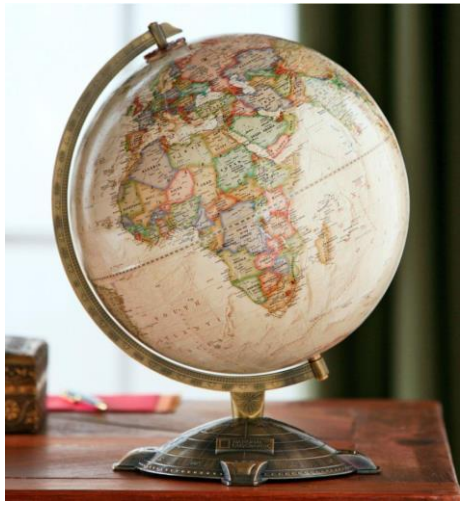


Connecting Math Educators from across the Globe: Resources, Lessons and Future Work

MARIA HERNÁNDEZ — THE NC SCHOOL OF SCIENCE AND MATH

GAIL BURRILL — MICHIGAN STATE UNIVERSITY

SOLOMON FRIEDBERG — BOSTON COLLEGE

Introduction to USNC/MI

THE U.S. NATIONAL COMMISSION ON MATHEMATICS INSTRUCTION

The **International Commission on Mathematics Instruction (ICMI)** is a commission of the International Mathematical Union (IMU), which fosters efforts to improve the quality of mathematics teaching and learning worldwide.

The National Academy of Sciences is the U.S. adhering body of ICMI and it maintains its relationship with the commission through the U.S. National Commission on Mathematics Instruction.

The charge of the US NC/MI includes…

*Purpose: **To plan, recommend, and encourage projects of international importance in mathematical sciences education.**

Its duties include:

*To inform both the Academy and the United States community of mathematics educators about ICMI (International Commission for Mathematical Instruction) affairs.

*To effect appropriate participation in activities of the (ICMI) through the National Academy of Sciences--National Research Council.

*To plan and sponsor scientific meetings in the United States in cooperation with ICMI.

Overview and History of PCMI International Seminar

2001organized by Joan Ferrini-Mundy and Gail Burrill, Michigan State University; originally funded by Wolfensohn Foundation

Establish an ongoing dialogue that examines, in practical and grounded terms, the interplay of policy and practice in diverse systems of mathematics education. Participants in the Seminar design and implement a series of reflections on common problems, along with suggestions for policy and practice and innovative offerings to share with the international community. The set of countries represented in the Seminar changes over time, with continuing attention to diversity and variety in educational challenges. Goals of the Seminar:

- Promote open discussion of issues affecting the mathematics education policies and practices of each nation,
- Identify common issues faced across national contexts,
- Identify common sources of direction and support for efforts to address problems, and search for common solutions to related problems

PCMI International Seminar: Bridging Policy and Practice in Mathematics Education Around the World

Operating Principles:

Protocols to ensure everyone has the opportunity to share

A mathematician/mathematics educator and a high school teacher per country

Identify Challenges/ideas that resonated

Focus not on country background and details- these were expected to emerge in the discussion

Eventually became a focus on a mathematical content area and discussion shaped by questions posed in relation to that content

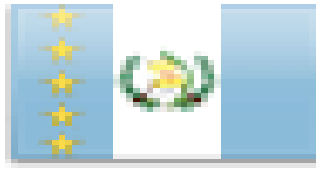
Bridging Policy and Practice in Mathematics Education Around the World: 2017

Organizers: Gail Burrill (Michigan State University) and Rick Scott (New Mexico State University)

Respondent: Solomon Friedberg (Boston College)

Focus on the teaching and learning of probability: What is the status of probability in the K-12 curriculum in your country?


Czech Republic


Guatemala


Nigeria


Philippines


Spain


United States

Funded by NSF Grant DRL-1445101

Bridging Policy and Practice in Mathematics Education Around the World: 2017

What is the status of probability in the K-12 curriculum in your country? And in particular:

- How are prospective teachers prepared for teaching probability in your country? How do probability topics fit into a tertiary mathematics program at the introductory level?
- Is probability more closely tied to mathematics or to statistics in your country? How are the ideas of chance related to quantitative literacy such as risk involved with medical procedures or the use of lotteries into the school curriculum?
- What is the current use of technology in classrooms in developing understanding of probabilistic concepts and procedures in your country? What potential future roles do you see for technology in developing understanding of probabilistic concepts and procedures in your country?

Bridging Policy and Practice in Mathematics Education Around the World: 2017

Emerging Issues/Central Themes

- The presence of probability in the school curriculum in the participating countries,
- How it is presented, and why it is an important component of the curriculum, implications for the curriculum and for teacher preparation and development.

Briefs:

- The Importance of Teaching Probability
- Linking Probability and Statistics at the K-12 Level
- Teaching Teachers to Teach Probability

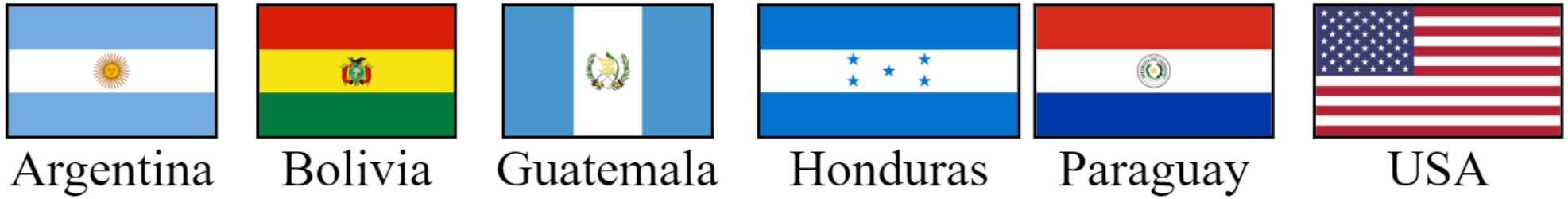
Work of Creating Briefs

Lessons and Surprises

Bridging Policy and Practice in Mathematics Education Around the World: 2016

Organizers: Gail Burrill (Michigan State University) and Rick Scott (New Mexico State University)

- What is the status of Statistics in the K-12 curriculum the USA?
- What is the current use of technology in classrooms in developing?
- What potential future roles do you see for technology in developing understanding of statistical concepts and procedures in the USA?



Outcomes and Lasting Impressions

- Connecting with and learning from teachers and researchers from across the globe.

- Honduran Connection

- Cultural considerations in engaging students in a Statistics lesson

- Use of the briefs/lessons by teachers and professors in their work with in-service teachers and masters students

Link to briefs

Mathematics Education National Congress Honduras

Sample Lesson

Brief on Broadening Teacher Experiences in Preparation for Teaching Statistics

Example - Fútbol (Soccer): A Statistical Investigation

The following example was adapted from an activity published in a report written by two preservice teachers who carried out their first teaching practices in the 4th year of an Argentinean secondary school (14-15 years old). The whole report is available at: http://www2.famaf.unc.edu.ar/institucional/biblioteca/trabajos/6085/17150.pdf (Nanini &Sierra, 2014).

The school practice lasted four weeks, and we will concentrate on the introductory activity. The main goal was to allow the students without any theoretical knowledge related to analysis of statistical data to analyze tables and histograms of data related to fútbol (soccer). The task was prepared in 2014 just before the FIFA World Cup in Brazil was finished. The lesson assumed that students would have access to a spreadsheet tool.

The fútbol players included in the activity are Lionel Messi, an Argentinian who plays in Spain, and Cristiano Ronaldo, a Portuguese who also plays in Spain. By the time of the implementation of the activity, Messi was playing for FC Barcelona and Ronaldo for Real Madrid Club.

International Commission on Mathematical Instruction (ICMI)

- Is a worldwide organization devoted to research and development in mathematical education at all levels. Its purpose is:
- To promote international programs of activities and publications that improve the collaboration, exchange and dissemination of ideas and information on all aspects of the theory and practice of contemporary mathematical education.
- To foster efforts to improve the quality of mathematics teaching and learning worldwide.
- To support and assist the International Congress on Mathematical Education (ICME) and meetings or conferences of ICMI affiliated organizations.

International Program Committee(IPC) for ICME-14

Chair:

- **Jianpan Wang** (ICME-14 Congress Chair), China

Members:

- **Jill Adler** (ex-officio member, ICMI President), South Africa
- **Abraham Arcavi** (ex-officio member, ICMI Secretary General), Israel
- **Jiansheng Bao** (ICME-14 LOC Co-chair), China
- **Daniel Chazan**, USA
- **Faiza Chellougui**, Tunisia
- **Marta Civil**, USA
- **Alicia Dickenstein** (IMU Vice-President), Argentina
- **Yufeng Guo**, China
- **Anjum Halai**, Pakistan/Tanzania
- **Gabriele Kaiser** (ICME-13 IPC Chair), Germany
- **Caroline Lajoie**, Canada
- **Celi Espasandin Lopes**, Brazil
- **Thomas Lowrie**, Australia
- **Maria Alessandra Mariotti**, Italy
- **Takeshi Miyakawa**, Japan
- **Frode Rønning**, Norway
- **Ewa Swoboda**, Poland
- **Luc Trouche**, France
- **Catherine Vistro-Yu**, Philippines
- **Binyan Xu** (ICME-14 LOC Co-chair), China
- **Ivan Yashchenko**, Russia

ICME History

ICME 1	1969	Lyon, France
ICME 2	1972	Exeter, United Kingdom
ICME 3	1976	Karlsruhe, Germany
ICME 4	1980	Berkeley, United States
ICME 5	1984	Adelaide, Australia
ICME 6	1988	Budapest, Hungary
ICME 7	1992	Quebec, Canada
ICME 8	1996	Sevilla, Spain
ICME 9	2000	Tokyo, Japan
ICME 10	2004	Copenhagen, Denmark
ICME 11	2008	Monterey, Mexico
ICME 12	2012	Seoul, Korea
ICME 13	2016	Hamburg, Germany

Early Career Researcher Day

Provides opportunities to develop research competencies in various fields, establish new contacts, build networks among themselves, and meet and work with international experts in the field. The event will be held one day before the opening ceremony.

See Second Announcement (coming soon for details).

Main Program

By Invitation

- Plenary Activities (lectures/panels)
- Invited Lectures
- Thematic afternoon
- ICME-12 Survey Teams

Papers submitted for presentation; open admission

- Topic Study Groups (TSGs) - organized by the IPC (tentatively September 15)
- Discussion Groups (DGs) (tentatively October)
- Workshops/Experience Sharing Groups (tentatively October)
- Poster Sessions/Round Tables
- Midweek Excursions

Topic Study Groups (TSGs)

- Designed to gather participants interested in a particular topic of mathematics education. organized by teams of IPC invited experts in the field. Papers can be invited or open submission and all accepted will be presented as a regular TSG presentation, short presentation or poster
- 62 topics grouped into two classes running in different timeslots. Participants can select with TSGs (one primary and one secondary) and expected to stay with the two groups throughout all the sessions.
- Topics include content areas by grade/age levels, assessment, technology, special needs, professional development, teacher preparation, semiotics in mathematics, mathematics and creativity, and international cooperation in mathematics as well as many others

Survey Teams:
In-depth look at an aspect of mathematics

ST 1. Survey team on research on university mathematics education

(Chair: Chris Rasmussen (San Diego State University, USA)

ST 2. Survey team on early childhood mathematics education (up to age 7)

(Anita Wagner from Vanderbilt)

ST 3. Survey team on teachers' collective work as a regular school practice for teacher development

ST 4. Survey team on the teaching and learning of mathematical modelling and interdisciplinary mathematics educations

Why attend an ICME?

"Most of the conferences that I attend have a specific focus – adults learning mathematics (ALM), developmental mathematics (NADE), or adult education (AAACE). The breadth of topics at ICME is unparalleled and the opportunity to hear and dialogue with experts from so many areas is wonderful. At the same time, it is one of the very few places that a worldwide collection of mathematics educators can get together in groups of more than 1 or 2 and converse about research, ideas, and collaboration. That in and of itself makes it incredibly valuable to the community and to NSF."

And things keep on

"As you will recall, I was a lucky participant at ICME-13. It was a fantastic experience for me. The experience gave me the idea for a mobile math museum, which is in its beginning stages. We've been taking our exhibits to local elementary and middle school (within a 45 minute drive). A few weeks ago, we went to a MathCounts event in Dubuque, IA." (Mathematician, February 28, 2019)

Travel Grant

Application at the NCTM website

Up to $2750 support for travel to ICME 14 (pending NSF funding)

Deadline September 30, 2019

Important notes

You will need a visa to enter China

Gmail / Google / Whatsapp will NOT work in China unless you have VPN installed – eduroam may work as well

A participant can only play ONE major role (e.g., presenter) in ONE Major activity (one TSG, Survey team, plenary (panel/ lecture), invited lecture) and one role in ONE of the other activities (DG, Workshops, poster, and several other activities that take place at ICME)

Deadlines for submissions will be given in the Second Announcement in early May or June, which will be posted on the website: will typically be in September or October

Board on International Scientific Organizations
U.S. National Commission on Mathematics Instruction

U.S. National Commission on Mathematics Instruction (USNC/MI)

"The U.S. National Commission on Mathematics Instruction (USNC/MI) plans, recommends, and encourages **projects in areas of international importance** in mathematical sciences education."

Moving Forward in **Future International Efforts**

- What would you like to see in mathematics education work?
- What would matter to you?
- What would be worthwhile or exciting to you?

Brainstorm with Your Neighbors

- Discuss your ideas
- Write them on a sticky note
- Place them on the big poster charts in the room.

Continue the conversation…

What topics should we consider for current and future projects?

Email: friedber@bc.edu

Subject line: USNC/MI

http://projects.ias.edu/pcmi/hstp/sum2017/int/

http://projects.ias.edu/pcmi/hstp/sum2016/int/

Thank You

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