

Cognitively Guided Instruction (CGI)
Fifth Biennial National Conference

San Diego, California
July 30—August 1, 2009

Welcome

Welcome to San Diego! We are delighted that more than 300 of you have chosen to spend part of your summer vacation exploring children's mathematical thinking. This conference has attracted participants from across the United States and several other countries, and we look forward to many lively and productive conversations. Special thanks to the more than 60 speakers who have graciously agreed to share their expertise with all of us. We are particularly grateful for the participation of the co-founders of CGI, Thomas Carpenter and Elizabeth Fennema. Be sure to introduce yourself to them and share your CGI story. Enjoy the conference!

Vicki Jacobs and Randy Philipp
Conference Co-Chairs

Keynote Sessions

*Examining CGI
Teachers' Practice:
What Leads to
Student
Understanding?*

Thursday, 6:30 p.m.
Ballrooms I–IV

Megan Loef Franke is a Professor in the Department of Education at the University of California, Los Angeles. She studies teacher learning and professional development, particularly in low-performing schools that serve large numbers of low-income students of color. She has spent the last 23 years working with teachers and researchers on Cognitively Guided Instruction (CGI). She is currently studying how to support teachers through school-based professional development as well as documenting the classroom practices that support the development of student understanding.

*Extending
Children's
Mathematics:
Fractions and
Decimals*

Friday, 1:30 p.m.
Ballrooms V–VIII

Susan Empson is an Associate Professor of Mathematics Education at The University of Texas at Austin. She studies the teaching and learning of fractions and other challenging mathematics content. She is a coauthor of *Children's Mathematics: Cognitively Guided Instruction* and is currently writing a book on children's thinking about fractions and decimals. Her work has appeared in numerous journals. She earned her PhD in Mathematics Education at the University of Wisconsin-Madison. Before attending graduate school, she taught high school mathematics in inner city New York at A. Philip Randolph High School and in the Peace Corps in Morocco.

*A Conversation
With the Founders
of Cognitively
Guided Instruction*

Saturday, 8:30 a.m.
Ballrooms V–VIII

Thomas Carpenter and **Elizabeth Fennema** are Emeriti Professors of Curriculum and Instruction at the University of Wisconsin. They began their careers as teachers of children before returning to school to complete their doctorates. Their distinguished research careers have included directing grants, writing articles, editing books and journals, and serving on national advisory boards. Tom and Eliz are also inspired teachers, and over their careers they have positively influenced many undergraduate students, graduate students, and teachers. They are known as the founders of Cognitively Guided Instruction, a program of research and professional development based upon the principle that teachers are professionals and that when teachers learn about their students' mathematical reasoning, they will use what they learn to make nuanced classroom decisions leading to enhanced student learning. Many teachers report having transformed their teaching through CGI and, as a result, hundreds of thousands of children around the world have experienced mathematics as a sense-making, creative, and engaging discipline.

Program at a Glance: Thursday, July 30, 2009

Ballrooms I-IV	<p>6:30 p.m. – 9:30 p.m.</p> <p>Levi (T1-1)</p> <p><i>Introduction to CGI Professional Development Through Teachers Development Group</i></p> <p>Franke (T1-1)</p> <p><i>Examining CGI Teachers' Practice: What Leads to Student Understanding?</i></p> <p>Dessert reception immediately following session (hosted by Teachers Development Group)</p>
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Program at a Glance: Friday, July 31, 2009

Location	8:30 a.m. – 10:00 a.m.	10:30 a.m. – 12:00 p.m.	1:30 p.m. – 3:00 p.m.	3:30 p.m. – 5:00 p.m.
Sonoma I	Brown & Van Den Heuvel (F1-1) <i>A Beginning Look at CGI</i>			
Sonoma II	Statz (F1-2) <i>Introduction to Algebra Number Work—Differentiating for Different Levels of Problem Solvers</i>	Wyse (F2-2) <i>Supporting Struggling Students During CGI Grades K–2</i>		Foreman (F4-2) <i>The Mathematics “Studio” Classroom: A Promising Context for Transforming Mathematics Teaching, Coaching, and Leadership</i>
San Diego I	Jensen (F1-3) <i>From Counting Everything Through Counting On to Using Number Relationships: The Development of Place-Value Concepts in the Primary Grades</i>	Bezuk & Klass (F2-3) <i>Algebra Success Starts With Children’s Fraction Understanding</i>		Alexander (F4-3) <i>Reading Student-Written Story Problems</i>
San Diego II	Gibson & Matteson (F1-4) <i>Selecting Problem Types and Number Choices for Your CGI Classroom</i>	Mendinueto (F2-4) <i>Supporting Struggling Students During CGI Grades 3–5</i>		Valentine & O’Donahue (F4-4) <i>Video-Taped Interviews: A Professional Developer’s Tool to Improve Practice</i>
Ballroom I				Simpson & Golan (F4-5) <i>Conjecture and Justification</i>
Ballroom II				Behrend (F4-6) <i>Starting Where They Are: CGI in Special Education</i>
Ballroom III				Steinberg (F4-7) <i>Classroom Discussions That Build Upon Children’s Thinking and How to Help Children</i>
Ballroom IV				Chan (F4-8) <i>Number Sense Through Counting in the Upper Grades</i>
Ballroom V	Levi, Bartosh, Case, Nielsen, Sweeney, & Wilson (F1-8) <i>Growing CGI Within a Region</i>	Ambrose & Martin (F2-8) <i>Mathematical Conversations: A Framework for Assessing Teachers’ Interactions With Their Students</i>	Empson (F3-2) <i>Extending Children’s Mathematics: Fractions and Decimals</i>	
Ballroom VI	Maldonado (F1-7) <i>Facilitating Discussions With ELL Students: Balancing Understanding Students’ Thinking and Successful Discussion Practices</i>	Ling & Kaufman (F2-7) <i>Young Problem Solvers and Big Numbers—Using Big Numbers to Encourage Great Thinking</i>		
Ballroom VII	Jaslow (F1-6) <i>Beyond Reading a Ruler: Examine the Hidden Concepts Embedded in Linear Measurement</i>	Tseng (F2-6) <i>Building Understanding: The Development of Spatial Thinking</i>		
Ballroom VIII	Brickwedde (F1-5) <i>CGI Summer Camp: Embedded Professional Development in a Summer School Program</i>	Fisher (F2-5) <i>CGI and English Language Learners</i>		
Brickstones	Shih (F1-9) <i>Connecting Children’s Mathematical Thinking and Children’s Literature</i>	Philipp, Cabral, & Schappelle (F2-9) <i>Using Video to Explore Children’s Mathematical Thinking</i>		
7:00 a.m. – 8:30 a.m.	10:00 a.m. – 10:30 a.m.	12:00 p.m. – 1:30 p.m.	3:00 p.m. – 3:30 p.m.	
Breakfast South Foyer	Morning Break South Foyer	Lunch Ballrooms I–IV	Afternoon Break South Foyer	

Program at a Glance: Saturday, August 1, 2009

Location	8:30 a.m. – 10:00 a.m.	10:30 a.m. – 12:00 p.m.	1:30 p.m. – 3:00 p.m.	3:30 p.m. – 5:00 p.m.
			Tickets required for these sessions	
Sonoma I		Moscardini (S2-1) <i>Cognitively Guided Instruction: An Inclusive Pedagogy</i>	Nordness & Keith (S3-1) <i>The Equal Sign—The Seemingly Simple Sign That Isn't</i>	
Sonoma II		Ambrose & Whaley (S2-2) <i>What's an Apex?: Using Building Opportunities to Build Understanding</i>	Junk (S3-2) <i>Equal-Sharing Tasks: Connecting Children's Intuitive Thinking to Fraction Concepts</i>	
San Diego I		Ponce (S2-3) <i>Overcoming the Wall of Silence and Despair That Surrounds Word Problems</i>	Behrend, Avila, & Bolton (S3-3) <i>Don't Give Up: Place-Value Development Takes Time</i>	
San Diego II		Reid (S2-4) <i>Creating CGI Problems: Integration and Collaboration</i>	Levi (S3-4) <i>The Role of Mathematical Notation in Developing Relational Thinking</i>	
Ballroom I		Wenrick (S2-5) <i>Invented Algorithms for Fraction Computation</i>	Baek (S3-5) <i>Teaching and Learning of Multidigit Multiplication and Division</i>	
Ballroom II		Stiegert (S2-6) <i>Balanced Math and Problem Solving With Number</i>	Blais (S3-6) <i>Developing a Deeper Understanding of Place Value</i>	
Ballroom III		Pierson, Pierson, & Maldonado (S2-7) <i>Talking Mathematics in Kindergarten: Ways to Support Students' In-the-Moment Mathematical Discourse</i>	Chan & Suomu (S3-7) <i>Counting Collections</i>	
Ballroom IV		Franke (S2-8) <i>Creating Opportunities for Teachers to Learn About Student Thinking</i>	Barker, Jaslow, & Kent (S3-8) <i>Exploring Mathematical Understandings in Context: Classroom-Embedded Professional Development</i>	
Ballroom V	Carpenter, Fennema, & Philipp (S1-1) <i>A Conversation With the Founders of Cognitively Guided Instruction</i>			
Ballroom VI				
Ballroom VII				
Ballroom VIII				
Brickstones		Kazemi (S2-9) <i>Working With Families to Support Children's Mathematical Learning</i>	Valentine (S3-9) <i>Using Fact Interviews to Assess Students' Basic-Fact Knowledge</i>	

7:00 a.m. – 8:30 a.m.	10:00 a.m. – 10:30 a.m.	12:00 p.m. – 1:30 p.m.	3:00 p.m. – 3:30 p.m.
Breakfast South Foyer	Morning Break South Foyer	Lunch Ballrooms V–VIII	Afternoon Break South Foyer

THURSDAY, JULY 30, 2009

Thursday, 6:30 p.m. – 9:30 p.m.

Dessert reception immediately following session (*Hosted by Teachers Development Group*)

T1-1

Introduction to CGI Professional Development Through Teachers Development Group

Linda Levi, *Teachers Development Group*

Location ♦ Ballrooms I–IV

Target audience ♦ K–5, PD

Examining CGI Teachers' Practice: What Leads to Student Understanding?

Megan Franke, *University of California, Los Angeles*

This presentation will present data and evidence to remind us all why understanding the development of children's mathematical thinking makes a difference for teachers, students, and schools. Particular attention will be paid to how we can marshal the ideas of CGI to support issues of equity and social justice.

FRIDAY, JULY 31, 2009

Friday, 8:30 a.m. – 5:00 p.m.

F1-1

A Beginning Look at CGI

Dinah Brown, *Oceanside Unified School District/San Diego State University*

Dyanne Van Den Heuvel, *Eau Claire Area Schools, Retired*

Location ♦ Sonoma I

Target audience ♦ K–5

Two of the first things we look at in our beginning CGI workshops are different types of story problems and the strategies students use to solve them. Knowledge of these two pieces of the CGI framework is the first step to enable teachers to assess their students' mathematical thinking and to craft subsequent problems to help students develop more abstract strategies over time. In this daylong session we will focus on problem types, solution strategies, and ideas for beginning to use the principles of CGI right away in your own classroom or instructional setting. ***This session is designed for participants new to CGI.***

Friday, 8:30 a.m. – 10:00 a.m.

F1-2

Location ♦ Sonoma II
Target audience ♦ 3–5

Introduction to Algebra Number Work—Differentiating for Different Levels of Problem Solvers

Kathy Statz, *Madison Metropolitan School District*

This session will introduce participants to the power of algebraic number work in helping to teach many mathematical concepts such as place value, fractions, multiplication, and division. We will explore ways to differentiate instruction for all learners in a 3–5 classroom. *This session will be particularly useful to people who are relatively new to CGI.*

F1-3

Location ♦ San Diego I
Target audience ♦ K–2

From Counting Everything Through Counting On to Using Number Relationships: The Development of Place-Value Concepts in the Primary Grades

Margaret Jensen, *Madison Metropolitan School District*

Let's take a close look at the variety of ways children develop their knowledge of multidigit numbers. Counting strategies are central to this development but are often rushed, glossed over, or ignored altogether. We will analyze children's counting strategies and see how the interaction between strategies and representations supports children's learning. Participants are encouraged to share examples of student work and/or bring questions to ponder as we work to expand and strengthen our knowledge packages on how primary children develop proficiency with multidigit numbers.

F1-4

Location ♦ San Diego II
Target audience ♦ K–2

Selecting Problem Types and Number Choices for Your CGI Classroom

Kristin Gibson, *San Diego State University*

Rachel Matteson, *La Mesa-Spring Valley School District*

As CGI teachers, we are continually assessing what our students currently understand and deciding what our next goal for them will be. Once we have a goal in mind, we need to select problem types and number choices that match the goal. In this session, we will examine student video and work samples, brainstorming potential follow-up problems. We will also share goals that arise in our own classrooms and explore ideas for meeting those goals. *This session will be most useful to people who have been using CGI for 2 or more years.*

Location ♦ Ballroom VIII
Target audience ♦ K–5, PD

F1-5

CGI Summer Camp: Embedded Professional Development in a Summer School Program
James Brickwedde, Hamline University

Meeting the needs of districts looking to build capacity, we designed a 2-week experience embedded in summer school for 12 teachers who had at least one year of CGI experiences. Three classrooms, two sections each of students entering 2nd, 4th, and 7th grades, allowed teachers to work in a 3:1 student-teacher ratio across the morning. The afternoon was spent debriefing, analyzing, and planning for instruction. This conference session looks at initial results with special attention to cases written by teachers on students, any observed shifts in teacher thinking, and teachers' insights on student learning.

Location ♦ Ballroom VII
Target audience ♦ K–5

F1-6

Beyond Reading a Ruler: Examine the Hidden Concepts Embedded in Linear Measurement
Linda Jaslow, Northwest Arkansas Educational Service Cooperative

In this session, we will examine the fundamental concepts that are embedded in the development of the ruler. We will consider the implications for student understanding of linear measurement.

Location ♦ Ballroom VI
Target audience ♦ K–5

F1-7

Facilitating Discussions With ELL Students: Balancing Understanding Students' Thinking and Successful Discussion Practices
Luz Maldonado, University of Texas at Austin

How can teachers begin to both explore ELL students' mathematical thinking and successfully facilitate a discussion of students' strategies? Three bilingual third-grade teachers in Texas facilitated problem-solving groups with ELL students and formed a teacher study group to reflect on and refine their attempts. This workshop will interactively present the best practices and provide an opportunity for participants to analyze ELL students' strategies toward understanding how to better introduce problems, support ELL students' problem solving, and utilize students' problem-solving strategies for discussion. Additionally, participants will be encouraged to reflect on initial steps toward inclusive discussions with all students. *This session will be particularly useful to people who are relatively new to CGI.*

Location ♦ Ballroom V
Target audience ♦ K–5, PD

F1-8

Growing CGI Within a Region

Linda Levi (Moderator), *Teachers Development Group*

Rick Bartosh, *Iowa Department of Education*

Joan Case, *Hesperia Unified School District*

Bill Nielsen, *Arkansas Department of Education*

Molly Sweeney, *The Downtown School*

Cheryl Wilson, *Springdale School District*

A panel of presenters will share their stories about how they developed CGI within their regions. Two of our panel members will talk about growing CGI within their schools. One panel member will talk about growing CGI within her school district. The final two panel members will talk about state-wide CGI initiatives. Several panel members will discuss how CGI addresses state and local standards. We will also share lessons learned from our efforts. There will be plenty of time to address questions from the audience.

Location ♦ Brickstones
Target audience ♦ K–5

F1-9

Connecting Children’s Mathematical Thinking and Children’s Literature

Jeffrey Shih, *University of Nevada, Las Vegas*

This session will focus on a grant at two high-need elementary schools that includes professional development in both CGI and in children’s literature. A framework for integrating children’s literature and mathematics will be presented, as well as teacher and student perspectives. Participants will be encouraged to explore and share explicit CGI connections to children’s literature.

Friday, 10 a.m. – 10:30 a.m.

BREAK

South Foyer

Friday, 10:30 a.m. – 12:00 p.m.

F2-2

Location ♦ Sonoma II
Target audience ♦ K–2

Supporting Struggling Students During CGI Grades K–2

Chrysta Wyse, *Santa Monica-Malibu Unified School District*

This session will focus on targeting the needs of your students who need the most support in math. We will look at counting warm-ups, matching the warm-up to the CGI problem, “unpacking” the problem to help students get started, and questioning to help students be successful. We will focus on supporting struggling students, but these strategies will benefit all of your mathematicians. *This session will be particularly useful to people who are relatively new to CGI.*

F2-3

Location ♦ San Diego I
Target audience ♦ 3–5

Algebra Success Starts With Children's Fraction Understanding

Nadine Bezuk, *San Diego State University*

Steve Klass, *Encinitas Union School District/San Diego State University*

Participants will explore the big ideas of ordering and comparing fractions along with childrens' thinking about these topics, including common conceptions and misconceptions. We will build on this understanding and connect it to basic algebra concepts of variable and algebraic reasoning. The strategies and models used are designed to build children's understanding of fraction concepts and fraction comparison through reasoning. Participants will leave with strategies and ideas to help children build a stronger foundation for quantitative and algebraic reasoning.

F2-4

Location ♦ San Diego II
Target audience ♦ 3–5

Supporting Struggling Students During CGI Grades 3–5

Darwin Mendinueto, *Santa Monica-Malibu Unified School District*

This session will focus on targeting the needs of your students who need the most support in math. We will look at counting warm-ups, matching the warm-up to the CGI problem, “unpacking” the problem to help students get started, and questioning to help students be successful. We will focus on supporting struggling students, but these strategies will benefit all of your mathematicians. *This session will be particularly useful to people who are relatively new to CGI.*

Location ♦ Ballroom VIII
Target audience ♦ K–5

F2-5

CGI and English Language Learners

Carol Fisher, *El Centro Elementary School District/San Diego State University-Imperial Valley Campus*

Is it knowledge of language, knowledge of mathematics, or both? Results of working with a school district along the border as well as examples of CGI problems will be discussed.

Location ♦ Ballroom VII
Target audience ♦ 2–5

F2-6

Building Understanding: The Development of Spatial Thinking

Nancy Tseng, *Robla School District*

In this session, we will examine the implementation of specifically designed instructional activities in a third-grade classroom. These activities were created to support the development of spatial-thinking skills in students. Data collected from pre- and post-assessments show that experience with spatial-thinking activities impacted student learning, and the use of polydrons was key to the development of skills. Activities in the session will include the use of polydrons, viewing of student-interview video, and analysis of student work. *This session will be particularly useful to people who are relatively new to CGI.*

Location ♦ Ballroom VI
Target audience ♦ K–2

F2-7

Young Problem Solvers and Big Numbers—Using Big Numbers to Encourage Great Thinking

Meghan Ling, *Encinitas Union School District*

Stacey Kaufman, *Encinitas Union School District*

Two kindergarten CGI teachers explore working with big numbers with children from kindergarten through second grade to encourage great number sense and place-value understanding. Through video, discussion, and looking at student work, teachers will be encouraged to help their young students solve problems using big numbers and take the next step in their mathematical thinking. Teacher questioning in problem solving, counting and estimation experiences, and classroom management will also be discussed.

Location ♦ Ballroom V

Target audience ♦ K–5, PD

F2-8

Mathematical Conversations: A Framework for Assessing Teachers' Interactions With Their Students

Rebecca Ambrose, *University of California-Davis*

Heather Martin, *University of California-Davis*

How do CGI teachers react when children struggle to solve a problem? What do they do to extend children's thinking? Analysis of videos of teachers interviewing their students will illustrate a framework for assessing teachers' interviews with their students. We will consider how teachers try to respond to their students' problem-solving needs and potentials without interfering in their thinking processes—helping neither too little nor too much, and in the right ways. Data will confirm just how challenging advancing children's mathematical thinking can be.

Location ♦ Brickstones

Target audience ♦ K–5, PD

F2-9

Using Video to Explore Children's Mathematical Thinking

Randy Philipp, *San Diego State University*

Candace Cabral, *San Diego State University*

Bonnie Schappelle, *San Diego State University*

Video is a powerful tool for supporting teachers' learning about children's mathematical thinking. We will introduce the audience to a searchable set of K-6 video clips designed to support teachers as they consider children's understanding of early number, place value, and fractions. We will view specific clips and discuss how they might be used in professional development to raise important issues about mathematics, teaching, and learning. The video clips used in the session will be made available to session attendees for their future use.

Friday, 12:00 p.m. – 1:30 p.m.

LUNCH

Ballrooms I–IV

Friday, 1:30 p.m. – 3:00 p.m.

F3-2

Extending Children's Mathematics: Fractions and Decimals

Susan Empson, *University of Texas at Austin*

Location ♦ Ballrooms V–VIII

Target audience ♦ K–5, PD

This talk will focus on the development of children's thinking about fractions and how that thinking can be integrated with children's developing understanding of algebra. Specific topics include problems types that build on and extend children's informal knowledge of partitioning, solution strategies, the emergence of relational thinking, and the teacher's role in supporting student learning. Excerpts from a book in progress, *Extending Children's Mathematics: Fractions and Decimals*, will be shared.

Friday, 3:00 p.m. – 3:30 p.m.

BREAK
South Foyer

Friday, 3:30 p.m. – 5:00 p.m.

F4-2

The Mathematics "Studio" Classroom: A Promising Context for Transforming Mathematics Teaching, Coaching, and Leadership

Linda Cooper Foreman, *Teachers Development Group*

Location ♦ Sonoma II

Target audience ♦ K–5, PD

What is a mathematics studio? Imagine a live classroom teaching study: "resident" classroom teachers and administrators collaborate with the "studio" teacher and a coach to design a lesson and/or the rehearsal of a specific teaching practice. Then the residents observe, the studio teacher enacts the plan, and the coach suggests teaching moves "in the moment." Immediately following, there is a facilitated discussion of the impact of the teaching moves. This session will overview the Mathematics Studio Program, emphasizing practices/tools deemed most promising for leveraging high-cognitive engagement and learning by all K–12 math students, teachers, coaches, and administrators.

F4-3

Reading Student-Written Story Problems

Cathleen Alexander, *University of California-Davis*

Location ♦ San Diego I

Target audience ♦ 1–6

What happens when children write their own story problems? We will examine a range of story problems written by EL and EO first- and second-graders. We will see videos of older students writing stories using fractions. We will discuss the component parts of story problems and create a rubric for analyzing student work. I will share data from a large study of 300 student-written story problems, discuss how we coded the data, and show interesting patterns that emerged.

Location ♦ San Diego II
Target audience ♦ K–5, PD

F4-4

Video-Taped Interviews: A Professional Developer's Tool to Improve Practice

Carrie Valentine, *Madison Metropolitan School District*

Kim O'Donahue, *Madison Metropolitan School District*

This session presents a method for professional developers to bring student-teacher interactions from the classroom into a guided professional development session. As a professional developer, you will learn ways to incorporate video clips provided by teachers to constructively expand the teachers' self-awareness and improve their abilities to make the most of problem-solving interactions with their students. Establishing expectations for viewing and responding to participant videos will be discussed along with the logistics of interviewing students, using FLIP video-cams, and selecting appropriate video clips for discussion. The session is aimed at professional developers interested in incorporating videotaping into their PD work with teachers.

Location ♦ Ballroom I
Target audience ♦ K–5

F4-5

Conjecture and Justification

Lori Simpson, *Mathematics Program Specialist currently on leave from Capistrano Unified School District*

Ana Golan, *Orange County Department of Education*

We will explore how children can state conjectures and justify their thinking to make number properties explicit, helping them to structure their learning and thus further their understanding. For many people, arithmetic represents a collection of unrelated and arbitrary manipulations of numbers and symbols. Once children have a good understanding of basic operations, the next step is to reflect on important properties of those operations so that students can use their knowledge more flexibly and extend their understanding of number facts, place value, and other basic arithmetic concepts.

Location ♦ Ballroom II
Target audience ♦ K–5
(Special Education)

F4-6

Starting Where They Are: CGI in Special Education

Jeanie Behrend, *California State University, Fresno*

Special Education is designed to differentiate instruction for individual students. What better way to do this than to look at what students know and build on that knowledge. This session will explore techniques for blending assessment and instruction in Special Education.

Location ♦ Ballroom III

Target audience ♦ 3–5

F4-7

Classroom Discussions That Build Upon Children's Thinking and How to Help Children

Ruti Steinberg, *Kibbutzim Teacher College, Tel Aviv, Israel*

We will look at examples of classroom situations from Grades 3–5. We 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. The session includes video clips from classrooms, children's solution strategies, and transcripts of classroom discussions. The examples will be from topics such as place value (like adding or subtracting 3-digit numbers), multiplying 2-digit numbers, fractions, decimals, and more.

Location ♦ Ballroom IV

Target audience ♦ 3–5

F4-8

Number Sense Through Counting in the Upper Grades

Angela Chan, *University of California, Los Angeles*

Students' continued number-sense development is critical as students operate on large numbers, fractions, and integers, yet number-sense activities are seldom built into upper-grades curricula. This session engages participants in counting activities designed to support conceptual understanding of upper-grades-mathematics content. We will count together (by large numbers, by fractions, backwards into negative numbers), discuss patterns that arise within counting sequences, and detail the mathematical content addressed by a variety of counting tasks. Participants will also watch classroom video and develop and share counting sequences to use in their own classrooms.

Location ♦ Brickstones

Target audience ♦ K–2

F4-9

Implementing CGI in Kindergarten—The Nuts and Bolts

Mary Jo Yttri, *Madison Metropolitan School District*

This session will focus on the practical aspects of using CGI with Kindergarteners. It will include how and when to begin CGI, which problem types to begin with, how to help children express their thinking, record keeping, using centers and manipulatives, and what comes after direct modeling for some of your students.

SATURDAY, AUGUST 1, 2009

Saturday, 8:30 a.m. – 10:00 a.m.

S1-1

Location ♦ Ballrooms V–VIII

Target audience ♦ K–5, PD

A Conversation With the Founders of Cognitively Guided Instruction

Thomas Carpenter, *University of Wisconsin-Madison*

Elizabeth Fennema, *University of Wisconsin-Madison*

Randy Philipp (Moderator), *San Diego State University*

More than 25 years ago, Thomas Carpenter and Elizabeth Fennema originated Cognitively Guided Instruction as a university research project, and since that time, many teachers have learned about and used information from CGI to transform their mathematics teaching. During this panel session, Tom and Eliz will answer questions about CGI. Topics to be discussed include what CGI is, its history, critical early decisions that affected the directions of CGI, and what they might do differently if they were recreating CGI. Audience members will have an opportunity to submit questions for Tom and Eliz before the session.

Saturday, 10:00 a.m. – 10:30 a.m.

**BREAK
South Foyer**

Saturday, 10:30 a.m. – 12:00 p.m.

S2-1

Location ♦ Sonoma I

Target audience ♦ K–5, PD

Cognitively Guided Instruction: An Inclusive Pedagogy

Lio Moscardini, *University of Strathclyde, Glasgow, Scotland, UK*

This session will present the findings of a research study funded by the Esmee Fairbairn Foundation (EFF). The study is a pilot of the initial UK development of CGI with a group of mainstream primary teachers. It explores the nature of teachers' learning from this professional development in terms of knowledge and beliefs and how this translates into practice as an inclusive pedagogy supporting all pupils. The session would also invite the opportunity to discuss the development of this work further through collaborative research activity potentially funded through EFF.

Location ♦ Sonoma II
Target audience ♦ K–5

S2-2

What's an Apex?: Using Building Opportunities to Build Understanding

Rebecca Ambrose, *University of California-Davis*

DJ Whaley, *Woodland School District*

Third graders quickly identify *apexes* as a critical feature of pyramids and like using the term in their descriptions of polyhedra they build. While not always using it correctly and not always defining it comprehensively, they do readily look at polyhedra with new eyes, focusing on whether tops are flat or “pointy.” Session activities will include engaging in activities that use polydrons to promote mathematical discussions, watching videos of children, discussing children's development from informal/visual thinking to formal/analytic reasoning, and sharing the challenge of helping students understand the need for precise definitions in mathematics.

Location ♦ San Diego I
Target audience ♦ K–5

S2-3

Overcoming the Wall of Silence and Despair That Surrounds Word Problems

Gregorio Ponce, *San Diego State University-Imperial Valley Campus*

This session intergrates Daily Oral Language and CGI into one classroom activity to help break the barriers teachers and students face when solving word problems.

Location ♦ San Diego II
Target audience ♦ K–2

S2-4

Creating CGI Problems: Integration and Collaboration

Roberta Reid, *Santa Monica-Malibu Unified School District*

In this session you will explore strategies to support creating CGI word problems, particularly as you work together with your colleagues and integrate the problems with your curricula. We will explore the area of number choice and how numbers can be chosen to meet the needs of all learners. We will discuss linking your word problems to your warm-ups. Participants will also have an opportunity to consider specific number choices for individual math concepts.

Location ♦ Ballroom I
Target audience ♦ 3–5

S2-5

Invented Algorithms for Fraction Computation

Melanie Wenrick, *California State University, Fresno*

Analyze a developing framework for classifying children's invented algorithms for adding and subtracting fractions. Children's work from a third-, fourth- and fifth-grade multilevel CGI class serves as the basis for this framework. We will explore how well the classification system works as we try to solve problems and consider examples from different students. We will compare invented strategies for whole number and fraction computation. Participants are invited to bring examples of work showing students' invented strategies for solving fraction-computation problems. *This session will be most useful to people who have been using CGI for 2 or more years.*

Location ♦ Ballroom II
Target audience ♦ 3–5

S2-6

Balanced Math and Problem Solving With Number

Dawn Stiegert, *Madison Metropolitan School District*

What is Balanced Math and where does Problem Solving fit? In this session, participants will explore a framework for balanced mathematics and its implementation in the classroom. Specifically, participants will focus on one aspect of balanced math—problem solving with number. Instructing guided math groups with intentional numbers that encourage students' mathematical thinking and development is often overwhelming, given the variety of student needs. Methods for organizing groups on the basis of assessments and creating an efficient classroom flow will be provided. Participants may bring classroom math textbooks to explore how balanced math coincides with current curricular materials. *This session will be particularly useful to people who are relatively new to CGI.*

Location ♦ Ballroom III
Target audience ♦ K–2

S2-7

Talking Mathematics in Kindergarten: Ways to Support Students' In-the-Moment Mathematical Discourse

Jessica Pierson, *San Diego State University*

Erika Pierson, *Round Rock Independent School District*

Luz Maldonado, *University of Texas at Austin*

Facilitating mathematical discussions in which students actively participate in making conjectures, providing explanations, and understanding one another's reasoning is a goal of mathematics instruction. However, scaffolding students in their ability to "talk mathematics" can be challenging in lower elementary grades as young students struggle to verbalize their ideas. In our session, we describe one kindergarten teacher's attempts to help her students verbalize their mathematical thinking while solving story problems. We represent different combinations of scaffolding moves that routinely occurred in the classroom as multiple "pathways" the teacher and her students traveled down to communicate their mathematical thinking in-the-moment. *This session will be particularly useful to people who are relatively new to CGI.*

S2-8

Location ♦ Ballroom IV

Target audience ♦ K–5, PD

Creating Opportunities for Teachers to Learn About Student Thinking

Megan Franke, *University of California, Los Angeles*

This session is designed for those of us who are working to support teachers as they are becoming CGI teachers. I will share what we have learned over the past few years about supporting teachers. I will share what we have learned in our most recent work at one school site and our newest approach to supporting teachers as they develop particular classroom practices that enable them to listen to and build on student thinking.

S2-9

Location ♦ Brickstones

Target audience ♦ K–5

Working With Families to Support Children's Mathematical Learning

Elham Kazemi, *University of Washington*

What can families do at home to support children's mathematical learning? In this session, we'll discuss strategies teachers can use to help families support mathematics learning at home, through one-time events such as parent nights as well as ongoing activities. Ideas for supporting struggling and confident learners will be shared. Participants will learn about resources they can use, including those to help families “mathematize” ordinary activities at home, foster enthusiasm for doing mathematics, provide support with homework, practice number facts and work on problem solving.

Saturday, 12:00 p.m. – 1:30 p.m.

LUNCH

Ballrooms V–VIII

Note about ticketed sessions

We are delighted to provide you with an opportunity to participate in a 3-hour session focused on a topic of interest. We were able to assign everyone to one of their top three choices (specified during registration), and in your welcome packet, you received a ticket for your session. Please bring your ticket to the session because we will be collecting tickets before the session begins.

We ask that you please be respectful of the session assignments and not attend a session unless it was assigned to you. We worked to create all sessions with fewer than 40 participants so that the 3 hours could be interactive. Thank you, and enjoy your extended session.

<p>Saturday, 1:30 p.m. – 5:00 p.m. (ticketed sessions) BREAK (3:00 p.m. – 3:30 p.m. in the South Foyer)</p>
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S3-1

The Equal Sign—The Seemingly Simple Sign That Isn't
Carla Nordness, Madison Metropolitan School District
Annie Keith, Madison Metropolitan School District

Location ♦ Sonoma I
Target audience ♦ K–5

What does it mean to understand the equal sign? How does this understanding help children mathematically? During this session, we will discuss the teacher's role in building understanding of the equal sign and facilitating students' ability to generalize this understanding to other areas. Participants will have an opportunity to work in grade-level groups. Join us as we look at the importance of this seemingly simple sign and its relevance to mathematical competence. *This session will be most useful to people who are relatively new to CGI.*

S3-2

Equal-Sharing Tasks: Connecting Children's Intuitive Thinking to Fraction Concepts
Debbie Junk, The University of Texas

Location ♦ Sonoma II
Target audience ♦ K–5

In this session, participants will explore equal-sharing problems that can be used to develop understanding of fractions. Children, as early as Kindergarten, can build on their intuitive ideas of fair shares and whole number relationships to build understanding of fractions. We will solve equal-sharing problems, explore strategies that can be used to solve these problems, and view video-taped sessions featuring individual children solving problems. Middle grades teachers may also find this information beneficial, because fractions are a major component of the 6–8 curriculum. *Participants with any level of CGI experience are welcome.*

Location ♦ San Diego I
Target audience ♦ 1–4

S3-3

Don't Give Up: Place-Value Development Takes Time

Jeanie Behrend, *California State University, Fresno*

Ben Avila, *Central Unified School District*

Laura Bolton, *Central Unified School District*

What do you do when students come from more traditional instruction and can do the standard algorithms but lack the place-value knowledge to understand what they are doing? How can these students develop place-value knowledge, flexible strategies, and a belief that mathematics makes sense? In this session, we will explore these issues by looking at samples of student work across time. *This session will be most useful to people who have been using CGI for 2 or more years.*

Location ♦ San Diego II
Target audience ♦ 1–6

S3-4

The Role of Mathematical Notation in Developing Relational Thinking

Linda Levi, *Teachers Development Group*

Mathematical notation is an important tool in developing students' relational thinking. It is challenging to introduce students to mathematical notation that both reflects their understandings and is widely understood. In this session, we will talk about our goals in having students record their mathematical thinking and the types of notation that support these goals. We will also discuss ways to introduce notation to students and ways to help students develop more sophisticated notation to represent mathematical relationships. *This session will be most useful to people who have been using CGI for 2 or more years.*

Location ♦ Ballroom I
Target audience ♦ 3–6

S3-5

Teaching and Learning of Multidigit Multiplication and Division

Jae M. Baek, *Illinois State University*

In this session, participants will focus on how children make sense of multidigit multiplication and division and what strategies they develop over time if they are encouraged to construct strategies based on their understanding of multiplicative concepts and contexts. Participants will explore different types of children's strategies and how to classify them. We will investigate the underlying mathematics of the strategies and instructional methods to help children develop more sophisticated and fluent strategies. *This session will be most useful to people who have been using CGI for 2 or more years.*

Location ♦ Ballroom II
Target audience ♦ K–4

S3-6

Developing a Deeper Understanding of Place Value

Tanya Vik Blais, *Teachers Development Group*

Developing place value begins in the early grades and becomes increasingly important to a student's success in mathematics over the years. In this session, we will rethink common place value tasks and consider effective alternatives. A significant amount of time will be dedicated to identifying CGI problems and specific number choices that will deepen our students' understanding of place value. *This session will be particularly useful to people who are relatively new to CGI.*

Location ♦ Ballroom III
Target audience ♦ K–2

S3-7

Counting Collections

Angela Chan, *University of California, Los Angeles*

Susan Suomu, *Santa Monica-Malibu Unified School District*

In this session, we will go in-depth into counting collections of objects, a classroom activity designed to develop number sense and place-value understanding through counting. During this session, we will count different kinds of collections, identify student counting strategies, analyze students' written representations, and watch classroom video. Throughout the session, we will unpack and detail the teacher's role in supporting students to count collections, particularly noting the questions teachers ask to elicit and extend student ideas. We will also highlight the mathematical ideas that arise in counting collections and discuss how these connect to CGI problem-solving strategies. *Participants with any level of CGI experience are welcome.*

Location ♦ Ballroom IV
Target audience ♦ K–5, PD

S3-8

Exploring Mathematical Understandings in Context: Classroom-Embedded Professional Development

Vicki Barker, *Prairie Grove Intermediate School*

Linda Jaslow, *Northwest Arkansas Educational Service Cooperative*

Laura Kent, *University of Arkansas*

How do you answer the question "What does CGI look like in the classroom?" This session will focus on a professional development approach that helps teachers grapple with teacher decision-making in the context of an actual classroom. During classroom-embedded professional development, participating teachers visit a single classroom to observe a mathematics lesson, then spend time outside of the classroom discussing what happened, analyzing student work, and developing learning goals and next steps based on that work. The teachers then return to the classroom to watch the classroom teacher facilitate a mathematical discussion centered around these predetermined goals and tasks. In this session, we will conduct a modified form of the classroom-embedded process using specially designed protocols to help teachers (a) examine student work, (b) develop learning goals based on that work, and (c) carefully select problem types and numbers. In addition, we will discuss the benefits and logistics of this professional development approach to facilitate mathematical discussions centered around predetermined learning goals.

Location ♦ Brickstones

Target audience ♦ 1–5

S3-9

Using Fact Interviews to Assess Students' Basic-Fact Knowledge

Carrie Valentine, Madison Metropolitan School District

What does it mean to know basic facts? Is there a typical trajectory for development of fact knowledge? How can you quickly assess whether your instruction is helping your students use relational thinking for basic facts? In this session, we will investigate these questions and more based on Fact Interviews developed by teachers in Madison, Wisconsin. Fact interviews will be conducted with real children during this session. Materials to use with your students will also be provided. Join this group if you want to break free of timed tests as a means of assessing number sense. *Participants with any level of CGI experience are welcome.*

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