Cognitively Guided Instruction
7th Biennial National Conference

DES MOINES, IOWA, JULY 10 – 12, 2013

Thomas Carpenter

Elizabeth Fennema

Jim Hiebert – Keynote Speaker

CONTENTS

Welcome

The Iowa Department of Education in partnership with the Center for Excellence in Science, Mathematics, and Engineering Education (CESMEE) at Iowa State University welcome you to Des Moines, Iowa, and to the 7th biennial CGI National Conference.

We appreciate your dedication to CGI and this wonderful opportunity to learn about and share the ways in which CGI is impacting mathematics teaching and learning all over the world.

We sincerely acknowledge all of the participants, representing 15 states and three countries, for your ongoing commitment to CGI. A special thank you goes to our 70 presenters, who have volunteered their time and expertise to make the Iowa conference successful through the 40 sessions that will be offered in the next three days.

We would like to thank in particular the founders of CGI, Thomas P. Carpenter, Elizabeth Fennema, Penelope Peterson as well as their former students and current colleagues Rebecca Ambrose, Jae Baek, Jean Behrend, Deborah Carey, Susan Empson, Megan Franke, Vicki Jacobs, Laura Kent, Linda Levi, Cheryl Lubinski, Margie Pligge, Olly Steinthorsdottir and Ruti Steinberg.

The theme of the conference is *CGI and the Common Core*, and indeed many of the 40 sessions address the CCSS. You will notice in the program that many sessions are tagged with labels to allow the quick identification of various focus strands.

The Iowa Department of Education has supported CGI as a statewide initiative since 2005.

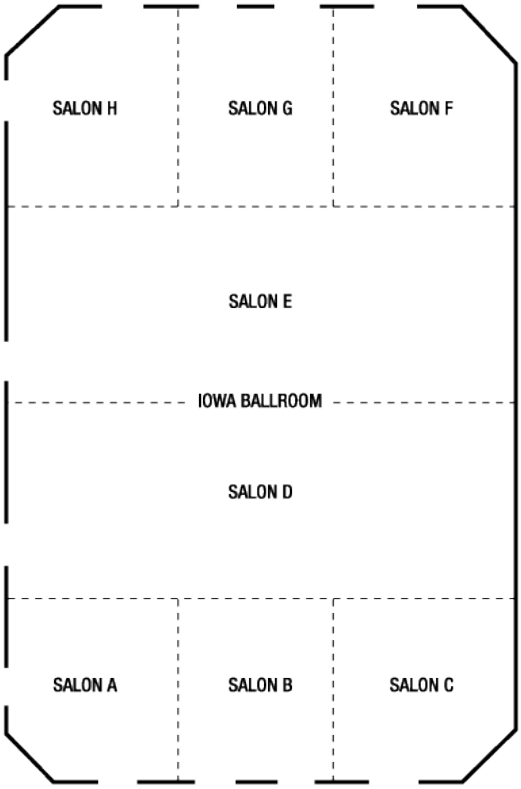
Many people and organizations have worked together to make this conference a success. We could not have done it without you.

Sincerely,

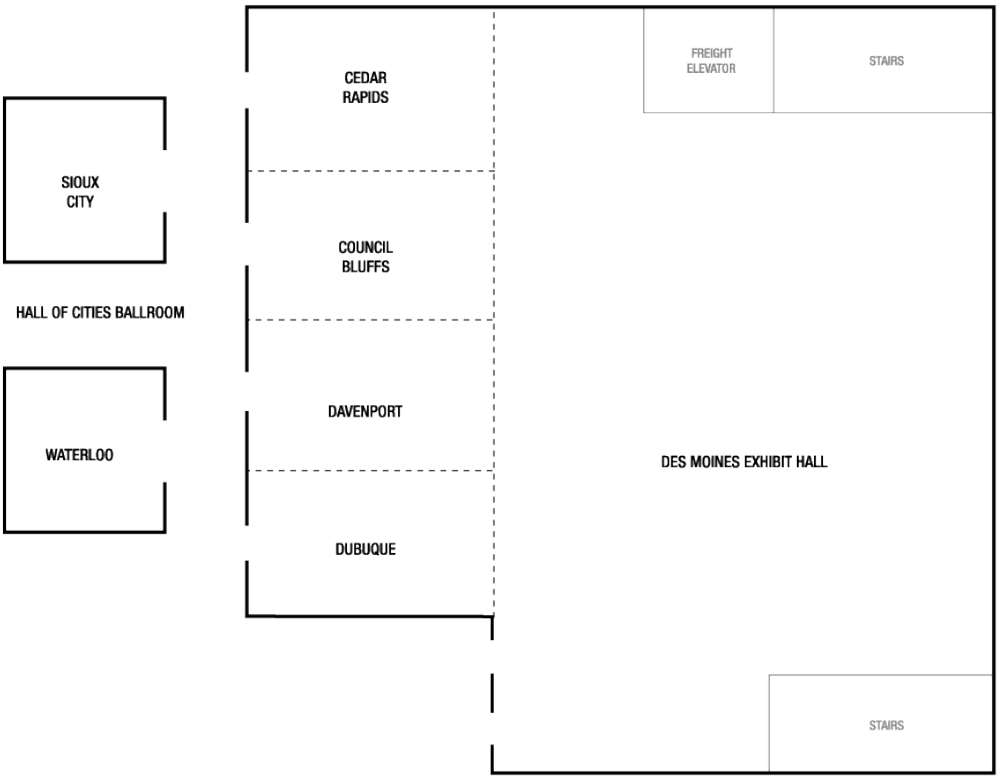
The Steering Committee

Judith Spitzli, Iowa Department of Education
Nancy Port, Nevada (IA) Community School District
Denise Carlson, Heartland Area Educational Agency
Tracie Miller, Iowa State University – CESMEE
Alex Andreotti, Iowa State University
Rick Bartosh, Iowa Department of Education
Vicki Bachman, Mathematics Consultant

Conference Center Floor Plan



Second Floor



Third Floor

Schedule Overview

Wednesday, July 10, 2013

4:00 p.m. – 8:00 p.m.	Conference Check-in/Packet Pickup
6:00 p.m. – 8:00 p.m.	Welcome and Keynote Speaker
8:00 p.m. – 9:30 p.m.	Dessert reception with Live Music by Kaizer Trio

Thursday, July 11, 2013

7:30 a.m. – 10:30 a.m.	Conference Check-in/Packet Pickup
7:30 a.m. – 8:30 a.m.	Breakfast/Networking
8:30 a.m. – 10:00 a.m.	Breakout sessions
10:00 a.m. – 10:30 a.m.	BREAK
10:30 a.m. – Noon	Breakout sessions
Noon – 1:30 p.m.	Lunch
1:30 p.m. – 3:00 p.m.	Breakout sessions
3:00 p.m. – 3:30 p.m.	BREAK
3:30 p.m. – 5:00 p.m.	Breakout sessions

Friday, July 12, 2013

7:30 a.m. – 8:30 a.m.	Breakfast/Networking
8:30 a.m. – 10:00 a.m.	Breakout sessions
10:00 a.m. – 10:30 a.m.	BREAK
10:30 a.m. – Noon	Breakout sessions
Noon – 1:30 p.m.	Lunch
1:30 p.m. – 3:00 p.m.	Breakout sessions
3:00 p.m.	Conference Adjourns

Wednesday, July 10

Conference Opening and Keynote — Iowa Ballroom 6 – 8 pm

Welcome: Dr. Joanne Olson, Interim Director, ISU's Center for Excellence in Science, Mathematics and Engineering Education (CESMEE)

Dr. Mary L. Delagardelle, Associate Division Administrator Division of Learning and Results, Iowa Department of Education

Introduction: Judith Spitzli, Educational Consultant – Mathematics, Iowa Department of Education

Keynote: Dr. Jim Hiebert – *Spreading Improvements in Teaching to All Classrooms*

A variety of approaches to improving classroom teaching, including Cognitively Guided Instruction, have shown significant results. But the history of teaching improvements in the United States is filled with pockets of excellence that do not touch the average classroom. One pathway toward wider-scale improvement in teaching is to focus on teach*ing*, rather than teach*ers*. Although this path has not been taken in the U.S., it has been successful in other countries. I will examine what this approach would mean for teachers, and teacher leaders, and I will explore the advantages, and challenges, of taking this alternative path toward improving teaching.

Jim Hiebert is the Robert J. Barkley Professor of Education at the University of Delaware, where he teaches in programs of teacher preparation, professional development, and doctoral studies. His professional interests focus on mathematics teaching and learning in classrooms. He has co-authored Making Sense: Teaching and Learning Mathematics with Understanding and The Teaching Gap: Best Ideas from the World's Teachers for Improving Education in the Classroom. He has served as the director of the mathematics portion of the TIMSS-R Video Study and currently is a PI on the NSF-funded Mid-Atlantic Center for Teaching and Learning Mathematics and co-PI on an NSF-funded project to assess the impact of a specially-designed preparation program in mathematics on graduates' teaching practices.

Dessert reception and cash bar with live music by Kaizer Trio will follow the keynote.

Dessert reception sponsored by Teachers Development Group (TDG). TDG is a nonprofit organization dedicated to improving all students' mathematical understanding and achievement through meaningful, effective professional development. TDG offers CGI Professional Development Nationwide. For more information, please contact Linda Levi, Director of CGI Initiatives at linda.levi@teachersdg.org.

Thursday, July 11

Program at a Glance

Room	8:30 – 10	10:30 – 12	1:30 – 3	3:30 – 5
A	**Wager, Christenson, & DeBarbieri** CGI in PreK: Culturally and Developmentally Responsive Approaches to Problems and Problem Solving PK-3 Equity	**Levi** An Overview of *Extending Children's Mathematics*	**Hurtado** Creating a Strong Mathematical Foundation: Supporting Parents and Students in CGI PD	**Carpenter, Fennema, M. Franke, Levi, Empson** Panel Keynote
B		**Nugent** Leading CGI in Your School PD		
C	**Case & N. Johnson** Comparing Fractions – A Look at Children's Strategies 3-6 Fractions CCSS	**Clark & Bonthuis** Making Connections: CGI for the Kindergarten and First Grade Classrooms K-1 CCSS	**Hintz** Mathematizing Read Alouds Discourse CCSS	
D	**M. Franke** Supporting Students as They Engage With Each Other's Ideas: Research-Based Findings	**Hiebert** Question and Answer Session (Follow-Up to Wednesday's Keynote)	**Schorg & Bane** Using Student Work to Write Equations	
E	**Sweeney, N. Franke, & Butz** The Power of Ten 4-6 Base-10 CCSS	**Hintz, Lind, & Lomax** The Power of Counting Collections CCSS	**Land, Drake, Sweeney, N. Franke, & J. Johnson** Number Choice Matters CCSS	
F	**Pulley** Using CGI to Introduce Multidigit Multiplication		**Lubinski & Otto** How can we as CGI Teachers Reflect on our Problem-Solving Processes for the Purpose of Further Developing our Students' Mathematical Practices? CCSS	
G	**Cooley, Willwerth, Terrock, & Moore** Making the Elementary Classroom Come Alive with CGI Beginners' Track K-2 CCSS	**Hughet, Knott, Kix, & Haywood** Growing CGI in a Garden CCSS	**Nefzger, Lau, Smith, & Frieden** CGI: Had I Known Then What I Know Now... Beginners' Track CCSS	
H	**Restani** Data Days PD CCSS			

Lunch will be served at 12.

Thursday, July 11

8:30 – 10 Sessions

CGI in PreK: Culturally and Developmentally Responsive Approaches to Problems and Problem Solving

***Anita A. Wager**, University of Wisconsin – Madison*
***Bridget Christenson**, Madison Metropolitan School District (WI)*
***Renae DeBarbieri**, Madison Metropolitan School District (WI)*

Room A **Tags: PK-3 Equity**

In this session, we will share ways we have modified our approach to CGI to meet the developmental and cultural understandings of our diverse population of young children. The session focuses on how CGI can be incorporated into pre-K classrooms, but offers culturally appropriate practices for K-3 as well. Participants will have the opportunity to discuss strategies for engaging children with diverse backgrounds in a variety of story problems that relate to their lived experiences during play, transitions, and routines.

Comparing Fractions – A Look at Children's Strategies

***Joan Case,** Teachers Development Group*
***Nicholas Johnson,** Orange County Department of Education (CA)*

Room C **Tags: 3-6 Fractions CCSS**

In this session we will be looking at the relational thinking strategies children use when comparing fractions. We will explore one fourth grader's thinking and look at what these strategies reveal about a student's understanding of fraction concepts. We will conclude by discussing how teachers can nurture and support this understanding with their own students.

Supporting Students as They Engage With Each Other's Ideas: Research-Based Findings

***Megan Franke,** UCLA*

Room D

This session will share research and detail the ways teachers support students to explain their mathematical ideas and engage with each other's mathematical ideas.

The Power of Ten

***Molly Sweeney,** Des Moines Independent CSD*
***Natalie Franke,** Waukee Community Schools*
***John Butz,** Des Moines Independent CSD*

Room E **Tags: 4-6 Base-10 CCSS**

This session will help teachers pose equation and number work that will help move his/her students to a deeper understanding of multiplying a number times a power of ten. An emphasis will be placed on students' use of their knowledge of basic multiplication and division facts to assist them when working with multi-digit numbers. Participants will have the opportunity to see a math session with students which will include number work and problem solving, and processing of the problem.

Thursday, July 11

8:30 – 10 Sessions

Using CGI to Introduce Multidigit Multiplication

Cynthia Pulley, *Illinois State University*

Room F

Developing children's thinking from single digit to multidigit multiplication using CGI allows for multiple strategies to emerge. We will discuss these strategies and their connections, as well as extending children's thinking.

Making the Elementary Classroom Come Alive with CGI

Kristi Cooley, *Clinton School District*
Deb Willwerth, *Clinton School District*
Michele Terrock*, Clinton School District*
Deb Moore, *Clinton School District*

Room G **Tags: Beginner's Track K-2 CCSS**

After a year and a half of implementing CGI in our K-2 classrooms, we in the Clinton Community School District are excited to share our experiences. We will spend time looking at HOW and WHY we started using CGI and the excitement it has created with staff and students. After hearing about classroom experiences and student growth, participants will be given hands-on, practical ideas for number work to take back to their classroom for immediate use. These activities will show a clear connection to the Common Core Math Standards.

Data Days

Rachel Restani, *University of California Davis*

Room H **Tags: PD CCSS**

Data-driven instruction is becoming more emphasized across all grade levels. Due to the increase in benchmark tests in a school district in Sacramento, the CGI-based professional development program, *Strategic Alliance II*, has implemented *Data Days* into the teacher training sessions. Using multiple-choice answers, as well as CGI story problems, how do we interpret the student solutions to parents, teachers, and the district? How well do these benchmark questions correspond to the upcoming common core standards? What can the story problems tell us about student learning? Engage in discussion with teachers, administrators, and parents about benchmark test implications.

NOTE: ***This is a double length session (8:30 – 12)***

Thursday, July 11

10:30 – 12 Sessions

An Overview of "Extending Children's Mathematics"

Linda Levi, *Teachers Development Group*

Room A

Frameworks that describe children's thinking are powerful tools in teaching math for understanding. In CGI, these frameworks include descriptions of mathematical problem types and children's solution strategies. Frameworks that describe children's thinking for fractions and decimals are similar in many ways to the frameworks that describe children's thinking for whole numbers. There are, however, some important differences. In this session we will look at some of the similarities and some of the differences in frameworks describing children's thinking for whole numbers and frameworks describing children's thinking for fractions and decimals. This session provides an introduction to the book titled *Extending Children's Mathematics.* This session addresses many of the same ideas as the keynote presented by Levi and Empson at the 2011 CGI conference in Little Rock, Arkansas.

Leading CGI in Your School

Chris Nugent, *Dubuque Schools*

Room B **Tags:** PD

Leading CGI in a building can be challenging. What are models of professional development that can be used? How do you monitor implementation? What are key elements that need to be in place in order to deepen implementation? During this session the presenter will talk about things that have worked for her. This will be an interactive session and participants will be encouraged to ask questions and share successes and struggles.

Making Connections: CGI for the Kindergarten and First Grade Classrooms

Carrie Clark, *Gilbert Elementary School*
Angie Bonthuis*, Gilbert Elementary School*

Room C **Tags:** K-1 CCSS

How can you use the CGI framework to enhance the Common Core in Kindergarten and First Grade? Come and see how we have implemented CGI into our everyday teaching. We will walk you through large and small group lessons, math station ideas, counting collections, and questioning strategies. We have seen success with these teaching techniques in our classrooms. You will leave this session with strategies you can implement. You will receive useful handouts and discover different ways to use manipulatives. You will gain insight by seeing our students in action, through video clips, within our CGI-based classrooms.

Question and Answer Session (Follow-Up to Wednesday's Keynote)

Jim Hiebert, *University of Delaware*

Room D

This session will provide attendees an opportunity to ask Dr. Hiebert questions concerning Wednesday's keynote, including questions regarding how his comments relate to CGI and mathematics education more generally.

Thursday, July 11

10:30 – 12 Sessions

The Power of Counting Collections

Allison Hintz, *University of Washington – Bothell*
Teresa Lind, *Renton School District (WA)*
Kendra Lomax, *University of Washington – Bothell*

Room E **Tags: CCSS**

We will describe one school's work with counting collections and how it has energized children's sense-making and understanding of number and operations.

Growing CGI in a Garden

Jamie Hughet, *Nevada Community Schools*
Michelle Knott, *Nevada Community Schools*
Joy Kix, *Nevada Community Schools*
Debbie Haywood, *Nevada Community Schools*

Room G **Tags: CCSS**

Our multi-age classrooms use a school garden for a service-learning project. This project provides an exciting framework to deliver concept-based cognitively demanding situations for our students as they apply essential concepts and skills to real-world, complex and open-ended situations. The content is linked to the Common Core and CGI, which requires authentic work, discipline-specific methods, applies what is known or being learned to solve complex problems, and provides opportunities for communication and application of that knowledge in the garden. This approach is an effective method to reach all learners.

Lunch will be served at 12.

Thursday, July 11

1:30 – 3 Sessions

Creating a Strong Mathematical Foundation: Supporting Parents and Students in CGI

Carolee Koehn Hurtado, *UCLA Mathematics Project*

Room A **Tags:** PD

Mathematical learning does not just happen in school. Parents can be powerful allies in their children's education. In this session, we share ways we have included and engaged parents in CGI and provide a space for participants to share and develop ideas for authentic family engagement in supporting mathematics learning.

Mathematizing Read Alouds

Allison Hintz, *University of Washington – Bothell*

Room C **Tags:** **Discourse** **CCSS**

Participants will learn about integrating mathematics and literacy to bring together read alouds and mathematical discussions that advance children's number sense. Participants will use the CGI trajectory and picture books to trace opportunities within texts for advancing children's number sense. Participants will use a planning template and picture books to co-plan a mathematizing discussion.

Using Student Work to Write Equations

Janelle Schorg, *Northwest Area Educational Area*
Tamara Bane, *Winterset Community School District*

Room D

In this session, participants will look at student work from a 3rd grade classroom and watch a follow-up equality lesson developed from the student work. Participants are encouraged to bring their own student work to identify equations they can use in their classrooms. Samples of student work will also be available.

Number Choice Matters

Tonia Land, *Drake University*
Corey Drake, *Michigan State University*
Molly Sweeney, *Des Moines Independent CSD*
Natalie Franke, *Waukee Community Schools*
Jennifer Johnson, *Des Moines Independent CSD*

Room E **Tags:** **CCSS**

This session will provide participants with explicit strategies and examples for using number choice to address the mathematical content, strategies, and practices in the Common Core State Standards for Mathematics (CCSSM). We define number choice as the strategic use of numbers and number combinations in the context of problem types. Based on our teaching experiences and research, we provide examples of and strategies for using number choice to engage and challenge all students.

Thursday, July 11

1:30 – 3 Sessions

How can we as CGI Teachers Reflect on our Problem-Solving Processes for the Purpose of Further Developing our Students' Mathematical Practices?

Cheryl Lubinski, *Illinois State University*
Albert Otto, *Illinois State University*

Room F **Tags: CCSS**

The Common Core has established high expectations in the mathematical practices to be developed by the students. These expectations present both a challenge and an opportunity for CGI teachers. We will present problems that encourage us as CGI teachers to reflect on our own mathematical thinking, reasoning, and problem solving. Then, through participant discussion, we will connect our reflections to the development of our own students' mathematical practices, as well as build on our students' understanding of mathematical concepts. Connections will be made to specific mathematical practices.

CGI: Had I Known Then What I Know Now...

Betsy Nefzger, *Valley Elementary School*
Kim Lau, *Valley Elementary School*
Amanda Smith, *Valley Elementary School*
Julie Frieden, *Valley Elementary School*

Room G **Tags: Beginner's Track CCSS**

Participants will be given practical suggestions and tools for the successful implementation of CGI based on one school district's journey. Topics will include: Team meetings, Alignment to the Common Core Curriculum, Teacher facilitation of problem solving, Grade-level specific areas of focus, and Teacher collaboration/reflection based on the PLC framework.

Thursday, July 11

3:30 – 5 pm

Panel Keynote

Thomas Carpenter, *University of Wisconsin – Madison*
Elizabeth Fennema, *University of Wisconsin – Madison*
Megan Franke, *UCLA*
Linda Levi, *Teachers Development Group*
Susan Empson, *University of Texas – Austin*

Iowa Ballroom

Thomas Carpenter

Elizabeth Fennema

Linda Levi

Megan Franke

Susan Empson

In this town hall style meeting, the authors of *Children's Mathematics: Cognitively Guided Instruction* will respond to questions that have been solicited in advance from the participants. This meeting will provide an oral history of CGI as well as a perspective on the human side of how CGI was developed and how it has evolved.

Friday, July 12

Program at a Glance

Room	8:30 – 10	10:30 – 12	1:30 – 3
A	**Turrou** Supporting Students to Engage With Each Others' Ideas Discourse CCSS	**Drake & Land** Opening Curriculum Spaces for Children's Mathematical Thinking CCSS	**Brickwedde** Transitioning from Additive to Multiplicative Ways of Thinking 3-5
B		**Schoen, Tazaz, & Brooks** Studying the Effects of CGI Professional Development on Teachers and Students Research PD	
C	**Steinthorsdottir & Hughes** Cognitively Guided Instruction & Classroom Discourse: Different Ends of the Same Stick Discourse		**Kent, Carethers, & Guthrie** Purposeful Problem Posing for ELL and Special Education Students in Middle School Mathematics Classes MS SPED ELL CCSS
D	**Leise & J. Johnson** Counting Collections: Building Number Sense That Transfers to Problem Solving K-1 Base-10 CCSS	**Nielsen** Cognitively Guided Instruction (ECM) & Classroom Discourse: Summing it up! Fractions Discourse CCSS	**Behrend & Mohs** Positives About Negatives
E	**Jacobs & Coles** Recording Children's Strategies 1-3	**Ambrose** Supporting Bilingual Children's Story Problem Comprehension K-3 ELL Equity	**King, Gotto, & Clark** CGI & Authentic Intellectual Work (AIW): Building School-wide Instructional Coherence AIW CCSS
F	**Pulley** Teaching Kindergarten Through CGI K	**Moscardini** Cognitively Guided Instruction in Scotland: A Story in Three Acts Research	**Steinberg** Classroom Discussions That Build Upon Children's Thinking Discourse 3-5
G	**Baek** Understanding Mathematics Embedded in Students' Strategies for Multidigit Multiplication 4-5 Base-10 CCSS		
H	**Maldonado** Engaging English Language Learners in Problem Solving Equity ELL CCSS	**Nordness & Keith** Common Core Mathematical Practice Standards CCSS	**Jaslow** Making Sense of CCSS Base 10 Concepts Across the Grade Levels and What it Looks Like in the Classroom Base-10 CCSS

Lunch will be served at 12.

Friday, July 12

8:30 – 10 Sessions

Supporting Students to Engage With Each Others' Ideas

***Angela Chan Turrou**, UCLA*

Room A **Tags: Discourse CCSS**

CGI classrooms are rich with students explaining mathematical thinking. What is often difficult, however, is figuring out how to support students to engage with each others' ideas. This session focuses on classroom practices that support such engagement. Participants will engage with research that describes the benefits of students engaging with each others' ideas and collaborate with each other about specific pedagogical moves and classroom norms that support student engagement. The goal is for participants to make connections to their own teaching practice as they grapple with supporting students to explain their thinking and engage with each others' ideas.

Cognitively Guided Instruction & Classroom Discourse: Different Ends of the Same Stick

***Olof Steinthorsdottir,** University of Northern Iowa*
***Elizabeth Hughes,** University of Northern Iowa*

Room C **Tags: Discourse**

This session will explore the relationship between experienced CGI teachers' practices and rich mathematical discourses. Through the analysis of classroom video from an experienced CGI teacher, we will identify ways in which common CGI practices and classroom discourses framework can inform each other. These two lenses will allow for a better understanding and construction of rich mathematics classroom environments.

Counting Collections: Building Number Sense That Transfers to Problem Solving

***Barbara Leise,** Des Moines Independent CSD*
***Jennifer Johnson,** Des Moines Independent CSD*

Room D **Tags: K-1 Base-10 CCSS**

Participants will leave with an understanding of what counting collection activities are, how to implement them in their classroom, and methods to use to scaffold to problem-solving situations. Participants will have the opportunity to observe children and teachers using counting collections in a classroom setting.

Recording Children's Strategies

***Vicki Jacobs,** University of North Carolina – Greensboro*
***LaDonna Coles,** Encinitas Union School District (CA)*

Room E **Tags: 1-3**

When children solve problems mentally or with blocks, fingers, or some other tool, why might you also want them to record their strategies on paper? What does it look like when you (or they) record the strategies? When might you push for a formal, equation-based recording and when are informal recordings more useful? We will use video and written student work to address these questions and more related to the challenging and important task of recording children's strategies.

Friday, July 12

8:30 – 10 Sessions

Teaching Kindergarten Through CGI

Cynthia Pulley, *Illinois State University* **Room F** **Tags: K**

For one year, the collaborative efforts between a practicing Kindergarten teacher and a university faculty member proved surprising and educational for both. We will explore the lessons learned for both the teacher and professor as well as activities that proved both successful and unsuccessful in the classroom.

Understanding Mathematics Embedded in Students' Strategies for Multidigit Multiplication

Jae Baek, *Illinois State University* **Room G** **Tags: 4-5 Base-10 CCSS**

This session will discuss different types multiplication word problems and strategies that students in grades 4-5 develop for multidigit multiplication word problems. Participants will have opportunities to investigate student strategy samples and to explore what mathematical concepts are related to more sophisticated strategies and how those strategies are addressed in CCSS. We will share instructional strategies that can facilitate construction of mathematically sophisticated strategies, and discuss algebraic reasoning that reexamines multiplication as a relation. The discussion of algebraic reasoning will focus on how multiplication of whole numbers can provide groundwork for multiplying numbers in other number domains.

NOTE: ***This is a double length session (8:30 – 12)***

Engaging English Language Learners (ELLs) in Problem Solving

Luz Maldonado, *Texas State San Marcos* **Room H** **Tags: Equity ELL CCSS**

Engaging all students in problem solving, when some of the students are English Language Learners, requires rethinking what it means to facilitate problem solving in the classroom. For example: How do you pose problems? How do students explain their thinking? How do you encourage strategy sharing? Suggestions for including ELL students in the mathematics discussions will be shared.

Friday, July 12

10:30 – 12 Sessions

Opening Curriculum Spaces for Children's Mathematical Thinking

Corey Drake, *Michigan State University*
Tonia Land, *Drake University*

Room A **Tags: CCSS**

Many teachers confront a tension between using CGI and a published curriculum series. Eliciting and building upon children's mathematical thinking while using mandated curriculum materials is a significant challenge, but it can be accomplished through small changes in lesson components. In this session, we will describe and demonstrate three strategies for opening curriculum spaces for children's mathematical thinking. Participants will also work with curriculum materials to practice implementing the strategies and should feel free to bring their own materials.

Studying the Effects of CGI Professional Development on Teachers and Students

Robert Schoen, *Florida State University*
Amanda Tazaz, *Florida State University*
Lisa Brooks, *University of Central Florida*

Room B **Tags: Research PD**

The original CGI research is currently being replicated in a large urban school district in Florida. Come meet with the principal investigator and the project directors to learn more about their research plan. The team will engage participants in a lively discussion about CGI research. We will invite participants to provide their perspective on what teachers learn through CGI and the characteristics of CGI classrooms in an effort to ensure that the researchers are measuring the most important aspects.

Cognitively Guided Instruction (ECM) & Classroom Discourse: Summing it Up!

Lynne Nielsen, *Louisiana Tech University*

Room D **Tags: Fractions Discourse CCSS**

In this session participants will participate in a story problem involving computation of fractions. Participants will solve the problem and the leader will facilitate a discussion on how to manage classroom discourse during the presentation of solution strategies. Emphasis will be on how to select which students share, what order the solution strategies will be shared, and connections between and among the strategies.

The participants will be the "students" and engage in the problem first, then discussion will follow from a teacher's perspective on effective ways to elicit mathematical discourse. Common Core State Standards will be addressed whenever appropriate with an emphasis on mathematical notation and properties of operations.

Friday, July 12

10:30 – 12 Sessions

Supporting Bilingual Children's Story Problem Comprehension

Rebecca Ambrose, *University of California – Davis*

Room E **Tags: K-3 ELL Equity**

Video from a study of 18 first graders' work comprehending and solving story problems in English and in Spanish will be shown to illustrate their successes and challenges in problem solving. We will share strategies for instruction with bilingual children that promote engagement and sense-making. Research on reading comprehension and language acquisition will inform our discussion.

Cognitively Guided Instruction in Scotland: A Story in Three Acts

Lio Moscardini, *University of Strathclyde*

Room F **Tags: Research**

Act 1: An exploration of the concept of inclusive pedagogy and how CGI provides a framework for thinking about teaching all children rather than most children and then others.
Act 2: An account of developing CGI in Scotland, in practice, initial teacher education, and masters degree programmes. Where we are, what we've done, and where we're going and how you might get involved.
Act 3: How principles and structures drawn from CGI support teacher development and inclusive practice. Specifically how Professional Noticing has been applied in a longitudinal study on supporting children from drug abuse backgrounds in mainstream schools.

Common Core Mathematical Practice Standards

Carla Nordness*, Madison Metropolitan School District (WI)*
Annie Keith, *Madison Metropolitan School District (WI)*

Room H **Tags: CCSS**

In this interactive session participants will engage in discussions around the Common Core Mathematical Practice Standards. Discussions will focus on what the Common Core Mathematical Practice Standards mean to us as teachers, connections to CGI practices, and how to provide meaningful instruction related to these standards.

Lunch will be served at 12.

Friday, July 12

1:30 – 3 Sessions

Transitioning From Additive to Multiplicative Ways of Thinking

James Brickwedde, *Hamline University*

Room A **Tags: 3-5**

This session will explore transitions students pass through as they move from repeated addition strategies to being able to multiply by thinking in scale. We will explore some of the research questions that are being asked in ongoing work with third through fifth graders. Topics will include exploring how the operation of multiplication is uniquely different than addition, what the distinction is between additive and multiplicative thinking, and trying out some instructional tasks and strategies being used to help nurture student transitions. Student work samples will be viewed.

Purposeful Problem Posing for ELL and Special Education Students in Middle School Mathematics Classes

Laura Kent, *University of Arkansas*
Rachel Carethers, *Springdale (AR) School District*
Tammy Guthrie, *Springdale (AR) School District*

Room C **Tags: MS SPED ELL CCSS**

This workshop highlights elements of a middle school mathematics professional development program that enhances teachers' knowledge of how middle school students make sense of, think about, and solve problems involving fractions, ratios, and proportions. In particular, English language learners and special education students find success in classrooms where problems are purposefully designed with student oriented contexts. These carefully designed problem situations provide access to diverse strategies and meaningful mathematical connections. We will share student work samples and video vignettes of students and classrooms that focus on teacher questioning and rich mathematical discourse.

Positives About Negatives

Jeanie Behrend, *CA State University Fresno*
Laura Mohs*, Visalia Unified School District (CA)*

Room D

How do primary grade students understand and use negative numbers to solve problems? What types of problems and conversations facilitate students' exploration of negative numbers? How can students' use of negative numbers in the primary grades lead to computational fluency and algebraic reasoning? How might this information provide avenues for developing an understanding of negative numbers in the intermediate grades? This session will explore these questions through examples of problems, students' work, and classroom conversations.

Friday, July 12

1:30 – 3 Sessions

CGI & Authentic Intellectual Work (AIW): Building School-wide Instructional Coherence

M. Bruce King, *University of Wisconsin – Madison*
Zach Gotto, *Taft Elementary School (Humboldt)*
Carrie Clark, *Gilbert Elementary School*

Room E **Tags: AIW CCSS**

Participants will learn about common criteria for CGI and AIW; use criteria for intellectually challenging work to analyze teacher or student artifacts; consider the importance of school-wide instructional coherence; and how CGI and AIW can increase coherence.

Classroom Discussions That Build Upon Children's Thinking

Ruti Steinberg, *Hakibbutzim State College of Education*

Room F **Tags: Discourse 3-5**

We will look at examples of classroom situations from grades 3-5. We'll focus on giving children challenging problems, helping them construct their own solution strategies, conducting discussions that build on children's thinking, and organizing the classroom to allow such work.

Making Sense of CCSS Base 10 Concepts Across the Grade Levels and What it Looks Like in the Classroom

Linda Jaslow, *Northwest Arkansas Education Service Cooperative*

Room H **Tags: Base-10 CCSS**

In this session, we will make connections between CGI and CCSS for Base 10. We will solve problems related to base 10 and analyze videos of students' work. We will look at the CCSS Base 10 standards and consider how base 10 ideas are the same and different across the grade levels, how they interconnect and ultimately reflect on the instructional implications.

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