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You have to find the problem before you can fix it!

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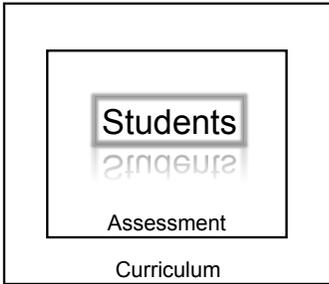
*Went from...
Wanting a list of questions to get at the disconnects
to...
What math do I need to learn so that the student guides the interview*

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Students

Assessment Curriculum

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Global Perspective—Intervention Design Principles

- Timely
- Relevant to Core Instruction
- Specific to learner and pinpoint source of error
- Target concepts that underlie skills
- Bridge to grade level outcomes

If we slow down, how will they ever catch up?

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Global Perspective—Refining Math Intervention, 2008 – Present...

- Evolving Model
- Considering the role of classroom teachers
- PD for all stakeholders—both whole group sessions and site-based demos
- *First Steps in Mathematics- Number*
- Collaborative Inquiry Group

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Global Perspective—Refining Math Intervention

By Spring 2013 we began to really focus on the work of intervention.

Timely for site-based support

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Local Perspective—Diagnosing the Problem

- Data meetings with teachers
- Common Themes: How do we help struggling mathematicians?

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Local Perspective—Intervention Model

- Purpose:
 - Develop teachers' understanding
 - Design intervention lessons
 - Create resource area in bookroom
- Model 1.0-2.0 (October 2012 – May 2013)
 - 1.0—Intervention Journey
 - Timeline
 - What to Expect
 - 2.0—"The Journey Continues"

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Local Perspective—Model 2.0

- Pilot 1st Grade
- 12 Staff (Flood in Model): 2 SpEd teachers, 2 Interventionists, 5 teachers, & 3 classified staff
- 3 x per week, 9:30 – 10:00
- Instructional Focus: Counting & Cardinality

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Setting the Stage—PD Model

5 half day sessions

- 1 hour prebrief
- 30 minutes with 1st grade intervention group
- 30 minute individual interview with a 1st grader
- 45 minute debrief

Participants: District Math Specialist, Instructional Coaches, Math Intervention Specialists, Classified Staff, Classroom Teachers

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Setting the Stage—PD Model

Day 1 Prebrief

School was initiating an intervention model in which students were grouped by teachers based on common assessment results.

Wrench 1: Students could get similar scores on an assessment but for different reasons.

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Case Study—Day 1, Small Group Observation

Take a few minutes to read through the day 1 observation notes. In your small groups discuss,

- What are your curiosities about Connor?
- What further information would you like?
- What interventions are needed?
- What would your next steps be?

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Case Study—Day 2, Connor's Interview

Take a few minutes to read through the day 2 interview notes. In your small groups discuss,

- What recommendations would you make to the teacher in planning intervention experiences for Connor?
- How do we build in the gift of time to our intervention experiences and regular classroom activities?
- What would your next steps be?

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Case Study—Day 2, Connor's Interview

My 2 x 4 experience
How many more to make five?

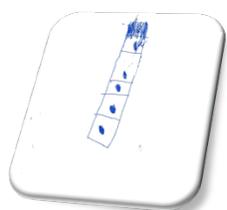


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Case Study—Day 2, Connor's Interview

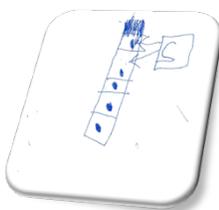
My 2 x 4 experience



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Case Study—Day 2, Connor's Interview

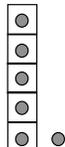
My 2 x 4 experience



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Case Study—Day 2, Connor's Interview

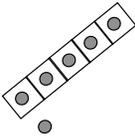
My 2 x 4 experience



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Case Study—Day 2, Connor's Interview

My 2 x 4 experience



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Students

Understandings

Intervention

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PD Landscape—Small Group Intervention Plan

Days 3-5

- Debrief would include generating ideas for the next day's intervention.
- Morning prebrief would highlight plan.
- Intervention took place in a fish bowl.

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PD Landscape—Small Group Intervention Plan

Day 4

- Placed about 34 cubes on a table.
- Children counted and wrote the numeral on their whiteboards.
- Asked to predict how many rods of ten we could make.
- Made a rod of ten...and then...WOW!

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PD Landscape—Individual Interviews

Days 1-5

- Each first grade teacher selected a student.
- Interview took place in a fish bowl.
- Teacher joined in observation and debriefing pieces.
- Essentially used the same interview.

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PD Landscape—Individual Interviews

Guiding lens

- **Use initial questions as launching points.**
- **Pursue a curiosity**
- Try to determine how and why they think ____ about a concept.
- Focus on conceptual understandings
- Seek to answer...what do they understand?

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PD Landscape—Individual Interviews

Guiding lens

- **Do not panic if there is a misconception...pursue it!**
- Do not teach. That is for another time. You may try to throw a wrench in their thinking.
- Do not cue with your face. Use your face to show that you are really curious about their thinking.
- The same is true with words...be careful with praise.

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PD Landscape—Individual Interviews

Observer comments

- They seem to share more because your face doesn't change.
- ...*What math do I need to learn so that the student guides the interview?*

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Local Perspective—Implications and Residue

"I used to ask,
Why don't they get it?
Now I ask,
What can they do?"

Connor's teacher

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Local Perspective—Implications and Residue

- Assessment; determining groups
- Conceptual when looking at interventions
- Activities: multiple ways
- Understanding of mathematical thinking (trajectory), intentional moves
- Interviews: Student lead vs. teacher lead... wrench (comfortable with uncomfortable)

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Global Perspective—Important Take Aways

What needs fixing is unique to the learner, even within a "like" group.

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Global Perspective—Important Take Aways

- Holding a learner stance as educators is what makes it possible for us to understand problems and devise intentional solutions.
- All participants (including the facilitator) held a learner stance.
- There is risk for participants (especially facilitators and coaches) in engaging as a learner.

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If we approach a situation with what we "know" dominating our thinking, we run the risk of covering the problem, not uncovering.

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$\frac{3}{10}$.3 $\frac{6}{10}$.6 $\frac{4}{10}$.4

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$\frac{3}{10}$.3

What is perfection with fraction representations?

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$\frac{35}{100}$.35

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$\frac{8}{100}$.8

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$\frac{35}{100}$.35 .08 $\frac{8}{100}$.8

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Instead of requiring students to learn how we teach...

Teach how they learn.

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You have to find the problem before you can fix it...
is a Systems issue
a School issue
and a Student issue

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We cannot choose the appropriate instructional path or provide effective intervention until we determine what the students really think.

That is, we can't fix the problem until we know what it is.

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Mathematics Education Professional Development

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Global Perspective—Evergreen Public Schools

- Vancouver, WA
- 27,000 students
- 21 Elementary Schools

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Global Perspective—Intervention History

- Historically strong K-3 reading
- District PD for Reading Specialists
- Historically pull-out groups or 1-1

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Global Perspective—Intervention History

Pre-2007 there were NO Title I or State funded specialists providing math intervention at the elementary level

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Global Perspective—Defining Math Intervention

- Beginning in 2007...
 - Recognized need for math intervention
 - Began to...
 - Articulate a philosophy
 - Consider guiding principles
 - Principals would have to re-allocate funds to math intervention

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Local Perspective—Endeavour Elementary Host School

- Enrollment: 679 K-5 students
- Free and Reduced Lunch: 58%
- Mobility Rate: 28%
- English Language Learners: 192 receiving services

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Local Perspective—Endeavour Elementary Host School

- Faculty and Support Staff
 - 26, K-5 teachers
 - 1.5, Special Ed teachers
 - 1.0, Instructional Coach--all curricular areas
 - 0.5, Math Interventionist, April-June hired another 0.5
 - 3 ELL paras
 - Principal and 0.5 Assistant Principal

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Global Perspective—Refining Math Intervention

By Fall 2012 seven of the twenty-one schools had 1 or more persons focused specifically on math intervention (coaching and/or direct student support)

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Global Perspective—Important Take Aways

Teachers consistently describe struggling mathematicians as “inconsistent”

- Landscape of number
- Goal is to assess and intentionally support struggling mathematicians

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Clincher—Adults as Learners

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Global Perspective

- Site-based demonstration PD
 - Trust the Process
 - Trust the Learners