

ICMI

ICMI Newsletter

A Newsletter from the ICMI-International Commission
on Mathematical Instruction

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1. Editorial - Carlos Kenig, President of the International Mathematical Union

My term as President of the IMU started in January 2019. The ensuing months have been very intense, setting up the structures for the current four-year IMU cycle, and a major learning experience for me.

The first meeting of the new Executive Committee (EC) of the IMU took place last March, at the IMU Secretariat in Berlin, and many important decisions were taken at this meeting. Since with the exception of the past President and the Secretary General (who is in his second term), all remaining members of the EC had no previous EC experience, all of us had to learn the job of being an EC member as well as how to work together. I am very happy to report that this turned out very well.

Right before the EC meeting I participated in the yearly meeting (also held in Berlin) of the IMU's Commission for Developing Countries (CDC). This was a great opportunity for me to learn more about the important work of the CDC and its partners. The CDC is charged with managing the programs of the IMU in the developing world. The CDC and its partners have, with very limited resources, a disproportionately high impact.

One of the projects discussed at this meeting, which I hadn't previously known about, was the Capacity and Networking Project (CANP), which is run jointly by the CDC and ICMI. The aim of CANP is to enhance the mathematical education in developing countries, at all levels, by developing the educational capacity of those who educate mathematics teachers (from all levels of instruction). This is very important, and with a large potential pay-off, since each teacher reaches many students, thus widely propagating the acquired knowledge.

Last May I participated in the annual meeting of the Executive Committee of ICMI (of which I am an ex-officio member), in Montevideo. This was another great learning opportunity for me. At this meeting I was able to learn in detail about the preparations for ICME 14 (that I look forward to attending), which are very advanced, and about the many impressive activities of ICMI, dealing with both theoretical research in mathematics education and with the practice of mathematics education, at all levels.

I also learned more about the CANP project that I mentioned earlier and about its successes and its challenges. I continue to be impressed with this project.

One thing that struck me during my visit to Uruguay and after the ICMI EC meeting is the gulf that seems to exist, in many countries and in many institutions around the world, between mathematicians and mathematics educators. This seems to me to be very artificial, and very damaging to both communities, since research and education cannot and should not be separated. I hope that the close continuing collaboration between IMU and ICMI will be a vehicle for improving this regrettable situation. I very much look forward to this continuing collaboration.



Carlos E. Kenig,
University of Chicago, USA

2. From the desk of Jill Adler, President of the International Commission on Mathematical Instruction (ICMI)

ICME15

The past few months have been very busy for the ICMI Executive Committee (EC), office-bearers and members. Jill, Abraham and Jean-Luc completed the ICME15 site visits. From these we prepared a report for the EC meeting in May, where the decision on the site of ICME15 was to take place. Thank you to both our Australian and Czech mathematics education colleagues and the wide range of their collaborators in Sydney and Prague for their excellent bids. The EC's decision process was not easy given the high quality of both bids. It gives me great pleasure in this introduction to share the decision ICME15 will be held in Sydney, Australia. We are confident we have made a good decision and can look forward to the introduction to ICME15 in the closing ceremony in Shanghai next year.

ICMI STUDY 25

As reported in the previous newsletter, Jill and Abraham (as ex-officio members) participated in the first IPC meeting of our newly launched ICMI Study 25: Teachers of Mathematics Working and Learning in Collaborative Groups. The meeting was in February 2019, in Berlin, and the study Discussion Document and Call for Papers was disseminated soon thereafter. It can be found at <http://icmistudy25.ie.ulisboa.pt/>. The deadline for submission of papers to the Study Conference is July 19, 2019 and thus very soon. We are looking forward to your contributions to this study, and to having an excellent working conference in Lisbon, Portugal in early February 2020, and the study volume that will be its final product.

ICME14

At the end of March, Jill and Abraham travelled to Shanghai to join colleagues from across the world for our second IPC meeting for ICME14.



The IPC at work during its meeting, Shanghai,
March 2019

The fruits of that meeting, and all the preparation that preceded it by the Local Organizing Committee and the overall convenor and Chair of the IPC Jianpan Wang, have already been seen. The Second Announcement for ICME14 has been widely distributed across all our networks. We hope that all our members have begun thinking about and working on their contributions to the congress. I take this opportunity to remind all that we aim to support the participation of as many people as possible from low income countries through the Solidarity Fund. Applications for such funding must come in timeously, and these depend, of course, on acceptance of participation in the Congress e.g. in a TSG. Information can be found at <https://www.icme14.org/static/en/news/68.html?v=1560259311005> We are very excited with the topical and interesting range of plenary lectures and panels, the survey teams, invited lectures and all other activities in the Scientific Program. This includes an important innovation in the organization of the program related to Topic Study Groups: the two TSG strands will enable every congress participant to participate in two TSGs (though present a paper only in one).

ICMI AWARDS

As I write this our committees for the Emma Castelnuova, Hans Freudenthal and Felix Klein awards are hard at work. Thank you Konrad Krainer and Anna Sfard for Chairing these important committees. Konrad and Anna have informed me (and so the EC) that they are very happy with the quality and quantity of nominations received. As can be imagined, selecting our awardees and so marking the excellence in our fields of practice and research is rewarding but challenging work. We do not expect the outcome of the committees' deliberations until much later in the year.

ICMI EC ANNUAL MEETING

As if the site visits and IPC meeting in different countries and on different continents were not sufficient travel, we responded to an invitation from our Uruguayan colleagues in mathematics education to hold our 2019 annual EC meeting in Montevideo. We gladly accepted this generous invitation as it is ICMI tradition to shift its activities across regions of the world if there are possibilities for interacting with and supporting local communities. Merrilyn, Abraham and Luis gave plenary talks and workshops at the national conference that occurred immediately after our EC meeting had ended.

Yuriko, Zahra and Anita attended the opening ceremony and Merrilyn's plenary (which was translated simultaneously into Spanish), and had an opportunity to interact with local colleagues.



The EC hosted
in the home of one of the Uruguayan hosts

We were happy to welcome to our EC meeting the new IMU President Carlos Kenig, Paolo Piccione, (the new IMU EC liaison for ICMI) and Helge Holden who was re-elected as IMU SG. Their contributions to our ongoing work through their participation in our EC are critical and I concur wholeheartedly with Carlos in his editorial above, that we are all the richer when there is active collaboration across the communities of mathematicians and mathematics educators.

Holding the EC in Latin America in May also coincided with the CIAEM XV conference, one of the regional conferences affiliated with ICMI. Jill, Ferdinando and Yuriko were invited speakers there and so travelled from Montevideo to Medellin in Colombia where CIAEM was held.

ICMI PROPOSAL - DOCUMENT ON CITATIONS AND PROMOTION

Immediately following my message is a proposal ICMI has developed for use by members with regards to publications, citations and promotion. Thanks to Merrilyn and Zahra for the work they did to initiate this. We are sharing it here in the newsletter so that we can invite comments from all that will enable us to improve the proposal. Please read this, and we look forward to receiving your comments and suggestions.

REFLECTIONS

In my last “from the President’s desk”, I commented about CERME which had just been held in Utrecht in February 2019. The privilege you have as President is to travel the world and interact with colleagues across continents and countries. As I flew home from Medellin (and living at the Southern tip of Africa means most flights are long haul) I had time to reflect on how much I had learned just through these activities in the last two months – learning that goes beyond our ongoing ICMI activities like preparing a bid for and then organising an ICME; launching an ICMI Study, its first IPC meeting and the preparation of its Discussion Document; and reporting on and accounting for all the EC work done and to be done in the next months. Making a decision on the site for ICME15 was only one of a number of critical issues on the EC agenda in our recent meeting.

Meeting people in Latin America first-hand, and in the context of their local and regional activity, provided an experience not possible through reading about these communities and their work, or meeting them and interacting on their work in an international conference, for example, like PME. The opportunity I had to interact directly with two Latin American communities (quite similar yet with interesting differences) helped me to reflect further on two critical challenges of effective communication in an international community like ICMI.

First, and most obvious, there is the issue of language. The languages of communication in the CIAEM conference were Spanish and Portuguese, and predominantly Spanish.

As someone who knew very little Spanish or Portuguese besides some everyday interactive phrases, communicating my own work, and then attempting to learn from others’ presentations was a significant challenge. This brought home to me the question of what are effective means of communication in such settings, for those more and less fluent in the language of the conference.

In addition to differences in spoken languages, understanding educational cultures, practices and problems across communities is also critical for effective communication.

Do we reflect sufficiently on these issues when preparing talks or papers for international audiences? Are the shared assumptions we take for granted in our active networks meaningful to all? What work do we need to do to foster effective communication about mathematics education in our multilingual and multicultural events?

The thematic afternoon in ICME provides opportunity for the host country to share its educational culture and practices. In Shanghai, we will have such opportunity and will find presentations by practitioners in Chinese, as this is the route to hearing authentic voices sharing their educational culture and practice. Simultaneous translation will not be possible in these sessions. We will collectively need to assist with other means of translation for participants. And this will entail both language and cultural considerations. I look forward to discussing these and other substantive issues when our country representatives meet in Shanghai for the ICMI General Assembly, just prior to ICME14, and then when we all meet in the Congress itself, and so in a way not possible to engage further in this newsletter.

PLEASE VISIT www.icme14.org

3. ICMI Statement on Evaluation of Scholarly Work in Mathematics Education - A call for comments by Merrilyn Goos, ICMI Vice President

At the ICMI Executive Committee meeting held in Geneva in March 2017, it was noted that ICMI had been approached to inquire whether our organization has an official stance regarding use of citation indices as the basis for evaluation and promotion of scholars in academic positions. A suggestion arising from that meeting was that ICMI could refer to the recommendation on the evaluation of individual researchers in the mathematical sciences that had been issued by the International Mathematical Union (IMU) (available at https://www.mathunion.org/fileadmin/IMU/Report/140810_Evaluation_of_Individuals_WEB.pdf.)

A similar document based on the same considerations has now been developed by ICMI. We invite all members of the ICMI community to read this document (see below) and send us any comments by 30 September 2019. Please email comments to ICMI Vice President Merrilyn Goos at merrilyn.goos@ul.ie. The final version of this document will then be published on the ICMI website.

¹ See the IMU (2014) statement on evaluation on researchers in the mathematical sciences.

² See the San Francisco Declaration on Research Assessment (DORA, n.d.) - a worldwide initiative covering all scholarly disciplines and all key stakeholders including funders, publishers, professional societies, institutions, and individual researchers.

Evaluation of scholarly work in mathematics education

Evaluating the quality and impact of scholarly work in all academic disciplines has become an increasing concern of universities as well as many national governments. However, generic evaluation processes do not always take into account discipline-specific norms for conducting and publishing research and other forms of scholarly work undertaken to influence practice or policy. Even within the global field of educational research there exist various sub-fields that take different approaches to theory, method, and dissemination of findings.

Concerns about the need to improve the evaluation of scholarly work have led to the formulation of various statements and recommendations that are either specific to a discipline¹ or applicable to all research fields². The purpose of the present document is to consider the question of how to evaluate scholarly work in the specialized educational sub-field of mathematics education. It sets out ICMI's position on evaluation of individual researchers in mathematics education.

This document is organized around three questions, with brief responses set out below that are elaborated in subsequent sections:

1. What is being evaluated and for what purpose?	Individuals or institutions? Research output or other forms of scholarly work? For decisions about hiring, promotion and tenure? For decisions about institutional resource allocation and continuation or cessation of funding for research centres or institutes?
2. What problems arise in evaluating scholarly work in mathematics education?	Mathematics education research journals are not adequately represented in citation databases. Journal citation metrics are improperly used as an indicator of article quality. Predatory publishers exploit inexperienced researchers. Evaluation focuses on too narrow a range of scholarly work.
3. What solutions can be proposed?	Promote alternatives to citation-based evaluation systems. Develop ways of evidencing research impact as well as research quality. Broaden the scope of evaluation to include scholarly activity that influences educational practice and policy.

A. What is being evaluated and for what purpose?

Academics employed in universities are expected to devote some of their time to evaluating the scholarly work of other *individuals*, for example, by reviewing journal manuscripts, conference papers and grant applications, examining research students' theses, or assessing academic performance to inform decisions about hiring or promotion. Expert peer review is universally recognized as being fundamental to research evaluation, since only experts in a field can judge the significance and originality of a piece of research or the quality and relevance of the publication outlets in which the findings are disseminated.

Research evaluation can also be used to judge the performance of higher education *institutions* with the goal of providing accountability for public spending on research. Some countries (e.g., the UK, Australia, New Zealand) conduct regular national research evaluation exercises that typically place most emphasis on publication quality, with scores or ratings being assigned to either individual academics or discipline-based units of assessment within each institution³. Judgments about research quality may be made on the basis of expert peer review or bibliometric data, or some combination of these.

Evaluation of the scholarly work of individuals or institutions is a high-stakes enterprise with significant implications for career progression and academic reputation, and sometimes for the selective allocation of institutional research funding. It is therefore essential to use valid measures that not only capture the distinguishing features of quality in a specific discipline, but also avoid perverse consequences that might lead to "gaming" of the evaluation system and thus distortion or undermining of research goals.

³ For more information, see <https://www.ref.ac.uk/about/> (UK), <https://www.arc.gov.au/excellence-research-australia> (Australia), <https://www.tec.govt.nz/funding/funding-and-performance/funding/fund-finder/performance-based-research-fund/> (New Zealand).

B. What problems arise in evaluating scholarly work in mathematics education?

Research evaluation depends largely on assessment of the quality of research outputs. In mathematics education, papers in peer-reviewed journals are typically the most highly regarded form of publication. Evaluation of such outputs can be either quantitative, relying on various forms of bibliometric analysis using citation data, or qualitative, relying on expert peer judgment.

A major limitation of citation-based systems for evaluating journal quality is the limited coverage they give to mathematics education journals. Nivens and Otten (2017) compiled a list of 69 journals that have an explicit focus on mathematics education research, but found that only six appeared in the Web of Science database from which journal impact factors are calculated. They concluded that Web of Science is of little value to mathematics education, despite its widespread use to measure scholarly output in other disciplines. A further limitation of all three major journal ranking systems – Web of Science (Impact Factor, IF), Scopus (Scopus Journal Ranking, SJR), and Google Scholar (h5-index) – is that they only trace citations within their own data bases, thus excluding the vast majority of mathematics education journals.

Nivens and Otten (2017) warn of a further problem, when journal citation metrics are improperly used to draw conclusions about the impact of articles published in particular journals. They show that there is little correlation between a journal's citation-based measures of impact (such as IF) and the number of citations received by articles published in that journal. Yet journal impact measures and rankings are often used – inappropriately – in making decisions about tenure and promotion of individual academics.

Evaluations based on so-called "objective" quantitative methods are not inherently more reliable than expert human judgments. Williams and Leatham (2017) cautioned against giving too much credence to citation analysis in mathematics education, noting that "at a minimum, the literature raises questions of whether citation-based indices are valid and meaningful in our field and how they compare with other ranking methods" (p. 372).

Despite the significant problems outlined above, citation-based measures are increasingly being used to compare and rank individual academics or even entire academic departments and disciplines. Such ill-advised evaluation practices can have perverse consequences. For example, researchers whose universities evaluate their performance on the basis of journal impact factors or quantitatively derived rankings can be exploited by predatory publishers that promise fast peer-reviewing without the full editorial and publishing services of a legitimate journal. Early career researchers, doctoral students, and academics in developing countries are especially vulnerable to these unethical practices.

A different kind of problem that arises from attempts to evaluate scholarly work in mathematics education concerns the practice-engaged nature of our field (Nivens & Otten, 2017). Thus citations in scholarly journals are not the only way of measuring impact: in addition, researchers in mathematics education value dissemination of their scholarship in practitioner journals, through teacher education and professional development work, and by influencing education policy development.

C. What solutions can be proposed?

Recommendation 1

ICMI does not support reliance on only quantitative measures of research quality, and in particular citation analyses, to evaluate scholarly work in mathematics education. ICMI supports the IMU's (2014) argument that "nothing (and in particular no semi-automatised pseudo-scientific evaluation that involves numbers or data) can replace evaluation by an individual who actually understands what he/she is evaluating". Education in general and mathematics education in particular are grounded in diverse cultures and social contexts. Yet the richness and effectiveness of the mathematics education communities worldwide depend on this diversity.

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Evaluating the contributions of individual researchers to advancing knowledge therefore requires different and complementary approaches in order to do justice to these complexities. At the very least, any quantitatively based rankings of journals should be supplemented with qualitative judgments informed by the expert survey of journals conducted by Williams and Leatham (2017).

Recommendation 2

Analysis of journal citation data leads to flawed measures of academic impact. Alternative impact measures are being developed in some countries, where impact is defined in terms of "the demonstrable contribution that research makes to the economy, society, culture, national security, public policy or services, health, the environment, or quality of life, beyond contributions to academia" (Australian Research Council, 2012). These broader measures of impact should be included in any evaluation of scholarly work in mathematics education.

Recommendation 3

Following on from the previous recommendation, ICMI supports broadening the scope of evaluation of scholarly work to recognize academic activities that influence practice and policy in mathematics education.

**TEACHERS OF MATHEMATICS WORKING AND LEARNING
IN COLLABORATIVE GROUPS**

ICMI STUDY 25 - DEADLINE: JULY 19, 2019
<http://icmistudy25.ie.ulisboa.pt/>

4. ICME15

ICME15 will take place in Sydney, Australia on July 7-14, 2024. Start packing!

The convener of ICME15 is Professor **Kim Beswick**, Head of the School of Education, University of New South Wales, Sydney.



The Chair of the Local Organizing Committee is **Will Morony**, former CEO of the Australian Association of Mathematics Teachers.



Convention center – ICME15 site

Kim, Will and their teams will make a presentation/invitation at the closing ceremony of ICME14, on July 19, 2019 in Shanghai.

5. Once upon a time... Historical vignettes from the ICMI Archives: Episodes from the Freudenthal era – Bernard Hodgson, Curator of the ICMI Archives (former ICMI SG)

In his plenary talk delivered at the symposium held in Rome in 2008 on the occasion of the centennial of ICMI, Hyman Bass (ICMI President 1999-2006) uses the expression “Freudenthal era” ([1], p. 10) – from the name of Hans Freudenthal (ICMI President 1967-1970) – to refer a particularly active period in the life of ICMI. It corresponds to a time when mathematics education was emerging as a bona fide scientific and academic discipline, ICMI being at the international level an important player in that connection.

Emphasis was then put less on comparative studies of national curricula, as had been the case during the first decades of ICMI, and more in particular on the classroom interactions between teachers and students (or pupils).

The spirit of the time is well captured in a series of resolutions adopted at the first International Congress on Mathematical Education (ICME) held on Lyon in 1969, as can be seen for instance in the following statement:

(5) The theory of mathematical education is becoming a science in its own right, with its own problems both of mathematical and pedagogical content. The new science should be given a place in the mathematical departments of Universities or Research Institutes, with appropriate academic qualifications available.

Scan from the ICME-1 Proceedings [2], p. 284 (Source: IMU Archive)

The instigation of the ICME congresses, under the dynamism and vision of Freudenthal, is clearly one of his major accomplishments during his ICMI presidency. Freudenthal’s main motivation was his dissatisfaction with the way educational issues were addressed at the quadrennial international congresses of mathematicians.

Another of his achievements is the launching of what was to become one of the main journals devoted to research in mathematics education, Educational Studies in Mathematics, not formally created under the auspices of ICMI but clearly with its assistance ([3], p. 259). Here again, Freudenthal was displeased, this time with the discussion of educational matters in *L’Enseignement Mathématique*, the official organ of ICMI since its inception in 1908.

As testified by several documents from the ICMI/IMU Archive, those most significant initiatives were taken by ICMI in isolation from IMU, the International Mathematical Union, in spite of the formal existence of ICMI as a commission of IMU. In a letter to Freudenthal's successor as ICMI President, Sir James Lighthill, IMU President Henri Cartan lamented this absence of communication: "During the four years when I was President of IMU, I regretted on many occasions this lack of reciprocal information between IMU and ICMI. In particular, the decision to hold special international congresses on mathematical education, independent from the regular international congresses of mathematicians, was taken by ICMI without consulting IMU." ([4]).

In many ways, Freudenthal can be seen as acting as president more or less by himself. In a previous letter to Lighthill, Cartan had even described as unsatisfactory the relationship between Freudenthal and the Secretary of ICMI, André Delessert, who, in Cartan's words, had become a "simple letterbox" of the president ([5]). This perception is reinforced by a comment from Delessert himself who, in a letter to IMU Secretary Otto Frostman ([6]), explains that he is not so well informed of what is being prepared under the ICMI Executive Committee, as ICMI secretarial work is being taken care of by Freudenthal's secretariat.



Hans Freudenthal (1905-1990)

Photo ID 1221 (1969)



Henri Cartan (1904-2008)

Photo ID 7471 (1968)

(Source: MFO, Oberwolfach)

Je signale enfin que, pour l'essentiel, le travail de secrétariat de la CIEMI est effectué par le secrétariat du Prof. Freudenthal. Cela explique que je ne sois pas toujours très bien informé de ce qui se prépare.

Scan from a letter of Delessert to Frostman [6] (Source: IMU Archive)

On the occasion of ICMI Centennial celebration, I had the opportunity of interviewing Sir Bryan Thwaites, member of the ICMI Executive Committee during Freudenthal's presidency. When asked about the dynamics inside that EC, and in particular about what happened during the EC meetings, Thwaites replied: "You know, I can't really think of any meeting of the whole Executive Committee. In Freudenthal's time, when he was the chairman, he certainly ran it as his own fiefdom. And he didn't easily take into account other people's views." ([7], Part 1, approx. 3 min 15 s)

I leave the final word of this saga to Cartan, reacting to some non-trivial actions taken by Freudenthal very close to the end of his term as ICMI President. In a letter to Secretary Frostman ([8]), the IMU President launches his comments with a cri du cœur: "Freudenthal me donne encore du souci." ("Freudenthal again causes me worries.")

Sources

- [1] Bass, H. (2008). Moments in the life of ICMI. In M. Menghini, F. Furinghetti, L. Giacardi, & F. Arzarello (Eds.), *The first century of the International Commission on Mathematical Instruction (1908-2008). Reflecting and shaping the world of mathematics education* (pp. 9-24). Rome: Istituto della Enciclopedia Italiana.
[www.mathunion.org/icmi/digital-library/other-icmi-conferences-proceedings]
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6. Survey of the Education Committee of the European Mathematical Society

Jürg Kramer, Chairman of the Education Committee of the European Mathematical Society (EMS) addressed ICMI with the request to distribute a worldwide call inviting mathematics educators and mathematicians interested in mathematics education to participate in a survey EMS is now conducting. The survey is about the problem of transition of high school students to universities. The announcement and invitation follows.

Survey by the EMS Education Committee

Student transition from school-level mathematics to university-level mathematics, often referred to as the secondary-tertiary transition (STT) is an enduring, complicated and multi-faceted process. STT is a long-standing issue of concern, which has merited significant attention in mathematics education research and practice. The EMS Education Committee recognized that our knowledge about successful ways of dealing with STT is still insufficient and that moving forward requires a large-scope effort on the part of all parties involved, including mathematics lecturers, school teachers, education researchers, policymakers and students in transition.

As part of this effort, the Committee is conducting a survey among mathematicians. The goal of the survey is to collect and report to the mathematics community information needed in order to devise national and international actions that can essentially improve the state of the art with respect to STT.

We would be thankful to you if you distributed the survey below among the members of your national mathematical societies. The completion of the survey takes about 15 minutes. The survey is open until September 15, 2019.

https://docs.google.com/forms/d/e/1FAIpQLSd_cxoDW63m1h7nmdacQkhtWS8cGHH84K4a8OU-fWVnqIEuGJA/viewform

For more background information about STT, we refer to

<http://euro-math-soc.eu/sites/default/files/STT-survey-%2015-02-2019.pdf>

7. Upcoming Events

- The next PME Annual Conference will take place in Pretoria, South Africa, from July 7 to 12, 2019. <http://www.igpme.org/index.php/annual-conference>
- The International Commission for the Study and Improvement of Mathematics Teaching, an ICMI Affiliated Organization announces the CIEAEM71 to be held in Braga, Portugal (at Instituto de Educação da Universidade do Minho, Campus de Gualtar) on July 22-26, 2019. The theme of the conference is Connections and understanding in mathematics education: Making sense of a complex world. <http://www.eventos.ciec-uminho.org/cieaem71/>
- Fifteenth bi-annual conference on Elementary Mathematics Teaching, SEMT '19, to be held from August 18-22, 2019, in Prague. <https://www.semt.cz/>
- Sixth International Conference on the History of Mathematics Education (ICHME-6) CIRM, Marseille (France), September 16-20, 2019. https://ak-mg-u.uni-mainz.de/files/2019/01/ICHME_6_1st-Announcement_CfP.pdf
- ICMI Study 25: Teachers of Mathematics Working and Learning in Collaborative Groups to be held in Lisbon, Portugal, February 3-7, 2020. <http://icmistudy25.ie.ulisboa.pt/>
- 14th International Congress on Mathematical Education (ICME14), from July 12 to 19, 2020, Shanghai, China, <http://www.icme14.org/static/en/index.html>
- ICME15 will take place in Sydney, Australia on July 7-14, 2024.

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