



THE 27TH ICMI STUDY

MATHEMATICS EDUCATION AND THE SOCIO-ECOLOGICAL

ANNOUNCEMENT OF THE DISCUSSION DOCUMENT

1. Overview of the Study

This document is a short version of the Discussion Document announcing the 27th Study to be conducted by the International Commission on Mathematical Instruction (ICMI). The complete Discussion Document can be found on the Study website: <https://icmistudy27.sciencesconf.org>.

As a named topic, the ‘socio-ecological’ is relatively new compared to many others in the field of mathematics education. Yet, as demonstrated in the online 2023 [ICMI symposium](#), there is growing recognition of the urgent need for, substantial interest in, and commitment to research that explores what is and might be the role of mathematics and mathematics education in multiple, intersecting, social, political, and ecological issues such as climate change, poverty, inequality, health crises, discrimination and marginalisation, and totalitarianism. The topic of ICMI Study 27, ‘Mathematics Education *and* the Socio-Ecological,’ locates mathematics education *in* the complexity of social and ecological interdependencies, or frames mathematics education within the socio-ecological. This includes, for example, interdependent relations between all humans (individual and community; bodies, thoughts, emotions); the living and inanimate natural world; material technologies; languages; and concepts. These relations cross multiple scales of space (local, regional, national, global) and time (pasts, presents, futures). The complexity of bringing together the social-ecological and mathematics education, (re)produces a number of tensions. Such tensions are not yet well understood (beyond simple binaries), with considerable methodological, empirical, and ethical implications. We view these tensions as creative, as generating new questions about and for mathematics education, and prompting new imaginaries of presents and futures.

ICMI Study 27 aims to explore different theorizations of the socio-ecological and the role of mathematics education therein, and the implications for mathematics education research and practice.

It will bring together – in a Study Conference and culminating in a ICMI Study volume based on the Conference activities – an expert reference group comprising scholars, with diverse representation within the ICMI community, and across mathematics education sites and contexts. The task of this group is to reflect on ‘the state of the art’ by analysing the growing research and practice in the areas of mathematics education and the socio-ecological, offered from diverse traditions including, and not limited to: critical mathematics education; decoloniality; ethnomathematics; feminist thought; Indigenous ways of knowing; and mathematical modelling. Furthermore, the Study hopes to harness such contributions and anticipate new possibilities, questions, and recommendations for research, innovation and action for mathematics education located in the complexity of social and ecological interdependencies. The Study will build community (including interdisciplinary relations) and open space towards new directions in mathematics education, as it relates to the socio-ecological at local and international levels.

The Study is arranged around four singular, yet related themes, each with subthemes. Each theme invites engagements with notions of the social and ecological *and* their interdependencies; consideration of tensions emerging from mathematics education positionings in these complex relations; and asks of the thinking and practices of mathematics education specific questions related to: knowledge; curriculum; pedagogy; learning materials; professional development opportunities; philosophy; theory; methodology; and so on. Full theme descriptions are available in the Discussion Document on the Study website: <https://icmistudy27.sciencesconf.org>.

Theme A. Aims of mathematics education

Sub-theme A1. Examining the aims of mathematics education

Sub-theme A2. Examining mathematics as a subject of education

Theme B. Scales of mathematics education

Sub-theme B1. Relations between the local/global, historical, ecological, and political

Sub-theme B2. Curriculum innovations and different voices located in the socio-ecological

Sub-theme B3. Learning from site-specificities

Theme C. Resources for and of Mathematics Education

Sub-theme C1. What and how resources are/may be used in relation to socio-ecological concerns

Sub-theme C2. How resources are embedded within histories, values and ideologies

Theme D. Mathematics Education Futures

Sub-theme D1. Contexts and communities of education that can/have yet to be imagined

Sub-theme D2. Knowledges, curriculum and pedagogies that can/have yet to be imagined

Sub-theme D3. Practices and ethics of mathematics education research that can/have yet to be imagined

2. Call for Contributions to ICMI Study 27

The International Program Committee (IPC) for ICMI 27 Study invites submissions from across the globe, of those working on issues in mathematics education that span social (including political) and ecological (environmental) problems, and related ethical concerns. We encourage collaborations involving researchers, teachers, teacher educators, policy makers, and other stakeholders from diverse contexts and sites of education. Empirical and theoretical contributions (we value those that are analytical and innovative, rather than solely descriptive) should primarily respond to one of the four study themes, and a subtheme therein, as described in Section 1: (A) Aims of mathematics education; (B) Scales of mathematics education; (C) Resources of and for mathematics education; and (D) Mathematics education futures.

Authors should nominate the theme and one sub-theme in which they would like their paper considered, by examining the content and questions outlined in the topic sections presented above. It may be the case that interconnections between sub-topics emerge and warrant attention; consequently, papers may be re-allocated by the IPC if beneficial.

2.1 Conference location and dates

The ICMI Study 27 Conference will take place from January 22 (Wednesday) to January 26 (Sunday), 2025, in Quezon City, Philippines. All details, including registration fees will be available on the Study website: <https://icmistudy27.sciencesconf.org>.

As an IPC we grapple with the ethical contradictions in relation to, on the one hand, the carbon and wider ecological impact of an in-person conference and, on the other hand, the inclusivity that comes from generative in-person engagement in an ICMI Study. While acknowledging their limitations, we seek to make various gestures of ‘mitigation’: in reducing travel for the Study overall, we have chosen to prioritise a small, in-person Study Conference; as an IPC, we have met virtually to create this

document; we are committed to attending to the ecological footprint of the Conference itself; we will look to offering opportunities for individual and collective action towards mitigation, during the Conference; and a Study aim is for the generative potential of discussions to work towards addressing socio-ecological priorities beyond the Conference.

2.2 Submission

A template for the submission of papers is available on the 27th ICMI Study website (<https://icmistry27.sciencesconf.org>), on the ‘Call for Contributions’ page. Papers have to be written in English (the language of the Study Conference) according to the template instructions, with a maximum of 8 pages.

Consistent with the aims of ICMI studies to be inclusive and to grow the field, the IPC invites early career researchers to engage in a pre-submission process. Assistance will be offered to scholars who can show they have limited academic support. This assistance does not include the writing of the text in English, and we encourage research collaborators to support one another as may be needed.

2.3 Deadlines

Submissions must be made online no later than *June 15, 2024*, but earlier if possible. Papers will be reviewed and decisions made about invitations to the conference. Notifications of decisions will be sent to the corresponding/main author between *July 30 and August 15, 2024*.

Information about the venue, registration, costs, travel, and accommodation will be made available on the 27th ICMI Study website (<https://icmistry27.sciencesconf.org>).

Summary of dates:

1. Call for proposals (paper submission): from February 2024
2. Pre-submission support deadline: May 30, 2024
3. Deadline for proposals (paper submission): June 15, 2024
4. Invitations to participate mailed: between July 30 and August 15, 2024
5. Registration: opens on July 30, 2024, and closes November 1, 2024
6. Proceedings published online: December 31, 2024
7. Conference Opening: January 22, 2025

2.4 Beyond the Submission of Contributions

Outcomes from the conference activity provide the foundations for an edited volume published open access by Springer as part of the New ICMI Studies Series. While the volume will focus on the four themes and the contributions and discussions about these in the Proceedings and at the Conference, the final organisation and authorship of the volume will only take shape following, and as a consequence of, the discussions raised during the Conference. It must be appreciated that there is no guarantee that papers accepted in the Study conference proceedings will appear in the volume. Furthermore, chapters in the volume may be an amalgamation of several presented papers and not all participants in the Conference are guaranteed to become co-author of a chapter in the study volume. At the same time, the IPC will be looking for some participants to take significant writing roles in the Study volume.

3. Members of the International Program Committee

Co-chairs

Alf Coles (UK, alf.coles@bristol.ac.uk)

Kate le Roux (South Africa, kate.leroux@uct.ac.za)

IPC Members

Marcelo Borba (Brazil, marcelo.c.borba@unesp.br)

Arindam Bose (India, arindam.bose@tiss.edu)

Vince Geiger (Australia, vincent.geiger@acu.edu.au)

Rochelle Gutiérrez (USA, rg1@illinois.edu)

Mariam Makramalla (Egypt, mariam.makramalla@ngu.edu.eg)

Armando Solares-Rojas (Mexico, asolares@cinvestav.mx)

Nathalie Sinclair (Canada, nathalie_sinclair@sfu.ca)

Paola Valero (Sweden, paola.valero@su.se)

Catherine P. Vistro-Yu (Philippines, cvistro-yu@ateneo.edu)

Ex-officio members

Frederick K.S. Leung (ICMI President, Hong Kong SAR, icmi.president@mathunion.org)

Jean-Luc Dorier (ICMI General-Secretary, Switzerland, icmi.secretary.general@mathunion.org)