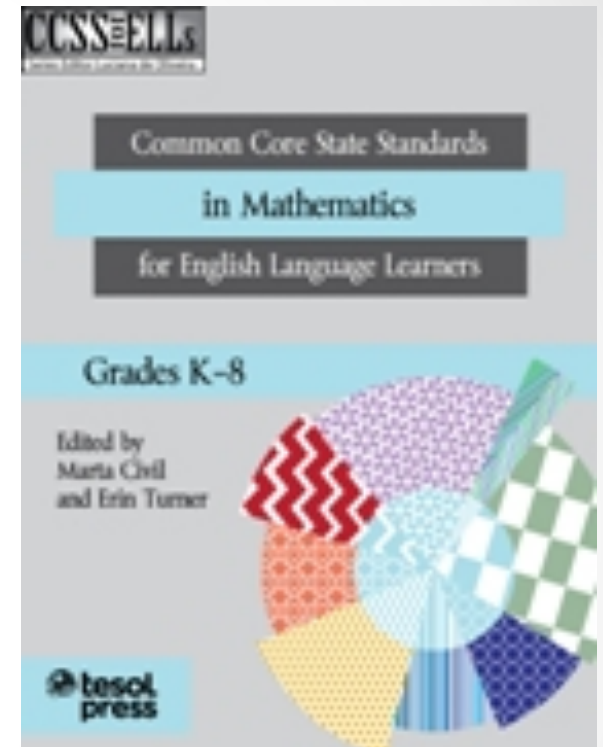


Exploring the CCSSM Mathematics Practices with ELLs



Panel Presentation delivered at
TODOS: Mathematics for ALL Conference
Chandler, AZ June 27, 2014

Presentations

- Marta Civil, Introduction
- Kathryn Chval, *Positioning ELLs to Develop Academic, Communicative, and Social Competencies in Mathematics*
- Carlos LopezLeiva, *Bilingual Latina/o Students Model Community Practices Using Familiar Resources*
- Cynthia Oropesa Anhalt, *Scaffolding in Mathematical Modeling for ELLs*

SMALL GROUP DISCUSSION (10 Minutes)

- Anthony Fernandes & Marta Civil, *Beyond Writing and Speaking: Broadening Mathematical Communication with ELLs*
- Angela Thompson, *Fostering Mathematical Discourse with Socratic Seminars*
- Craig Willey, *Integrating Communication in Common Core Mathematics for English Learners*

WHOLE GROUP DISCUSSION: What is overlooked? What now?

But, first...

- What are our everyday mathematics teaching practices that need to be enhanced in order to maximize mathematical experiences among bilingual learners/ELLs?
- The Common Core Math Practices present an opportunity for teachers to focus more acutely on mathematics discourse/ language development everyday. What does this entail?
- With the introduction of CCSSM Math Practices, what are new dimensions of the mathematics teachers? How are these roles differentiated when working with bilingual learners/ELLs?

Sit with these questions for a while, and also think about what it is that you hope to focus on, or gain, from this session. ***Talk with one another for a minute!***

Jot down comments and questions for mid-point and concluding discussions!



Mid-Point Discussion

- What new ideas resonated with you from the first three presentations?
- What ideas or themes warrant further explanation or clarification?
- What challenges (e.g., local, curricular, sociopolitical) remain particularly thorny and potentially interfere with maximizing opportunities for pedagogical enhancement with bilingual children?

Discussion

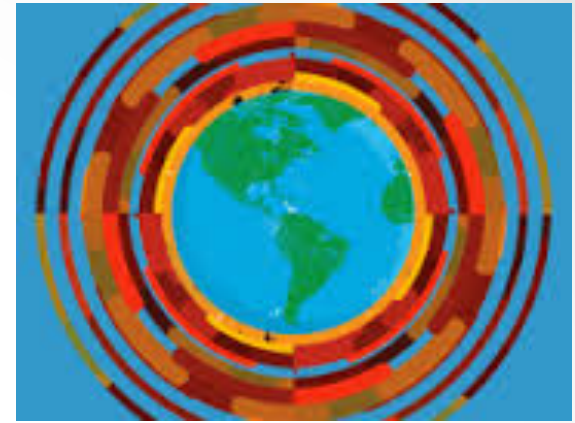
- What new ideas resonated with you from the first three presentations?
- What ideas or themes warrant further explanation or clarification?
- What challenges (e.g., local, curricular, sociopolitical) remain particularly thorny and potentially interfere with maximizing opportunities for pedagogical enhancement with bilingual children?

But, also...

- Is this focus on exploring practices associated with MP's helpful?
- What's missing?

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Thank You

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CCSS-M for ELLs

Grades K-8

Editors: Marta Civil & Erin Turner

Series Editor: Luciana C. de Oliveira

Goals of the book(s)

- From the guidelines for authors: “This book series aims to examine the potential challenges of the CCSS for ELLs and describe practices, strategies, and key ideas related to supporting ELLs in grades K through 12.”
- Hence, the book aims to be practice oriented yet grounded on research. Each chapter (except the introduction) follows the same format:

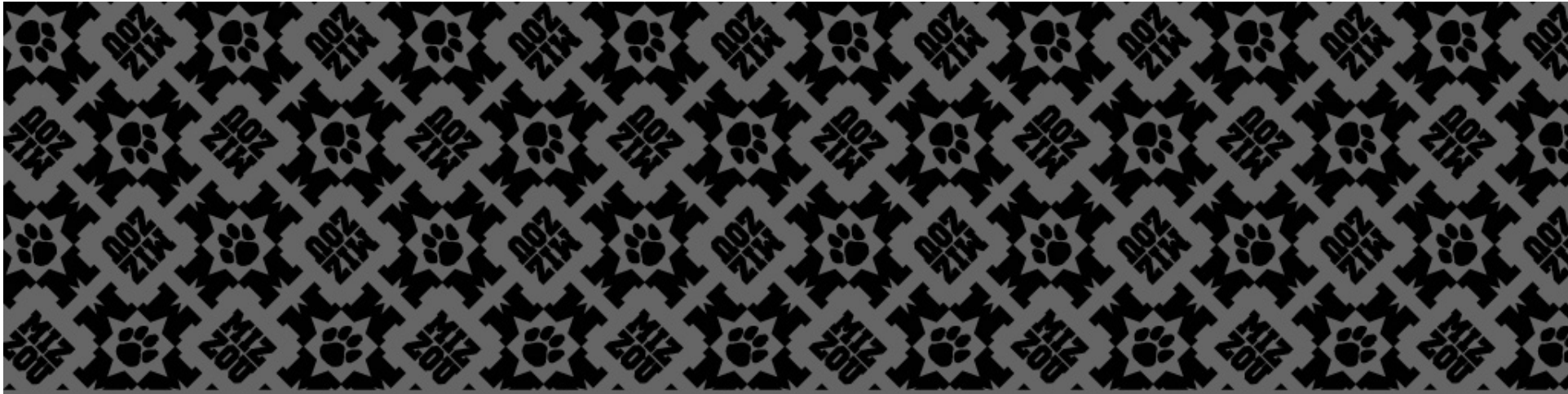
Structure that links research and practice

- Content and linguistic demands of one specific aspect of the CCSS (e.g., MP#3, viable arguments and critique reasoning of others)
- Research-based Pedagogical Practice to address these demands (e.g., “task selection and academic language”)
- Illustration of the Pedagogical Practice through vignettes and classroom-based situations, including suggested teacher actions
- Questions for reflection and suggestions for action plans

A focus on Mathematical Practices

- From the introduction: “we [authors and editors] view the current MPs as opportunities for ELLs to be part of learning and teaching environments that reflect the different expertise and backgrounds (including languages) that all students bring to the classroom.
- Some of the main practices emphasized in the chapters include...

- ELLs need opportunities to communicate mathematically in the classroom.
- Multiple resources to support sense making and communication (e.g., objects, drawings, graphs, gestures, and home languages).
- Building on the cultural and linguistic differences that students bring to the classroom.
- Challenging tasks that reflect students' mathematical potential.
- Scaffolding strategies to support making sense of, solving, and communicating about mathematical tasks.



Positioning ELLs to Develop Academic, Communicative, and Social Competencies in Mathematics



College of Education
University of Missouri

*Rachel J. Pinnow
Kathryn B. Chval*

Chapter Overview

- We highlight two pedagogical practices Courtney used to establish classroom communities where ELLs developed:
 - Multiplication and division competencies
 - Problem solving and perseverance
- We demonstrate how:
 - Courtney organizes her lessons to facilitate ELL participation
 - Courtney scaffolds language to support ELL development
- We share how the teacher:
 - Selected or enhanced lessons
 - Introduced the context of the lessons and tasks to the class
 - Emphasized problem solving and communication processes
 - Positioned ELLs to be successful and persistent problem solvers



Different Problem Situations Involving Remainders

•Balloon Task

- A mother had 20 balloons. She wanted to give them to her 3 children so that each child had the same number of balloons. How many balloons will each child get?

•Bird Task

- A pet store owner had 14 birds and some cages. She will put 3 birds in each cage. How many cages will she need to use?

•Cookie Task

- A father had 17 cookies. He wanted to give them to his 3 children so that each child has the same amount of cookies. How many cookies will each child get?





University of Missouri

Excerpt 3 – R is for Remainder

- Introduces handout students will use with their partners
- Uses a number sentence involving remainders
 - Discuss the symbol for remainder (i.e., the capital letter R)
- Draws students' attention to the symbol by posing a question
- Recognizes students have written number sentences during their elementary years but not involving remainders
- Continues the lesson to facilitate ELL participation



Thank you!

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THE UNIVERSITY *of*
NEW MEXICO

BILINGUAL LATINA/O STUDENTS MODEL COMMUNITY PRACTICES USING FAMILIAR RESOURCES

Carlos A. LópezLeiva

University of New Mexico

TODOS Conference 2014



CEMELA

CCSSM Mathematical Practices

1. Make sense of problems and persevere on solving them
2. Reason abstractly and quantitatively
3. Construct viable arguments and critique the reasoning of others
4. Model with mathematics
5. Use appropriate tools strategically
6. Attend to precision
7. Look for and make use of structure
8. Look for and express regularity in repeating reasoning

What is modeling?

Mathematization

- Application of mathematics to real-life situations

(Murata & Kattubadi, 2012)

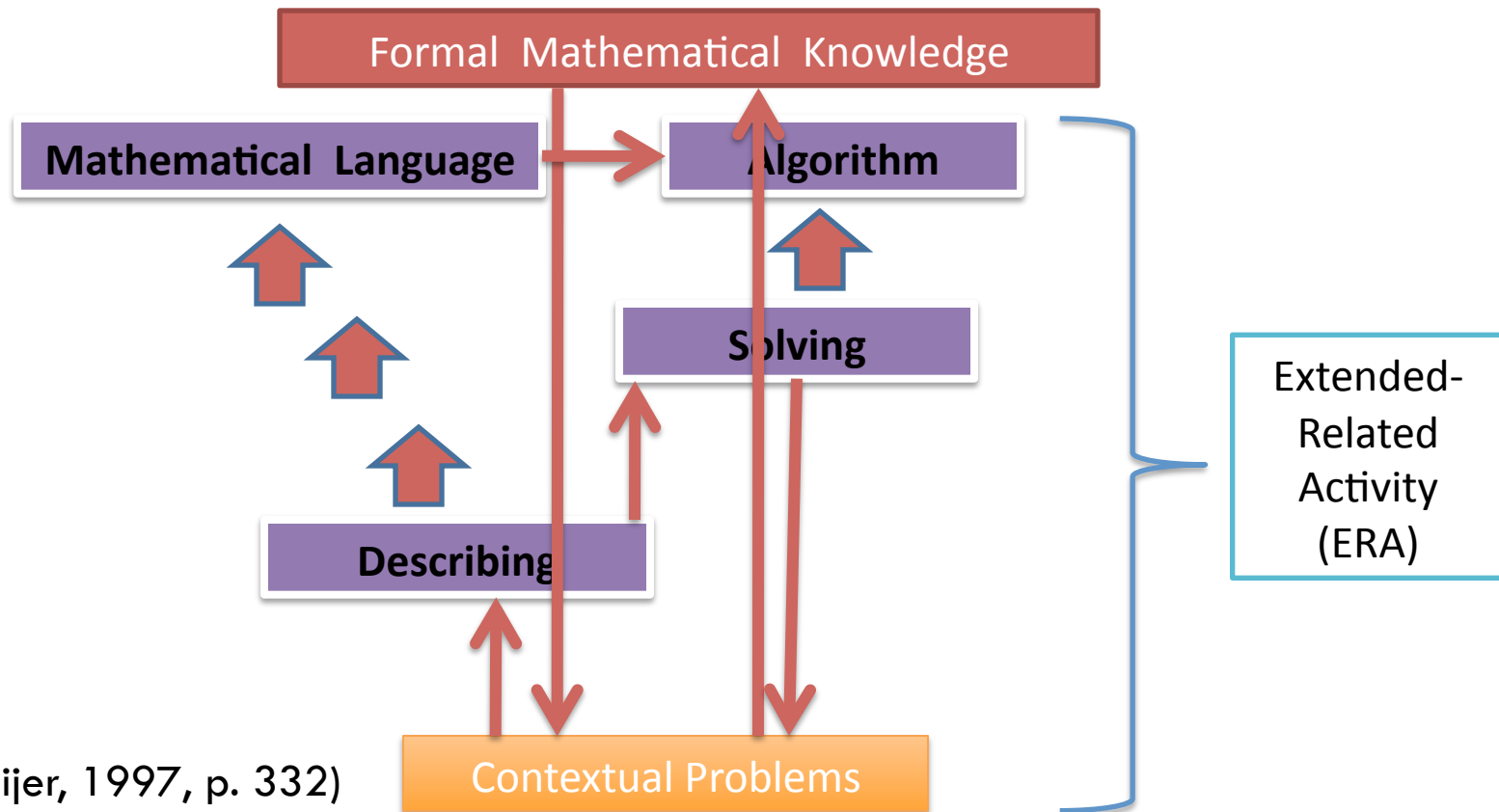
Modeling

- Use of symbols to represent mathematical relations



Mathematization = Application

Re-invention, Real Mathematics Education



(Gravemeijer, 1997, p. 332)

Mathematics is an activity, a way of working. Then learning it means doing mathematics, in which solving real-life problems is essential.

Mathematization & Language

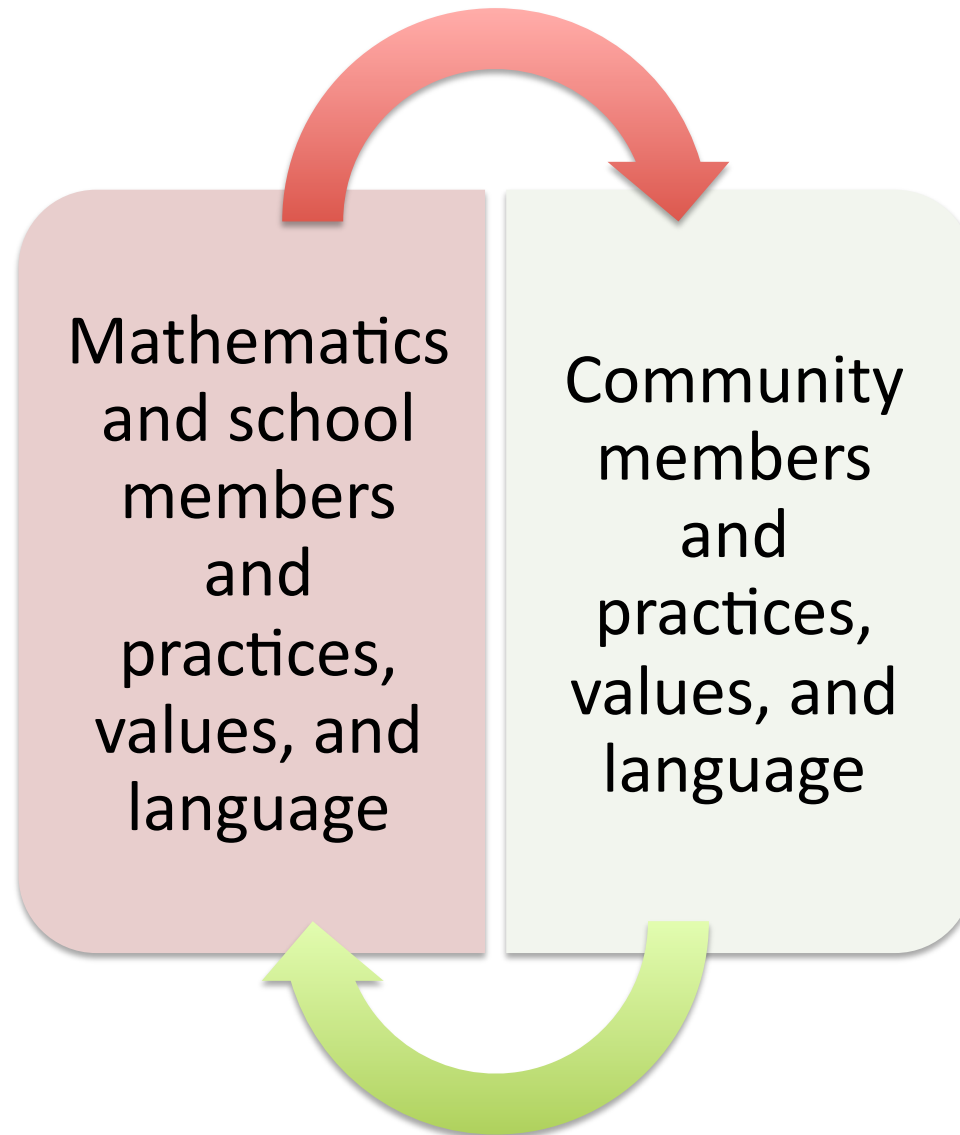
- **Language is central:** to name, to think about and manipulate patterns, & to apply mathematics to community practices



Everyday and mathematical discourses and concepts are interdependent (Moschkovich, 2010), they **blend** more obviously in modeling

Challenge: mathematical understanding transfers from language to language, but not necessarily the specific terms to describe the community & mathematical practices

Mathematization & Community



What supports modeling?

Mathematization is supported through:

1. Social interactions and communication
2. First-hand experience with practices
3. Social and historical familiarity with practices provide meaningfulness of practices (Lo Cicero et al., 1999; Varley Gutiérrez, 2009-2010; Domínguez, 2011)

Community Mathematization Project

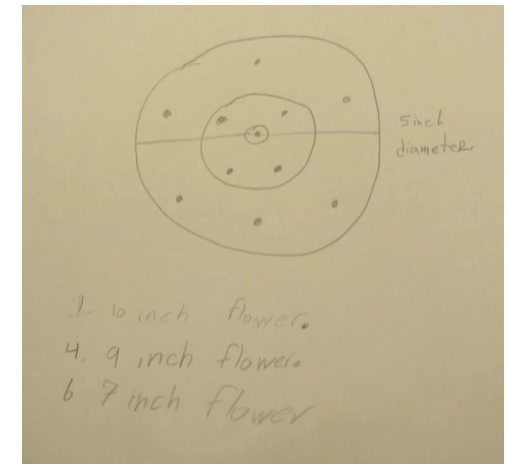
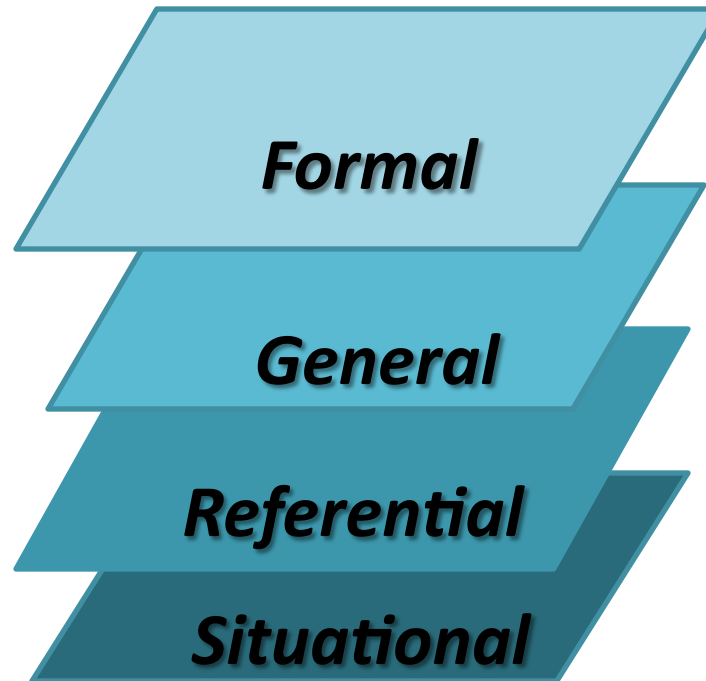


Phases:

1. Open Exploration
2. On-site visits
3. Debriefing and modeling processes
4. Narrative development

Mathematization

Diameter of Vase	Size of Flowers				
	10 inch	9 inch	7 inch	5 inch	3 inch
5 inch	1	4	6	0	0
8 inch	1	4	8	12	0
10 inch	1				
12 inch	1	4	12	24	



(Gravemeijer, 1997, p. 340)

Extended-Related Activity (ERA)

1. Student Centered
2. Virtual Participation
3. Modeling with Mathematics

