

# **Realistic Mathematics Education Conference**

**University of Colorado at Boulder**

**October 12 - 14, 2009**

**~~ Second Announcement ~~**

We cordially invite you to join us October 12 - 14, 2009, in Boulder, Colorado, for the Second Realistic Mathematics Education Conference, held at the University Memorial Center situated on campus in the scenic foothills of the Rocky Mountains. This three-day conference is sponsored by the University of Colorado School of Education and the Freudenthal Institute USA.

Realistic Mathematics Education (RME), widely respected throughout the world as an exemplary approach to mathematics education, is a Dutch approach to design of curriculum, assessment and instruction that has evolved over the last 30 years out of the work of Hans Freudenthal and research faculty at the Freudenthal Institute.

## **Who Should Attend?**

The conference will serve an audience with various roles and interests in mathematics education. The program is organized to address the needs of lead teachers and professional developers; district, state or regional administrators; and university faculty who are engaged in research in mathematics education and/or teach pre-service courses. The content addressed in this 3-day conference ranges from early elementary to secondary level mathematics.

## **Conference Program**

The 2009 RME conference will focus on the principle of progressive formalization, which has been noted in *How People Learn* as a promising approach to mathematics education. Building on thematic strands from the 2005 RME conference in Madison, plenary and interactive breakout sessions will explore more specifically how progressive formalization informs applications in ways that engage the mathematical reasoning of all learners, and support the development and use of formative assessment.

### *Plenary sessions*

Several plenary/keynote sessions have been scheduled for the 3-day conference. Cathy Fosnot, Marja van den Heuvel-Panhuizen, Jan de Lange, and Lorrie Shepard will highlight different perspectives on the application of RME-related design principles in curriculum, assessment, and instruction. Their presentations will further highlight the intersection of theory and practice, and describe how materials and activities that have been designed to promote progressive formalization have been used in school and informal settings.

### *Interactive, breakout sessions*

The conference program will also include at least five 90-minute breakout sessions organized by thematic strands and grade bands. The themes are curriculum, assessment and research. The grade bands are elementary, middle grades, and secondary/undergraduate. These sessions will be conducted in an interactive, workshop style to promote engagement with mathematics problems and activities, study of assessment tasks and student work, review of classroom video, and exploration of computer software. These educational artifacts will be used to exemplify progressive formalization and essential features of RME that promote student learning and understanding. Many of these resources can be used for further development of resources, professional development, or classroom activities.

### *Curriculum*

Instructional materials that embody principles of progressive formalization include the use of context as a starting point for exploration of mathematics to promote informal reasoning, use of language, and students' own representation for the problem. Through guided reinvention students either produce or are introduced to pre-formal strategies and representations that are used to support problem solving at a level that is understood by the learner. Students are motivated to use formal strategies and representations by relating mathematical abstractions to pre-formal and informal representations. Through this process of progressive formalization, students develop a greater understanding of mathematics and how it can be applied to new situations.

Applications of this approach have been used with a broad range of students from undergraduates in courses such as Differential Equations and Linear Algebra to pre-Kindergarten students in nursery school settings. Sessions in this strand will include examples of progressive formalization at these various grade bands and with online instructional systems. More information about design principles for this strand can be found at [www.fius.org](http://www.fius.org) → Design Theory → RME.

### *Assessment*

Teaching for student understanding requires the use of assessment practices that elicit and document student understanding. Such practices require more than the use of tasks that assess student recall of procedures and algorithms. Students need to be able to articulate mathematical connections, reasoning, generalize, and mathematically model realistic situations.

Sessions in this strand will include the design of tasks to assess different types or levels of reasoning, the use of context in assessment, professional development in assessment, and consideration of how to design a balanced classroom assessment program using the assessment pyramid as a guide. More information about design principles for this strand can be found at [www.fius.org](http://www.fius.org) → Design Theory → Assessment.

### *Technology*

Educational technology offers students interactive dynamic tools for exploring, learning, and reinforcing mathematical concepts and skills in ways that cannot be accomplished using chalkboard and paper. In recent years, the research faculty at the Freudenthal Institute have

developed applets and a Digital Mathematics Environment using principles of RME and progressive formalization.

During each breakout, sessions in a computer lab will be available to explore and discuss applets and instructional modules in the Digital Mathematics Environment. Some sessions will focus on the design of instructional modules using this online system. More information about applets and the DME can be found at <http://www.fi.uu.nl/wisweb/en/>

### *Other information*

In addition to the mix of plenary and breakout sessions, ample time for discussion between sessions for informal meetings and professional networking has been planned into the schedule. Monday evening will include dinner at the CU Stadium Club. Tuesday afternoon offers an opportunity for local excursions in the Boulder area. And Wednesday afternoon will include time for meetings with presenters or attendees to support reflection and planning before departure.

### **Registration**

The Conference registration page is: <http://cucs.colorado.edu/confreg/rme2009.html>

**Registrations received by the pre-enrollment deadline of July 15th are required to submit a conference fee of \$295. After July 15th, the standard registration fee is \$350.**

Conference registration fee covers materials, continental breakfast, lunch, snacks, and one dinner at the University Stadium Club. The registration fee does not cover transportation, lodging, parking, and other meals. Participants are responsible for their own travel expenses.

Enrollment for this conference is limited and registration may close early, so please pre-register as soon as possible.

### **Lodging**

Participants must arrange for their own travel and lodging. Because of its proximity to the campus and conference, a block of rooms has been reserved for conference participants at the:

Millennium Harvest House Boulder

1345 28th Street

Boulder, CO 80302

Phone: (303) 443 -3850

<http://www.millenniumhotels.com/millenniumboulder/index.html>

Guests may register online using the conference rate call (800) 545-6285 or (303) 443-3850 and ask for the Reservations Department. Guests may also send e-mail reservations to [millboulderres@mill-usa.com](mailto:millboulderres@mill-usa.com). Please refer to the "CU - School Of Education RME Conference" to receive the reduced conference rate.

If making hotel arrangements online, you can use the following link

<http://reservations.synxis.com/LBE/rez.aspx?Hotel=11538&Chain=5303&lang=1&group=0910EDUCAT>

which includes the reference for the reduced conference rate:

Single	\$114/night
Double	\$114/night
Triple	\$124/night
Quad	\$134/night

### **Confirmation**

Upon receiving registration, the program committee will send a confirmation email within 48 hours that includes general conference information. Additional information and updates will also be emailed and posted to the conference website.

### **Conference Website**

Additional conference information will be available at [www.fius.org](http://www.fius.org) later this summer. Please continue to check the website for conference updates.

### **Questions**

Please direct any conference related inquiries to David Webb at [fius@colorado.edu](mailto:fius@colorado.edu)

## Tentative Program and Schedule

(subject to change)

### From The Netherlands:

Marja van den Heuvel-Panhuizen, Jan de Lange, Mieke Abels, Peter Boon, Henk van der Kooij, Willem Uittenbogaard.

### From the USA:

Cathy Fosnot, Lorrie Shepard, Chris Rasmussen, David Webb, Meg Meyer, Monica Geist, Paige Larson, Michael Matassa, Jill Ryerson, and others ...

Monday, October 12th

08:00 – 08:30	Continental breakfast				
08:30 – 09:00	Welcome and opening			David Webb / Henk van der Kooij	
09:00 – 10:00	Keynote 1	Set up of RME with examples		Marja van den Heuvel-Panhuizen	
10:00 – 10:30	Break				
10:30 – 12:00 Parallel Sessions	Interactive 1 <i>curr. design</i>	Elementary	Middle grades	High school/ UG	Technology
12:00 – 01:30	Lunch break				
01:30 – 03:00 Parallel Sessions	Interactive 2 <i>research</i>	Elementary	Middle grades	High school/ UG	Technology
03:00 – 03:30	Break				
03:30 – 04:15	Keynote 2a	Mathematical Landscape: algebra		Cathy Fosnot	
04:25 – 05:10	Keynote 2b	Progressive formalization		David Webb / Henk van der Kooij	
05:10 – 05:30	Questions & Answers; looking ahead				
06:00 – 9:00	Dinner at CU Stadium Club				

## Tuesday, October 13th

08:00 – 9:00	Continental breakfast				
09:00 – 10:00	Keynote 3	Formative assessment		Lorrie Shepard	
10:00 – 10:30	Break				
10:30 – 12:00 Parallel Sessions	Interactive 3 <i>Curr. Design</i>	Elementary	Middle grades	High school/ UG	Technology
12:00 – 01:00	Lunch break				
01:00 – 02:30 Parallel Sessions	Interactive 4 <i>Assessment</i>	Elementary	Middle grades	High school/ UG	Technology
02:30 – 03:00	Break				
03:00 – 04:00	Plenary	RME in Secondary/UG Math		TBD	
04:00 –	Choice from several suggested excursions				

## Wednesday, October 14th

08:30 – 09:30	Keynote 4	Curious Minds		Jan de Lange	
09:30 – 10:30	Continental breakfast				
10:30 – 12:00 Parallel Sessions	Interactive 5 <i>Open</i>	Elementary	Middle grades	High school/ UG	Technology
12:00 – 01:00	Plenary: Closure threads, looking forward				
01:00 – 01:30	Departure, boxed lunches				
01:30 – 04:00	Optional follow-up meetings and planning sessions with presenters (Morning program may also be extended depending on demand and interest)				