu.au. Authors who wish to have a mentor to compose a Research Report or Oral Communication should contact the coordinator as early as possible, but no later than 1 November 2021.



The pre-submission support papers should be accompanied by a statement in which the authors describe their limited experience in writing research reports (or journal articles) and their limited access to expert advice.

Mentors will correspond with the applicants and help strengthen their submitted papers. Please note that this procedure is meant to provide feedback on written reports. It is not meant as support for conducting research. This mentoring does not guarantee acceptance, as all submitted papers will still undergo the regular PME reviewing procedures.

For more information, see www.igpme.org/index.php/annual-conference/pre-submission-support.

Open Contribution

The IMPACT book series for mathematics teacher education

Submitted by Tommy Dreyfus (Israel), Nathalie Sinclair (Canada), and Günter Törner (Germany)

IMPACT stands for *Interweaving Mathematics Pedagogy and Content for Teaching*. IMPACT is a series of texts for teacher education which aims to advance the learning and teaching of mathematics by integrating mathematics content with the broader research and theoretical base of mathematics education. The texts focus on fundamental conceptual understanding of the central ideas and relationships, while sometimes compromising on the breadth of coverage. The target audience of the series includes mathematics teacher educators in a wide variety of frameworks, as well as curriculum developers, graduate students and qualified mathematics teachers. The series is published by Routledge. See the [IMPACT website](#) for details.



Titles

The Learning and Teaching of Algebra - Ideas, Insights and Activities by Abraham Arcavi, Paul Drijvers, and Kate Stacey is a primer for teachers and researchers that provides a pedagogical framework for the teaching and learning of algebra grounded in theory and research. Areas covered include: Algebra - setting the scene; some lessons from history; seeing algebra through the eyes of a learner; emphases in Algebra teaching; algebra education in the digital era. Reader reactions:

This book was a joy to read. It is written in a style that is extremely accessible, while not making any compromises on depth. It is short, without omitting anything important. Examples are plentiful and especially well chosen to illustrate the points to be made.

This book has been reviewed by Birgit Pepin in *Nieuw Archief voor Wiskunde* 5/19(1), 61 (March 2018).

Published in 2016.

The Learning and Teaching of Geometry in Secondary Schools - A Modeling Perspective by Pat Herbst, Taro Fujita, Stefan Halverscheid, and Michael Weiss reviews past and present research on the teaching and learning of geometry in secondary schools and

proposes an approach for design research on secondary geometry instruction. Areas covered include: Students' cognition in geometry; Teacher knowledge, practice and beliefs; Teaching strategies, instructional improvement, and classroom interventions; Research designs and problems for secondary geometry; Teaching and learning secondary geometry through history. Reader reactions:

In reading, and re-reading the manuscript, I have been constantly impressed with its coverage, its clear arguments, and its authoritative command of the domain. My clear sense is that the authors have done sterling work in assimilating and synthesising the considerable literature on geometry education. Not only that, but they have succeeded admirably in developing coherent arguments that offer new insights.

Published in 2017.

The Learning and Teaching of Mathematical Modelling by Mogens Niss and Werner Blum takes stock of the state of affairs of the teaching and learning of mathematical modelling with regard to research, development and practice. It provides a conceptual framework for mathematical modelling in mathematics education at all education levels, with an emphasis on the secondary school level; it also provides the background and resources for teachers to acquire the knowledge and competencies that will allow them to successfully include modelling in their teaching. Reader reactions:

An exceptional book, and quite staggering in its comprehensiveness and the way it has all been brought together.

Published in 2020.

The Learning and Teaching of Number – Paths Less Travelled Through Well-Trodden Terrain by Rina Zazkis, John Mason, and Igor' Kontorovich explores how mathematics education research has addressed issues related to the structure of numbers and number operations and provides a classroom context. While perceived as familiar and understood, numbers present fascinating and often mysterious patterns, relationships and pedagogical issues. This book invites readers to explore less-travelled paths through a well-trodden terrain of number. It illustrates central ideas related to numbers via a variety of tasks at different levels of complexity. It allows readers to examine, develop and enhance their personal understanding of number sets and operations, strengthen their personal problem-solving skills, and enrich their repertoire of mathematical tasks and pedagogical actions. Reader reactions:

This is a lovely book, entertaining, engaging and well written. It is a lovely example how rich and deep mathematics can be presented in an educative way: Fascinating, conceptually deep and at the same time highly accessible for teachers with some mathematical base. The content includes original and clever examples and tasks, which justify the metaphor of travelling anew through well-trodden terrains. It skillfully interweaves mathematical ideas with insights from pedagogy and research in mathematics education and cognition.

Published in 2021.

The Learning and Teaching of Statistics and Probability - An Approach Rooted in Quantitative Reasoning and Conceptual Coherence by Luis Saldanha, Caterina Primi, Egan J. Chernoff, and Neil J. Hatfield places reasoning about quantities and quantification at the core of the learning and teaching of foundational ideas in statistics and probability. The book is designed as a resource for teachers of secondary school mathematics and for mathematics and statistics educators. Drawing on conceptual analyses of the thinking entailed in reasoning about quantities and quantification, and presenting a variety of learning activities in contexts involving statistical data, the book's six chapters trace out a conceptual trajectory for the learning of foundational ideas in statistics and probability that emphasizes understanding and coherence—that is, how those ideas build on one another to provide a view of what it means to reason statistically and probabilistically.

Expected in 2022.

The Learning and Teaching of Calculus - Ideas, Insights and Activities by John Monaghan, Robert Ely, Marcia Pinto, and Michael Thomas offers a variety of methods to approach the teaching of calculus; provides a reader-friendly overview of research on learning and teaching of calculus; and sets interesting questions on educational and mathematical discussion topics. Areas covered include a short discussion of what calculus is and the value of mathematics education research; a brief history of calculus and how calculus differs over countries today; making sense of limits and continuity, of differentiation, of integration and of the Fundamental Theorem of Calculus; the ordering of calculus concepts (should limits come first?); applications of calculus (including differential equations); and a final chapter that looks beyond elementary calculus. This book offers you different possible approaches, so that you can decide what is the best approach for you. The potential for the use of mathematical software permeates every chapter.

Expected in 2023.

Coda

Beyond being an integrated presentation of the central ideas of mathematics and their learning and teaching, the IMPACT books serve as guides to further resources. They are short (about 200 pages), but rich in annotated references for further reading. These references will lead the interested reader to the mathematics education research literature; they will also indicate carefully selected books for further deepening the student's mathematical understanding, as well as relevant sources in the history and philosophy of mathematics.

The books can be ordered from the [IMPACT website](#) of Routledge at a discount (use the code FLY21, unless a 20% discount is applied automatically).

PME Announcement Forum on the PME Website

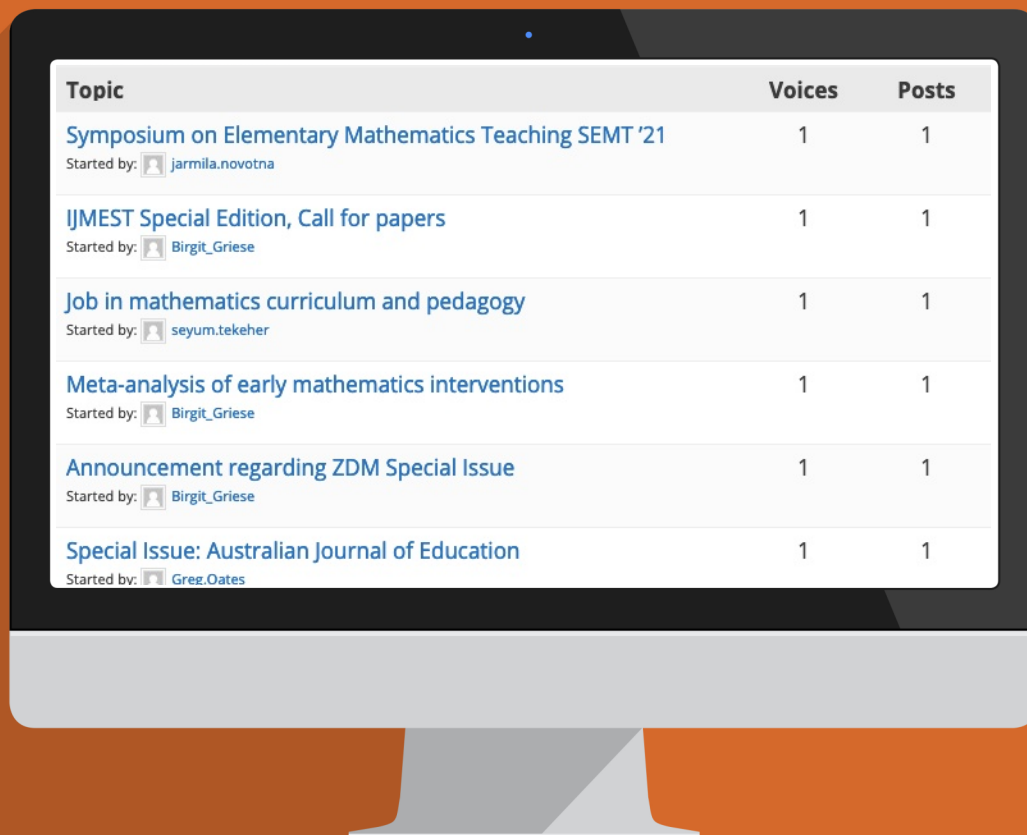
The PME website (www.igpme.org) is the main portal for all communication and information regarding PME. A useful feature for PME members is the Announcement Forum as this is the place to post items of information for PME members such as job announcements, conference announcements, and so on. To access the Announcement Forum, please visit

<http://members.igpme.org/>

and use your PME member login. You can then find the forum in the main menu. By clicking on 'subscribe' in the forum, you then receive an email each time an announcement is posted in the forum.

Since the previous PME Newsletter, the following items have been posted on the PME Announcement Forum:

1. Symposium on Elementary Mathematics Teaching SEMT'21
2. ijMEST Special Edition, Call for papers
3. Job in mathematics curriculum and pedagogy
4. Meta-analysis of early mathematics interventions



Topic	Voices	Posts
Symposium on Elementary Mathematics Teaching SEMT '21 Started by: jarmila.novotna	1	1
IJMEST Special Edition, Call for papers Started by: Birgit_Griese	1	1
Job in mathematics curriculum and pedagogy Started by: seyum.tekeher	1	1
Meta-analysis of early mathematics interventions Started by: Birgit_Griese	1	1
Announcement regarding ZDM Special Issue Started by: Birgit_Griese	1	1
Special Issue: Australian Journal of Education Started by: Greg.Oates	1	1