CGI Professional Development
University of California, Los Angeles

Summer Follow-Up #1
Sept. 12, 2014

Presented by: Melissa Canham
Day 5 Agenda

- Grade Level Share Out
- Classroom Discourse
- Routines to Develop Number Sense
- Place Value and the Common Core
- Planning: CGI in Your Classroom
Grade Level Talk

• What does CGI look like in your classroom?

• Share with your group any successes, challenges and/or questions that you may have in regards to CGI.
  • Be prepared to report ideas back to the whole group.
Problem solving is the focus of instruction; teachers pose a variety of problems.

Many problem-solving strategies are used to solve problems. Children decide how they should solve each problem.

Children communicate to their teachers and peers how they solved the problems.

Teachers understand children’s problem-solving strategies and use that knowledge to plan instruction.
Classroom Discourse

Four steps toward productive discussions:

1. Helping individual students clarify and share their own thoughts.  
   (Pp. 13 - 15)

2. Helping students orient to the thinking of other students.  
   (Pp. 15 - 16)

3. Helping students deepen their reasoning.  
   (Pp. 16 - 17)

4. Helping students engage with others’ reasoning.  
   (Pp. 17 - 19)
4th Grade Example
Debriefing the Video

• What do you think Tanya’s goal(s) for the number string was?

• What productive discussion steps is Tanya setting up?

• What Standards for Mathematical Practice are evident in this routine?
Your Turn

• With a similar grade level group:
  • Create a sequence of true/false number sentences that you can use with your class this coming week
Where is Place Value in the CCSS?

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What is the end goal?

- 4th grade Narrative from the CCSS-M:
  - Students generalize their understanding of place value to 1,000,000, understanding the relative sizes of numbers in each place. They apply their understanding of models for multiplication (equal-sized groups, arrays, area models), place value, and properties of operations, in particular the distributive property, as they develop, discuss, and use efficient, accurate, and generalizable methods to compute products of multi-digit whole numbers (CCSS-M, p.27)
Where do we start?

• K.NBT.1: Compose and decompose numbers from 11 to 19 into ten ones and some further ones, and record each composition or decomposition by a drawing or equation; understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.
Hundreds Chart in 1st Grade
How Many Ways?

Solve this problem as you think your students would solve it.

How many different ways can you show 463 with your base-ten blocks?
Grouping by Ten

• Which of these story problems would encourage students to group by tens?

• If the problem does not encourage grouping by tens, why not? How can you change it so that it will?
Multiplication and Division Review

• Look at problems 1, 3 and 5. How would a Kinder, 1st, 2nd or 3rd grade student solve them?
Groups of Ten Strategies

• Direct Modeling by Ones
• Direct Modeling by Tens
• Counting by Ones and/or Tens
• Direct Place Value
Looking at Strategies

Solve the following problem two different ways.

Our class has 7 boxes of doughnuts. There are 10 doughnuts in each box. We also have 3 extra doughnuts. How many doughnuts do we have all together?
What Strategy?  

Our class has ___ box(es) of donuts. There are 10 donuts in each box. We also have ___ extra donuts. How many donuts do we have all together?

Strategy 1:

Solution: ___

Number Sentence: ___
What Strategy?

Strategy 1:

Do we have all together?

Solution: 124

Number Sentence: 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 = 124
What Strategy?

Solution: I will count by 10's and go to 70 and I'll add 3.

Number Sentence: (7\times10)+3 = 73

70
What Strategy?

Solution: 124

Number Sentence: 12 + 4 = 124
What Strategy?

Count 12 times by 10

10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120 plus 4 that are extra = 124

Solution: Count by 10

Number Sentence: \(12 \times 10 = 120 + 4 = 124\)
What Strategy?

Our class has 7 boxes of doughnuts. There are 10 doughnuts in each box. We also have 3 extra doughnuts. How many doughnuts do we have all together?

Strategy 1:

\[ 7 \times 10 = \frac{70}{73} + 3 \]

\[ \frac{73}{73} \]
What Strategy?

• Sofia’s Strategy:

“The answer is in the number choices. For (3,1), it is 31 because you have 3 tens and 1 one. For (7, 3) it is 73. For (12, 4) the answer is 124 because you have 12 tens and 4 ones.”
A Fifth Grade Example

Olivia has 8 pages of stickers. There are 20 stickers on each page. How many stickers does Olivia have?
20 x 5

20

20

20

20

20

0

40

50


20

20

20

20

0

20

20

20

20

20

Solution: 100

Number Sentence: ___________

Explanation: I did 20 + 30 = 50. Then 60 + 50 = 110. Finally, 110 - 20 = 90 + 20 = 110.
Solution: 160
Number Sentence: 8 \times 10 \quad 8 \times 10 \quad 70+80
Explanation: I did 8 \times 10 because 8 \times 20 is harder than 8 \times 10, but I had to add.
Solution: 160

Number Sentence: 20 x 8 = 160

Explanation: I know that twenty
x five equals 100, then I add
60 more, then I got 160

20 x 5 = 100
20 x 3 = 60
100 + 60 = 160
Olivia has 9 pages of stickers. There are 29 stickers on each page. How many stickers does Olivia have?

Strategy 1:

\[ 9 \times 29 \]
\[ (9 \times 20) + (9 \times 9) \]
\[ 180 + 81 \]
\[ 261 \]

Solution: I got 261

Number Sentence: \(9 \times 29 = 261\)

Explanation: First, I did \(9 \times 20\) and got 180. Second, I did \(9 \times 9\) and got 81. Last, I did 180 and got 261.
Strategy 1:

$20 \times 8 = \frac{2}{8}\frac{160}{160}$

Solution: 160

Number Sentence: $20 \times 8 = 160$

Explanation: I did standard algorithm $2 \times 8 = 16$ and it equals 160.
Developing Understanding of Place Value

- Unitizing the ten (or hundred or thousand) in context
- Constructing meaningful solutions without instruction
- Providing many experiences with grouping by ten facilitates children’s invention of multi-digit algorithms.
Rita

What do you notice about Rita’s growth as a problem solver and doer of mathematics over the course of the school year?

What evidence do you see of her place value understanding?

What do you think a teacher might need to do to foster this type of growth?
Planning: CGI in Your Classroom

- Meet with colleagues from your grade level

- Knowing the Common Core Standards and knowing what you know about CGI, pick a topic that is coming up. What would you do differently?
  - Decide on one word problem that you will all agree to do prior to the next training.
What does CGI look like in the classroom?

- Problem solving is the focus of instruction; teachers pose a variety of problems.

- Many problem-solving strategies are used to solve problems. Children decide how they should solve each problem.

- Children communicate to their teachers and peers how they solve the problems.

- Teachers understand children’s problem-solving strategies and use that knowledge to plan instruction.
Homework

Our next meeting is Saturday, October 4th. Prior to that day please do the following with your class and bring student work samples back with you:

• True/false number string

• Word Problem