Mathematics education research supporting practice:
Empowering the future

45th Annual Meeting of the International Group for the Psychology of Mathematics Education (PME 45)

18-23 July, 2022
Alicante, Spain

https://web.ua.es/en/pme45/

First Announcement
PME45 First Announcement

Sculpture “Dibuixar l’espai”

La Explanada

University of Alicante

https://web.ua.es/en/pme45/
Contents

1. Welcome 6
   1.1. Your Host 6
   1.2. About Alicante 8
   1.3. About Spain 10

2. Committees of PME 45 11
   2.1. The International Program Committee (IPC) 11
   2.2. The Local Organizing Committee (LOC) 12

3. PME Conference Secretariat 13
   3.1. Secretariat Email Address 13
   3.2. Conference Website 13

4. About IGPME 13
   4.1. The Constitution of IGPME 14
   4.2. Honorary Members of IGPME 15
   4.3. International Committee of IGPME (IC) 15
   4.4. IGPME Administrative Manager 16

5. The Scientific Program 16
   5.1. Plenary Sessions 17
      5.1.1. Plenary Lectures 17
      5.1.2. Plenary Panel 18
   5.2. Personal Presentations 18
      5.2.1. Research Report (RR) 18
      5.2.2. Colloquium (CO) 21
      5.2.3. Oral Communication (OC) 23
      5.2.4. Poster Presentation (PP) 26
   5.3. Group Activities 28
      5.3.1. Research Forum (RF) 28
      5.3.2. Working Group (WG) 30
      5.3.3. Seminars (SE) 33
      5.3.4. Ad Hoc Meeting (AH) 34

https://web.ua.es/en/pme45/
5.3.5. National Presentation (NP) 34
5.4. Early Researchers’ Day (ERD) 35

6. PME Pre-Submission Support 35
6.1. Coordinator 35
6.2. Procedure 36

7. Registration and Payment 36
7.1. Conference Pre-Registration 36
7.2. IGPME Membership Only 37
7.3. Registration Fees 37
7.3.1. Conference Deposit 38
7.3.2. Total Registration Fee 38
7.3.3. Accompanying Person Fee 38
7.3.4. Late Registration Fees 39
7.4. Payment Options 39
7.5. Donations to Skemp Fund 39
7.6. Richard Skemp Memorial Support Fund 40
7.7. Cancellation Policy 41
7.7.1. For Registered Participants 41
7.7.2. For Accompanying People 42
7.7.3. General Information 42

8. Deadlines for PME 45 (2022) 42
8.1. Scientific Program 42
8.1.1. Personal Presentations 42
8.1.2. Group Activities 43
8.2. Registration 43
8.3. Deadlines for PME 46 (2023) in University of Haifa, Israel 44

9. Travel Information 44
9.1. Getting to Alicante 44
9.2. Getting to the Conference Venue 47
9.3. About Alicante 50
9.3.1. Language 50

https://web.ua.es/en/pme45/
PME45 First Announcement

9.3.2. Passport and visa
9.3.3. Letter of Invitation
9.3.4. Currency
9.3.5. Power Plugs
9.3.6. Time zone
9.3.7. Telephone Codes and Useful Numbers
9.3.8. Weather

9.4. Liability and Insurance
9.5. Accommodation

10. Conference Excursion

11. Credits

11.1. PME Logo Design
11.2. Photo Credits
1. Welcome

The Local Organizing Committee of the 45th 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 Alicante, Spain from July 18 to July 23, 2022.

The theme of the conference is “Mathematics education research supporting practice: Empowering the future”. This theme stresses that practice supported by research is an important tool for improving the quality of mathematics teaching-learning since it allows the empowerment of the individuals and the groups. Mathematics education research provides opportunities for educators to exercise informed freedom of choice when making decisions in teaching and learning.

The theme also has a special meaning for the mathematics education research community in the host country because the history of mathematics education in Spain was tightly knitted with the idea of empowering the future of the country. In Spain, during the 80s, the concern about mathematics teaching and learning was linked to the care for improving practice. Several groups emerged which proposed and used innovation as a tool for effectively empowering teaching. Years later, mathematics education research broadened our understanding of mathematics teaching and learning.

Our goal is to make the 2022 meeting scientifically and socially successful. We hope that your visit and stay in Alicante and Spain will be exciting, informative, and inspiring. We look forward to welcoming you to the conference in July, 2022.

1.1. Your Host

PME 45 in 2022 will be hosted by the University of Alicante, Spain. The University of Alicante (https://www.ua.es/en/index.html) was inaugurated in October 1979, and was built on the foundations of its predecessor institution, the University Study Centre, which was set up in 1968. The current Alicante University campus was built in 1968 on a military airfield located on the outskirts of Alicante. The urban growth of the city in the last decades has led to a perfect connection between the city centre and the University campus, becoming one of the fundamental pillars of Alicante’s economy.

Alicante University campus has come to resemble an island due to the layout of fast-moving traffic routes along its four edges. The campus, located on the
Spanish Mediterranean coast and with a surface area of almost one million square metres, stands out for its high quality and environmentally friendly urban design and for its rich and varied green areas.

The conference will take place at this campus, in the Faculty of Education, a building located outside the enclosed perimeter of the campus, but whose access is easily connected to the main campus. The Faculty of Education, inaugurated in the 2013-2014 academic year, is a modern and functional building with an assembly hall with a capacity of 350 people.

1.2. About Alicante

Alicante is an astonishing city full of life, contrasts and beauty. Labelled as the “City of Light,” Alicante is one of those idyllic destinations where guests can get lost on magical beaches and enjoy exciting experiences. The capital of the Costa Blanca offers the most varied landscapes and the most enviable contrasts. A cultural city with wide parks, palm trees, and centennial Ficus tree gardens and a city centre with its dynamic shopping and leisure district, Alicante also has a vibrant night-life scene. Its fine sand beaches, known worldwide, also offer a much-welcomed respite from the buzz of the busy city life.

With more than 3,000 years of history, shown in the remains left by different civilizations, the history of Alicante or Lucentum, as the ancient Romans named this city, began with an Iberian settlement at the end of the 5th Century B.C. The city, currently having approx. 330,000 inhabitants, enjoys a privileged climate and a convenient location, with the 5th busiest airport in Spain connecting Alicante with the rest of Europe and the world. These circumstances have made the city one of the most important tourism destinations in Spain and a place to
call home for hundreds of thousands of EU and non-EU citizens, contributing to the establishment of a multicultural society.

Alicante is characterized by the beauty of its beaches and its cosmopolitan character. It offers visitors all of the Mediterranean charm with all the conveniences of a modern city.

For those who enjoy history, explore the Santa Bárbara Castle, an imposing fortification located on a rocky mountain 166 meters above sea level. Take a guided tour of its interior and see stunning panoramic views of the city below. Visit the Provincial Archaeological Museum MARQ, an international centre for archaeology, or travel to the past in the Spanish Civil War air-raid shelters. The Alicante City Hall surprises visitors with its historic facade, Solomonic columns and two towers. See the city’s Christian influence when you visit La Basílica de Santa María, Concatedral de San Nicolás, or Monasterio de Santa Faz. At the Central Market, guests will find fresh seafood, and local produce from Alicante’s orchards. Other must-visit iconic places are La Explanada, a promenade which is one of the city’s emblems due to its unmistakable marble mosaic in red, white and blue which imitates the waves of the sea, and is part of this year's conference logo; or the Hogueras Festival Museum, which explores the evolution of Alicante’s most representative festival, the Hogueras de San Juan bonfire celebration, held in June, officially declared as the International Tourist Interest.

Visit the precious beaches of Costa Blanca, like San Juan Beach (6 km long), Almadraba Beach, La Albufera Beach, Postiguet Beach, Saladares-Urbanova Beach, the iconic island of Tabarca (only populated island in the region), and the coves of Cabo de la Huerta. Every year, Costa Blanca’s beaches earn the prestigious Blue Flag award, which grants beaches international recognition for their quality, services, natural beauty and cleanliness.

Local food is an important part of Alicante, a range of varied and complete dishes is all about the Mediterranean diet. Expect fresh fish, seafood, fruits, vegetables and herbs, and traditional recipes like cauldron, an assortment of Paella specialities (meat, shellfish, veggies, octopus…), tapas and local specialities. Rice dishes deserve special recognition here, and they get it with the distinction “Alicante city of rice”. Regarding wine, the Protected Designation of Origin of Alicante marks a wide range of wines, all special because of the area’s diverse climates and grapes.
Spain is in southwestern Europe and has borders with France (in the North) and Portugal (in the West). Most of its territory is a peninsula, but it also has two large archipelagos. The Balearic Islands are off the coast of Catalonia and the region of Valencia. The Canary Islands are in the Atlantic Ocean, about 1,500 kilometres from the Andalusian coast, the southernmost end of the peninsula. Spain also has two Autonomous Cities: Ceuta and Melilla. They are in northern Africa and connected by frequent ferry services to the coast of Andalusia. Mainland Spain, together with Portugal, forms the Iberian Peninsula, surrounded by the Mediterranean Sea to the east and south, the Atlantic Ocean to the west and parts of the north and south, and the Cantabrian Sea to the north.

Spain’s geography is very varied, and the landscapes are very diverse. The total land area is just over 505,000 square kilometres, 12,500 km² of which are the islands. Spain is an extremely mountainous country with a large central plateau. To simplify somewhat, this plateau is divided by two major mountainous areas: the mountain ranges of the Sistema Central and the Montes de Toledo. Towards the edges there are other mountain ranges, including the Galaico massif, the
Cantábrica range, the Sistema Ibérico, and Sierra Morena. The most peripheral mountain systems are the Bética and Catalan ranges and the Pyrenees. The highest points in the country are the Teide (3,718 metres) on the island of Tenerife; Mulhacén (3,478 metres) in Granada; and Aneto (3,404 metres) in the Pyrenees.

Spain epitomises natural diversity and has more UNESCO Biosphere Reserves than any other country in the world, from the lush green laurel forests of Garajonay National Park (La Gomera) to the desert of Las Bardenas Reales Natural Park (Navarra). From the Andalusian coast with endless fine sand beaches to the scalloped shores of tiny coves with pine trees growing almost to the waterline in the Balearic Islands and some parts of Catalonia. From the high mountain landscape of the Picos de Europa National Park to the plains of Doñana National Park or the wetlands of Tablas de Daimiel National Park.

Spain has over 47 million inhabitants and its life expectancy is over 83 years, one of the world’s highest. These inhabitants are distributed in 17 Autonomous Regions. Among these, Madrid and Barcelona are the largest cities in Spain. Madrid is also the national capital, with over three million inhabitants. Most of the population of Spain lives in towns and cities. These are the largest: over 1.5 million inhabitants: Madrid and Barcelona; over 500,000 inhabitants: Valencia, Seville, Zaragoza, and Málaga; over 300,000 inhabitants: Murcia, Palma, Las Palmas de Gran Canaria, Bilbao, Alicante/Alacant, and Córdoba.


### 2. Committees of PME 45

#### 2.1. The International Program Committee (IPC)

The International Program Committee of PME 45 in Alicante consists of:

<table>
<thead>
<tr>
<th>The International Program Committee (IPC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conference Chair</td>
</tr>
<tr>
<td>Co-Chair</td>
</tr>
</tbody>
</table>

https://web.ua.es/en/pme45/
2.2. The Local Organizing Committee (LOC)

The Local Organizing Committee of PME 45 in Alicante consists of:

<table>
<thead>
<tr>
<th>Conference Chair</th>
<th>Ceneida Fernández</th>
<th>Universidad de Alicante, Spain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salvador Llinares</td>
<td>Universidad de Alicante, Spain</td>
<td></td>
</tr>
<tr>
<td>Mar Moreno</td>
<td>Universidad de Alicante, Spain</td>
<td></td>
</tr>
<tr>
<td>Ángel Gutiérrez</td>
<td>Universidad de Valencia, Spain</td>
<td></td>
</tr>
<tr>
<td>Núria Planas</td>
<td>Universidad Autónoma de Barcelona, Spain</td>
<td></td>
</tr>
<tr>
<td>Gloria Sánchez-Matamoros</td>
<td>Universidad de Sevilla, Spain</td>
<td></td>
</tr>
<tr>
<td>Julia Valls</td>
<td>Universidad de Alicante, Spain</td>
<td></td>
</tr>
<tr>
<td>Patricia Pérez-Tyteca</td>
<td>Universidad de Alicante, Spain</td>
<td></td>
</tr>
<tr>
<td>Javier Monje</td>
<td>Universidad de Alicante, Spain</td>
<td></td>
</tr>
<tr>
<td>Pere Ivars</td>
<td>Universidad de Alicante, Spain</td>
<td></td>
</tr>
<tr>
<td>Ángela Buforn</td>
<td>Universidad de Alicante, Spain</td>
<td></td>
</tr>
<tr>
<td>Juan Manuel González-Forte</td>
<td>Universidad de Alicante, Spain</td>
<td></td>
</tr>
<tr>
<td>Melania Bernabeu</td>
<td>Universidad de Alicante, Spain</td>
<td></td>
</tr>
</tbody>
</table>
3. PME Conference Secretariat

3.1. Secretariat Email Address

For any questions regarding PME 45, please contact at: pme45@ua.es.

3.2. Conference Website

The conference website is https://web.ua.es/en/pme45/ where you can find up-to-date information on matters contained within this First Announcement. See also the conference page on Facebook (https://www.facebook.com/PME-45-108082168189980), Twitter (https://twitter.com/PME45Alicante) and Instagram (https://www.instagram.com/pme45alicante/) where news and reminders are posted. General information about PME is also available on the website of the International Group for the Psychology of Mathematics Education (IGPME) at www.igpme.org.

4. About IGPME

The International Group for the Psychology of Mathematics Education (IGPME) is an autonomous body, governed as provided for in its constitution. It is an official subgroup of the International Commission for Mathematical Instruction (ICMI) and came into existence at the Third International Congress on Mathematics Education (ICME-3) held in Karlsruhe, Germany in 1976. The conference in 2022 is the 45th Annual Meeting of the International Group for the Psychology of Mathematics Education (PME 45).
4.1. The Constitution of IGPME

The constitution of PME was adopted by the Annual General Meeting (AGM) on August 17, 1980 and changed at the AGM on July 24, 1987, on August 10, 1992, on August 2, 1994, on July 18, 1997, on July 14, 2005, on July 21, 2012. PME decided to seek charitable organization status under UK law and the new constitution related to this change was accepted by the Annual General Meetings in 2018 and 2019. The name of the Charitable Incorporated Organisation (“the CIO”) is the international Group for the Psychology of mathematics Education.

The objects of the CIO are to advance the field of mathematics education for the public benefit by:

- Promoting and stimulating research.
- Organising regular educational conferences around the world.
- Supporting regional workshops around the world in general, and in under-represented regions of the world in particular.
- Collaborating with organisations with similar aims.
- Facilitating cross-disciplinary discussion and the sharing of information and research with an international emphasis.
- Helping scholars from different parts of the world establish collaborative networks to further our collective understanding of how to improve mathematics education in their respective countries.
- Providing grants to help bring scholars from under-represented regions of the world to our annual meeting.
- Disseminating our research for the benefit of improving mathematics education at the classroom, school, district, and national levels.
- Disseminating our research for the benefit of improving students’ experiences with mathematics education at the classroom, school, district, and national levels.
- Disseminating our research for the benefit of improving the preparation of mathematics teachers at the university level around the world.
- Providing access to our research publications to the public.

All information concerning PME and its constitution can be found at the PME website: http://www.igpme.org.
4.2. *Honorary Members of IGPME*

Efraim Fischbein (deceased), Hans Freudenthal (deceased), and Joop Van Dormolen (retired).

4.3. *International Committee of IGPME (IC)*

<table>
<thead>
<tr>
<th>Office</th>
<th>Person</th>
<th>Country/Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>President</td>
<td>Markku Hannula</td>
<td>Finland</td>
</tr>
<tr>
<td>President-elect</td>
<td>Wim Van Dooren</td>
<td>Belgium</td>
</tr>
<tr>
<td>Vice-President</td>
<td>Arindam Bose</td>
<td>India</td>
</tr>
<tr>
<td>Secretary</td>
<td>Jodie Hunter</td>
<td>New Zealand</td>
</tr>
<tr>
<td>Treasurer</td>
<td>Yasmine Abtahi</td>
<td>Norway</td>
</tr>
<tr>
<td>Policy</td>
<td>Anika Dreher</td>
<td>Germany</td>
</tr>
<tr>
<td></td>
<td>Judy Anderson</td>
<td>Australia</td>
</tr>
<tr>
<td></td>
<td>Chiara Andrà</td>
<td>Italy</td>
</tr>
<tr>
<td></td>
<td>Michal Ayalon</td>
<td>Israel</td>
</tr>
<tr>
<td></td>
<td>Ban Heng Choy</td>
<td>Singapore</td>
</tr>
<tr>
<td></td>
<td>Anthony Essien</td>
<td>South Africa</td>
</tr>
<tr>
<td></td>
<td>Ceneida Fernández</td>
<td>Spain</td>
</tr>
<tr>
<td></td>
<td>Tracy Helliwell</td>
<td>United Kingdom</td>
</tr>
<tr>
<td></td>
<td>Maitree Inprasitha</td>
<td>Thailand</td>
</tr>
<tr>
<td></td>
<td>Helena Johansson</td>
<td>Sweden</td>
</tr>
<tr>
<td></td>
<td>Kotaro Komatsu</td>
<td>Japan</td>
</tr>
<tr>
<td></td>
<td>Christina Krause</td>
<td>US</td>
</tr>
<tr>
<td></td>
<td>Daniel Sommerhoff</td>
<td>Germany</td>
</tr>
</tbody>
</table>
4.4. IGPME Administrative Manager

Birgit Griese
Universität Paderborn
Postal address: Warburger Str. 100
33098 Paderborn, Germany
Tel: +49 5251 60-1839
Email: info@igpme.org

5. The Scientific Program

The theme of the 45th PME conference is:

**Mathematics education research supporting practice: Empowering the future**

The conference language is English. Papers for the proceedings must be written and presented in English. However, colleagues, including the presenters, are welcome to contribute to discussions and questions in their first languages, following a Research Report or an Oral Communication, if translation is provided by someone in the session. The scientific program includes the following activities that are explained in more detail below.

**Plenary sessions (see Section 5.1)**

- Plenary Lectures
- Plenary Panel

**Personal presentations (see Section 5.2)**

- Research Reports (RR)
- Colloquiums (CO)
- Oral Communications (OC)
- Poster Presentations (PP)

**Group activities (see Section 5.3)**

- Research Forums (RF)
- Working Groups (WG)
- Seminars (SE)
- Ad Hoc Meetings (AH)
- National Presentation (NP)
In addition to these activities, the conference will also offer an Early Researchers' Day (ERD), the day before the main conference (see Section 5.4).

**Restrictions**

All presentations have to promote the major goals of the IGPME (refer to Section 4.1). In addition, please note that there are restrictions on the number of possible contributions.

Each submission should be made by the presenting author. You are allowed to be presenting author of either a Research Report (including those bundled within a Colloquium) or an Oral Communication presentation. In addition, you can be presenting author of a Poster Presentation, Research Forum, and Working Group. There are no restrictions for being a co-author. Note, that it is not allowed to change the presenting author after the review process.

Each conference participant may act as organiser of at most one Colloquium and as Coordinator of at most one Seminar. Note, however, that because of scheduling issues it may not be compatible to be a presenter in both a Research Forum and a Seminar. This may also apply to Working Groups.

### 5.1. Plenary Sessions

#### 5.1.1. Plenary Lectures

There will be four plenary lectures from invited speakers. Each lecturer will have 60 minutes for presentation, and a reactor will then comment on the presentation for 10 minutes. Following the reactor intervention, the lecturer will have up to 5 minutes to respond. In all plenary sessions, there will be time left for questions and comments from the audience. The plenary speakers for PME 45 are:

Markku Hannula, University of Helsinki, Finland.
Laurinda Brown, University of Bristol, United Kingdom.
Yoshinori Shimizu, University of Tsukuba, Japan.
Manuel Santos-Trigo, Cinvestav, Mexico.

Plenary lectures by all plenary speakers will be livestreamed. For plenary speakers who cannot be onsite due to travel restrictions, the lecture will be livestreamed to the venue at the University of Alicante. Provisions will be made.
for both live audience and online audience to participate in the discussion during the lectures.

5.1.2. Plenary Panel

The Plenary Panel will be held according to the Oxford-Style debate protocol on a topic related to the theme of the conference: Mathematics education research supporting practice: Empowering the future.

The panel for PME 45 consists of the following researchers:

Olive Chapman, University of Calgary, Canada (chair).
Nuria Climent, University of Huelva, Spain.
Paola Sztajn, NC State University, United States.
Jaguthsing Dindyal, Nanyang Technological University, Singapore.
Nancy Chitera, University of Malawi, Malawi.

The plenary panel will be held onsite at the venue. For speakers who are unable to present due to travel restrictions, provisions will be made for them to present via livestream. In addition, provisions will be made for both live and online audiences to participate in the discussion during the panel.

5.2. Personal Presentations

5.2.1. Research Report (RR)

Research Reports should state what is new in the research, how the study builds on past research, and/or how it has developed new directions and pathways. Some level of critique must exist in all papers.

Contributions need not be limited to completed research. Ongoing studies may be submitted, provided that theoretical framework, preliminary results, and a discussion of these results appear in the text submitted. Proposals that are too similar to papers previously presented cannot be accepted. Proposals that represent new and significant contributions to research in the Psychology of Mathematics Education are especially encouraged.

Two types of papers are suitable for Research Reports:

1. Reports of empirical studies
Reports of empirical studies should cover, as a minimum, the following:

- a statement regarding the focus of the submitted paper;
- the study’s theoretical framework;
- references to the related literature;
- a description of the research methods used; and
- a sample of the data and the results (additional data can be presented at the conference but some data ought to accompany the proposal).

2. Theoretical and philosophical essays

These should cover, as a minimum, the following:

- a statement regarding the focus of the submitted paper;
- a statement about the paper’s theoretical or philosophical framework;
- references to related literature;
- a clearly articulated statement regarding the author’s position on the paper’s focus or theme; and
- implications for existing research in the respective area.

Submission procedure and restrictions

Research Report Proposals papers are to be written in English, with an abstract in English (and one in another language, if desired by the author) of at most 10 lines. The document may be up to 8 pages long and must be in line with the formatting guidelines provided by the conference organizers. The PME 45 template for Research Report Proposals and guidelines for proposals are available at [https://web.ua.es/en/pme45/](https://web.ua.es/en/pme45/). For the peer review process, authors must submit a second, blinded version of their proposal. Papers that do not conform to the formatting guidelines, exceed the maximum number of pages, or which are not accompanied by a properly blinded version may be rejected without further consideration or peer review.

For details, please refer also to the Submission Checklist provided by IGPME at [http://www.igpme.org/annual-conference/session-types/research-report/submission-checklist-rr/](http://www.igpme.org/annual-conference/session-types/research-report/submission-checklist-rr/).

Because of length restrictions, papers should be concise, but should nevertheless contain all information necessary to inform both reviewers and other researchers. Proposals merely stating that results will be presented at the conference cannot
be accepted. Authors are requested to refer to related papers that have been presented at previous PME conferences.

Please consider the following issues before you submit your proposal:

Proposals for Research Reports must be submitted via ConfTool (www.conftool.com/pme45) by the presenting author no later than January 15, 2022. Submissions to ConfTool are only possible if the presenting author is registered in the ConfTool system and has paid the non-refundable conference deposit.

Two files must be submitted for each proposal:

- for publication, a word file that strictly follows the formatting guidelines
- for review, a “blinded version” as a PDF file in which it is not possible for a reviewer to infer the authors’ identities from the text, including the references.

Please note that no revisions are possible after submission. Each contribution is accepted or rejected in the form in which it was submitted. Every pre-registered person may submit up to one Research Report. The proposal should be submitted by the author who will deliver the presentation during the conference. Each conference participant may present at most one Oral Communication or one Research Report, including the Research Reports that are part of Colloquia (please refer also to section 5.2.1 for Restrictions on number of contributions).

**Reviewing procedure and criteria**

The submitted proposals for the Research Reports are double-blind peer-reviewed by three PME members whose areas of expertise match the research categories chosen for the contribution. The International Program Committee (IPC) decides on the acceptance of proposals. Details of the review process are available at the IGPME webpage http://igpme.org/index.php/annual-conference/session-types/research-report/.

Notification of the decision of the International Program Committee will be available after the second meeting of the International Program Committee in April. The proposal can be accepted or rejected, or the author is invited to resubmit the contribution in the form of an Oral Communication or Poster Presentation.
Publication and presentation

Accepted papers will be included in the proceedings only if the full conference registration fee has been paid in time. The deadline for this payment is May 15, 2022. Details are published in the Second Announcement.

Each Research Report presentation will be allotted a total time of 40 minutes: 20 minutes for the oral presentation and 20 minutes for questions and comments.

A chairperson will be assigned to each Research Report session. He/she will introduce the presenters, make a comment regarding photographing, audio- and videotaping the session, monitor timing of the session, and moderate the discussion.

By default, Research Reports will be presented in person by the presenters. If presenters cannot present in person due to travel restrictions, then they are expected to present via the online platform and take questions from the audiences (onsite and online) during the time slot allocated to them.

5.2.2. Colloquium (CO)

The goal of a Colloquium is to provide the opportunity to present a set of three Research Reports that are interrelated in a particular way (e.g. they are connected through related or contrasting theoretical stances, use identical instruments or methods, or focus on closely related research questions), and to initiate a discussion with the audience on the interrelated set.

A Colloquium proposal:

- consists of a set of exactly three research reports, to be presented by members from at least two different countries;
- includes, in addition, a one-page summary by an organizer (one person), indicating a specific pre-determined focus that is common to each research report; and
- involves a presentation of the three research reports, and a discussion with the audience that is initiated by the contribution of a discussant (one person, indicated in the author line of the one-page summary) who is appointed at submission.

The three Research Reports should be formatted and submitted via ConfTool using the guidelines provided for that presentation format (see above, 5.2.2)
Research Report (RR)). Here, further information is provided only for the one-page summary which accompanies the three Research Reports.

The additional one-page summary is created using the same template or formatting guidelines as for Poster Presentations and Oral Communications, and is submitted by the Colloquium organizer via ConfTool. It provides the Colloquium title and the name of the organizer (preceded by “Organizer:”) and discussant (preceded by: “Discussant:”) in the author fields. Then, the text containing the focus and/or rationale for the Colloquium is provided. Note that no abstract is necessary for the Colloquium summary. Proposals that do not follow the formatting guidelines will not be included in the peer review process.

In the comments field in ConfTool, the authors and titles of the three research reports that comprise the Colloquium must be indicated.

Submissions to ConfTool are only allowed if the presenting author is registered in the ConfTool system and has paid the non-refundable conference deposit. Every pre-registered person may submit up to one Colloquium as organizer.

A Research Report in a Colloquium is counted identically to an individual Research Report for the existing restrictions on the number of contributions for a participant. Therefore, each conference participant may present at most one Oral Communication or one Research Report, including the Research Reports that are part of Colloquia (please see also section 5.2.1 for Restrictions on number of contributions). Note that acting as a discussant of a Colloquium will not count as a contribution for the existing restrictions on conference contributions. Nevertheless, each participant can take the role of organizer or discussant in a Colloquium no more than once during one conference. Also, the organizer cannot be involved as (co-)author in more than one of the research reports in the Colloquium.

Submission and review process

Proposals for Colloquium presentations must be submitted no later than January 15, 2022 (also the deadline for Research Report proposals). The Research Reports that comprise a Colloquium proposal are reviewed in the usual way, using the same criteria. The IPC may, however, assign the set of three research reports to the same reviewers, who are then informed that the Research Reports are part of a Colloquium proposal. If all three Research Reports are considered acceptable during the review process, the International Program Committee reviews the
Colloquium proposal during the second meeting of the International Program Committee and decides upon its acceptance. If not all the three Research Reports are accepted or if the framing proposal to group them in a Colloquium is rejected by the IPC, those Research Reports that were accepted in the usual review process will enter the conference program as usual Research Reports. In case of rejection, encouragement for resubmission in a different format is possible for the single Research Reports.

Details of the review process are available at the IGPME webpage: http://igpme.org/index.php/annual-conference/session-types/colloquium/.

Presentation

A 90-minute timeslot will be devoted to each Colloquium. The organizer takes care of the chairing. The organizer first briefly introduces the Colloquium topic and then each Research Report is presented in turn. The presentation time for each report can be agreed with the organizer beforehand but will be between 15 and 20 minutes (depending on how much the papers have in common; some presentations can be shorter). Afterwards, the discussant initiates the discussion for approximately 10 minutes, which is followed by discussion with the audience.

Colloquium will be presented in person by the group of presenters. If presenters cannot present in person due to travel restrictions, then they are expected to present via the online platform. Provisions will be made for both live audience and online audience to participate in the discussion during the colloquium.

5.2.3. Oral Communication (OC)

An Oral Communication proposal should describe which past research the study is built on; give a concise overview of the new results attained, and what the main implications of these results are.

Contributions need not be limited to completed research. Ongoing studies may be submitted, provided that theoretical framework, preliminary results, and a discussion of these results appear in the text submitted. Proposals which are too similar to papers previously presented cannot be accepted. Proposals that represent new and significant contributions to research in the Psychology of Mathematics Education are especially encouraged.
Submission procedure and restrictions

Proposals for Oral Communications are to be written in English without an abstract. The document may be up to one page long and must be in line with the formatting guidelines provided by the conference organizers. The PME 45 template for Oral Communications Proposals and guidelines for proposals are available at https://web.ua.es/en/pme45/. For the peer review process, authors must submit a second, blinded version of their proposal. Papers that do not conform to the formatting guidelines, exceed the maximum number of pages or which are not accompanied by a properly blinded version may be rejected without further consideration or peer review.

For details, please refer to the Submission Checklist provided by IGPME at http://www.igpme.org/annual-conference/session-types/oral-communication/submission-checklist-oc-and-pp/.

The preparation of a proposal for an Oral Communication is a challenging enterprise since the length is limited to one page only. Note that no abstract is necessary for an Oral Communication paper.

Please consider the following issues before you submit your proposal:

Proposals for Oral Communication must be submitted via ConfTool (www.conftool.com/pme45) no later than March 1, 2022. Submissions to ConfTool are only possible if the presenting author is registered in the ConfTool system and has paid the non-refundable conference deposit. Two files must be submitted for each proposal:

● for publication, the word file that strictly follows the formatting guidelines
● for review, a “blinded version” as a PDF file in which it is not possible for a reviewer to infer the authors’ identities from the text, including the references.

Please note that no revisions are possible after submission. Each contribution is accepted or rejected in the form in which it was submitted. Every pre-registered person may submit up to one Oral Communication (please refer also to section 5.2.1 for Restrictions on number of contributions). The proposal should be submitted by the author who will deliver the presentation during the conference.

Reviewing procedure and criteria
Proposals for Oral Communications will be double-blind peer-reviewed by at least one member of the IPC (International Program committee). Notification of the decision of the International Program committee to accept or reject the Oral Communication proposal will be available after the second meeting of the International Program Committee in April 2022.

Details of the review process are available at the IGPME webpage: http://igpme.org/index.php/annual-conference/session-types/oral-communication.

Advice for authors on how to prepare an Oral Communication paper can be found on the PME website www.igpme.org/index.php/annual-conference/further-information/preparing-oc-and-pp.

**Publication and presentation**

Accepted papers will be included in the proceedings only if the full conference registration fee has been paid in time. The deadline for this payment is May 15, 2022. Details are published in the Second Announcement.

The IPC will group three Oral Communications according to the distinctive themes in order to provide the opportunity for a common discussion period at the end of each OC session.

For OC sessions, the IC recommends one of two timing options. Some sessions may contain presentations that are closely related, while for other sessions, this may be less the case. Based on the chair’s reading of the OC summaries, and after consultation of the three presenters before the start of the session, he/she can select the appropriate option.

**Option 1**: Joint discussion at the end for presentations with related themes. After each presentation, there is the opportunity to clarify immediate questions for at most 5 minutes. 15 additional minutes of discussion are at the end of the session.

**Option 2**: Separate discussions for presentations with separate themes. The chairperson starts 10 minutes of questions and discussion directly after each 10-minute presentation.

A chairperson will be assigned to each Oral Communication session. He/she will introduce the presenters, make a comment regarding photographing, audio- and videotaping the session, monitor timing of the session, and moderate the discussion according to one of the previously mentioned options.
By default, Oral Communications will be presented in person by the presenters. If presenters cannot present in person due to travel restrictions, then they are expected to present via the online platform and take questions from the audiences (onsite and online) during the time slot allocated to them.

5.2.4. Poster Presentation (PP)

Poster Presentations are intended for research that is best communicated in a visual form rather than an oral presentation. There is no formal oral presentation associated with Poster Presentations, although there is time allotted during which presenters will be available by their posters for discussion with conference participants.

Reports should describe the research context of the study presented, the study itself, and its implications, with a particular focus on the visual aspects of the presentation.

Contributions need not be limited to completed research. Ongoing studies may be submitted, provided that theoretical framework, preliminary results, and a discussion of these results appear in the text submitted. Proposals which are too similar to papers previously presented cannot be accepted. Proposals that represent new and significant contributions to research in the Psychology of Mathematics Education are especially encouraged.

Submission procedure and restrictions

Proposals for Poster Presentations are to be written in English. The document may be up to one page long and must be in line with the formatting guidelines provided by the conference organizers. The PME 45 template for Poster Presentation Proposals and guidelines for proposals are available at https://web.ua.es/en/pme45/. For the peer review process, authors must submit a second, blinded version of their proposal.

For details, please refer also to the Submission Checklist provided by IGPME at http://www.igpme.org/annual-conference/session-types/oral-communication/submission-checklist-oc-and-pp/.

Papers that do not conform to the formatting guidelines, exceed the maximum number of pages or which are not accompanied by a properly blinded version may be rejected without further consideration or peer review.

https://web.ua.es/en/pme45/
The preparation of a proposal for a Poster Presentation is a challenging enterprise since the space is limited to one page only. Note that no abstract is necessary for a Poster Presentation. Advice on how to prepare a Poster paper can be found on the PME website at http://igpme.org/index.php/annual-conference/further-information/preparing-oc-and-pp.

Please consider the following issues before you submit your proposal:

Proposals for Poster Presentations must be submitted via ConfTool (www.conftool.com/pme45) no later than March 1, 2018. Submissions to ConfTool are only possible if the presenting author is registered in the ConfTool system and has paid the non-refundable conference deposit. Two files must be submitted for each proposal:

- for publication, the word file that strictly follows the formatting guidelines
- for review, a “blinded version” as a PDF file in which it is not possible for a reviewer to infer the authors’ identities from the text, including the references.

Please note that no revisions are possible after submission. Each contribution is accepted or rejected in the form in which it was submitted.

Every pre-registered person may submit up to one Poster Presentation (please refer also to section 5.2.1 for Restrictions on number of contributions). The proposal should be submitted by the author who will deliver the presentation during the conference.

**Reviewing procedure and criteria**

Proposals for Poster Presentations will be reviewed by at least one member of the IPC (International Program Committee). Notification of the decision of the International Program Committee to accept or reject the Poster Presentation proposal will be available after the second meeting of the International Program Committee in April 2022.

Details of the review process are available at the IGPME webpage http://igpme.org/index.php/annual-conference/session-types/poster-presentation/.

**Publication and presentation**
Accepted proposals will be included in the proceedings only if the full conference registration fee has been paid in time. The deadline for this payment is May 15, 2022. Details are published in the Second Announcement.

60 minutes will be allocated to Poster Presentation sessions during the conference. Authors should be available at their poster in this session for discussion with conference participants. The authors should bring their posters printed in the format prescribed by the conference organizers in the Second Announcement.

Posters will be fully onsite. Nevertheless, all posters will be included as one-page pdf in the platform and an asynchronous chat will be available during the whole conference to communicate and discuss ideas with authors.

### 5.3. Group Activities

Group activities are intended to provide attendees with the opportunity to exchange information and ideas related to the PME. Conference participants will need to select which sessions they would prefer to attend and indicate this in their registration. Group activities will take place during parallel time allotments, and will have limited space.

All group activities (except RF proposals) are submitted for review through ConfTool, the online conference registration system ([www.conftool.com/pme45](http://www.conftool.com/pme45)). ConfTool is configured to only accept submissions from presenters who are registered in the ConfTool system and have paid the non-refundable conference deposit. Please refer also to section 5.2.1 for Restrictions on number of contributions.

#### 5.3.1. Research Forum (RF)

A Research Forum is a format of group presentation undertaken by a group of at least five researchers. The goal of a Research Forum is to provide PME members a comprehensive overview on the state of the art on a topic where substantial research has been undertaken in the last 5-10 years and that is of ongoing interest for the PME members. The researchers are expected to be experts with respect to the research topic and offer coherently structured activities during 2 slots of 90 minutes each, as well as a comprehensive contribution (30 pages) to the
A Research Forum is not supposed to be a collection of individual research presentations (see Colloquium format), but instead is meant to convey an overview of research, highlighting contemporary academic debates and perspectives in the field. In contrast to the Working Group format for evolving research topics, Research Forums are considered to mark significant advances with respect to established research topics.

A Research Forum:

- focuses on a topic which is of substantial interest within the work of PME;
- has a coherent structure that enables to attain a comprehensive overview of the topic;
- contrasts and integrates different research approaches through the consideration of multiple perspectives;
- includes structural opportunities for academic debate in interaction with the audience;
- provides the participants with the opportunity to prepare for the participation through the provision of reading materials prior to the activity;
- is developed by at least five researchers who are experts with respect to the research topic;
- covers 2 slots of 90 minutes each; and
- is represented in a comprehensive and coherent 30-page contribution in the conference proceedings.

Submission and Reviewing Process

Research Forums are highest-quality contributions to PME conferences and, as such, they are subject to a review process. In order to allow the researchers to adequately prepare the Research Forum, the deadline for proposals is November 1 in the year preceding the conference. A proposal should not exceed 5 pages, including references.

The International Program Committee (IPC) pre-reviews the proposals. If necessary, the IPC provides feedback to the coordinators with the opportunity to revise the proposal until January 15. During the First IPC meeting (late January),
the IPC decides on the acceptance of the Research Forums. If accepted, the final contribution for the conference proceedings (30 pages) must be handed in by March 15.

Proposals must include:

- the topic, title, and focus of the Research Forum;
- the names of all researchers contributing (minimum of 5);
- the name of the coordinator (corresponding researcher);
- an outline of the theoretical background of the research topic;
- a detailed description of the proposed layout of the Research Forum, including thematic structuring, time structuring for 2 slots of 90 minutes each, as well as descriptions of the planned presentations and audience interactions;
- prior reading suggestions for attendants and details on accessibility (if needed, organizers may use the PME communication infrastructure at http://www.igpme.org/); and
- information on the planned structure of the contribution in the conference proceedings.

**Presentation and Proceedings**

Two 90-minute slots will be devoted to each Research Forum. The conference chairs are asked to schedule the slots subsequent whenever possible, although this cannot be guaranteed.

The proposal and conference proceeding contribution should follow the PME formatting guidelines. The final contribution for the conference proceedings should not exceed 30 pages including references. For accepted papers to be included in the proceedings, all researchers contributing to the Research Forum have to make a full registration by May 15, at the latest.

Research Forum will be presented in person by the group of presenters but it will be livestreamed to the online participants. Provisions will be made for both live audience and online audience to participate in the discussion during the forum.

5.3.2. Working Group (WG)

A Working Group is a format of group presentation undertaken by a group of at least two researchers. The aim of a Working Group is that PME participants are offered the opportunity to engage in exchange or to collaborate in respect to a
common research topic (e.g., start a joint research activity, share research experiences, continue or engage in academic discourse). See also http://www.igpme.org/index.php/annual-conference/session-types/working-group.

A Working Group may deal with emerging topics (in the sense of newly developing) as well as topics that are not new but possibly subject to changes.

A Working Group needs a clear goal (outcome) and a strategy to reach this goal in collaboration with the participants. It must provide opportunities for contributions of the participants that are aligned with the goal (e.g. share materials, work collaboratively on texts, discuss well-specified questions).

A Working Group is not supposed to be a collection of individual research presentations (see Colloquium format), but instead is meant to build a coherent opportunity to work on a common research topic. In contrast to the Research Forum format that is meant to present the state of the art of established research topics, Working Groups are considered to involve fields where research topics are evolving.

A Working Group:

● focuses on a research topic of substantial interest within the PME community;
● has a clear goal and a strategy to reach this goal in collaboration with the participants;
● includes structural opportunities for contributions by the participants to reach the goal;
● involves only a minimum of planned presentations to stimulate the specific collaboration or exchange;
● is provided by at least two researchers who are actively working within the research topic;
● covers 2 slots of 90 minutes each;
● is represented via the 2-page proposal in the conference proceedings; and
● will be portrayed in respect to its outcomes, after the conference, in a report to be included in the following PME newsletter.

Submission and Reviewing Process

Working Groups are subject to review in order to ensure the fit to the goals of PME as an organization. The deadline for proposals (2 pages) is March 1st via
The International Program Committee (IPC) reviews the proposals for Working Groups and decides on their acceptance during the Second IPC meeting (April).

Proposals must include:

- the topic, title, goal, and strategy to reach the goal of the Working Group;
- the names of all researchers contributing (minimum of 2);
- the name of the coordinator (corresponding researcher);
- an outline of the theoretical background of the research topic;
- an explicit statement on the way the participants are expected to engage in collaboration and/or exchange in the Working Group;
- an explicit statement if the Working Group is a new initiative or a follow up on previous PME activities, as well as an indication of tentative follow up activities at future PME conferences (further WGs, RRs, Colloquium, etc.);
- a detailed description of the proposed layout of the Working Group, including
  - thematic structuring, time structuring for 2 slots of 90 minutes each, as well as descriptions of planned presentations and participants’ exchange/collaboration activities;
  - opportunities to contribute by participants and details on the organizational process (if needed, organizers may use the PME communication infrastructure at http://www.igpme.org/ for collaboration).

**Presentation and Proceedings**

Two 90-minute slots will be devoted to each Working Group. The conference chairs are asked to schedule the slots subsequent whenever possible, although this cannot be guaranteed.

Due to the highly interactive nature of Working Groups, and the difficulty of holding discussions in hybrid format, they will take place only on site this year.

The proposals should follow the PME formatting guidelines. The total length for the proposal is 2 pages including references. If accepted, this proposal will be included in the conference proceedings. For accepted papers to be included in
the proceedings, all researchers contributing to the Working Group have to make a full registration May 15, at the latest.

After presentation, each Working Group is required to send a report of its activities and the goals reached to the PME Administrative Manager (info@igpmeme.org) by September 2022. This report may be included in the following PME Newsletter.

5.3.3. Seminars (SE)

The goal of a Seminar is the professional development of PME participants, especially new researchers and/or first comers, in different topics related to scientific PME activities. This encompasses, for example, aspects like research methods, academic writing or reviewing. A Seminar is not intended to be only a presentation but should involve the participants actively. PME can give a certificate of attendance to participants of the Seminar. Facilitating a seminar will not count as a contribution for the existing restrictions on conference contributions.

Submission and review process

A SE application must include:

- name of a coordinator;
- information about the topic and the goals of the SE as well as descriptions of specific tasks or activities to be carried out in the sessions; and
- a short outline about the goals and/or activities planned for each of the two 90 minutes’ sessions.

Two-page proposals for a SE must be submitted not later than March 1, 2022 via Conftool. The International Program Committee reviews and selects SEs during the second IPC meeting. Notification of the decision of the IPC to accept or reject a proposal for SE will be communicated in April 2022.

Presentation and Proceedings

Due to the highly interactive nature of Seminars, and the difficulty of holding discussions in hybrid format, they will take place only on site this year.

The two-page proposals of accepted Seminars will be included in the Conference Proceedings. Two 90-minute sessions will be allocated to Seminars. After
presentation, the coordinators of each SE are required to send a report of its activities to the PME Administrative Manager (e-mail address: info@igpme.org). This report may be included in the PME newsletter. This report is due by the end of September 2022.

5.3.4. Ad Hoc Meeting (AH)

Ad Hoc Meetings are a form of conference activity approved in 2010. During the conference, PME provides time slots and rooms for meetings of ‘ad hoc’ groups. The idea is that researchers can meet and discuss research topics that spontaneously came up during discussions of previous presentations at the conference. The Ad Hoc Meetings are reserved only for discussions; presentations or a continuation of a Research Report or Oral Communication are not allowed. To organize an Ad Hoc Meeting, at least two people should prepare an announcement with a short and precise description of the topic, the names of the organizers, and the preferred time slot, and deliver it to the PME Administrative Manager (info@igpme.org). The Administrative Manager will then assign times and rooms. Since there are only a few time slots and rooms, proposals will be accepted on a first-come, first-served basis.

5.3.5. National Presentation (NP)

The country hosting a PME conference can include a National Presentation in the scientific program of the PME conference. The goal of a National Presentation is to present to PME members of other countries the specific history, traditions and perspectives, as well as the most important results, of a national mathematics education community. Accordingly, the National Presentation has to be organized as a combination of giving information about the national situation and relating/contrasting this information with international mathematics educational research. One 90-minute session will be allocated to the National Presentation.

National Presentation will be fully onsite. It will be broadcast online. Audience on site will be able to participate lively in the discussion and online audience via chat.
5.4. Early Researchers’ Day (ERD)

PME is pleased to offer a special day (early researchers’ day, ERD) for early career researchers who are also attending the PME conference. The Early Researchers’ Day will directly precede the main PME conference and will consist of presentations, working groups and other kinds of sessions planned to be of value to those new to research in mathematics education.

The aim of the ERD is to provide early career researchers with opportunities to develop their research skills in various fields, establish new contacts, build networks among themselves and with respect to future PME conferences, and meet and work with international experts in the field.

The 2022 ERD will be held on the afternoon of Sunday July 17 and the morning of Monday July 18 at the University of Alicante (on site). The day is being organized by Pedro Ivars (LOC member, Spain) and Einat Heyd-Metzuyanim (PME representative, Israel). Registration fees for ERD and coffee breaks are complimentary (no cost) and researchers can apply for participation through ConfTool. The number of participants will be limited. Priority will be given to current PhD students and post-doctoral students, and special consideration will be given to applicants from underrepresented countries.

Updated and more detailed information will be posted on the conference website: https://web.ua.es/en/pme45/.

6. PME Pre-Submission Support

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.

6.1. Coordinator

The PME pre-submission support coordinator is Merrilyn Goos (Australia), mgoos@usc.edu.au.
6.2. Procedure

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 November 1, 2021. The pre-submission support papers should be accompanied by a statement in which the authors describe

a. their limited experience in writing research reports (or journal articles) and

b. 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.

7. Registration and Payment

7.1. Conference Pre-Registration

Pre-registration for PME 45 begins in November 2021. It will be carried out online using the ConfTool conference registration system, at www.conftool.com/pme45. Before registering for the conference or paying the membership fee, you need to register in the PME ConfTool system.

1. If you already have been a user of the PME ConfTool system, for example if you attended one of the last conferences:

   ● Please enter your username and password to log in and select the option “Pre-Register for this Event or Join PME as a member.” If you have forgotten your password, ConfTool will help you to retrieve it.

If you are a new user for the PME ConfTool system:

   ● Please create a new account and register in the system.
   ● You will need to provide your personal information and account information in order to build your own data base in the system.
   ● After filling in these details and submitting all information needed, you will be able to continue with your conference pre-registration.
2. Select your status as PME participant by clicking on the appropriate option. Step by step, the system will take you to the payment form for the conference deposit (see section 7.4).

If you have any problems with your conference pre-registration, please contact at: pme45@ua.es.

7.2. IGPME Membership Only

If you have been an IGPME member in the past, but will not be attending PME45, or you want to become a new IGPME member who will not attend PME45, pay the annual membership fee for PME through ConfTool. This is necessary for maintaining or getting membership.

1. As a member of IGPME who wants to renew membership:
   - Please log in by entering your username and password and select the option “Pre-Register for this Event or Join PME as a member.”

   As a new member of IGPME:
   - Please create a new account and register in the system.
   - You will need to provide your personal information and account information in order to build your own data base in the system.
   - After filling in these details and submitting all information needed, you are able to select the option “Pre-Register for this Event or Join PME as a member.”

2. After checking your personal details and choosing “Pay PME membership fee ONLY” in the following step, the system will automatically take you to the payment form for the membership fee (see section 7.4).

If you have any problems with payment of the membership fee, please contact at: pme45@ua.es.

7.3. Registration Fees

The upper limit for the total registration fee will be around €400, according to PME regulations. The exact amount depends on the number of participants and external financial support. The exact amount will be decided by the International Program Committee in April 2022, just prior to the publication of the Second Announcement.
7.3.1. Conference Deposit

The non-refundable conference deposit is €130. For those who attend the conference, the conference deposit will be deducted from the total conference registration fee.

The conference deposit covers:

- PME memberships for the year 2022 of €50;
- a compulsory Skemp Fund donation of €10;
- access to electronic conference proceedings; and
- administrative cost related to the handling of the proposals.

7.3.2. Total Registration Fee

The total registration fee covers:

- PME membership for the year 2022 of €50;
- a compulsory Skemp Fund donation of €10;
- a set of printed proceedings (see below) and access to an electronic version of the proceedings;
- 4 lunches and 8 coffee breaks;
- opening reception;
- conference dinner;
- excursion; and
- the costs of venue, administrative work, and facilities needed for the organization of the conference.

You have the option to choose if you want to receive printed proceedings or not. During the final registration process via the ConfTool system, participants can choose the alternative option that includes only electronic proceedings. If you choose only electronic proceedings, the registration fee will be reduced.

The reduction depends on the price of printed proceedings (i.e., on the number of pages and volumes) and will be announced on the conference website and in the Second Announcement in April 2022.

7.3.3. Accompanying Person Fee
We welcome accompanying people. Accompanying people participate in the social program but not in the scientific program of the conference. The fee for accompanying people is expected to be around €130 per person depending on the anticipated number of participants and external financial support. The exact amount will be decided by the International Program Committee in April 2022, just prior to the publication of the Second Announcement.

The fee covers:

- opening reception;
- excursion;
- conference dinner; and
- some of the administrative work involved outside of the scientific program.

There is no fee for accompanying children under 14 years of age. If you have any questions, please contact at: pme45@ua.es.

7.3.4. Late Registration Fees

An additional charge of €50 will be applied for registrations made after May 15, 2022.

7.4. Payment Options

All participants should do their payment by bank transfer. After confirming your pre-registration, you will find the information about the bank account details to make the payment. In the reason for transfer you should provide the following: PME45-Surname, Name.

After the payment, you have to send a copy of the bank transfer receipt to the email address: pme45_registration@ua.es to complete the payment process. If you have any questions regarding your payment, please contact at: pme45@ua.es.

7.5. Donations to Skemp Fund

The Richard Skemp Memorial Support Fund is a fund that was established to support academics from under-represented or economically weak countries in attending the annual conference (see section 7.6). The spirit of the fund is to help academics who normally would not have access to the PME conference. As such, where applicants are from, where they are living, where they are working, where
they are currently studying, as well as the conditions of their employment and studies are important factors when adjudicating the applications.

The Skemp Fund plays an increasingly important role in making the PME annual conference more accessible to mathematics educators who would not otherwise be able to attend the conference. The extent to which we can give this financial assistance depends to a large degree on the generosity of the PME community. For this reason, a compulsory donation of €10 is included in the pre-registration fee for the conference. In addition, the International Committee calls on members to make an additional donation, however small, to the Skemp Fund when paying membership fees or registering for annual conferences.

7.6. Richard Skemp Memorial Support Fund

The Richard Skemp Memorial Support Fund is a fund that was established to support academics from under-represented or economically weak countries in attending the annual conference. The spirit of the fund is to help academics who normally would not have access to the PME conference.

A limited amount of financial support is available to researchers who experience difficulty in obtaining financial support to attend a PME conference. Applicants for a grant from the Fund must submit an individual contribution (RR, OC, PP) and pay the non-refundable conference deposit, prior to the applicant’s proposal being reviewed. A grantee must have at least one proposal (RR, OC, PP) accepted.

In general:

● only one of the authors of a particular proposal will be eligible to apply for a grant;
● those who have already received a grant on two prior occasions will not receive an additional grant; and
● for applicants who have already received a grant in a previous year, priority will go to those who have an accepted Research Report rather than an Oral Communication or Poster Presentation.

The number and size of grants each year depends on the amount available as well as the number of applicants and the relative merits of each application. The Richard Skemp Memorial Support Fund Committee will meet during the second International Program Committee meeting, in April 2022, and will make its recommendations once decisions on the acceptance or rejection of proposals have
been completed. The PME Administration Manager will contact applicants to inform them of the decision on their application for a Richard Skemp Memorial Support Fund grant. This will usually take place before the end of April each year. Please note that grants cannot be carried over to the next year’s conference. Grants will be paid at the conference and are not available in advance.

Applicants for a Skemp Fund grant should fill in the application form available from the conference website or from the PME website (http://igpme.org/index.php/annual-conference/skemp-fund-support). The application should be sent by March 1, 2022 to:

Birgit Griese  
Paderborn University, Germany  
Tel: +49 (0) 5251 60-1839  
Email: info@igpme.org

7.7. Cancellation Policy

7.7.1. For Registered Participants

Participation in the conference is conditional upon registration and payment of all fees. All cancellations and changes regarding the conference registration must be made in written form to the conference secretariat by sending an email to pme45@ua.es. In all cases, the conference deposit will not be refunded; however, the deposit will cover one year of membership as well as access to the electronic conference proceedings (see section 7.3.1 Conference Deposit).

If a cancellation for conference participation is made after the full registration fee has been paid: Before June 3, 2022, the refund will be the amount of the full registration fee minus the conference deposit and the fees that the bank charges for transferring the refund. Refund = (registration fee – conference deposit) – bank fees.

After June 3, 2022, the refund will be 50% of the full registration fee minus the conference deposit, and then subtracting the fees that the bank charges for transferring the refund. Refund = 50% of (registration fee – conference deposit) – bank fees.

After July 18, 2022, when the conference has started, cancellation will not be possible.

https://web.ua.es/en/pme45/
7.7.2. For Accompanying People

If a cancellation for accompanying person is made after the full registration fee has been paid: Before June 3, 2022, the refund will be the amount paid minus the fees that the bank charges for transferring the refund will be refunded. Refund = accompanying person fee – bank fees.

After June 3, 2022, the refund will be 50% of the amount, subtracting the fees that the bank charges for transferring the refund. Refund = 50% of accompanying person fee – bank fees.

After July 18, 2022, when the conference has started, cancellation is not possible.

7.7.3. General Information

Participation is not guaranteed until full payment of the registration fee is received.

The conference program may be subject to changes (based on decisions by the International Program Committee).

In the case of unforeseeable events, it is up to the International Program Committee and the International Committee of PME to decide on changes or even the cancellation of the conference and the amount of refund of payments. If the conference is cancelled, the remaining funds will be paid back to the participants and no further liability of the local organizers or PME will be accepted towards the client.

8. Deadlines for PME 45 (2022)

8.1. Scientific Program

For all accepted proposals, the deadline of final registration is May 15, 2022. Contributions will not be included into the proceedings, if final registration including the payment of the total registration fee is not completed by that date.

8.1.1. Personal Presentations
8.1.2. Group Activities

<table>
<thead>
<tr>
<th>Event</th>
<th>Details</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Forum</td>
<td>Proposals</td>
<td>December 1, 2021</td>
</tr>
<tr>
<td></td>
<td>Pre-Registration, revised Proposals and Payment of Conference Deposit</td>
<td>January 15, 2022</td>
</tr>
<tr>
<td></td>
<td>Full Papers</td>
<td>March 15, 2022</td>
</tr>
<tr>
<td>Working Group</td>
<td>Pre-Registration, revised Proposals and Payment of Conference Deposit</td>
<td>March 1, 2022</td>
</tr>
<tr>
<td>Seminar</td>
<td>Pre-Registration, revised Proposals and Payment of Conference Deposit</td>
<td>March 1, 2022</td>
</tr>
</tbody>
</table>

8.2. Registration

| Pre-registration       | Necessary to submit proposals and for proposals to be reviewed          | See above    |

https://web.ua.es/en/pme45/
8.3. Deadlines for PME 46 (2023) in University of Haifa, Israel

Research Forums for PME 46 to be held in University of Haifa, Israel, should be submitted before November 1, 2022, to the Administrative Manager (info@igpme.org).

The deadline for PME Pre-Submission Support for contributions to PME 46 in University of Haifa, Israel, is November 1, 2022. Please refer to www.igpme.org/index.php/annual-conference/pre-submission-support/ for further information.

9. Travel Information

9.1. Getting to Alicante

You can reach Alicante by plane, train, bus, or car.


If you have a direct flight to Alicante-Elche Miguel Hernández airport

Alicante is a city that is well connected by air with the most important cities in Europe through its Alicante-Elche Miguel Hernandez (ALC) airport, which offers the possibility of flying with more than 25 airlines.

For further information about the airport services, visit the website: https://www.aena.es/en/alicante-elche.html

When you are at the Alicante-Elche Miguel Hernández (ALC) airport there are several ways to get to the city of Alicante:

By bus (C.6 Airport-Alicante)

The C.6 bus service runs between the airport terminal building and Alicante city centre every 20 minutes, 365 days a year. The price of the standard ticket is about €3,85. It also stops at the Renfe train station and other strategic locations around
Alicante, connecting with TRAM lines 1, 2, 3 and 4 at the following stops: Alfonso X El Sabio, Plaza de los Luceros and Vázquez de Mella.

By taxi from the Airport (ALC)

- **Radio Tele Taxi Alicante**
  Phone: +34 965 101 611
  WhatsApp: +34 671 101 611
  Taxis can be booked between 2 days and 30 minutes before pick-up.
  There are fixed-rates services between the train station RENFE-AVE Alicante and other towns on the Costa Blanca.

- **Radiotaxi Elche**
  Phone: +34 965 910 591
  Taxis can be booked between 2 days and 30 minutes before pick-up.

- **Euro Taxi Alicante**
  Phone: +34 965 240 707

- **Cabify**

Rent a car

- **AVIS BUDGET**
  Location: arrivals
  Phone: 902 180 854; 902 248 824; 902 109 808

- **CENTAURO**
  Location: arrivals
  Phone: 966 360 360; 966 360 360

- **EUROPCAR**
  Location: arrivals
  Phone: 911 505 000; 913 434 503; 965 684 850

- **GOLDAR-INTERRENT**
  Location: arrivals
  Phone: 918 341 400; 918 340 262; 965 683 362

- **HERTZ-FIREFLY**
  Location: -
  Phone: 902 402 405; 965 682 760

[https://web.ua.es/en/pme45/](https://web.ua.es/en/pme45/)
If you do not have a direct flight to Alicante-Elche Miguel Hernández airport

Alicante also has direct flight connections with some important Spanish cities as Madrid (Adolfo Suárez Madrid-Barajas Airport), Sevilla (Seville Airport), Valencia (Manises Airport) and Barcelona (Barcelona El Prat Airport). These airports offer a wider array of international flights, then you can go to Alicante either by plane or by some of the following alternatives:

**By Train**

Alicante is very well connected by train. There are several departures of high-speed trains on a daily basis from Madrid, Sevilla, Valencia or Barcelona.

For further information on the train station, visit the website: 

**By Bus**

The main bus station connects Alicante with other towns in the province, with other Spanish and European capital countries, as Germany, Estonia, Netherland, Hungry, Italy, Norway and Sweden, and with Morocco.

For further information on the bus station, visit the website: 
[https://www.estacionalicante.es/](https://www.estacionalicante.es/)

**By Car**

- Alicante can be reached via the AP-7 highway, Alicante can be reached via the AP-7 highway, which connects to the north with Valencia and to the south with Murcia and Andalusia.
- It can also be accessed by the A-31 which connects Alicante with Madrid A-31. Madrid - Alicante highway.
- A-7. Highway (Inland road): Connects Alicante with the south of the province and Spain through the interior.
9.2. Getting to the Conference Venue

Once you are in Alicante, there are several ways to arrive at the University of Alicante, where the conference will take place:


By bus

If you want to take a public bus, line 24 is the mainline connecting the city centre and the University of Alicante. There are many bus stops for this line in the city centre. You can buy a single ticket (€1.45) on the bus or a multiple-trip card (€8.70 per every 10 trips and €2 the first time you buy the card) in one of the multiple establishments of the list you have next.
Where to buy multiple-trip cards: [https://alicante.vectalia.es/en/puntos-de-venta/](https://alicante.vectalia.es/en/puntos-de-venta/)

The multiple-trip card is compatible with tram and public buses. Commuters can also pay by credit card on the bus.

When coming from Alicante there are two bus stops next to the campus:

- Bus stop 2916 (Alicante 86 – Universidad). This is the bus stop that takes to the main entrance, close to building 29.
- Bus stop 3403 (Perú - Alicante). This is the closest bus stop to the faculty of Education (building 702).

There are other two bus stops if you go to Alicante:

- Bus stop 2932 (Universidad de Alicante), the closest one to the main entrance (building 29).
- Bus stop 3995 (Perú – Alicante II), the closest one to the faculty of Education (building 702).


**By tram**

The University of Alicante is also accessible by the tram Luceros-Universidad (L2) which connects Alicante with the Campus of San Vicente del Raspeig. There are two main stops in city centre: “Luceros” and “Mercado”. In the university, there are other two stops: “Universitat”, close to building 16, and “Sant Vicent del Raspeig”, the nearest one to building 702, and hence closest to the Conference Venue.

You can buy a single ticket (€1.45) or a round trip ticket for the same day (€2.30) in tram, or a multiple-trip card (€8.70 per every 10 trips and €2 the first time you buy the card) in one of the multiple establishments of the list you have below. The multiple-trip card is compatible with tram and public buses. Commuters may also purchase the ticket by credit cards on the Tram.
Map of Line 2 Alicante Tram:  
https://www.tramalacant.es/descargas/pdf/PlanoBarrio_L2_TRAM.pdf

Timetables of Line 2 Alicante Tram:  

Map of Tram Alicante lines:  

Where to buy multiple-trip cards:  
https://alicante.vectalia.es/en/puntos-de-venta/

More information about Tram Alicante:  


By train

The Alicante-San Vicente del Raspeig (C-3) commuter train has a stop near the Campus and connects Alicante with the University. You can take this train at the Alicante Train Station. If you want to use this service, you can buy a one-way ticket (€1.80) or a round trip ticket for the same day (€3.60).

More information about C-3 commuter train:  

By taxi

Getting from Alicante city to the University by taxi takes 15-20 minutes. The average price of the journey ranges between 10-18€ (notice that at night the price may increase/vary). Furthermore, you can download the Taxi service app in the following link:  

In the aforementioned section on Taxi services, all the information about taxis and other services such as Cabify is detailed.

By car

The University of Alicante has good road accessibility due to its location next to the Mediterranean motorway (AP-7), to the region’s highway network, such as the Alicante ring road (A-70), the Mediterranean carriageway (A-7), the Alicante carriageway (A-31) and the northern access to Alicante through A-77.
The (AP-7) motorway and the Alicante ring road (A-70) connect the university with the Alicante-Elche Airport, enabling visitors who choose the plane as their means of transport to travel fast and comfortably.

As mentioned before, it is possible to rent a car to easily reach the university.


By bike

The University of Alicante is also accessible by bike using the lanes for this purpose. Currently, Alicante does not have a public service of bike renting, but there are different establishments to rent a bike.


9.3. About Alicante

9.3.1. Language

Spanish is the official language of the Spanish territory. However, Spain has a wide linguistic diversity, with several co-official languages in its territory. For this reason, you may hear the Valencian language in the Valencian Community, although it is not widely used in the city of Alicante.

9.3.2. Passport and visa

Spain is a member state of the European Union (EU). No visa is needed for EU citizens, but citizens of many non-EU countries need a visa. This information can be found on the following website of the Spanish government: http://www.exteriores.gob.es/Portal/en/ServiciosAlCiudadano/InformacionParaExtranjeros/Paginas/RequisitosDeEntrada.aspx

For non-EU citizens, please contact the nearest Spanish Embassy or consulate for further details and the required formalities. Please remember to apply for a visa in good time.
If you are unsure whether a visa is required, you can check with the Immigration & Checkpoints Authority or with your local consular office. The period of stay granted will be shown on the visit pass endorsement in your passport. Those who need an official invitation in order to obtain a visa to enter Spain, please read Section 9.3.3. Letter of Invitation.

PME 45 cannot be held responsible for any matters related to obtaining visas.

**COVID-19 Information**

In the context of the evolution of the COVID-19 pandemic, every traveller who wishes to enter Spain must consider that, in addition to complying with the general entry requirements in Spain, exceptional measures restricting mobility are currently in force in order to contain the spread of COVID-19.

As a result, all travellers, regardless of the circumstances of their trip, are strongly recommended to keep informed before their trip about the restrictions adopted by the Ministry of the Interior on border crossing (interior.gob.es), as well as the sanitary measures adopted by the Ministry of Health (https://www.mscbs.gob.es).

9.3.3. Letter of Invitation

Delegates requiring a letter of invitation in order to attend the conference may write to the conference secretariat at pme45@ua.es specifying the necessary details. Please note that this procedure aims explicitly at assisting delegates who need to obtain a visa or permission to attend the conference. It is not an official invitation covering fees or other expenses and does not imply any financial support from the conference organizers.

9.3.4. Currency

The currency in Spain is Euro (EUR/€) and Cent (CT; 100 Ct = €1). For exchange rates, please check the European Central Bank website: https://www.ecb.europa.eu/home/html/index.en.html.

9.3.5. Power Plugs
The standard electrical current used in Spain is 230 volts AC (50 cycles). Electrical sockets (outlets) in Spain are one of the two European standard electrical socket types. The Type C and the Type F in the following list: https://www.worldstandards.eu/electricity/plugs-and-sockets/. If your appliance’s plug doesn’t match the shape of these sockets, you will need a travel adapter in order to plug it in.

9.3.6. Time zone

In summer, the time in Spain is two hours ahead of Greenwich Mean Time (GMT + 2, Central European Summer Time Zone CEST).

9.3.7. Telephone Codes and Useful Numbers

The Spain country code 34 will allow you to call Spain from another country. The code 34 is followed by an area code. The Alicante area code is 096 (+34 96 xxxxxxxx). There is no area code if you are calling a mobile phone (cell phone).

Where to call in case of emergency? There are four main important phone numbers in Spain:

112 (for emergencies)
091 (for police)
092 (for local police)
061 (for health emergencies)

9.3.8. Weather

Alicante has unbeatable weather with more than 300 sunny days a year and an annual average temperature of 18.5°C (65.3°F). The weather in winter is mild due to the sea and the mountains that surround the city, while in summer, it is dry and hot.

Particularly, in July, Alicante has daily high temperatures around 30°C (86°F), with an average temperature of around 25°C (77°F). The risk of rainfall in Alicante is very low, with an average of just 7mm. The temperature of the Mediterranean Sea is 24°C (75.2°F). The days are long, with sunrise around 6.30 am and sunset around 21:30 pm. For these reasons, during July, the weather comfort index in Alicante is excellent, with an overall score of 92/100.
More information about the weather: https://www.easyvoyage.co.uk/weather-forecast/spain/alicante/july.

9.4. Liability and Insurance

Please check the validity of your insurance before travelling to the conference. The Local Organizing Committee does not accept any liability for personal injury, loss or damage of personal belongings, or additional expenses incurred to congress participants (or their accompanying people) either during the conference or as a result of any other causes.

9.5. Accommodation

There are different accommodation options available for your visit to Alicante during PME 45.

On the one hand, if you prefer to stay in Alicante and enjoy your time visiting the town, most of their hotels are located very close to each other in the city centre, which makes it easy to meet up with colleagues in the long summer evenings.

On the other hand, the University of Alicante is surrounded by lots of residence halls where it is possible to stay during the congress if you prefer to remain next to the university campus.

Information about accommodation will be available on the conference webpage: https://web.ua.es/en/pme45/.

10. Conference Excursion

In addition to the scientific program, there will be an excursion afternoon with several options for participants. Details of the excursion tours will be included in the Second Announcement available in April 2022.

11. Credits

11.1. PME Logo Design

The PME 45 logo was designed by the Gabinete de Imagen y Comunicación Gráfica (Universidad de Alicante).
11.2. Photo Credits

Sculpture “Dibuixar l’espai”. Photo: Taller de Imagen UA.

La Explanada. Photo: Alicante Turismo.

University of Alicante from above. Photo: Universidad de Alicante.

University of Alicante Campus. Photo: Taller de Imagen UA.

Faculty of Education. Photo: Taller de Imagen UA.

Castillo de Santa Bárbara. Photo: Alicante Turismo.