Cognitively Guided Instruction

2017 National Conference

University of Washington - Seattle
June 26-28, 2017
Welcome

We are extremely honored to be hosting the 9th biennial CGI Conference at the University of Washington in the Emerald City. The theme of this year’s conference is Making Connections. We have organized the keynotes and the schedule to help you make connections of all kinds. First and foremost, we hope you will make new and lasting connections with colleagues from geographic distances near and far. We also hope you will make connections among ideas and projects, pursue themes and issues that you will be immersed in over the next two days.

Recently, the planning team enjoyed listening to Tom Carpenter and Elizabeth Fennema talk about the origins of CGI through Sam Otten’s Math Ed Podcast (mathedpodcast.com). From the start, CGI has been about honoring both children’s ideas and teachers. It puts curiosity and inquiry about what and how children think at the center of good teaching. It provides frameworks for children’s thinking but not limits. The CGI research team thought their experiences studying children’s mathematics would be useful for teachers and as Tom explains in the podcast, “if we had told teachers how to use this knowledge we would have been entirely off base and seen something entirely different.” Elizabeth put it more bluntly, “Here we are…believing that children have their own thoughts and their own minds and their own backgrounds and can solve problems. And yet we don’t believe that about the teachers. Well I believe it about the teachers! We’ve got to give the information to teachers about how children learn mathematics and then study what they do with it!” And so began an amazing partnership between researchers and teachers to figure out what was possible in classrooms that continues to this day. Over the years, researchers and teachers have asked questions and developed new curiosities about what it means to come to know children and nurture their social, cultural, and intellectual resources.

This conference will invite us to engage with questions and insights that learning about CGI has inspired. And in the spirit of engaging in inquiry together, we hope you will embrace and reflect on these essential questions that Joi Spencer will pose to us at the opening session. We hope they will inform our conversations throughout the conference and beyond:

1. In what ways are your students allowed to bring "their whole selves" to the learning of mathematics in your classroom and school?
2. What do you know about the cultural and lived experiences of the students in your mathematics classroom? (How can you broaden your knowledge?)
3. How does your mathematics classroom interrupt and/or reinforce narratives of who is and who is not capable mathematically? (How could your classroom become more interruptive vs. reinforcing of these narratives?)

We hope this conference helps you to make new connections among ideas, among people, and among projects and to use these connections to imagine where you want your practice to take you next. Welcome and enjoy the conference!
Monday, June 26
11:00 - 1:00  CGI 101 Pre-Session  Room 145
12:00 - 2:00  Registration  Husky Union Building (HUB) Lobby
2:00 - 3:30  Opening Remarks and Keynote  South Ballroom
             Talking Math with Kids
3:45 - 5:15  Session 1  Breakout Rooms
5:15 - 6:30  Reception  HUB First Floor: Lyceum & Room 145

Tuesday, June 27
7:45 - 8:30  Breakfast  Lyceum
8:30 - 9:45  Keynote  South Ballroom
             Equal Math Partners: Families, Communities, & Schools
10:00 - 11:00  Session 2  Breakout Rooms
11:15 - 12:15  Session 3 or Lunch  Breakout Rooms or Lyceum
12:30 - 1:30  Session 4 or Lunch  Breakout Rooms or Lyceum
1:45 - 3:15  Session 5  Breakout Rooms
3:30 - 4:30  Session 6  Breakout Rooms

Wednesday, June 28
7:45 - 8:30  Breakfast  Lyceum
8:30 - 9:45  Keynote  South Ballroom
             Anticipatory Thinking: Supporting Students’ Understanding of How Subtraction Works
10:00 - 11:00  Session 7  Breakout Rooms
11:15 - 12:15  Session 8 or Lunch  Breakout Rooms or Lyceum
12:30 - 1:30  Session 9 or Lunch  Breakout Rooms or Lyceum
1:45 - 2:30  Conference Closing: Making Connections  South Ballroom
Keynote Presentations

Making Connections Panel
We’ll begin the opening keynote session by offering three essential questions to consider throughout the conference. In our closing session, three guests, Joi Spencer, Andrew Gael, and Teresa Lind, will help us revisit these questions and reflect on what we’ve learned during the conference.

Talking Math with Kids
Christopher Danielson, Desmos
Allison Hintz & Tony Smith, UW Bothell
Megan Franke, Angela Turrou, & Nick Johnson, UCLA

Young children are curious mathematicians. When we listen carefully, we find that they bring a wealth of knowledge about the world to their mathematics work. They also bring important mathematical ideas to their everyday play. In this session we will explore ways that teachers and families can pay close attention to children’s ideas and leverage their incredible mathematical power to drive our conversations and learning.

Equal Math Partners: Families, Communities, and Schools
Erin Turner, Julia Aguirre & Corey Drake, Teach Math Project
Carolee Hurtado, UCLA Parent Project

Students learn mathematics in various settings, including family, community and school. They bring important knowledge and experiences about the world to make sense of school mathematics and vice versa. How can we leverage students’ funds of knowledge as strengths in learning mathematics? How can we work with families/communities as equal partners to support children’s learning of mathematics? In this session we will share approaches to making meaningful connections among families, communities, and the mathematics classroom.

Anticipatory Thinking: Supporting Students’ Understanding of How Subtraction Works
Virginia Bastable, Mount Holyoke College
Linda Levi, Teachers Development Group

Understanding how subtraction works lays the foundation for understanding subtraction with large numbers, fractions, integers, and algebraic expressions. In this session, we will examine the properties of subtraction embedded in students’ intuitive strategies. We will discuss how to support students in developing consistent approaches to a wide range of problems, how to analyze the strategies from a mathematical perspective, and how to support students’ discussion of how subtraction works.
About the Presentations

Thank you to all of our presenters!

TARGET AUDIENCE descriptors are provided for each session with many offerings for:
- a variety of grade levels
- different levels of experience with CGI
- and admin/PD providers

MAKING CONNECTIONS presentations involve multiple groups of presenters discussing a common theme in an engaging format. Look for Making Connections presentations in Sessions 1, 5, and 7.

KEYNOTE PRESENTATIONS will be held in the South Ballroom.

BALLROOM PRESENTATIONS will take place in the South Ballroom during regular breakout sessions. Look for these presentations during Sessions 2, 5, and 6.

Important Dining Details

BREAKFAST will be served in the Lyceum on the first floor 7:45-8:30am on both Tuesday and Wednesday.

LUNCH will also be served in the Lyceum during two different sessions on Tuesday and Wednesday. You can choose to attend lunch either at 11:15-12:15 or at 12:30-1:30.

WATER bottle filling stations are located on each floor of the HUB.

SNACKS will be available in each session room throughout the day.

If there is anything else that you need, there are dining options on the Ground Floor of the HUB including Starbucks, Subway, and Pagliacci Pizza.

Thank You to Our Sponsors
Let’s Make Some Connections

In the spirit of making connections, we’ve built some time into the conference schedule for us to gather, reflect, and enjoy our time together. We hope you’ll also take advantage of Twitter to connect virtually.

**MONDAY RECEPTION**

*Husky Union Building (HUB) First Floor, 5:15-6:30*

Join us in the Lyceum and Room 145 (on the first floor of the HUB) to enjoy appetizers, meet up with your colleagues, and get to know some new CGI friends. We’ll also have some fun math games and materials to play with, generously provided by Christopher Danielson, Dan Finkel and Allison Hintz.

**TWITTER**

*Online via Twitter.com or on the mobile app*

Twitter is a great way to connect with others during the conference and beyond! Here are some hashtags you can use to chat about what you’re learning. Many presenters have shared their handles (or usernames) in the contacts section toward the end of the program.

- **#CGIseattle** to discuss the conference
- **#CGImath** to talk CGI with a broader network of educators beyond the conference
- **#CountCollections** and **#ChoralCount** are hashtags related to counting
- **#MTBoS** is the Math-Twitter Blog-o-Sphere, a hashtag for discussing all things math!

New to Twitter? Here are some tips for getting started.

- Create an account. Your “Twitter handle,” or username, will start with an @. This is how others will find you.
- Start “following” people (such as @CGIseattle2017) and see who they’re following
- Want to share an insight, idea, or wondering related to the conference? Include #CGIseattle in your message so that others will find it.

Twitter terminology:
- Hashtag (#): think of this as a keyword or topic of interest; very useful for searching
- Tweet (noun): a short message posted on twitter with a 140 character limit
- Tweet (verb): the act of posting your message
Mathematizing Children’s Literature
Allison Hintz & Antony Smith, UW Bothell

Join us to think together about the power of children’s literature for opening up meaningful contexts to discuss children’s ideas about mathematics. We will share a process for approaching shared-reading experiences with a mathematical lens, thumb through books that represent a range of text types, and think about how to foster joy and wonder for mathematics with young children.

Grades PreK-3 • All levels of CGI experience

Teacher Moves to Support the Development of Multiple Strategies
Kelly Peters & Nancy Villalta, UCLA Lab School

This session helps teachers support developing mathematicians in engaging with each other’s ideas. We share explicit teacher moves that set students up for success through examples and student work, along with tips to document student thinking. Walk away with intentional moves to enhance student mathematical discourse and learn how to make their ideas visible in the classroom environment.

Any Grade • New to CGI

Exploring Numbers, Operations, and Properties Through Counting Collections
Teresa Lind, Erika Klein, Lynn Simpson, & Theresa Tse, Renton School District

In this session, we will share how one school uses “Counting Collections” to deepen student understanding of numbers, operations, and properties of operations. Using videos, student work, and interactive tasks, we will offer ideas for counting collections in grades K through 5.

Grades K-5 • All levels of CGI experience

Shaping Up - Kids' Thinking in Geometry
Rebecca Ambrose & Erica Burnison, University of California-Davis

Naming shapes is just the beginning of what students can do in geometry. In this session, we will go beyond typical textbook tasks to consider activities to advance students' spatial reasoning. We will do some tasks, examine students' thinking and explore a preliminary developmental framework for children’s spatial reasoning.

Grades K-6 • All levels of CGI experience
Helping Children Learn Facts with Understanding
Annie Keith, Madison Metropolitan School District, Madison, WI

How many times have you heard a teacher say, “My students don’t know their math facts. Didn’t anyone teach them their facts?” Instead of questioning whether or not facts have been taught, the discussion should be on teaching strategies to improve math fact understanding. In this session, we will focus on how to teach math facts with understanding vs. memorization. Relational thinking along with tools, such as ten frames, visualization, true/false, and open equations will be highlighted.

Grades K-5 • All levels of CGI experience

Numberless Word Problems
Brian Bushart, Round Rock ISD

How can we develop understanding of the underlying structures of word problems to help each and every student become proficient at solving them? Take out the numbers! In this session we’ll share an instructional routine that scaffolds student understanding of CGI problem types and encourages sense making prior to computation.

Grades K-MS • All levels of CGI experience

MAKING CONNECTIONS: Supporting Teacher Learning

All Grades • All levels of CGI experience • PD

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<tr>
<th>Journey into Coaching</th>
<th>Leading CGI Book Studies</th>
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<tr>
<td>Stacy Anderson &amp; Laura Delmas, Chowchilla Elementary School District&lt;br&gt;Melanie Wenrick, California State University&lt;br&gt;Coaching is a road trip. There are twists, turns, and bumps along the road. Other times you know that you are on the right road and making progress to your destination. Join us as we share what we have learned about how to help steer teachers in a small, rural district down the CGI road.</td>
<td>Barb Rock, Shauna Johnson, &amp; Georgia Steptoe, Sedro-Woolley School District&lt;br&gt;Come learn how to organize a CGI book study to promote teacher learning and change. We’ll discuss how to structure meetings, establish a collaborative spirit while allowing room to press on each other’s ideas, use student work and videos to support learning and get commitments to try tasks between meetings.</td>
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<th>Keeping Sense-Making at the Heart of Math Learning for Teachers and Students</th>
<th>Clinical Interviews and Embedded Lessons for Middle School Teachers</th>
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<td>Jana Sanchez, Everett Public Schools&lt;br&gt;Supporting teachers in implementing mathematically productive instructional routines that focus on sense-making, reasoning, and critical thinking connects teaching and student practices. Let’s create space for joy in mathematics, let students’ thinking guide the work of teaching, and open up space in problem solving to build on students’ strategies.</td>
<td>John Lamb, University of Texas at Austin&lt;br&gt;Middle school teachers participated in PD similar to CGI including in-depth task study, exploration of student strategies, clinical interviews, embedded lessons and studying student work. Results after the first two years show that teachers changed beliefs about math, spent more time on problem solving, and paid greater attention to student thinking.</td>
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<tr>
<td>Presentation Descriptions - Session 2</td>
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**Using CGI Trajectories to Support Teacher and Student Learning**

Stephanie Latimer & Mandy Hubbard, Renton School District

Participants will learn how coaches can use CGI trajectories to support both teacher and student learning. We will review the CGI trajectories, sort student work, and explore the kinds of coaching moves and questions that can help teachers think through facilitating math discussions with their students.

Grades K-5 • Experience with CGI

**The Cognitive Classroom**

Susan Tate & Julie Yearsley, Downey Unified & UCLA Mathematics Project

We’re making connections to deepen children’s understanding of math. You'll see what it looks like on a daily basis - where to start, and how to cover the standards. Using the CGI philosophy, you’ll have academic collaborative discourse about math! Our focus will be making CGI work for your class with examples of word problems, counting collections, routines, etc. while using formative assessment.

Grades K-5 • All levels of CGI experience

**Children's Strategies for Comparing and Ordering Fractions**

Joan Case, CGI Professional Development

Children continuously reveal to us the natural way they make connections between ideas in math. This generative understanding was again made clear to me as I listened to my students' natural strategies for comparing fractions. Through a video interview with Victoria (beginning 4th grader), we will consider how children’s strategies for comparing fractions provide insight into their understanding of fractions.

Grades 2-5 • Experience with CGI

**Interactions in a CGI Bilingual Classroom: Using Language as a Resource to Develop Mathematical Ideas**

Luz A. Maldonado, Texas State University
Melissa Adams, Austin Independent School District

Using children’s mathematical thinking during instruction is especially important for emergent bilingual learners. Join us in exploring how an English-Spanish bilingual teacher provides a space for students to engage in conversations where language is an instructional resource. We will explore emergent bilingual learner’s ideas by watching video and connecting to their mathematical strategies.

Grades K-3 • All levels of CGI experience
Bringing Out the "Unit" Across Mathematical Domains
Peter Cipparone & Hyman Bass, University of Michigan
Kim Van Duzer, NYC Department of Education

The concept of the “unit” is central to elementary school math, appearing during studies of measurement, place value, and fractions. Yet curricula rarely helps students understand the importance of the unit across mathematical domains. This presentation will explore the concept of the unit and provide examples from a 2nd grade classroom where the unit became a through line of the year.

Grades K-5 • New to CGI

Connecting Students' Strategies--We Can All Grow!
Thoma Thacker & Patricia Goodman, Little Rock School District

This session will be a summary and reflection about action research with a 1st grade urban classroom focused on use of instructional strategies to help students reflect on each other’s work.

Grades K-1 • All levels of CGI experience

IN THE BALLROOM: No More Mastery: Leveraging Partial Understanding
Megan Franke, UCLA

How do we notice and use what students DO know to support them to make progress in their thinking? Partial understandings provide great opportunities. This session will focus on seeing how we can use partial understandings to support students’ mathematical learning and thus challenges our common notions of mastery.

Grades: Pre-K-5 • All levels of CGI experience
The Power of Multiple Right Answers: Ambiguity in Math Class
Christopher Danielson, Desmos

For many students and teachers, math class is a place of great certainty. One plus one equals two; six is greater than negative four; and the area of a triangle is half the area of a related parallelogram. In this view, math is the place where there are right answers, wrong answers, and no mistaking which is which. But mathematics doesn't come from a place of certainty, it ends up there. Mathematics begins with uncertainty and ambiguity and wonder. In this session, we'll experience this process together—beginning with ambiguity and becoming more certain through our collective mathematical work.

Any Grade • All levels of CGI experience

Counting Collections: Mindsets, Motivation and Mathematics as Inquiry
Cristina Paul, UCLA Lab School

Artful teachers use Counting Collections to develop number sense and socio-emotional skills. This session will focus on how educators can create opportunities for upper elementary mathematicians to develop 21st century competencies through mathematics.

Grades 3-5 • Experience with CGI

Forging Connections Together: A Weekly Math Meeting Model to Support Teacher Learning
Charity Bauduin, Robert C. Schoen, Amanda Tazaz & Wendy Bray, Florida State University
Laura Steele & Christine Sadler, Okaloosa County School District

We will describe a Weekly Math Meeting model developed to support teachers with implementation of ideas learned in CGI professional development workshops. The model supports teachers in analyzing student thinking, collaborating with peers to discuss mathematics teaching, and differentiating instruction. This model has been implemented for several years with more than 30 teams of teachers.

Grades K-3 • All levels of CGI experience • PD
Understanding Teaching for Understanding
Lynne Nielsen, Louisiana Tech University

Participants will engage in a problem-solving task involving computation of fractions. Teachers will then participate in the problem share out. They will learn ways to organize the share out of strategies based on the CGI/ECM framework of strategies and how to connect these strategies to each other to help children move from concrete to abstract thinking.

Grades 2-5 • All levels of CGI experience

Play is the Engine of Learning: Creating Opportunities for Authentic Mathematics
Dan Finkel, Math for Love

Play is perhaps the single most critical element of mathematical learning for young children. We’ll review some of the science on the power of play, and explore how building the right environments and being willing to play yourself can create a vibrant culture of mathematical thinking.

Grades PreK-1 • All levels of CGI experience

Students' Understanding of Multidigit Multiplication
Jae Baek, Illinois State University

This session will focus on students' different strategies for multi-digit multiplication, what mathematical concepts/ properties are related to the strategies, and how they are related to algebraic reasoning. The session will conclude with instructional supports that teachers can provide to promote students' construction of mathematically sophisticated strategies.

Grades 3-MS • Experience with CGI
**Bridging Counting and Problem Solving**
Angela Turrou & Nick Johnson, UCLA

This session explores the bridge between counting collections of objects and posing story problems to young children. Together, we will watch video of children counting and responding to follow-up questions, and discuss how we can leverage children’s counting as we pose a follow-up problems that span range of problem types (join, separate, compare, equal share, etc.)

Grades PreK-1 • All levels of CGI experience

**Writing a Curriculum For Others To Use**
James Brickwedde, Hamline University

A hallmark of CGI is empowering teachers to shape their own curriculum. I did that myself. However, in spite of multiple CGI professional development sessions many teachers are stymied between not knowing how to start and a curriculum the district wishes them to follow. I have been writing lessons for others to follow. This session looks at results from one building’s process and results.

Grades 2-5 • Experience with CGI

**Using CGI Trajectories and Quick Images to Support Student Thinking**
Carlee Wyatt & Lindsay Wood, Kent School District

Quick Images provide a dynamic way for all students to have access to rich mathematical thinking and discussion, no matter where each student may currently be, along the progression of strategies. Participants will engage as learners in Quick Images. Teachers will be invited to make connections to the CGI trajectory and discuss ways to implement Quick Images into their instructional practice.

Grades PreK-5 • All levels of CGI experience
Algebraic Thinking that Supports Fraction Understanding
Margie Pligge & Kitty Thompson, University of Illinois at Chicago
Edie Clark, Arlington Heights, IL

What role does algebraic thinking play in nurturing a deeper understanding of fractions and decimals? Presenters will share techniques and tools we used to support teachers to promote more relational thinking strategies in their classrooms. Participants will have an opportunity to look at student work and teacher moves that engaged students in the Standards for Mathematical Practice.

Grades 2-5 • Experience with CGI

Lesson Planning with Long Term Teacher Learning in Mind
Ruth Heaton, Teachers Development Group

Participants will engage in a math lesson planning session where the goal is to meet a teacher’s short and long term needs. Sharing planning tools, perspectives and experiences from Math Studio in Nebraska, we consider coach-led planning practices that a teacher can continue to practice independently in future lesson planning.

Any Grade • PD

CGI and Students with Disabilities
Andrew Gael, Cooke Center Academy

Cognitively Guided Instruction helps students make sense of abstract mathematical concepts through contextual problem solving. Too often, students with disabilities are excluded from these rich sense-making opportunities because of challenges with language processing. This session will explore supports teachers can implement to provide students with disabilities access to mathematics through CGI.

Grades K-5 • All levels of CGI experience
Connecting with Communities: Variations on Community Mathematics Explorations
Corey Drake, Michigan State University
Erin Turner, University of Arizona
Julia Aguirre, University of Washington, Tacoma

In this session we will share variations and additional examples from the Community Mathematics Exploration. Examples will include the use of photos from school and community contexts to spark problem-posing discussion.

Grades K-5 • All levels of CGI experience

Connecting the Concrete to the Abstract: Making Algebraic Thinking Tangible
Danielle Moore, Consultant

We can build connections between the concrete and abstract with manipulatives. We can use manipulatives to make the properties of operations (commutative, distributive, and associative) visible and tangible for learners. These tools can be used to help students make connections to a variety of models and support them in learning how to read, record, and solve more formal equations with meaning.

Grades 1-5 • New to CGI

Developing K-2 Place Value Understanding through Student Work
Annie Mosich, Liz Herriges & Kathy Kuldanek, Federal Way School District

Supporting young learners to recognize mathematical relationships and interact with each others' representations can be challenging. This session will look at key ideas of place value developed through problem solving. We will explore strategies to highlight these ideas within student work during the summarize phase of the lesson for K-2 students.

Grades K-3 • All levels of CGI experience

Making Connections in Student Work
Kim Morchower & Kelly Serrano, UCLA Lab School

This session will focus on helping students make connections between their work and other students’ work. We will look at how to create partnerships and tasks, scaffold dialogue, and confer in ways that help students talk meaningfully about the similarities and differences in their strategies.

Grades 2-5 • All levels of CGI experience
**Orchestrating Productive Discourse in the Classroom**
Melissa Canham & Glenda Martinez, Downey Unified School District

Facilitating productive student-to-student conversations about mathematics is a difficult task. Learn how to engage all students in a rich dialogue that moves beyond showing and telling of student strategies to help students make mathematical connections. We will examine classroom videos and discuss how a teacher can guide students’ mathematical thinking through student discourse.

Grades K-5 • All levels of CGI experience

**MAKING CONNECTIONS: Building Communities of CGI Educators**

**Growing CGI One Class at a Time: Connecting Practices School-Wide**
Andrew Jenkins, Liz Romero & Carly Payne, Los Angeles Unified School District

Powerful practices have a greater impact when they are shared and implemented collaboratively. Learn how one school adopted CGI as a school-wide approach for the teaching and learning of math.

**Principal Leadership to Support Collective Learning for Teaching Mathematics**
Alison Fox, University of Washington
Lynsey Gibbons, Boston University

How can principals support school-wide improvement of mathematics instruction? We will share what we have learned from our work in multiple districts about the leadership practices of principals that support collective, job-embedded learning for teachers.

**The Scottish Attainment Challenge: Closing the Gap by Working Across the Pond**
Lio Moscardini, University of Strathclyde, Scotland, UK
Cheryl Lubinski & Al Otto, Illinois State University
Chiara Moscardini, Kate Fisher, Kevin Kearney, Hareleeshill Primary School, Scotland

Learn about year 1 of a 4-year Scottish Government funded project developing CGI in an area of high socio-economic need in Scotland. Professional development includes school-based support, US educator visits, and ongoing international collaboration between US and UK CGI educators.

**IN THE BALLROOM: Using Equations to Develop Children’s Fraction Thinking**
Susan Empson, University of Missouri
Vicki Jacobs, University of North Carolina at Greensboro
D’Anna Pynes & Gladys Krause, University of Texas, Austin
Naomi Jessup & Amy Hewitt, University of North Carolina at Greensboro

We will explore two ways equations can be used to elicit and extend children’s understanding of fractions. The first involves creating equations connected to children’s explanations of their strategies for story problems. The second involves posing stand-alone equations as problems. Emphasis will be given to unit fraction relationships as foundational for developing children’s fraction thinking.

Grades 3-5 • Experience with CGI
Beyond the Classroom Walls: Partnering with Families
Carolee Koehn Hurtado, UCLA Mathematics Project and UCLA Parent Project

Supporting mathematical thinkers extends beyond the classroom. Join us to continue the conversation around engaging communities in CGI efforts. In this session, we will share specific examples from our counting collections and choral counting family sessions and engage in collective conversation to share ideas for engaging families and community.

Any Grade • All levels of CGI experience

Beyond the Distributive Property: The Importance of Counting in Grades 4 & 5 to Support Complex Ideas in Mathematics
Dr. Jennifer Kolb, Long Beach Unified School District
Jennifer Lawyer, Lawndale Elementary School District

Through the support of counting, students can develop foundational understandings of complex ideas in mathematics such as: Associative Property of Multiplication, Exponents, Ratio, and Proportional Reasoning. Using video, pictures, and student work samples, we will reflect on how counting deserves a second look in the upper grades.

Grades 4-5 • Experience with CGI

Engaging Students in Developing Ideas about Equivalence and Its Role in Fraction Operations
Linda Jaslow, Northwest Arkansas Educational Service Cooperative

We will focus on students’ work on extended equal sharing problems and examine how these problems help students develop an understanding of equivalent fractions (4th grade) and its uses in fraction operations addition/subtraction of fractions and multiplication/partitive division partial groups problems (5th & 6th grade standards).

Grades 4-MS • Experience with CGI • PD
Emergent Bilingual Students Participating in the CGI Classroom
Luz Maldonado, Texas State University

Engaging emergent bilingual students (i.e., English Learners) in problem solving requires connecting the role of language in mathematics learning to children's thinking. How do you pose problems for understanding? How can students share thinking and participate in discussion? Important aspects of language acquisition and examples of developing mathematical thinking will be shared.

Grades K-3 • All levels of CGI experience

Learning How to Speak (and Write!) Fractions
Becca Lewis, University of Washington & UW Math Ed Project
Teresa Lind, Renton School District

How do students learn to say and write fractions with precision? In this session, we will examine how one school drew on the ideas in Extending Children's Mathematics: Fractions and Decimals (Innovations in Cognitively Guided Instruction) to develop instructional approaches that supported students to connect fractions terminology and symbolic notation to their understanding of what fractions mean.

Grades 2-5 • All levels of CGI experience

Making Connections Between CGI Data and Problem Solving Routines in Kindergarten
Jennifer Niemann & Sarah Condrey, Nooksack Valley School District

Join us in analyzing CGI data and how it can be used to plan a sense making continuum in a kindergarten classroom. In this session we will learn about helping young children problem solve using real-world situations. We will share tools and strategies, for helping young children engage with rich problems by building on their intuitive strategies.

Grades PreK-1 • Experience with CGI

IN THE BALLROOM: Replicating the CGI Experiment: Description of a Professional Development Model and Results of Recent Randomized Controlled Trials
Robert C. Schoen & Amanda Tazaz, Florida State University
Linda Levi, Teachers Development Group

In the past four years, more than 500 Florida teachers and almost 10,000 students have participated in randomized controlled trials studying the effects of CGI programs on teachers and students. We will discuss the specific CGI program studied, measurement of implementation and impact, and results of the impact analysis. Feedback and interpretation of the results will be invited from participants.

Grades K-5 • Experience with CGI • PD
Supporting the Development of Young Children's Counting
Nick Johnson & Angela Turrou, UCLA

Young children show powerful intuitive ideas about counting. In this session we will attend to the details of children’s counting and consider ways to respond that recognize and build from children’s partial and emerging understanding of counting principles.

Grades PreK-1 • All levels of CGI experience

Learning from Children’s Thinking: A CGI Approach to Formative Assessment
Kendra Lomax, University of Washington

CGI offers us rich insight into children’s mathematical thinking. How can we leverage this knowledge to assess and keep track of students’ learning over time? In this session, we will explore a formative assessment approach that allows teachers to gather detailed information about their students’ mathematical ideas. This assessment interview consists of counting, addition, multiplication, division, fair sharing, and relational thinking tasks that teachers and schools can use to inform their instructional decisions.

Grades K-5 • All levels of CGI experience

An Examination of Multidigit Subtraction Across Grade Levels: Strategies, Alternative Algorithms, and the Standard Algorithm
Melanie Wenrick, California State University, Fresno
Stacy Anderson, Chowchilla Elementary School District

Do upper grade students rely on the standard algorithm to solve all subtraction problems or do they choose more efficient strategies when possible? Join us as we look at student work to examine how students’ strategies develop over the elementary grades. We will examine the invented algorithms students use to subtract and how those algorithms change when students learn the standard algorithm.

Grades 2-MS • All levels of CGI experience

Eliciting a Robust Understanding of Place Value
James Brickwedde, Hamline University

Place value at its core is a multiplicative rate of ten. This session will look at how explicitly working with factors of ten aids in eliciting and nurturing these ideas among student strategies used in multiplication and division. Underlying algebraic properties are identified as well as how relational thinking is nurtured.

Grades 2-MS • All levels of CGI experience
**Counting Collections in the Upper Grades (3-5)**
Julie Kern Schwerdtfeger & Darlene Fish Doto, UCLA Lab School and UCLA Math Project

Making connections across the grades, what makes counting valuable for 8-11 year olds? Collections that increase in size and variability encourage students to create complex recordings. We will examine the ways we extend counting tasks, including counting packages, counting very large collections, tackling mathematical properties through recordings, and counting the fractional parts of a complex collection.

Grades 3-5 • All levels of CGI experience

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**MAKING CONNECTIONS: Technology and CGI**

Any Grade • All levels of CGI experience

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<th>Making CGI Social by Using Technology: CueThink</th>
<th>The MathVision App: Helping Teachers Listen and Reflect Together</th>
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<tr>
<td>Theodora Beauchamp, Tustin Unified School District</td>
<td>Theodore Chao &amp; Stephen Lewis, Ohio State University</td>
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<td>Want to #makemathsocial? By using CueThink you can use the power of technology to not only have student work at your fingertips, but to also have peers annotate on other student CGI work, and provide encouragement and support to their learning. You can use your own CGI word problems, use problems from the CueThink bank, or use your district’s curriculum. (CueThink is a commercial product requiring school-level funding.)</td>
<td>MathVision helps mathematics teachers capture and reflect on children’s mathematical thinking together in an asynchronous platform. Built upon research on children’s mathematical thinking (CGI), teacher noticing (Jacobs et al.), and Cognition Based Assessments (Battista), MathVision helps teachers make build professional community and make instructional decisions.</td>
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Twenty minutes at the end of the session will be devoted to hands-on demonstrations of both technologies. A few iPads will be available for participants, or bring your own, to fully experience these platforms.

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**What’s the Connection: Connecting Student Strategies to the Properties of Operations**

Kim Romain, Little Rock School District

Connecting the math to the strategies. This session emphasizes finding, discussing and highlighting the commutative, associative and distributive properties as you discuss student work with the students and each other.

Grades K-5 • All levels of CGI experience
Understanding is Essential in Developing Computational Fluency
Linda Levi, Teachers Development Group

We will discuss what it means to be fluent with computation and discuss how understanding is essential to fluency. We will solve some problems of our own and analyze first grade through fifth grade students' strategies. This session will build on the keynote presentation by Virginia Bastable and Linda Levi.

Grades K-5 • Experience with CGI

Composing and Decomposing--What's the Big Deal?
Patricia Goodman, Little Rock School District

Initial ideas of place value and properties of operations will be explored through their connections to student activities, number work, and problem solving. What does it really mean for students to engage in composing and decomposing and why does it matter? How do these foundations connect to later content? Come find out!

Grades K-3 • All levels of CGI experience

Argumentation in Primary Classrooms
Jody Guarino, Orange County Department of Education

Drawing on ideas presented in Thinking Mathematically, explore ways to support students in thinking about conjecturing and argumentation. Unpack instructional activities to understand the types of learning experiences that can be used to develop rich mathematical understandings. Examine student work, analyze video, and consider structures that foster facility with math arguments in all students.

Grades K-3 • All levels of CGI experience
The Untapped Power of Unit Fraction Quantities for Building Children’s Fraction Understanding
Amy Hewitt & Naomi Jessup, University of North Carolina at Greensboro
Gladys Krause, D’Anna Pynes, University of Texas, Austin
Vicki Jacobs, University of North Carolina at Greensboro
Susan Empson, University of Missouri

Unit fractions (1/n) are foundational to the development of children’s fraction understanding. Teachers can use story problems involving unit fraction quantities to elicit and build children’s understandings of key fraction relationships. In this session, we will use video and written work to explore children’s thinking about two of these relationships in a variety of story problems.

Grades 3-5 • All levels of CGI experience

Constructing an Equity Inventory for your Mathematics Classroom
Joi Spencer, University of San Diego

In this workshop participants will learn about persistent issues of inequity in mathematics education & classrooms. Drawing upon this research and an equitable instructional practice framework, teachers will create a classroom tool to "inventory" equity/inequity in their mathematics classrooms. The tool is designed to provide an important mirror (Gutierrez, 2012) for teachers into the structures, patterns, and practices that invoke or impede equity in their mathematics classroom and beyond.

Any Grade • All levels of CGI experience

Making Connections Between Teachers’ and Students’ Mathematical Reasoning
Cheryl Lubinski & Al Otto, Illinois State University

CGI teachers who reflect on their own learning of mathematics improve their CGI instructional decision-making processes. In this session we will solve problems that can cause us to reflect on our own mathematical reasoning to better anticipate and help us to understand the mathematical reasoning of our students. We will use problems that can be solved using pictorial and symbolic representations.

Grades K-5 • All levels of CGI experience

Numbers Matter When Selecting and Sequencing Proportion Problems
Olof B. Steinthorsdottir & Suzanne Riehl, University of Northern Iowa

The numbers in a missing-value proportion problem matter! By varying the complexity of the numbers, teachers can advance students’ understanding of proportion. This session will explore features of missing-value proportion problems which determine their difficulty and consider the milestones of understanding students need for success. Sample problems will be shared.

Grades 4-MS • All levels of CGI experience
Support Math Reasoning By Linking Arithmetic to Algebra
Virginia Bastable, Mount Holyoke College

We will discuss examples of student reasoning as they articulate, represent, and justify generalizations about the operations in grades 2-7. We will explore a teaching model describing a process teachers can use to support the development of such reasoning in their own classrooms. This session is a follow-up to a keynote talk featuring Linda Levi and Virginia Bastable.

Grades 2-MS • All levels of CGI experience

Problem-Posing: What Stories Live in These Equations?
Janice Novakowski, Richmond School District, BC, Canada

Primary teachers in our district have been investigating the problem-posing practices of their students. Students are provided with equations based on the CGI problem types and create their own corresponding stories and problems, uncovering their understanding of the mathematics involved. Photos, videos and students’ stories and problems will be shared for discussion and analysis.

Grades K-3 • All levels of CGI experience

How Do They Relate? Teaching Students to Connect Ideas
Tracy Johnston Zager, Rollinsford Grade School and Stenhouse Publishers

Many students see math as a series of discrete topics, rather than a landscape of interconnected concepts. We’ll analyze transcripts and student work that reveal strategies for teaching relational thinking, an important habit of mind of mathematicians. We’ll play with rich questions to encourage students to make--and appropriately break--mathematical connections among concepts you teach.

Any grade • All levels of CGI experience

Small Group CGI Instruction
Jill McMahan & Leslie Watts, Greenwood School District

Setting up small group CGI instruction for deeper learning. Setting up the environment, managing small groups, maintaining records and promoting growth for all learners.

Grades PreK-3 • All levels of CGI experience
Lab Sites: Deepening Our Practice
Karen S. Recinos & Janene Ward, UCLA Mathematics Project

Developing a coherent understanding of children’s mathematical thinking and how to use this knowledge to make instructional decisions takes time. Teachers need multiple meaningful and collaborative opportunities to refine and deepen their practice. Join us as we explore how Lab Sites serve as a high leverage structure that supports the professional growth of teachers along their CGI journey.

Grades PreK-5 • Experience with CGI • PD

A New Take on Problem Solving: 3-Act Tasks & the Mathematical Practices
Sarah Dietz & Ellen Kleyman, Seattle Public Schools
Kristin Alfonzo, Highline Public Schools

Come learn about 3-Act Tasks. Participants will experience a 3-Act Task as a learner and explore how 3-Act Tasks engage students in all the mathematical practices and content standards. We will share resources for implementing 3-Act Tasks in your own class and sharing this instructional activity with your colleagues.

Any grade • All levels of CGI experience • PD

Leveraging Variables: Early Explorations
Jeanie Behrend, California State University, Fresno
Laura Mohs, Visalia Unified School District

Upper grade teachers often complain about the lack of algebraic reasoning by their students. What can we learn from primary grade students to deal with this dilemma? We will present examples from a first/second grade classroom where algebraic reasoning is encouraged through the use of True/False and open number sentences, multiple variables, and connections between story problems and equations.

Grades 2-5 • Experience with CGI
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Let’s stay connected beyond the conference. Here are some handy Twitter hashtags to keep the conversation going:

- **#CGIseattle** to discuss the conference
- **#CGImath** to talk CGI with a broader network of educators
- **#CountCollections** and **#ChoralCount** are hashtags related to counting
- **#MTBoS** is the Math-Twitter Blog-o-Sphere, a hashtag for discussing all things math!

Add your own contacts, websites, hashtags and other new resources here:
Amenities in and near the Husky Union Building (HUB)

A Few Dining Options Nearby

HUB Ground Floor: Starbucks, Subway, Pagliacci Pizza, and more

U-District: Thai Tom, Rancho Bravo, Arepa Venezuelan Kitchen, Shawarma King, Cedars

University Village: Blue C Sushi, Din Tai Fung, Eureka, Joey Kitchen, The Ram, Piatti

Copies

Forget your handouts at home? Copies can be made on campus using Dawg Prints (http://finance.uw.edu/c2/printing-copying/dawg-prints-card) or in the U-District at Kinkos, Rams, Ave Copy Center, Professional Copy n' Print, and other locations.

Transportation

Link Light Rail: The UW Station is located .5 mile from the HUB right next to Husky Stadium at the intersection of Pacific Street and Montlake Boulevard.

Bus: Many King County Metro Transit buses stop at the HUB. Use “UNIVERSITY OF WASHINGTON HUB” as your destination (kingcounty.gov/depts/transportation/metro).