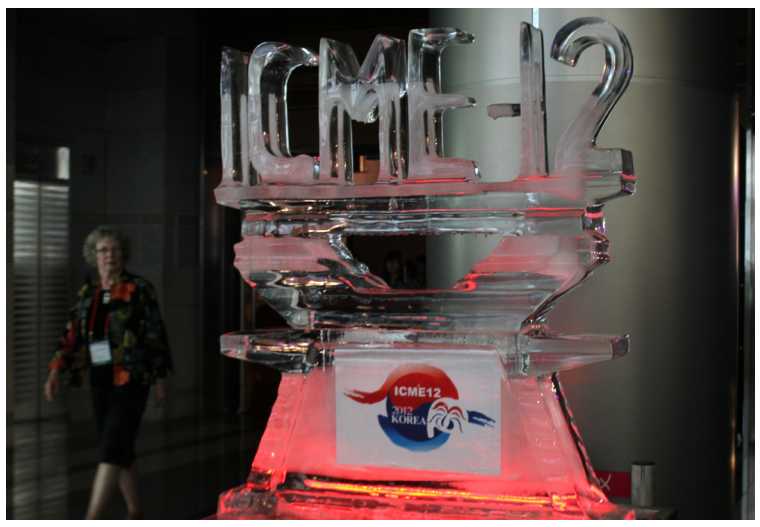
Faces of ICME-12

Welcome Reception



Top photo: Educators, professors, scholars, learners of mathematics gathered inside the hall room for the welcome reception.

Left Photo: A gleaming ice sculpture of ICME-12 stood outside of the Hall.

Right photo: The attendees indulged themselves in the food provided at the standing buffet, as they exchanged greetings to old and new friends.

Opening Ceremony

The room went pitch black as the ceremony commenced, with a traditional Korean five-drum dance, Ogomu, performed by the Kim Joong Ja Dance Team.

As the applause died down, the Chair of the International Program Committee, Cho Sung Je was invited up to give the first opening speech, in which he provided a warm welcome to all ICMI-12 attendees.

He then passed attention to the big screen of President Lee Myung Bak, though he could not attend, who delivered a quick albeit meaningful welcoming message. Citing the necessity of mathematics of the world, President Lee honored ICMI, claiming, "mathematicians are the property of national propensity."

Lee Joo Ho, the Minister of Education, Science and Technology, then gave the next opening speech, emphasizing the changes that the Korean government is soon to implement in regards to mathematical education. He then passed the stage onto the President of IMU, Ingrid Daubechies, who expressed her elation to be of service and support for the ICMI, while saluting all its members and participants involved. The floor was then given to the president of ICMI, Bill Barton, who further stressed the importance of face-to-face communication among all mathematicians and mathematics educators alike, urging all attendees to get involved.

The award ceremony then took place, with Carolyn Kieran of the ICMI Awards Committee taking the stage. She honored the ICMI award recipients, over the past four years, with the Hans Freudenthal Medal and the Felix-Klein Medal for Lifetime Achievement. The 2009 Hans Freudenthal Award went to Yves Chevallard of the Association pour la Recherche en Didactique des Mathématiques (ARDM); the 2009 Felix-Klein Award went to Emerita Gilah C. Leder of La Trobe University; the 2011 Hans Freudenthal Award went to Luis Radford of Université Laurentienne; and the 2011 Felix-Klein Award went to Alan Schoenfeld of University of California, Berkeley.

Each of the said recipients personally expressed their gratitude for the honor bestowed upon them, with Schoenfeld concluding the acceptance speeches with a gratifying final comment, in that he "couldn't think of a better birthday present!"

The opening ceremony ended with a series of operatic performances done by a boy's quartet called Viva Voce, finishing off with traditional Korean folk song, "Arirang."

International Commission on Mathematical Instruction

Tuesday, July 10, 2012

ICME-12 Daily Newsletter

The 12th International Congress on Mathematical Education

Today's Highlight

- Plenary Lecture: Whither the mathematics / didactics interconnection? :Evolution and challenges of a kaleidoscopic relationship as seen from an ICMI perspective (Bernard R. Hodgson, Canada), 9:00~10:00, Hall D2
- National Presentation (15:00~18:30)
  Korea (Conference Room 401), Singapore (Hall E6), USA (Hall E5), India (Conference Room 402), Spanish Cultural Heritage (Conference Room 300)

Announcement

- Affiliated study group: International Organization of Women and Mathematic Education – IOWME (See page 3)
- U.S. National Presentations – Corrections (See page 3)
- For Excursion Course 0 (Visit a school) participants are required to select one school out of one elementary, two middle, and one high school, please visit Tour desk (Foyer of Hall D) by Wednesday.
- For those who want to buy a train ticket for International Group for Mathematical Creativity and Giftedness (MCG) conference which will be held in Pusan on July 15-18, please come to the foyer of Hall D1 on July 10 at 12 pm.
- Changes of Program on TSG18: Tuesday, 11:00~11:20, Srisurichan Rachaya's presentation is added. Please take the revised program from Ask Me desk.

Key Speakers of Today

Bernard R. Hodgson

Bernard R. Hodgson is Professeur titulaire in the Department of Mathematics and Statistics at Université Laval (Québec, Canada), where he has been on the faculty since 1975. The position he occupies is specifically related to the education of school teachers. His research and teaching interests include mathematical logic (his PhD field) and theoretical computer science, mathematical education (in particular the mathematical preparation of primary and secondary school teachers), history of mathematics education, and history of mathematics.

Prior to this plenary lecture at ICME-12, he was an invited speaker at the International Congress of Mathematicians (1990 and 1998) and at ICME-7 (1992). He has received awards for his contributions to mathematical education from the Association mathématique du Québec (association of pre-university teachers in the province of Québec) as well as from the Canadian Mathematical Society (CMS). He is the 2012 recipient of CMS Graham Wright Award for Distinguished Service.

He is the main author (jointly with L. Rogers, S. Lerman and Lim-Teo S.K.) of a chapter on "International organizations in mathematics education" to appear in the forthcoming Third International Handbook of Mathematics Education. He was on the founding team of Accromath and sits on its Editorial Committee. This journal, which is freely accessible online (www.accromath.ca), was launched in 2006 and is intended for pre-university teachers and students. Accromath has received numerous awards, including for the quality of its graphic design.

He has played key roles in a number of organizations, including as Vice-President of CMS, President of the Canadian Mathematics Education Study Group, and Secretary-General, from 1999 to 2009, of the International Commission on Mathematical Instruction (ICMI). He has also been a member for six years, including as President from 2005 to 2009, of a commission responsible for the quality assessment of all new university programmes proposed to be established in the province of Québec.

Lecture Title: Whither the mathematics / didactics interconnection?
When & Where to find: Hall D2 from 9:00 to 10:00

Zalman Usiskin

Zalman Usiskin is a professor emeritus of education at the University of Chicago, where he was an active faculty member from 1969 through 2007 and continues as the overall director of the University of Chicago School Mathematics Project (UCSMP), a position he has held since 1987. He is also a co-PI of the Center for the Study of Mathematics Curriculum.

His research has focused on the teaching and learning of arithmetic, algebra, and geometry, with particular attention to applications of mathematics at all levels and the use of transformations and related concepts in geometry, algebra, and statistics. His interests cover all aspects of mathematics education, with particular emphasis on matters related to curriculum, instruction, and testing; the selection and organization of content; comparison studies of students using different curricula; international mathematics education; teacher education; the history of mathematics education; and educational policy.

He is the author or co-author of over 150 articles and other papers on mathematics and mathematics education, dozens of books and book-length research monographs, including textbooks for each of grades 6 through 12. He has taught mathematics in nine different secondary schools. He is also the co-author of a mathematics text for advanced undergraduate and graduate students interested in gaining deeper knowledge about high school mathematics. In recent years, he directed the development of the 3rd edition of the UCSMP curriculum for grades 6-12.

His service includes terms on the Mathematical Sciences Education Board of the National Research Council, the Board of Directors of the National Council of Teachers of Mathematics (NCTM), and the United States National Commission on Mathematics Instruction, which he chaired from 1998 to 2001. From 1995 through 2004 he was on the test-development committee of the National Assessment of Educational Progress.

Among the many honors he has received are the Glenn Gilbert National Leadership Award from the National Council of Supervisors of Mathematics in 1994, a Lifetime Achievement Award from NCTM in 2001, and the Distinguished Life Achievement Award from the Illinois Council of Teachers of Mathematics in 2010.

Lecture Title: What does it mean to "Understand" some mathematics?
When & Where to find: Hall E5 from 13:30 to 14:30

Gilah Leder

Gilah Leder is an internationally recognized scholar. She is now an Adjunct Professor at Monash University and Professor Emerita at La Trobe University. She has held senior visiting positions at universities in the United States and Europe (including, concurrently with other positions, as a guest professor in Sweden 2002-2004) and has been a sustained contributor to the Swedish and Nordic Graduate Schools in Mathematics. She is Past President of the Mathematics Education Research Group of Australasia (1994-1998) [MERGA] and of the International Group for the Psychology of Mathematics Education (1999-2001) [PME], a Fellow of the Academy of the Social Sciences in Australia (since 2001), and a life member of MERGA. She was awarded the 2009 Felix Klein medal. Other indicators of the high regard in which she is held by her peers include: a long list of invited chapters, invitations to international editorial boards of high impact mathematics education research journals, and her inclusion in Notable Women in Mathematics: A Biographical Dictionary. Her research has focussed on gender issues in mathematics education, on the interaction between learning and assessment, on affect, and on exceptionality – predominantly high achievement. She has published widely in each of these areas. Alone, or jointly, she has written the "state of the art" chapter on mathematics and gender for a number of major international handbooks and encyclopaedia.

Recent publications include:

Leder, G. C. (2011). Mathematics taught me Einstein's old cocktail of inspiration and perspiration: Mathematically talented teenagers as adults. Canadian Journal of Science, Mathematics and technology Education, 11(1), 29-38.

Leder, G C & Forgasz H J (2012). The gendering of mathematics: Views from the street. In W. Blum, R B Ferri, & K Maas (Eds.) Mathematikunterricht im Kontext von realität. Kultur und lehrerprofessionalitität (pp. 166-176). Wiesbaden: Vieweg+Teubner Verlag

Forgasz, H. J., & Leder, G. C. (2011). Equity and quality of mathematics education: Research and media portrayals. In B. Atweh, M. Graven, W. Secada, & P. Valero (Eds.), Mapping equity and quality in mathematics education (pp. 205-222). Dordrecht: Springer.

Lecture Title: Mathematics for all? The case for and against National Testing
When & Where to find: Room 401 from 13:30 to 14:30

Masami Isoda

Masami Isoda, The University of Tsukuba, Japan, is an internationally well-known authority in the field of Lesson Study, an active branch of Mathematics Education. He has been a co-representative of Asia Pacific Economic Cooperation (APEC) Lesson Study project since 2006; a member of the advisory board of HPM (History and Pedagogy of Mathematics) since 2002; and a member of the IPC on Asian Technology Conference in Mathematics (ATCM) since 1998. He has been collaborating with researchers and teachers in Central and South America, South East Asia and Pacific including Australia, and contributed to enrich their mathematics education. His latest book 'Mathematical Thinking: How to develop it in the classroom' (2012) directly supports classroom practice.

To enable teachers to develop good practices, he established a theory for understanding, 'Hermeneutic Efforts' in 2000 concerned with the activity of interpretation to understand others. From a philosophical point of view, it bridges the alienation between constructivism (solipsism) and social-constructivism (materialism) which is necessary for developing the productive lesson study community among teachers and students with a shared objective for teaching and learning. This was partially explained in English with Abraham Arcavi in ESM (2007), and will be explained further using examples from history of mathematics in his lecture. Moreover, as the chief editor of the Journal of Japan Society of Mathematical Education, he edited the special issues focused on Lesson Study for designing curriculum and teaching.

In recognition of his contribution, he has received several awards which include: award by the Minister of Education (MEXT), Japan, for his software in 2005; award by the Japan Publishers Association for his book 'Curves: Properties, History and Construction' co-authored with Maria G. Bartolini Bussi (2009) as the best book of the year in the area of natural sciences in 2010; and an Honorary Doctorate from Khon Kaen University for his contribution to the mathematics education in Thailand in 2011.

Lecture Title: Designing problem solving teaching approach for understanding mathematics: Hermeneutics, meaning and procedure for objectifying subjective
When & Where to find: Hall E1 from 13:30 to 14:30

Mathematical Carnival

As a part of the program directed towards children and general public, the LOC of ICME-12 will arrange a mathematical carnival during the conference days of ICME-12. We hope that local families, teachers and families of participants will come to experience these fun mathematical activities. The carnival will be located at the conference center. Each booth will have a different theme, and the booths will be organized as a journey through different worlds of mathematics.

· Exhibition of Mathematics Manipulative and Art

Mathematics Manipulative and Art, developed and designed by Korean mathematics teachers and members of Korean Origami Association etc., will be exhibited.

· Student Workshops

The purpose of student workshops is to stimulate curiosity and to enhance positive thinking toward mathematics by experiencing basic principles of mathematics. The activities will be organized so that some students, teachers or a general public can volunteer to engage directly in an activity, while others participate as audience.

· Mathematical Plaza

Each mathematics classroom of Tokyo, Hong Kong, Shanghai, and Armidale will be televised real-time on Tue, Wed, and Sat respectively. Before televising, a representative from each city will introduce the classroom for 10 minutes in front of the audience and after a 50 min class; s/he will answer the questions from the audience for 30 minutes.

· Non-Commercial Booths

The LOC will provide 50 booths for non-commercial exhibitors, some of which are taken by ICMI, 5 NP teams (USA, India, Singapore, Korea, Spanish Cultural Heritage), 3 Asian countries/Regions (China, Japan, ASEAN) and 2 Asian Associations (EARCOME-6 and APEC Lesson Study). The LOC also selects the rest of the 14 exhibitors based on the evaluation of the application form.

· Commercial Booths

The LOC invites 37 commercial companies who would like to display their products at the Congress.

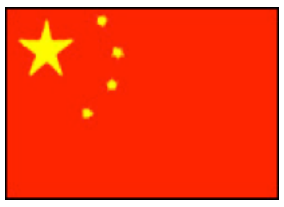
Late afternoons and evenings will target older children and adults. During this time we will have mathematicians talk about math, tailored for a general audience. The LOC invites teachers from all countries to contribute to and participate in the carnival activities. These are the activities that have been tried out with students in class, at mathematics fairs or other events aimed at engaging children in active participation. In this way, we will also have a chance to show how a variety of novel activities might be used as a tool for learning mathematics while having fun!

· Location: Hall D1

· Timetable

Time	July 10 (Tue.)	July 11 (Wed.)	July 13 (Fri.)	July 14 (Sat.)
10:00~10:30				
10:30~11:00	The Association of Mathematical Instruction	Tokyo Classroom Introduction	How to conduct the Lesson study	The Association of Mathematical Instruction
11:00~11:30	The Association of Mathematical Instruction			The Association of Mathematical Instruction
11:30~12:00				
12:00~12:30				
12:30~13:00			Let's Experience the Lesson Study	
13:00~13:30	Armidale Classroom Televising	How to develop Good practice through Lesson Study		Shanghai Classroom Televising
13:30~14:00				
14:00~14:30				
14:30~15:00				
15:00~15:30	Enjoy Mathematics At Elementary School	HongKong Classroom Televising		How to develop and use e-textbook with the freeware dbook?
15:30~16:00				
16:00~16:30			How to Develop Mathematical Thinking in Classroom	
16:30~17:00				ORIGAMICS 2 : Let's Enjoy Paper Folding
17:00~17:30	Let's Read Japanese Elementary School Textbook	Let's Enjoy Japanese Abacus / Soroban		
17:30~18:00			ORIGAMICS 1 : Let's Enjoy Paper Folding	
18:00~18:30				
18:30~19:00				

Mathematics Education All Around the World



China

Curriculum Revision

The Chinese government launched the curriculum reform of basic education in 1999, which was the eighth basic educational curriculum reform since 1949 when the People's Republic of China was founded. On the basis of theoretical study and practical exploration, the Mathematics Curriculum Standards of Full-time Compulsory Education (experimental version) and the Mathematics Curriculum Standards of High School (experimental version) were promulgated in 2001 and 2003, respectively.

Mathematics Curriculum Standards of Full-time Compulsory Education (experimental version) published and implemented in 2001 has made great changes in the content according to the mathematics curriculum during the period of compulsory education from grades 1 to 9. Mathematics curriculum contents are divided into four fields: "Number and Algebra", "Space and Graph", "Statistics and Probability" and "Practice and integrative Application". Mathematics Curriculum Standards of High School (experimental version) (2003) highlights selectivity. Mathematics is no longer divided into traditional areas such as "geometry", "algebra", but directly formed by modules. These modules are further divided into two parts: compulsory courses and optional courses. Among them, compulsory courses contain five modules, and optional courses are divided into four series, each formed by several modules.

The curriculum revision takes place about every ten years. Since 1949, now we have the eighth basic educational curriculum reform. The basic education in China has made satisfactory achievements in the long-term development, and has accumulated much useful experience in the areas of mathematics curriculum and instruction. While developing the mathematics curriculum, some problems which are exposed in mathematics curriculum need to be solved.

A number of prominent problems to be dealt with include the following:

· The educational value of mathematics curriculum was ignored. Curriculum goals, content and evaluation method paid more attention to mastering basic knowledge and skills, and neglected comprehensive quality of students.

· The cultivation of the awareness of innovation in students was ignored, while too much emphasis was put on mathematics drills, and understanding its nature. The experience about process of formation of mathematical knowledge was also not adequate.

· The curriculum contents were partially difficult, deep, old, and overemphasized the form rather than the actual world of students. The textbooks also lacked of concerns on the learning interest of students.

Based on the analysis of problems of mathematics education and exploration of international mathematics curriculum reform, mathematics curriculum reform of basic education started in 1999.

Gifted Education

Gifted education in mathematics plays an important role in education in China. In some schools special classes for gifted students in mathematics have been set up. Special curriculums have been developed and individual teaching would be organized in order to unearth the mathematics talent and bring up students' mathematics perceptive, profound understanding etc. The students also focus on studying international mathematics Olympiad competition. Through the gifted education students could experience how to cooperate each other and how to respect each other.

Regarding the gifted education, schools have their own enrollment criterion, one of which is a paper and pencil test. Many parents believe that their children may be gifted and want to send them in such gifted classes. So in order to prepare such test (enrollment examination) students must visit special private education and practice to solve many difficult mathematics problems. But most of them may not have potential in mathematics, or they have no interesting in mathematics learning or thinking. Through the hard training students maybe lost their normal interesting in learning mathematics, even loathe mathematics.

Many Chinese parents want to their children to be famous in the future or to get the best status. So they pay more attention to basic education. The parents believe their children can reach the target when they achieve the best education (or gifted education).

The national "long term education development planning" (2010-2020) stresses that education should bring up initiative, creative talent in a person; high quality education resources should be reinforced. The policy explains indirectly how important it is to carry out gifted education.

Correspondence to Binyan Xu, East China Normal University,
E-mail: byxu@kcx.ecnu.edu.cn

INTERNATIONAL ORGANIZATION OF WOMEN AND MATHEMATIC EDUCATION – IOWME

Wednesday, July 11, 17:00-18:30

The current status of gender research in the field of mathematics education

17:00-17:10 Opening remarks

17:10-18:10 Guest speakers **Helen Forgazs and Gilah Leder**:
The gender divide: Once more under the microscope

18:10-18:30 Interactive group discussions and closing remarks

Friday, July 13, 17:00-18:30

Business meeting: The future and the role of IOWME

17:00-17:10 Opening remarks

17:10-17:50 Interactive group discussions

17:50-18:10 Election of a new governor, newsletter editor, copy editor, and technology coordinator

18:10-18:30 Closing remarks and celebration

U.S. National Presentations

* Location: Hall E5

Overview of Math Ed in the U.S.: Curriculum Reform

Tuesday, July 10: 15:00~16:30

1. Mathematics Education in the United States 2012 – Katherine Halvorsen, Smith College
2. Evolution and Revolution: From the NCTM Standards to the Common Core State Standards in the U.S. – Michael Shaughnessy, Immediate Past President of the National Council of Teachers of Mathematics (NCTM)
3. Research Perspectives on Mathematics Standards Reform in the U.S. – Mary Kay Stein, University of Pittsburgh

Teaching Math in the U.S.

Tuesday, July 10: 17:00~18:30

1. The "Mathematics Studio": Sustainable School-Based Professional Learning – Linda Foreman, President of the Teachers Development Group
2. Challenges of Knowing Mathematics for Teaching in the United States – Deborah Ball, University of Michigan