Improving Math and Literacy through Speaking and Listening

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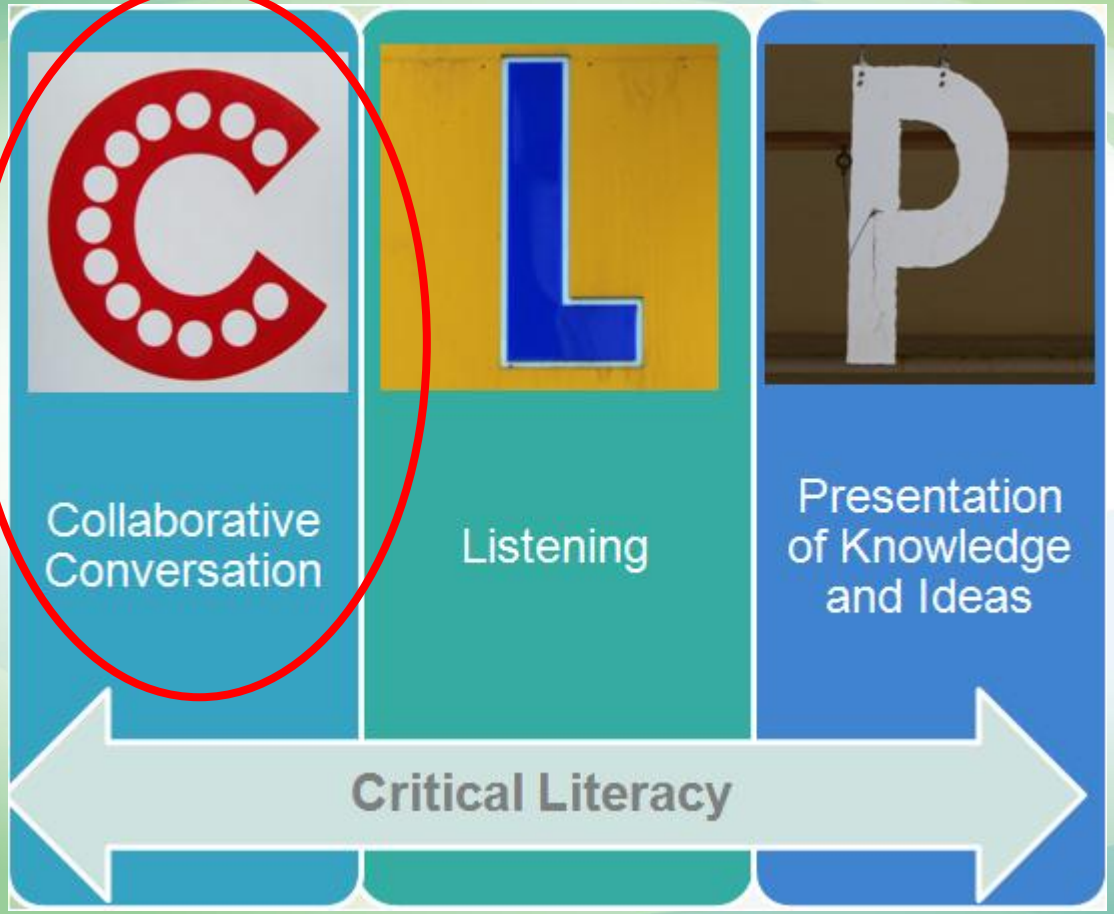
How do You Collaborate?

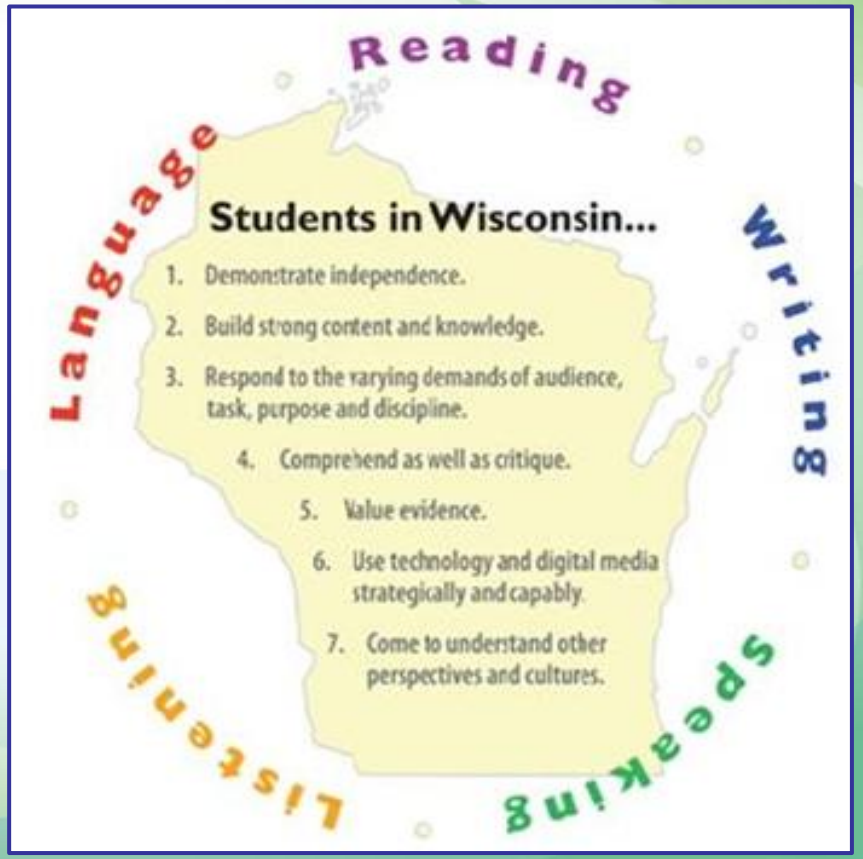
What type of collaborative conversations and discussions are part of your personal and professional life?

- One-on-one
- Small group
- Large group
- Digital – synchronous or asynchronous

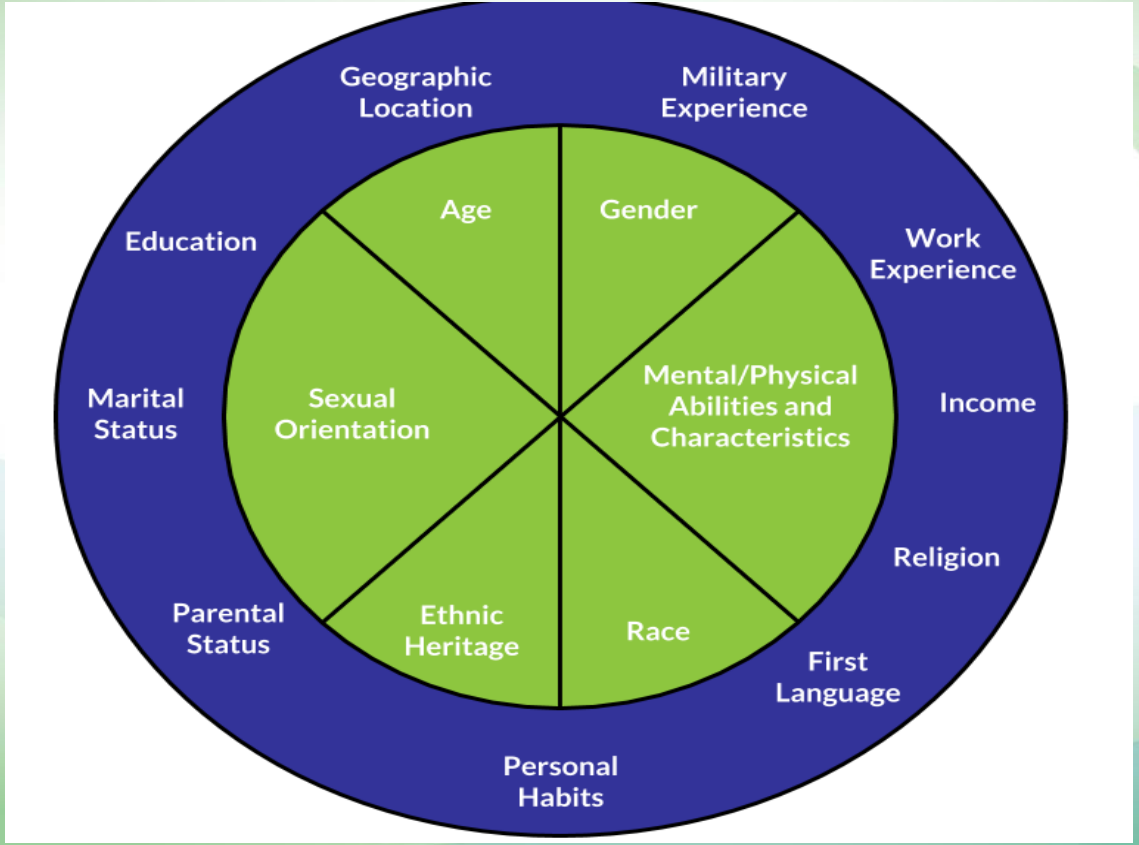

C
L
P
Collaborative Conversation
Listening
Presentation of Knowledge and Ideas
Critical Literacy

Multi-Level System of Support / RtI

Foundations for ELA



Culturally Responsive Practices



Culturally Responsive Practices

- Think of all students as capable learners and have high expectations for them
- Be culturally competent
- Draw on students' experiences
- Use a variety of engagement strategies
- Foster critical consciousness and cultural knowledge
- Bridge students' home and school lives while meeting district and state curricular requirements

Dr. Gloria Ladson-Billings

Critical Literacy

“refers to use of the technologies of print and other media of communication to analyze, critique, and transform the norms, rule systems, and practices governing the social fields of everyday life”

(Luke, 2004, p. 5)

Critical Literacy Examples

- Text selection and purposeful prompts for new ways to understand the world (Labadie, Mosley Wetzel, & Rogers, 2012).
- Making time for discussion where students consider critical issues in texts and even role play (Lewison et al., 2002)
- Theme-based approaches to literacy and topics relevant to students' concerns and interests (Man Chu Lau, 2012)
- Read to "examine society" from a broad definition of text (Christensen, 2000, 2009)

Benefits of Collaborative Conversations

Collaborative conversations benefit all students, but how often do collaborative conversations actually happen?

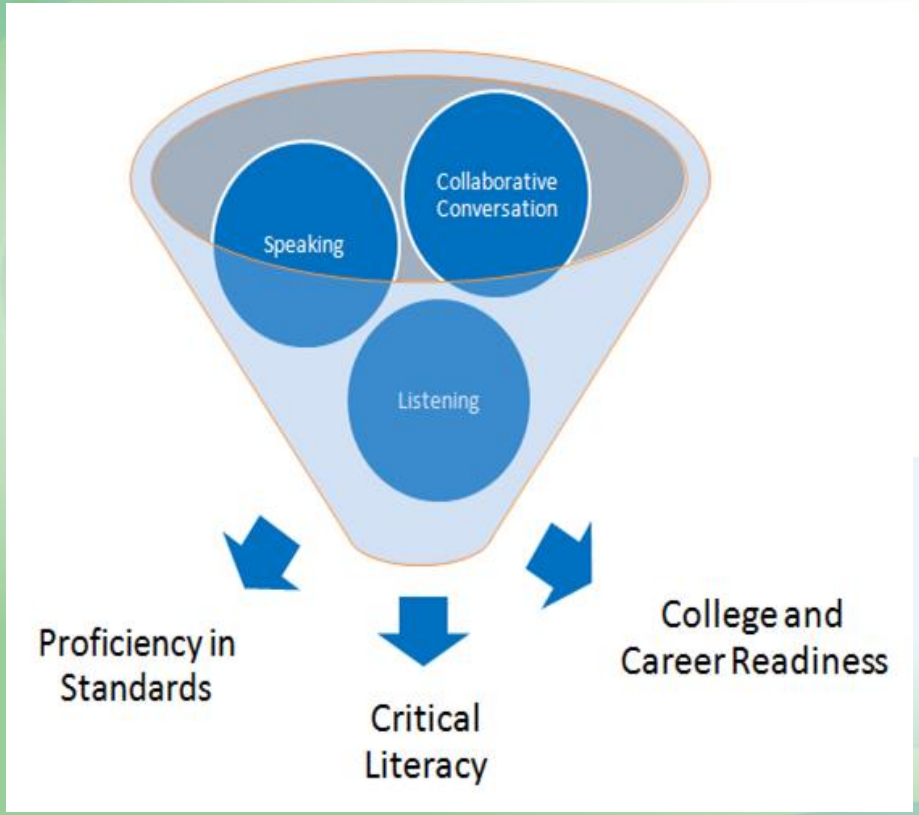
- Low-achieving and high-achieving students internalize knowledge and skills to independently work through challenging literacy tasks (Applebee, Langer, Nystrand, & Gamoran, 2003)
- English language learners build oral language and build knowledge (DaSilva Iddings, Risko, & Paula Rampulla, 2009)
- Discussion rarely took place and lasted an average of less than one minute (Nystrand, Gamoran, Kachur, & Prendergast, 1997)

Shifting Expectations

"One of the most important influences on all talk is the participants themselves - their expectations about interactions and their perceptions of each other"

(Cazden, 2001)

Critical Literacy



Students making real-life connections to texts with opportunities to read *and engage with* social issues. Teachers open "conversational space" for students to consider important issues through multiple perspectives.

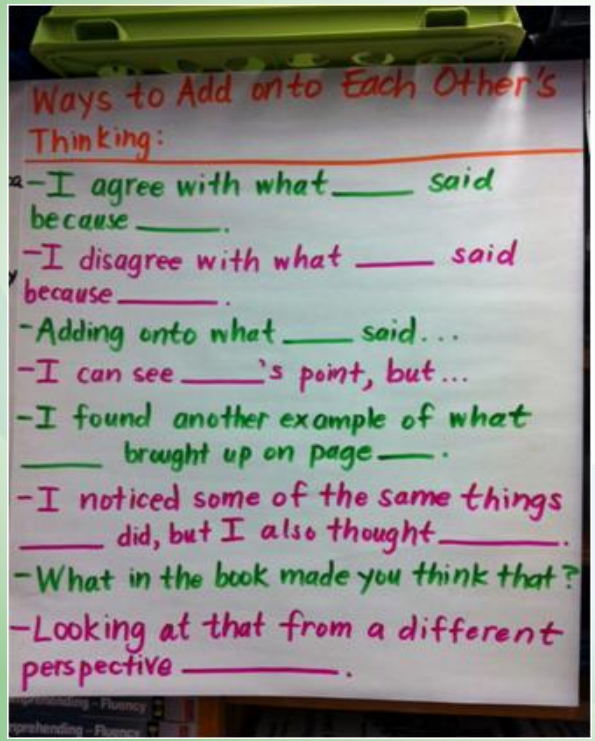
(Lewison et al., 2002)

Teaching Collaborative Conversation

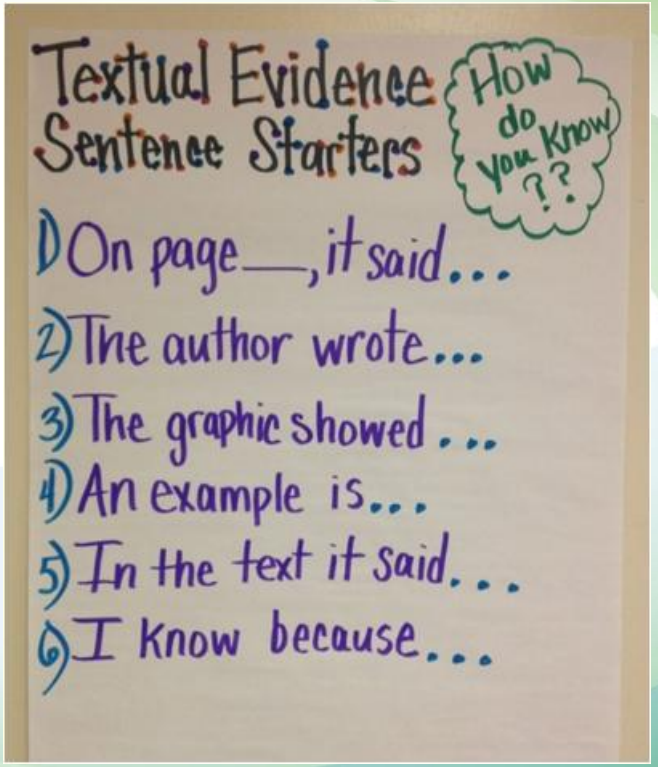
http://vimeo.com/55950554

1. View video of discussion.
2. Take notes about productive and unproductive moves.

Instructional Practice: Anchor Chart



http://middleschoolteachertoliteracycoach.blogspot.com/2013/05/more-guided-reading-anchor-charts.html



http://indulgy.com/post/zfYLAzGIB2/common-core-is-all-about-evidence-standard-on

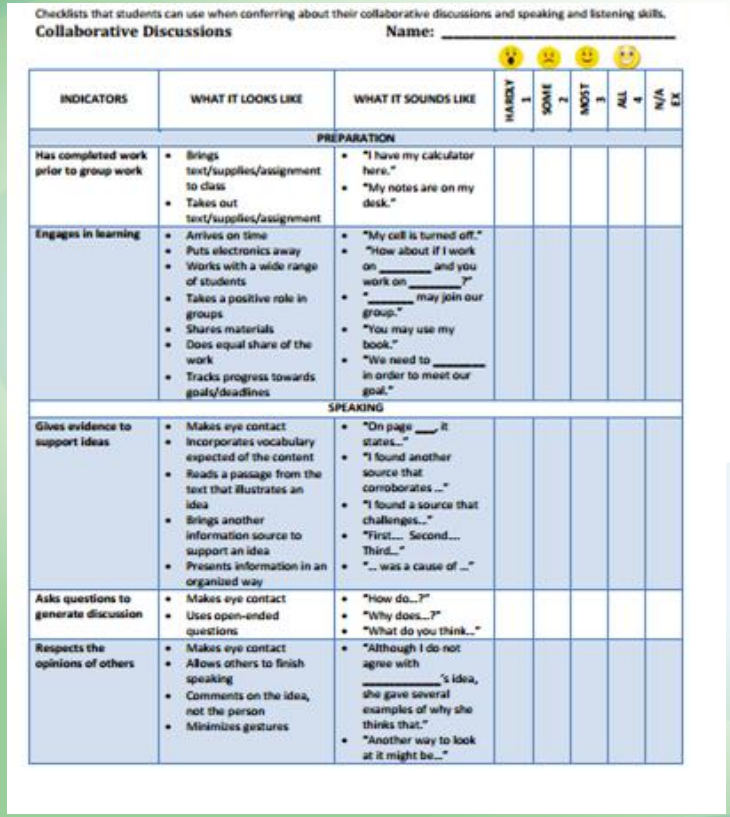
Teaching Collaborative Conversations

How do we get there?

Explicitly teach expectations

Gradual release of responsibility

Assessment Strategies



Checklists that students can use when conferring about their collaborative discussions and speaking and listening skills.

Collaborative Discussions **Name:** _____

INDICATORS	WHAT IT LOOKS LIKE	WHAT IT SOUNDS LIKE	HARDLY 1	SOME 2	MOST 3	ALL 4	N/A EX
PREPARATION							
Has completed work prior to group work	• Brings text/supplies/assignment to class • Takes out text/supplies/assignment	• "I have my calculator here." • "My notes are on my desk."					
Engages in learning	• Arrives on time • Puts electronics away • Works with a wide range of students • Takes a positive role in groups • Shares materials • Does equal share of the work • Tracks progress towards goals/deadlines	• "My cell is turned off." • "How about if I work on _____ and you work on _____?" • "_____ may join our group." • "You may use my book." • "We need to _____ in order to meet our goal."					
SPEAKING							
Gives evidence to support ideas	• Makes eye contact • Incorporates vocabulary expected of the content • Reads a passage from the text that illustrates an idea • Brings another information source to support an idea • Presents information in an organized way	• "On page ___, it states..." • "I found another source that corroborates ..." • "I found a source that challenges..." • "First.... Second.... Third..." • "... was a cause of ..."					
Asks questions to generate discussion	• Makes eye contact • Uses open-ended questions	• "How do...?" • "Why does...?" • "What do you think..."					
Respects the opinions of others	• Makes eye contact • Allows others to finish speaking • Comments on the idea, not the person • Minimizes gestures	• "Although I do not agree with _____'s idea, she gave several examples of why she thinks that." • "Another way to look at it might be..."					

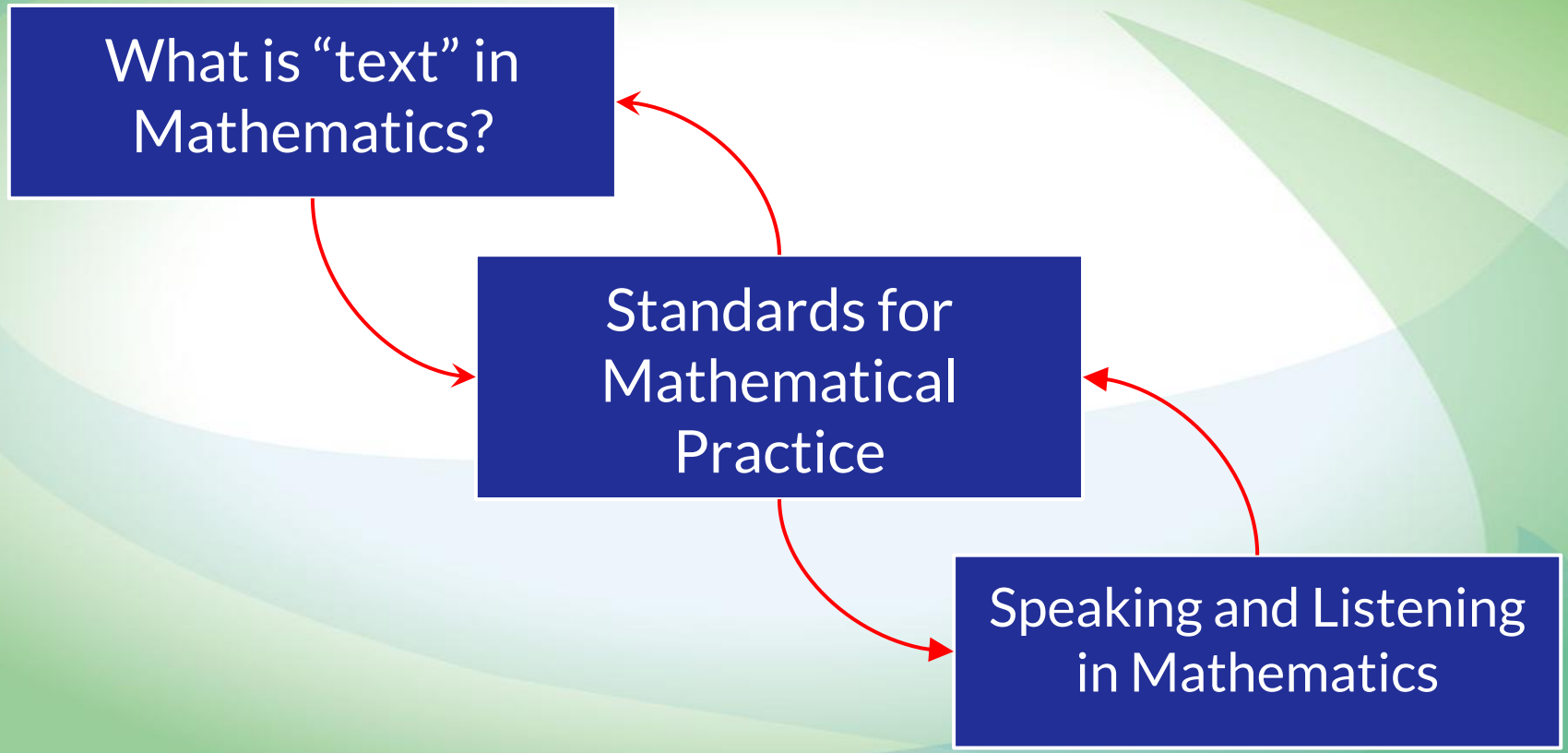
Observation notes

Observation rubric

Recording

Student self-assessment

Speaking and Listening in Math Classroom



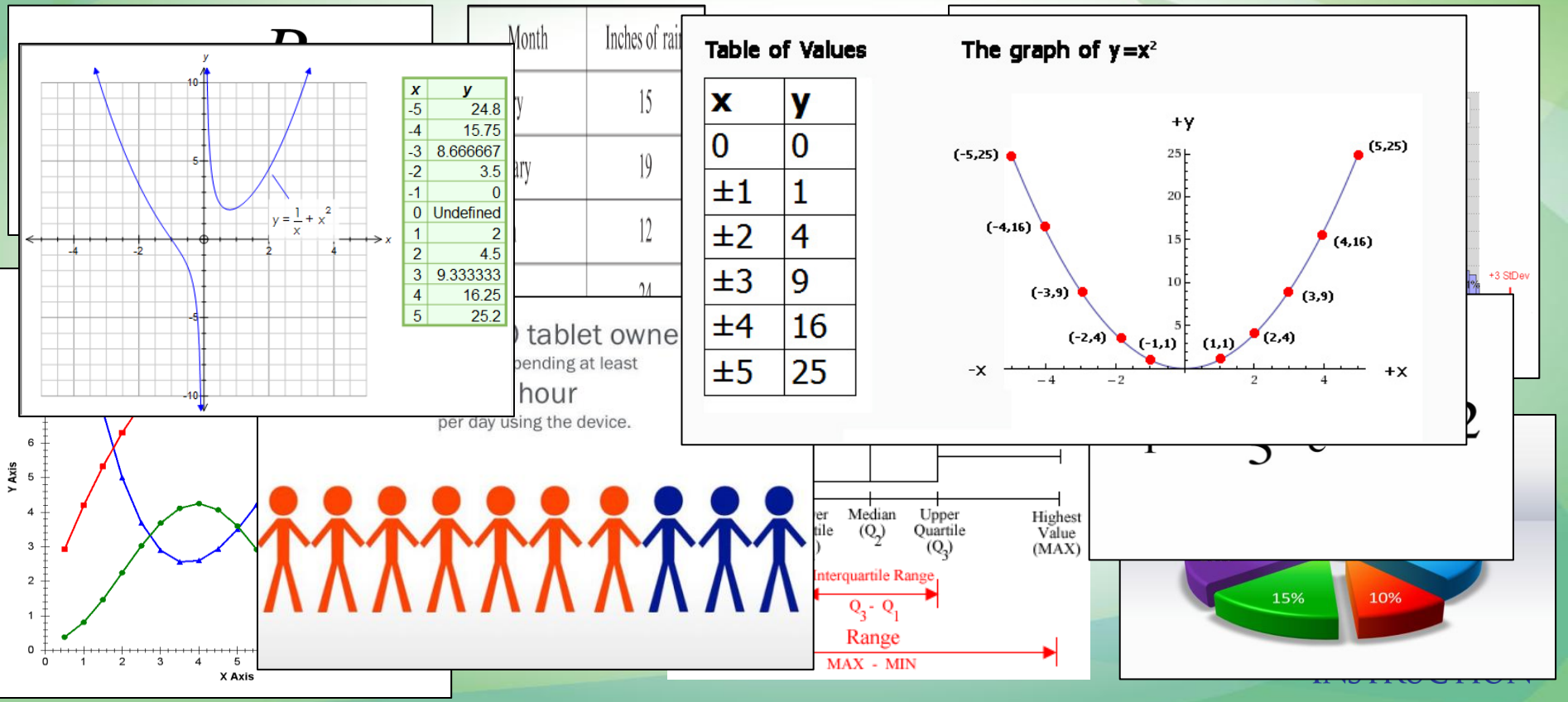
Wisconsin's Definition of 'Text'

A text is:

any communication –
spoken, written, or visual –
involving language

Text in Mathematics

A text is any communication – spoken, written, or visual - involving language



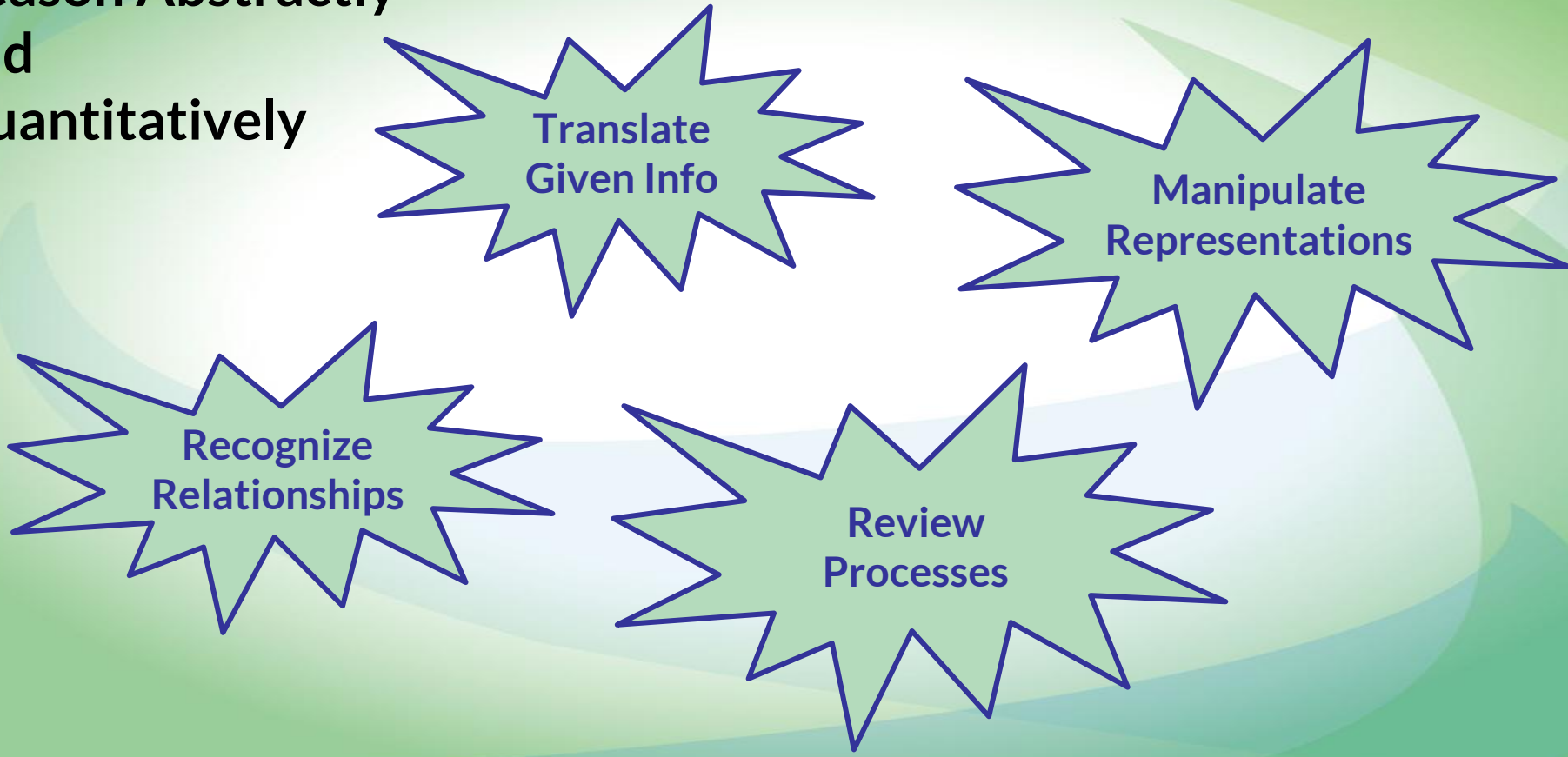
Standards for Mathematical Practice

"Habits of Mind" that lead to deeper understanding of mathematical concepts

Connect SMP.2 and SMP.3 to Speaking and Listening

Standards for Mathematical Practice #2

Reason Abstractly and Quantitatively

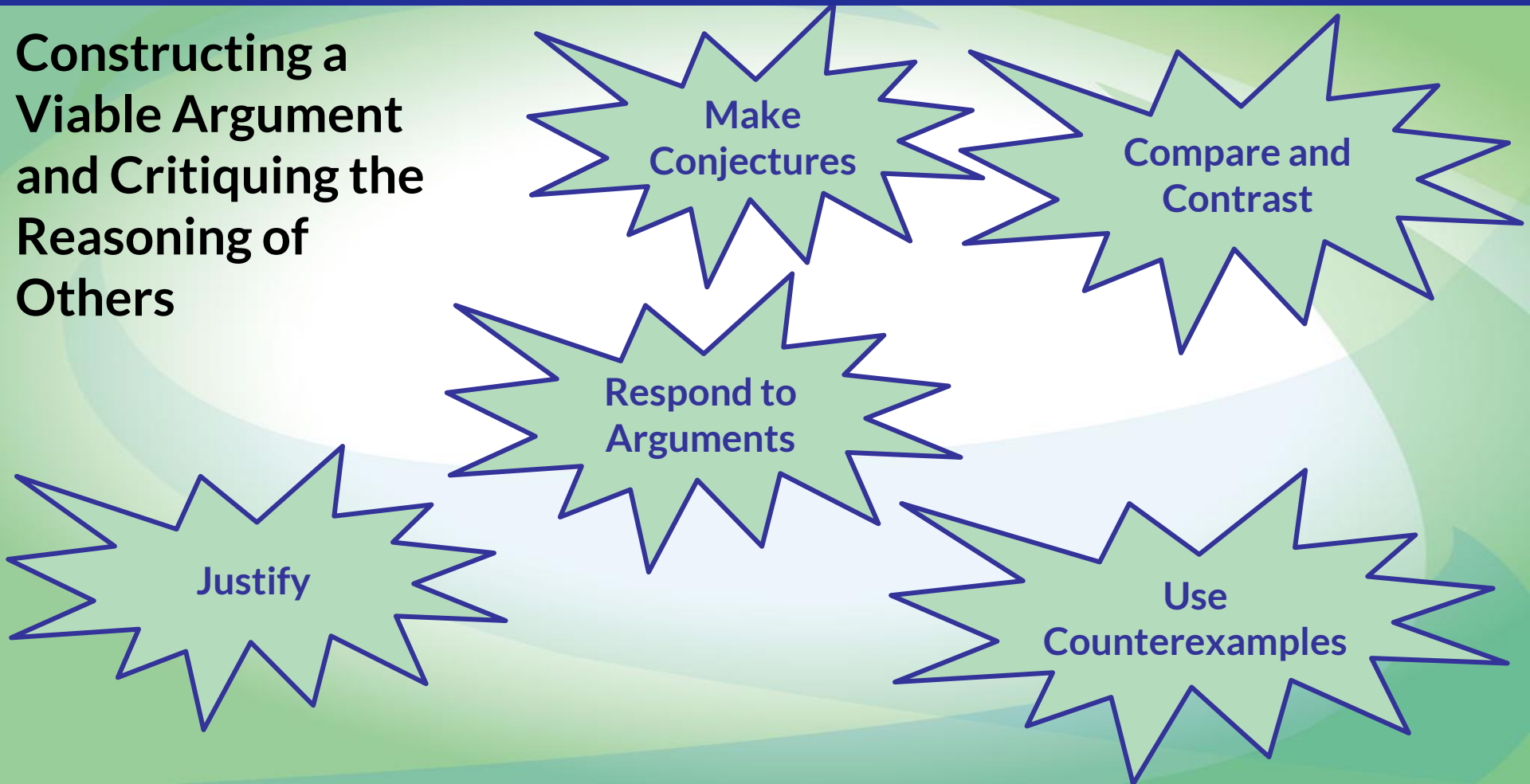


Standards for Mathematical Practice #2

Teachers who are developing students' capacity to "reason abstractly and quantitatively" help their learners understand the relationships between problem scenarios and mathematical representation, as well as how the symbols represent strategies for solution.

Standards for Mathematical Practice #3

Constructing a Viable Argument and Critiquing the Reasoning of Others



Standards for Mathematical Practice #3

Teachers who are developing students' capacity to "construct viable arguments and critique the reasoning of others" require their students to engage in active mathematical discourse. This might involve having students explain and discuss their thinking processes aloud, or signaling agreement/disagreement with a hand signal.

Connecting Practices to Speaking and Listening

Mathematically Proficient students can...

Standard for Mathematical Practice #3

Speaking and Listening

Speaking and Listening

MAKE, JUSTIFY (PROVE) and PRESENT by...

- using objects, drawings, and diagrams.
- using examples and nonexamples.

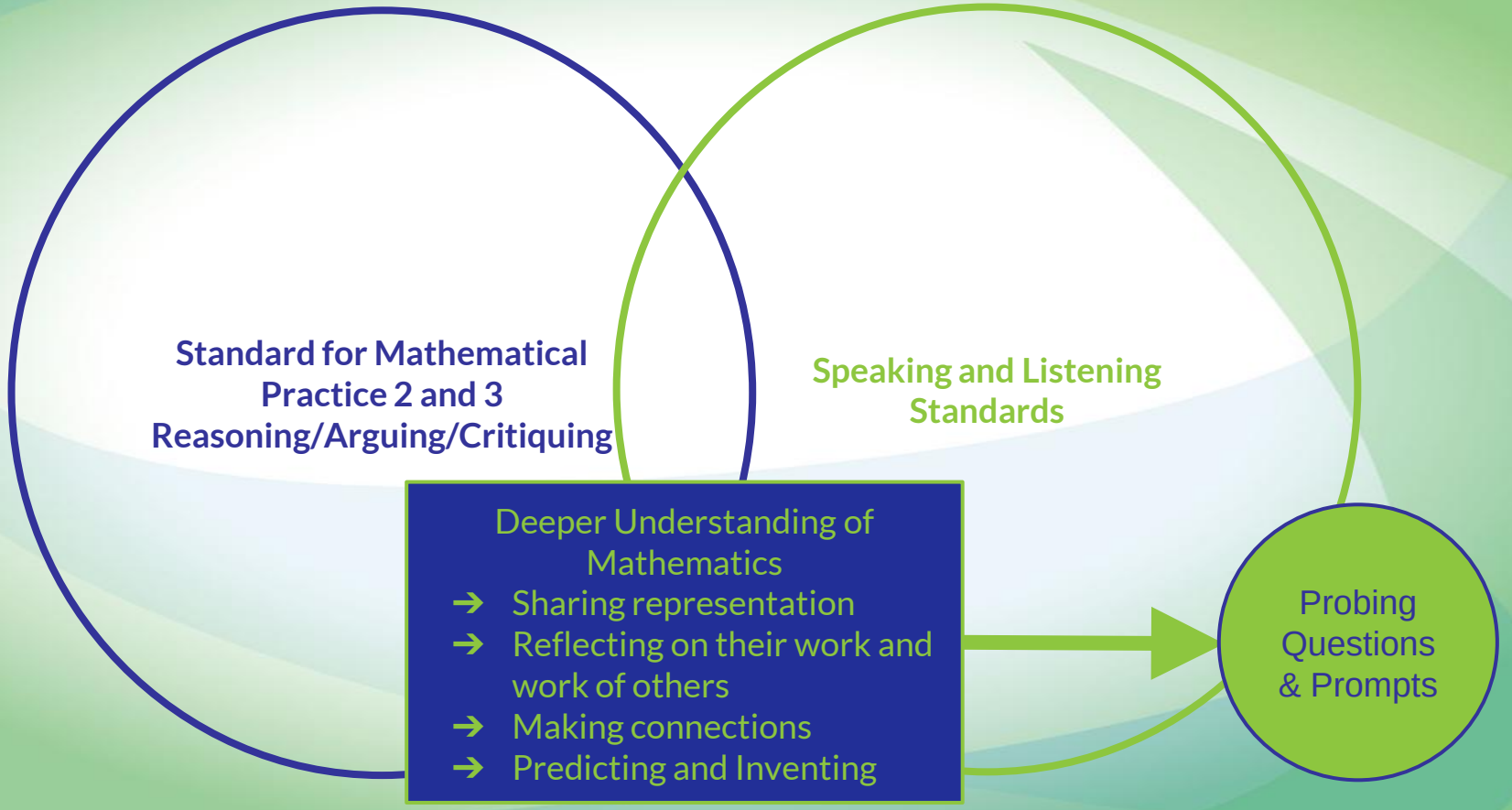
Text

CRITIQUE the reasoning of others by...

- listening to others solutions and responding to questions.
- asking questions to clarify or improve arguments.
- making connections.

Student Evidence - Objects/Charts/Drawings/Diagrams

Incorporating Speaking and Listening into Math Instruction



TO HELP STUDENTS SHARE THEIR REPRESENTATIONS...

Pose these Questions	Use these Prompts
➔ How have you shown your thinking (e.g., picture, model, number, sentence)? ➔ Which way (e.g., picture, model, number, sentence) best shows what you know? ➔ How have you used math words to describe your experience? ➔ How did you show it? ➔ How would you explain _____ to a student in Grade ___? (a grade lower than the one the student is in)	➔ I decided to use a … ➔ A graph (table, T-chart, picture) shows this the best because … ➔ I could make this clearer by using a … ➔ The math words that help someone understand what I did are …

Adapted from Ontario Ministry of Education. (2006). A guide to effective instruction in mathematics, Kindergarten to Grade 6

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TO HELP STUDENTS REFLECT ON THEIR WORK...

Pose these Questions	Use these Prompts
➔ What mathematics were you investigating? ➔ What questions arose as you worked? ➔ What were you thinking when you made decisions or selected strategies to solve the problem? ➔ What changes did you have to make to solve the problem? ➔ What was the most challenging part of the task? And why? ➔ How do you know?	➔ A question I had was … ➔ I was feeling really … ➔ I decided to _____, I was thinking … ➔ I found _____ challenging because … ➔ The most important thing I learned in math today is …

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TO HELP STUDENTS STUDENTS MAKE CONNECTIONS...

Pose these Questions	Use these Prompts
➔ What does this make you think of? ➔ What other math can you connect with this? ➔ When do you use this math at home? At school? In other places? ➔ Where do you see _____ at school? At home? Outside? ➔ How is this like something you have done before?	➔ This new math idea is like… ➔ I thought of … ➔ I did something like this before when … ➔ We do this at home when we … ➔ I remember when we …

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TO HELP STUDENTS STUDENTS PREDICT OR INVENT...

Pose these Questions	Use these Prompts
➔ What would happen if …? ➔ What decisions can you make from the pattern that you discovered? ➔ How else might you have solved the problem? ➔ Will it be the same if we use different numbers?	➔ Prove that there is only one possible answer to this problem. ➔ Convince me! ➔ Tell me what is the same? What is different? ➔ How do you know?

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Using Number Talks to Deepen Understanding

Number talks were developed for classroom teachers to engage students in "mental math" through grappling with interesting mathematics problems. Educators can use number talks regularly as introductions to the day's mathematical practice, as "warm ups" for other lessons, or as stand-alone extended engagements with mathematical concepts.

Use the rubric for either Standard for Mathematical Practice 3 in order to evaluate the student's and teacher's proficiency in your selected practice

Inside Mathematics - Number Talks

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Resources

DPI ELA
http://dpi.wi.gov/ela

DPI Math
http://dpi.wi.gov/math

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