Letting Go to Empower Thinking! Facilitating A Mathematical Community That Let's Your Kids Talk!

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Meet Our Discourse Team!

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Which One Doesn't Belong?

WHY?

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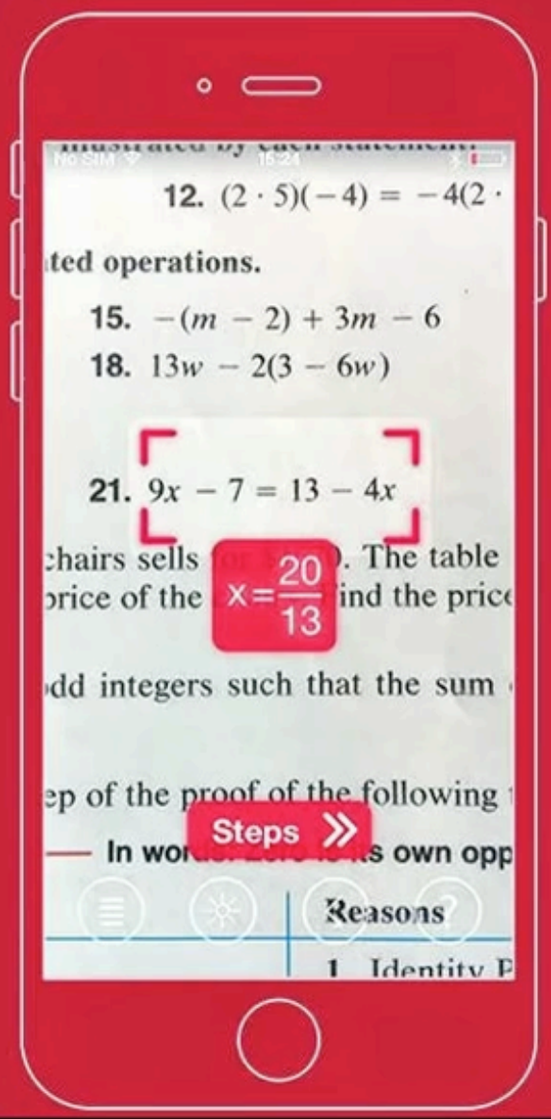
Getting AN Answer is Easy!
Getting Your students to talk about their thinking is Harder!

Instant results

PhotoMath reads and solves mathematical expressions by using the camera of your mobile device in real time. It makes math easy and simple by educating users how to solve math problems.



Beliefs About Teaching & Learning Mathematics

UNPRODUCTIVE BELIEF

Mathematics learning should focus on practicing procedures and memorizing basic number combinations.

PRODUCTIVE BELIEF

Mathematics learning should focus on developing understanding of concepts and procedures through problem solving, reasoning and <u>discourse.</u>

Beliefs About Teaching & Learning Mathematics

UNPRODUCTIVE BELIEF

The role of the teacher is to tell students exactly what definitions, formulas and rules they should know and demonstrate how to use this information to solve mathematics problems.

PRODUCTIVE BELIEF

The role of the teacher is to engage students in tasks that promote reasoning and problem solving and facilitate <u>discourse</u> that moves students toward shared understanding of mathematics.

Beliefs About Teaching & Learning Mathematics

UNPRODUCTIVE BELIEF

The role of the student is to memorize information that is presented and then use it to solve routine problems on homework, quizzes, and tests.

PRODUCTIVE BELIEF

The role of the student is to be actively involved in making sense of mathematics tasks by using varied strategies and representations, justifying solutions, making connections to prior knowledge or familiar contexts and experiences, and considering the reasoning of others.

Beliefs About Teaching & Learning Mathematics

UNPRODUCTIVE BELIEF

An effective teacher makes the mathematics easy for students by guiding them step by step through problem solving to ensure that they are not frustrated or confused.

PRODUCTIVE BELIEF

An effective teacher provides students with appropriate challenge, encourages perseverance in solving problems, and supports productive struggle in learning mathematics.

We have to change our mindset...

We have been teaching math with a fixed mindset in the United States.

What Is Discourse?

Discourse[**dis**•course] *noun*
the way ideas are exchanged and what the ideas entail

* Who talks? About what? In what ways?
* What do students write? What do they record?
* What questions are important?
* Whose ideas and ways of thinking are valued?

Positive Influences of Math Talks & Discourse

* Talk can reveal understanding and misunderstanding.

* Talk supports robust learning by boosting memory.

* Talk supports deeper reasoning.

* Talk supports language development.

* Talk supports the development of social skills.

* Talk builds the Habits of Mind or THE 8 Math Practices

Project Challenge

Scores on TOMA-2	Beginning
Below Average	*73%*
Average	
Above Average	*23%*
Superior/ Very Superior	*4%*

Classroom Discussions: Using Math Talk to Help Students Learn. Math Solutions Publications, 2001.

Project Challenge

Scores on TOMA-2	Beginning	After 2 Years
Below Average	*73%*	*0*
Average		*23%*
Above Average	*23%*	*36%*
Superior/ Very Superior	*4%*	*41%*

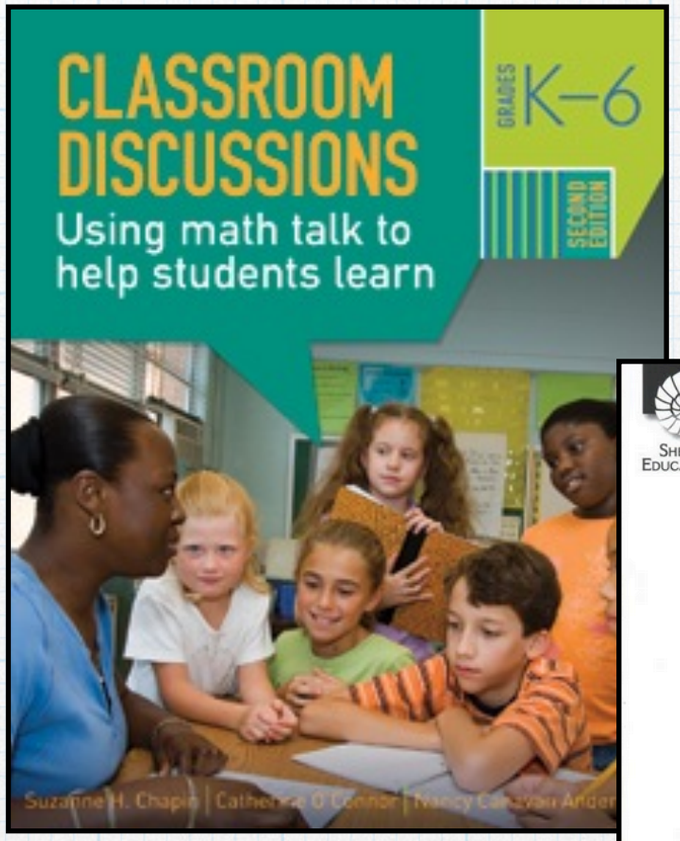
Project Challenge

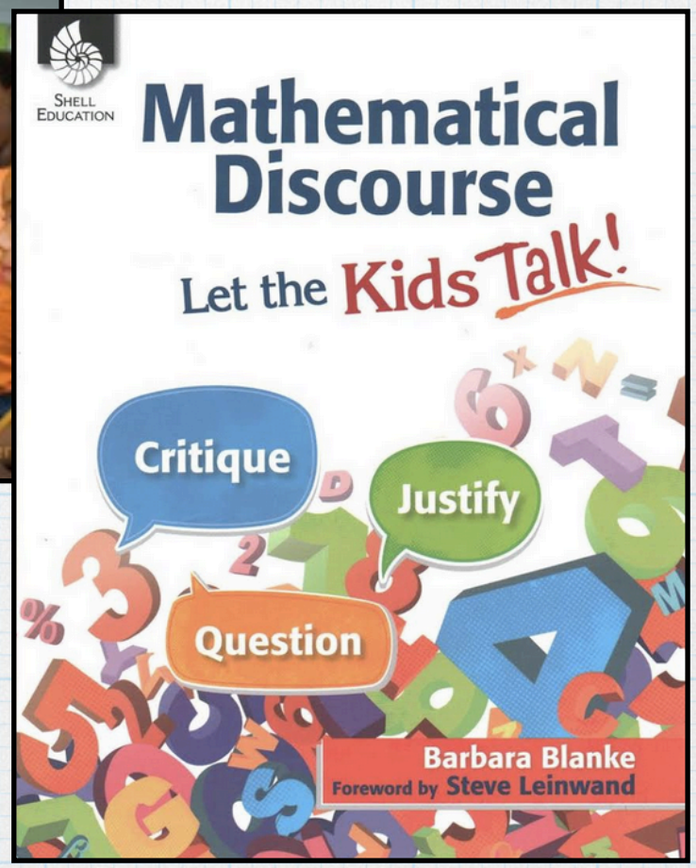
How did they do it??

They Expected Math Talk & Learned to Use Teacher Discourse Moves!

Teacher Discourse Moves

* Revoicing
* Repeating
* Reasoning
* Adding on
* Waiting
* Pass It On
* Think Aloud
* Turn & Talk

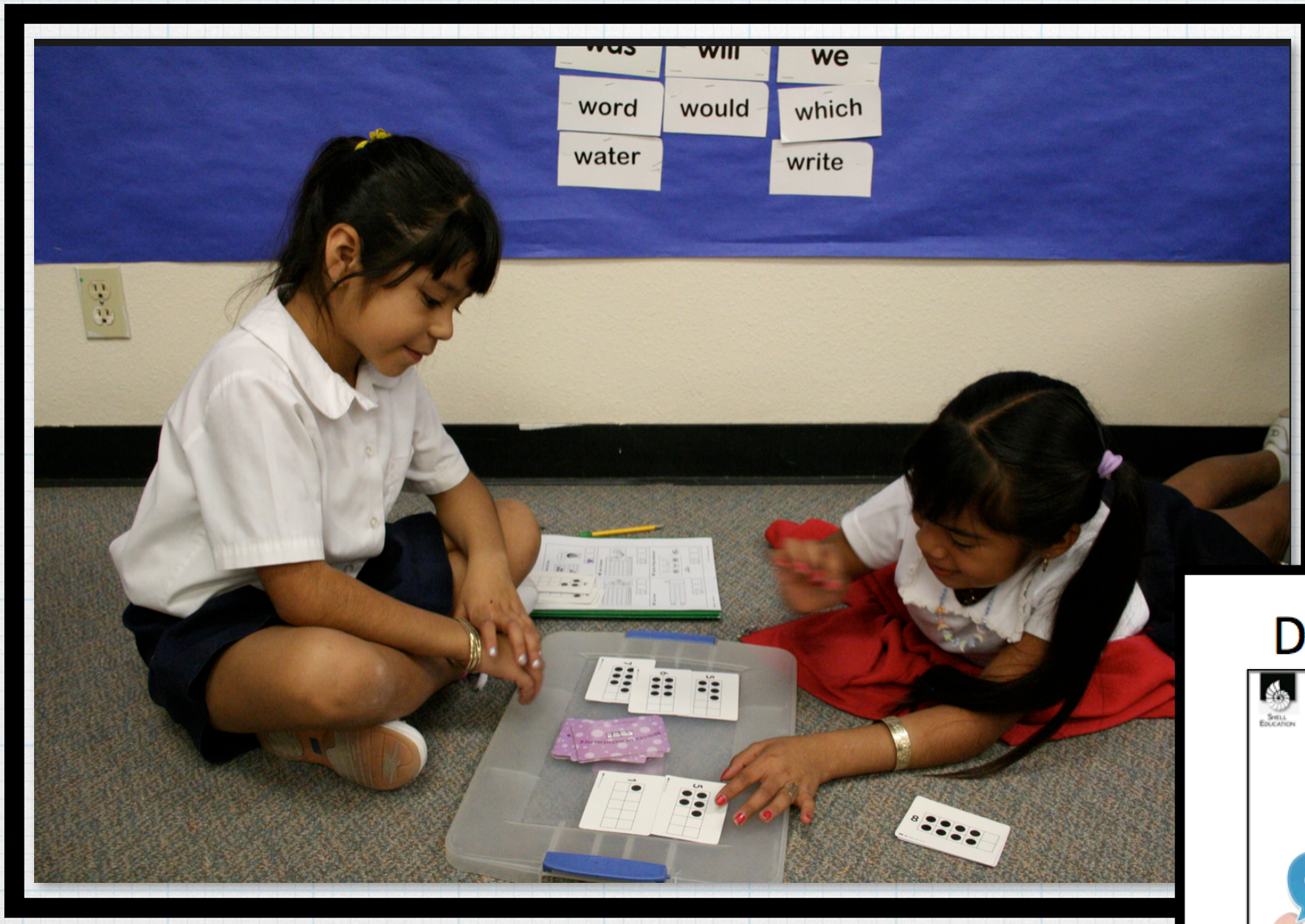




Teacher Discourse Moves

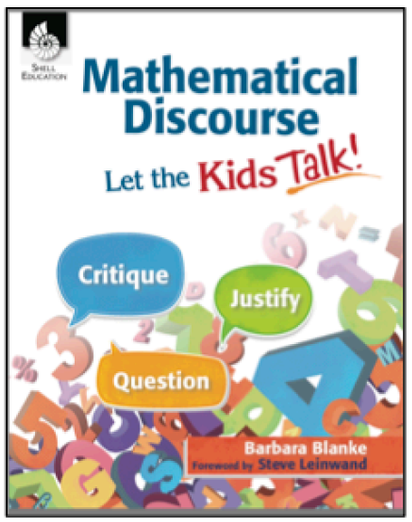
- **Re-voicing**: *"So you're saying that …"*
- **Repeating**: *"Can you repeat what he/she just said in your own words?"*
- **Reasoning**: *"Do you agree or disagree and why?"*
- **Adding On**: *"Would someone like to add on?"*
- **Using Wait Time**: *"Take your time … we'll wait while you think …"*
- **Pass it On:** *Students ask other students for clarifying and challenging questions.*
- **Think Aloud:** *While reading the problem the teacher stops and thinks aloud in front of the students.*
- **Turn and Talk:** *Think Pair Share*

Let's practice using TALK MOVES by playing a game.....



Use your handout Discourse Talk Moves!

Discourse Talk Moves



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by Barbara Blanke
www.tcmpub.com/shell-education

Digit Place

(From About Teaching Mathematics by Marilyn Burns)

* Partner 1: ME! - keeper of the mystery number
* Partner 2: YOU! - guesser of the mystery number

Digit Place-

think to yourself (don't share yet!)

Guess	# of correct Digits	# of correct Places

Digit Place

Play the game in a group of four by playing two against two.

As you play:

* Students: Think about your strategies.
* Teachers: Use Talk Moves to encourage discourse.

Revoicing ◆ Repeating ◆ Reasoning ◆

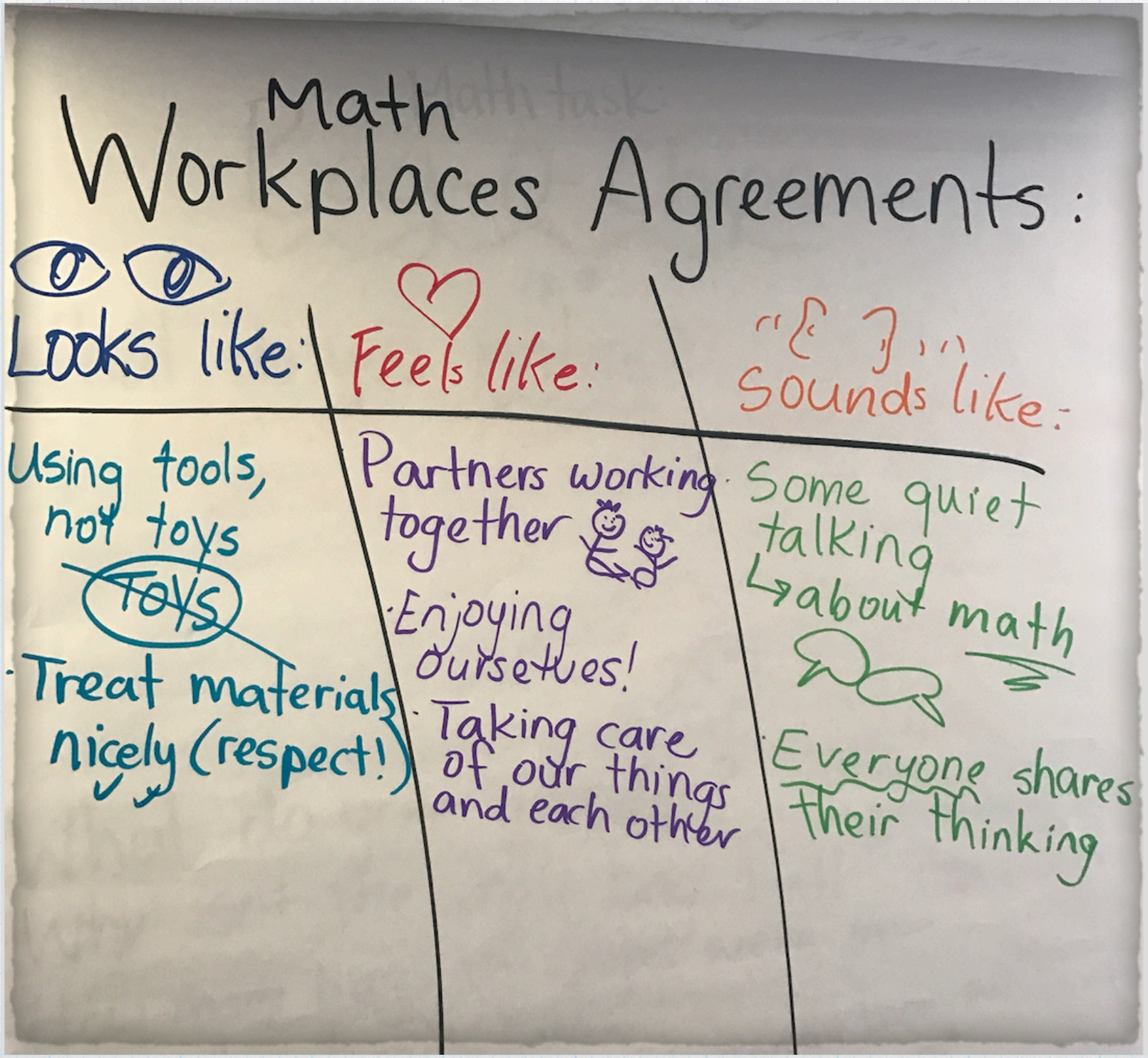
Adding on ◆ Waiting

What Does Discourse Look Like in the Beginning?

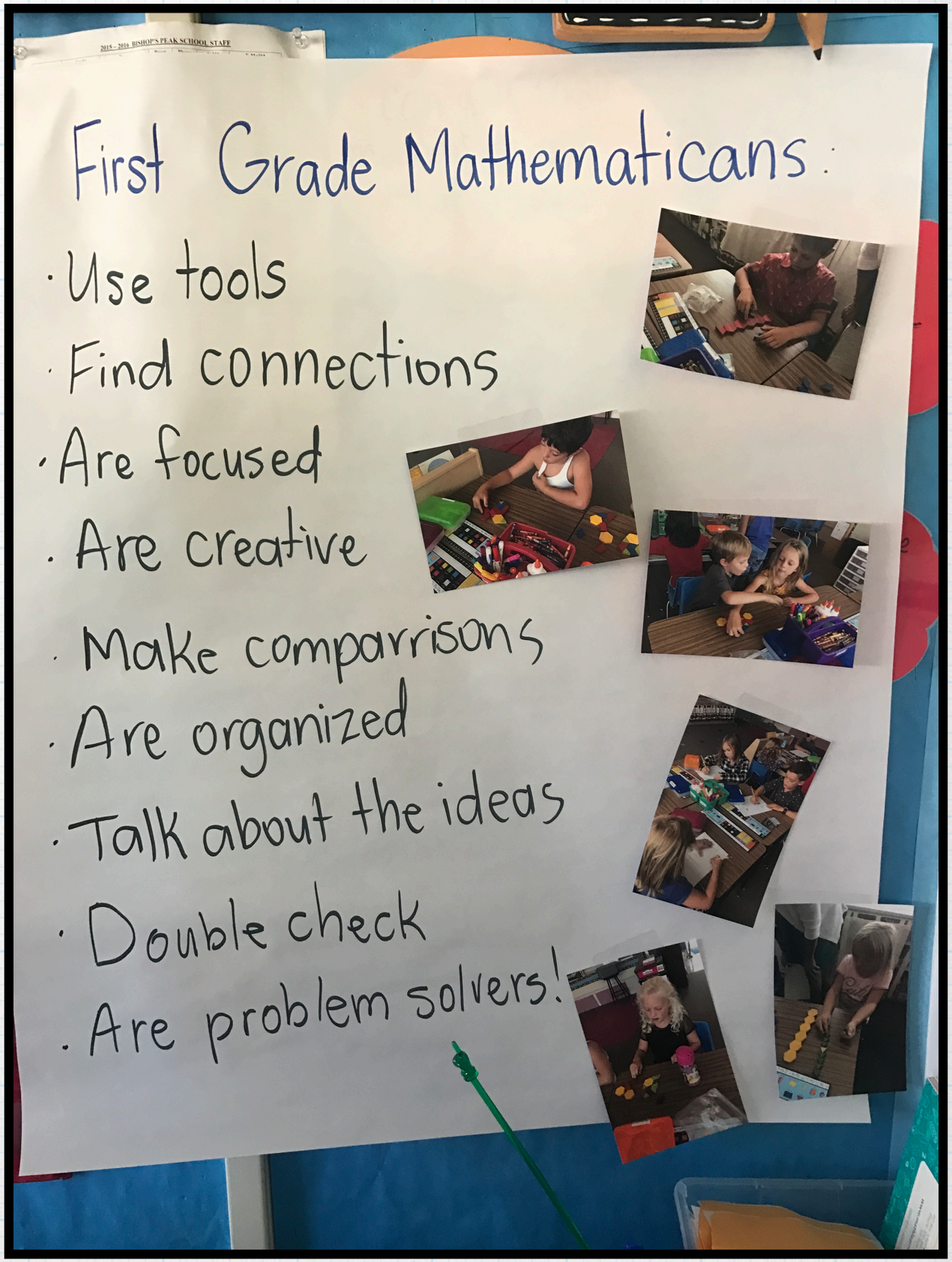
How Did Jessica Start...
The First 10 Days!
Of "The First Twenty Days of Discourse"

* Build A Mathematical Community
* Exploring & Managing Mathematical Tools
* Engaging in Accountable Talk
* Expectations for Active Listening
* Using Mathematically Accurate Language
* Representing/writing in Math Class
* Using Protocols to Facilitate Discourse
* Making Connections in Math Class
* Strategic Use of Tools
* Tools to Sketch to tell the Math Story

By Building Community!



Agreements: What Do First Grade Mathematicians Do?



Learning to Listen & Give Feedback in the First 10 Days!

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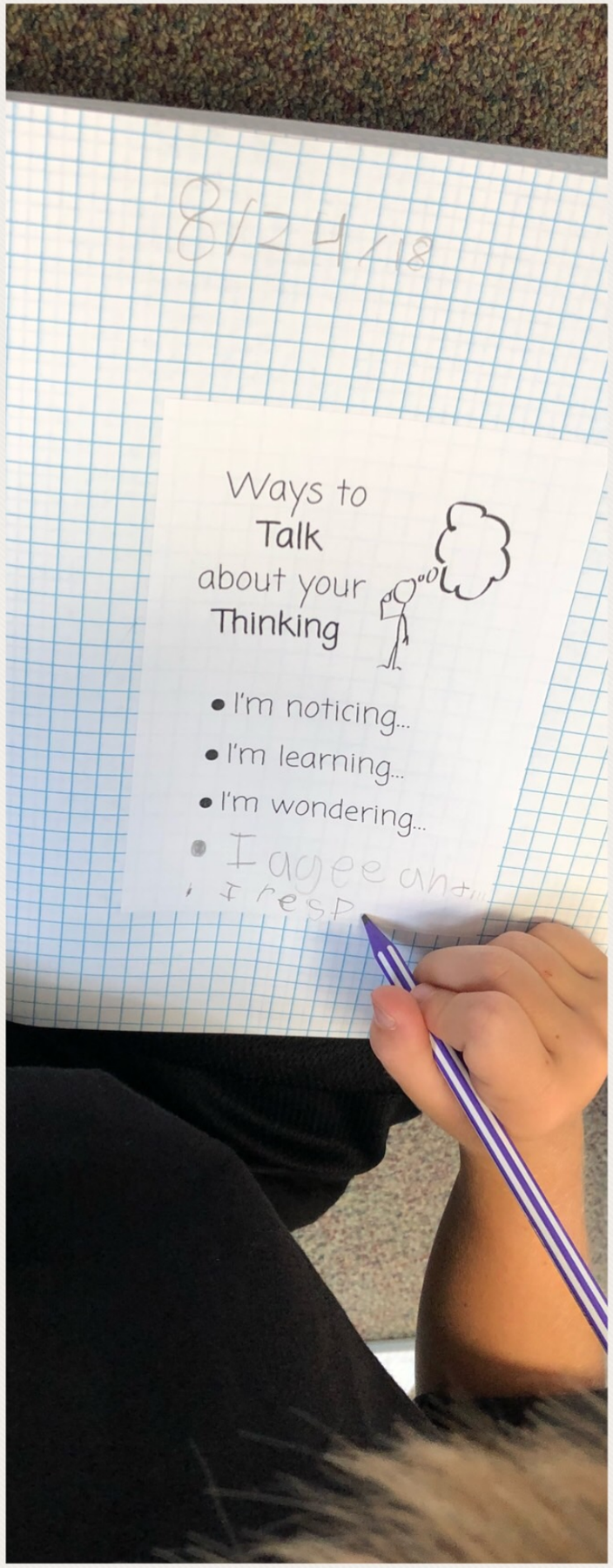
Using Sentence Frames to Share Their Thinking

* I notice...
* I agree...
* I wonder...
* I respectfully have a different idea...

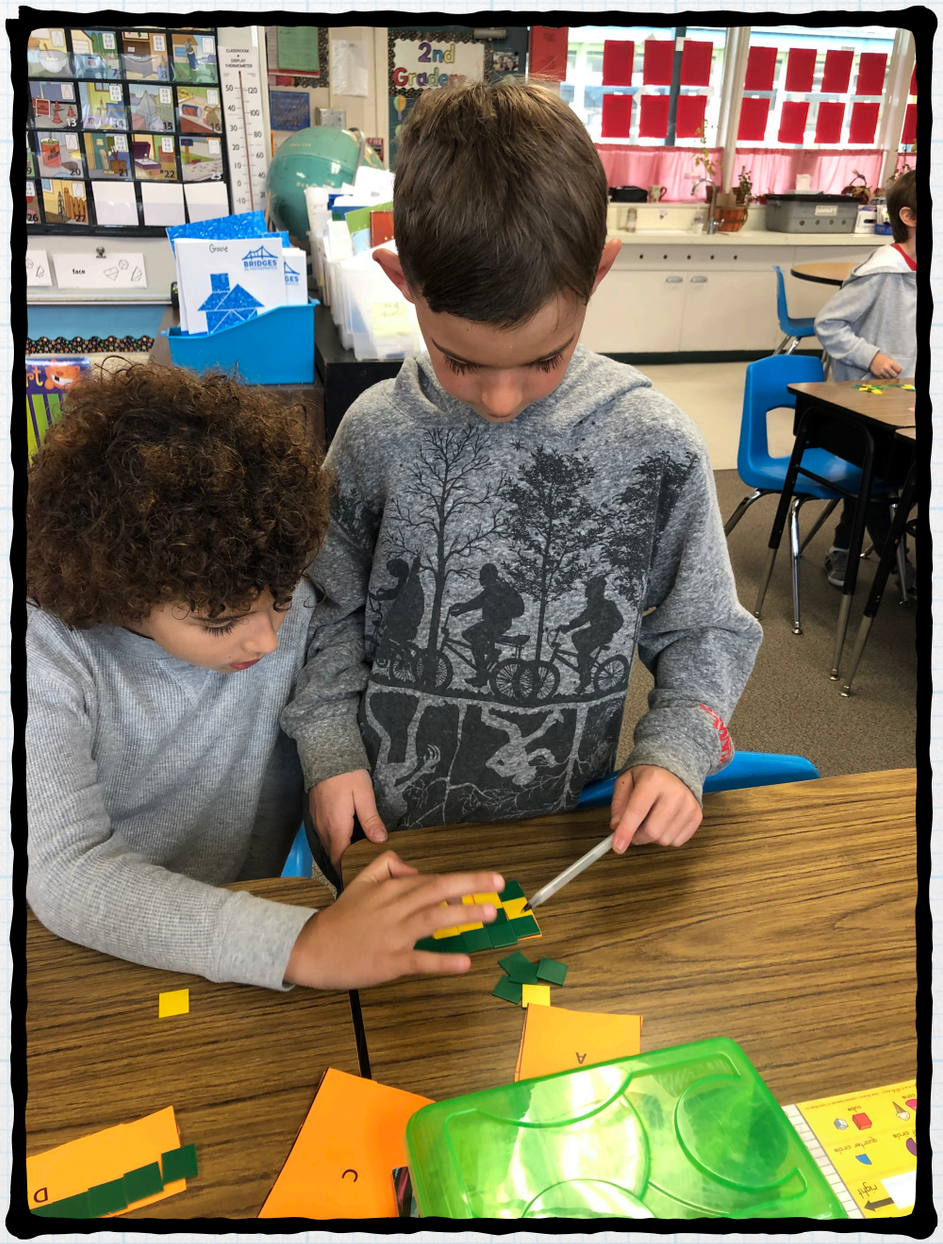

Ways to
Talk
about your
Thinking
• I'm noticing...
• I'm learning...
• I'm wondering...

The Next 10 Days!
Of "The First Twenty Days of Discourse"

* Self-monitoring & Becoming an Autonomous Learner
* Justification through Genuine Questions
* Asking Clarifying & Challenging Questions
* The Power of Mistakes or Partial Thinking
* Productive Noise vs. Non-Productive Noise
* Being a Problem Solver
* Using the 3 Reads Problem Solving Strategy
* Games in Math...Your Role as a Mathematician
* Guided Math Structure to Differentiate Instruction
* Talk Moves to Create A Good Math Conversation

2nd Graders Sharing How They Found the Area of a Rectangle

* How do you know?
* Repeated rows of 3?
* Three rows of 5?



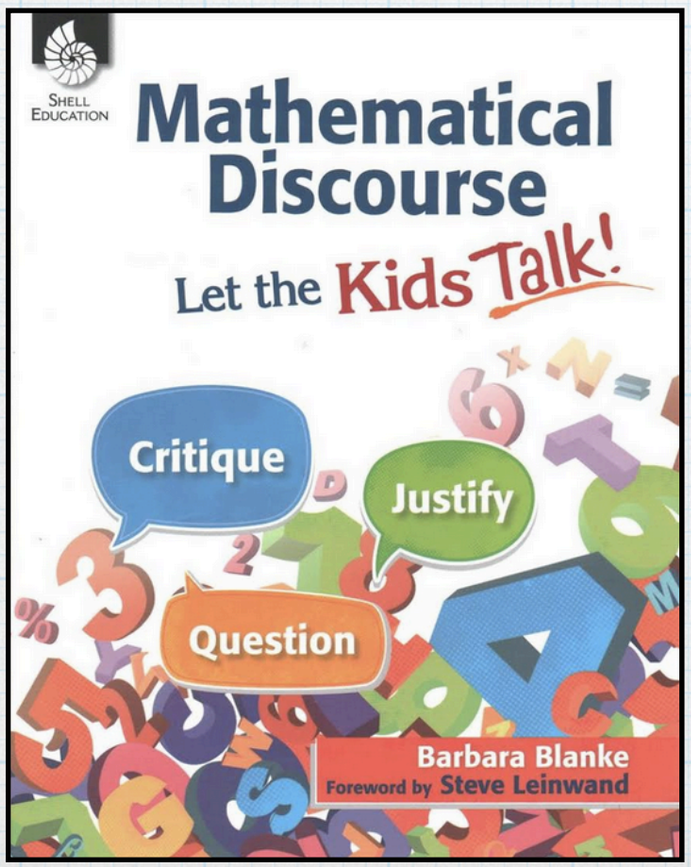
2nd Graders Practicing Active Listening... Next Move...Wait Time

"Reasoning is a habit of mind, and like all habits, it must be developed through consistent use in many contexts."

"Principles and Standards for School Mathematics"

Mathematical Discourse: Let the Kids Talk!

Chapter 1: What is Mathematical Discourse?
Chapter 2: Discourse and Mathematical Practices
Chapter 3: Teacher Moves That Promote Effective Student Discourse
Chapter 4: How Math Talks Promote Discourse
Chapter 5: Equity and Engagement
Chapter 6: Getting Kids Ready to Talk! The First 20 Days of Discourse



Remember...

"Those who do the talking, do the learning."

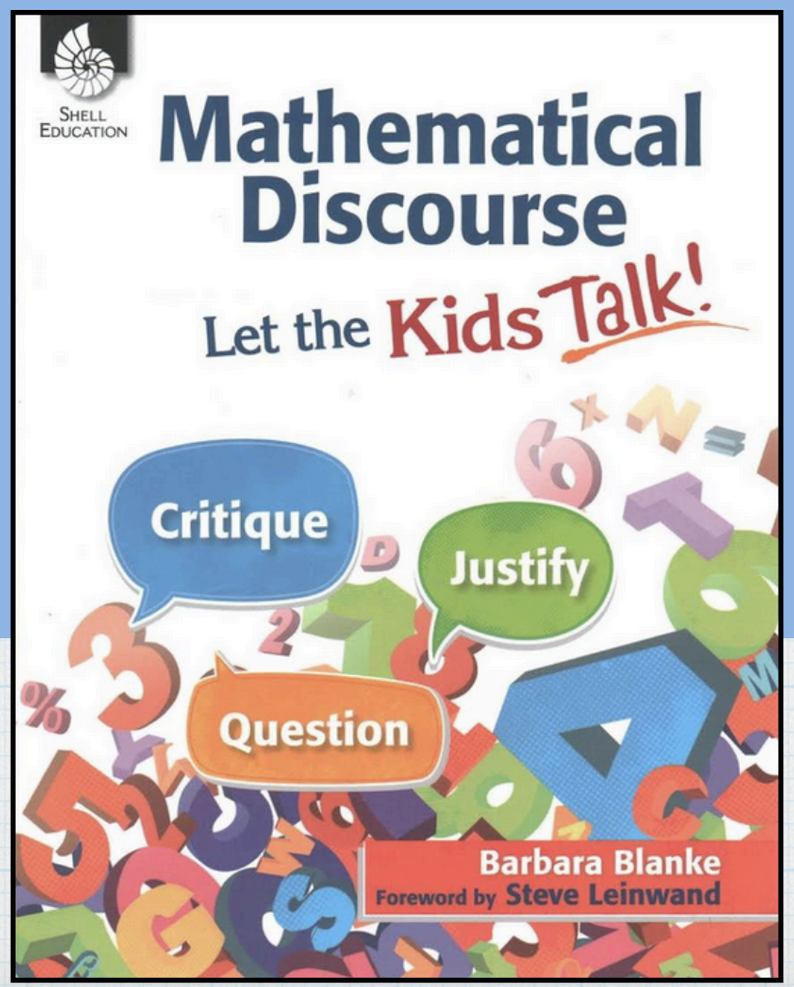
High Quality Math Talk

"Our goal is not to increase the amount of talk in our classrooms, but to increase the amount of **high quality talk** in our classrooms - the mathematically productive talk."

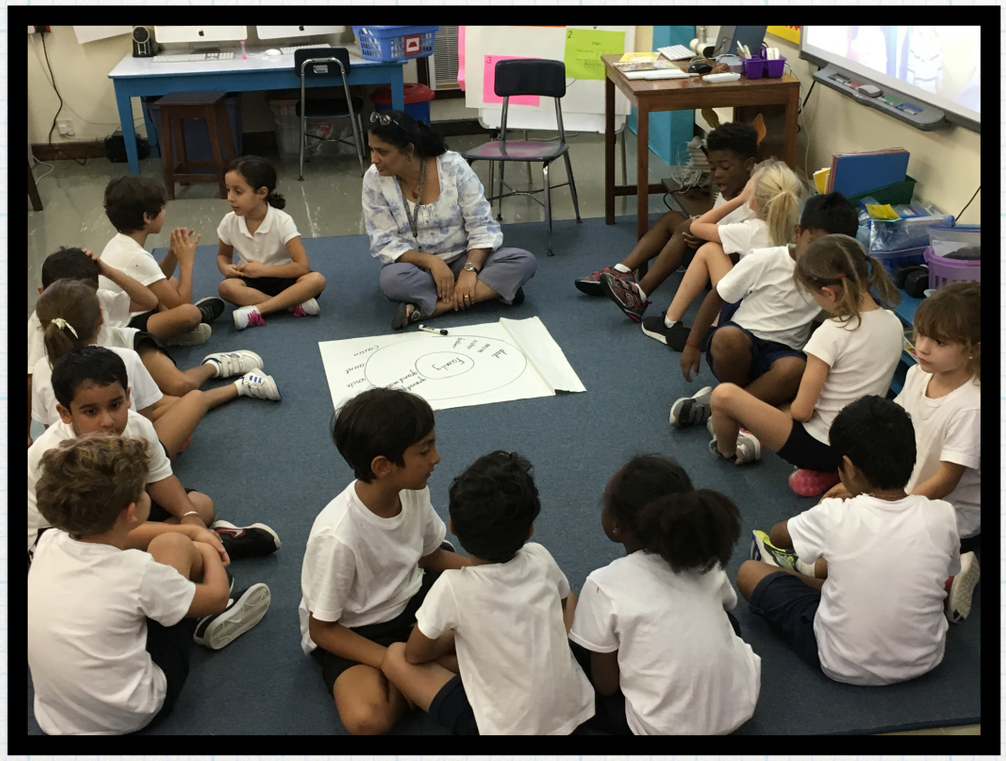
–From Classroom Discussions: Using Math Talk to Help Students Learn by Susan Chapin, Catherine O'Connor, and Nancy Canavan Anderson. Math Solutions Publications, 2001.

Call To Action!

How can you practice Discourse Talk Moves to facilitate deeper student-to-student math talk in YOUR classroom? Make a Plan!



Thank you for "Letting Your Kids Talk" in Math Class!



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Thank you for your Feedback on the APP!