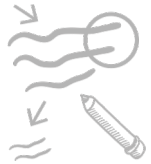
4 Essential Instructional Strategies that keep the focus on mathematical thinking while providing access for ALL learners…routinely

Ask-yourself questions



Annotation

I noticed…so I knew...

I saw...so I looked for...

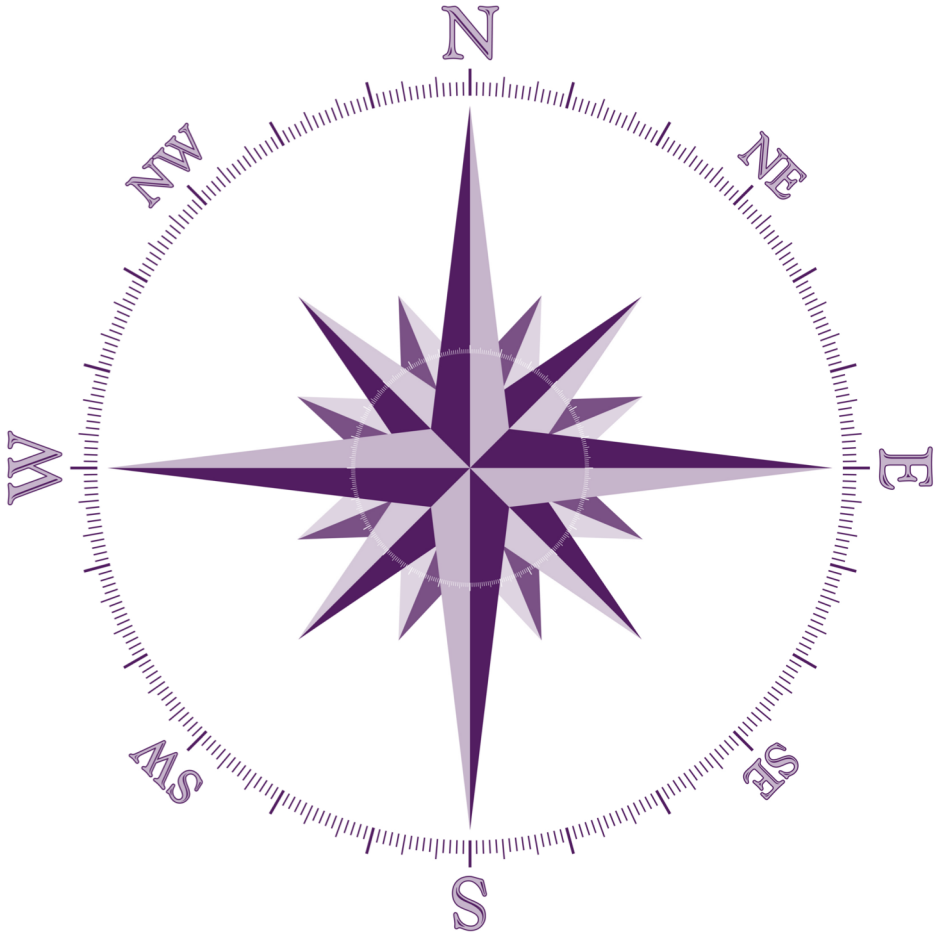
... Connects to ... because

Sentence frames and starters

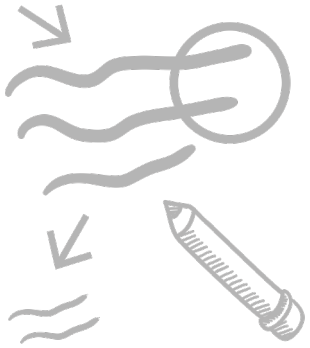
The Four Rs – repeat, rephrase, reword, record

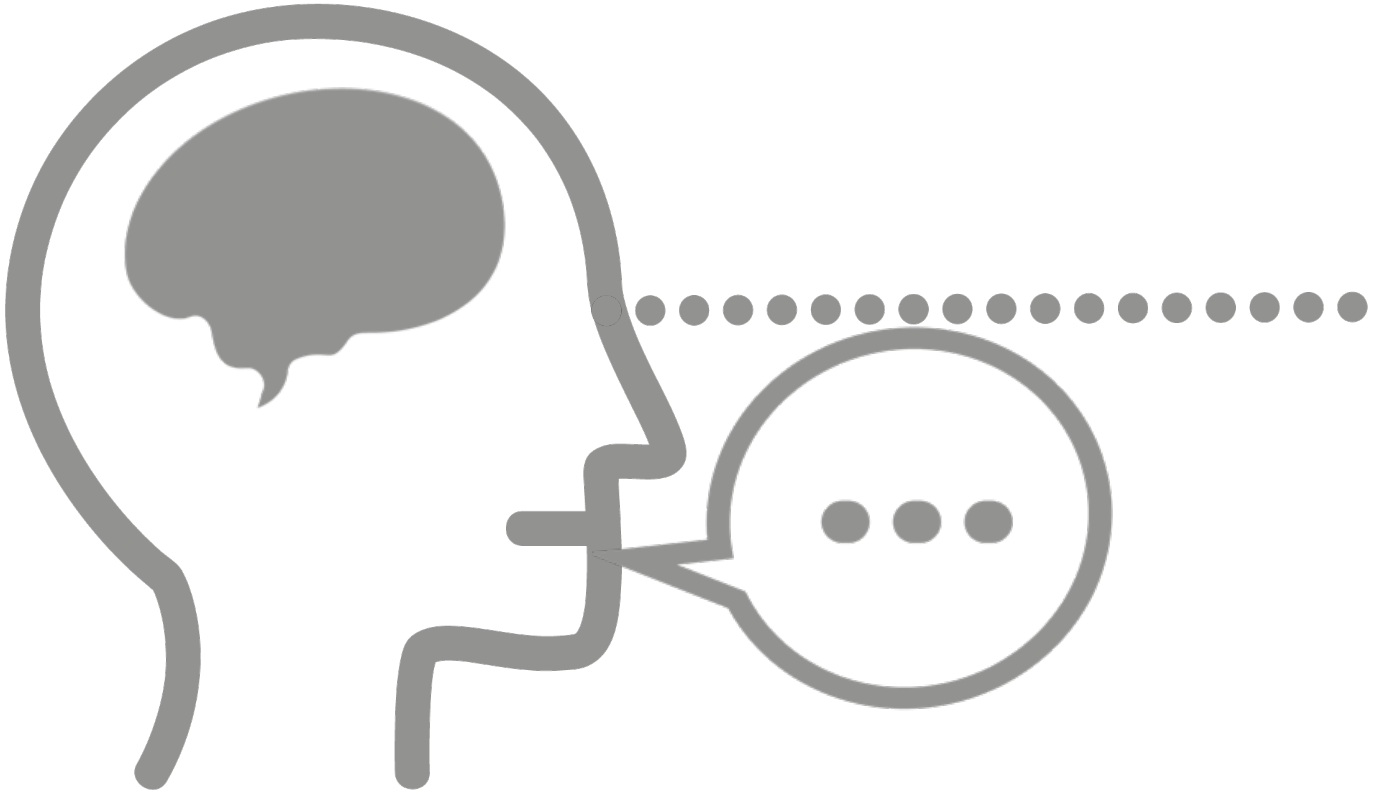
Ask-Yourself Questions…

- Combat learned helplessness
- Promote student agency

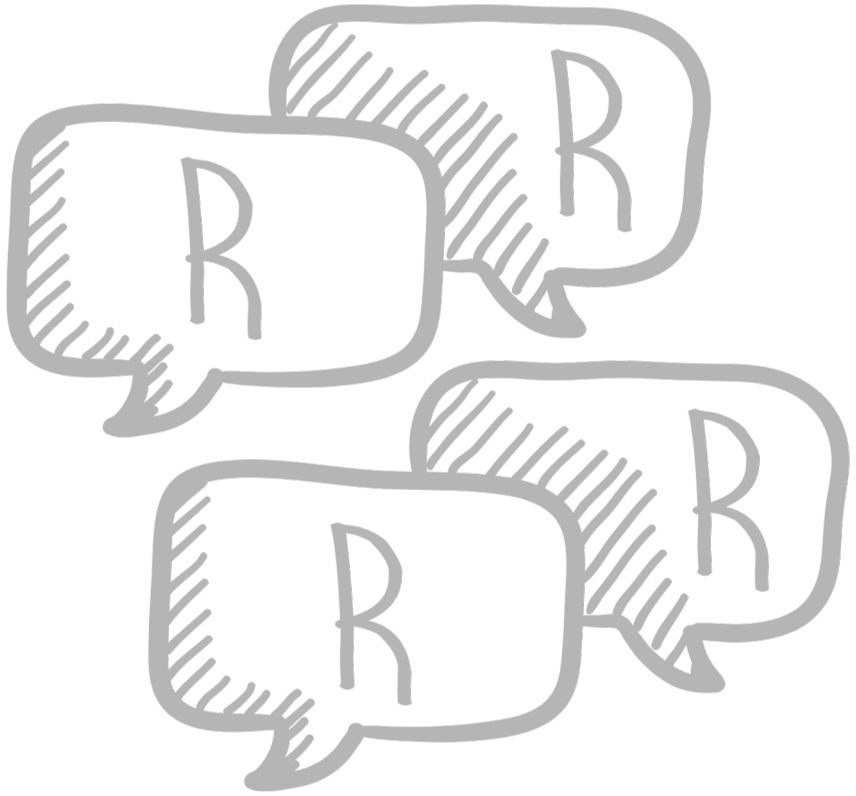


Annotation Connects the Verbal to the Visual

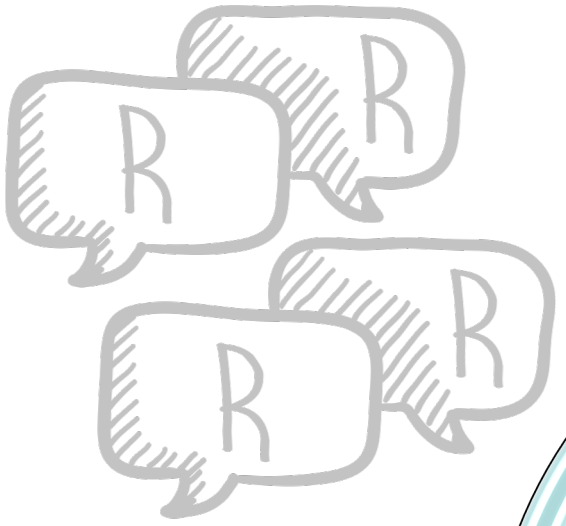


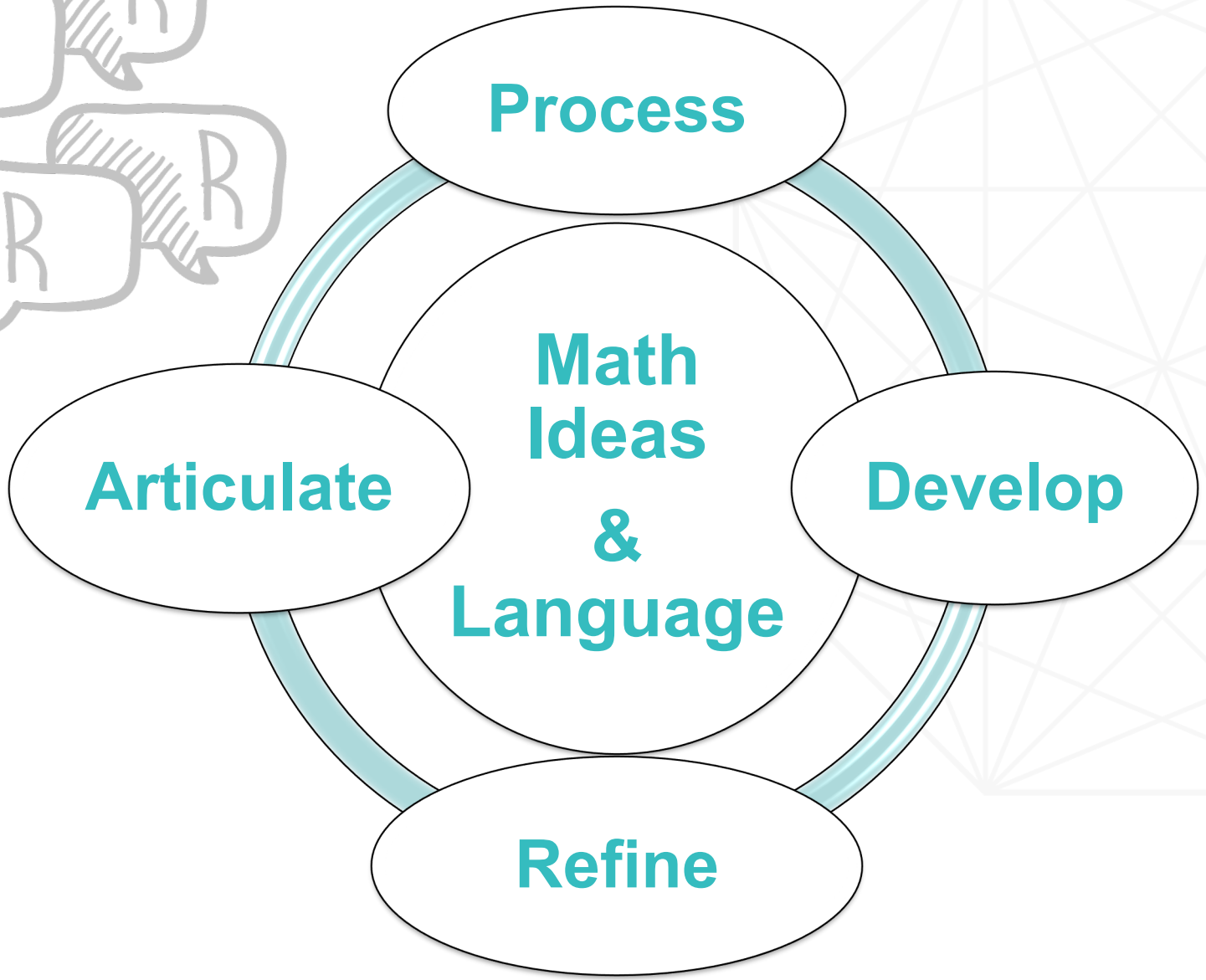


The Four Rs



Repeat Rephrase Reword Record




Process
Develop
Refine
Articulate
Math Ideas & Language

Sentence Frames and Starters

We noticed…..so we….

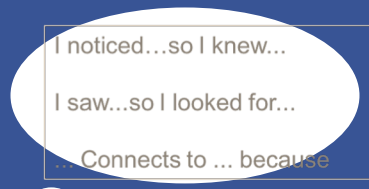
They knew….so they….

A question I learned to ask myself is…..

Essential Strategies: A Deeper Dive

Ask Yourself Questions

Annotation



Sentence Frames and Starters

Four Rs

Turn and Talks

Annotation

A representation of student thinking

Highlight *students'* ideas

Connects verbal to visual

Provides residue of discussion

By planning, practicing, and authentically listening to student thinking in the moment

Steps for Annotating

- Listen carefully to students when they share their thinking in full group
- “Annotate in the air” first-- i.e. point and gesture-- as students share thinking
- Annotate in ink as students rephrase and discuss classmate’s ideas
- Use color, words, symbol, etc. to highlight student thinking

Ask Yourself Questions

A thinking prompt for students to consider and eventually internalize as a mathematical habit of mind

Orient student thinking without taking it over

Combat learned helplessness

Promote student agency

Post it, Model it, Reference and Reinforce it

When Should Teachers Pose an Ask Yourself Question?

Check understanding

A. When students are stuck

B. When the teacher is orienting students to a specific avenue of thinking

C. To get students started in the thinking

D. To promote student agency

E. All of the above

Steps for Implementing Ask Yourself Questions

- Pose an Ask Yourself Question in writing, by projecting and/or verbally
- Model the language in the Ask Yourself Question
- Reference an Ask Yourself Question when students are stuck
- Create residue of Ask Yourself Questions mathematicians commonly ask themselves so students can self-implement

4 Rs

Repeat, Rephrase, Reword, Record

To process and refine mathematical ideas and language

- Prompt students to *Repeat, Rephrase, or Reword.*
- Ensure students repeat, rephrase, reword.
- Record important language and ideas.

When do you use each R?

Check understanding

1. If you think everyone understands the idea, and you want to add precision, which of the four Rs do you implement?

   A. Repeat B. Rephrase C. Reword D. Record

2. If a student shares an idea, and you're not sure everyone heard. Which of the four Rs do you implement?

   Repeat B. Rephrase C. Reword D. Record

3. If everyone heard an idea, and you want to check for understanding, which of the four Rs do you implement?

   A. Repeat B. Rephrase C. Reword D. Record

Sentence Frames and Starters

 What?	A skeleton of a sentence
 Why?	Orient student thinking without taking it over Combat learned helplessness Promote student agency
 How?	Post it, Model it, Reference it

When Should Teachers Provide a Sentence Frame or Starter?

Check understanding

A. When students are sharing an idea

B. When the teacher is orienting students to a specific avenue of thinking

C. When students might need a starting point for discussion

D. When students are writing about their thinking

E. All of the above

Steps for Implementing Sentence Frames and Starters

- Project, record, or provide in writing, a sentence frame or starter
- Model the sentence frame or starter
- Set the expectation for ALL students to use it
- If students are sharing in the full group, remind them of the sentence frame or starter
- Hold students accountable for using the sentence frame or starter

Turn and Talks

An opportunity for students to work out mathematical ideas and language together

So that each and every student has an opportunity to speak, develop language and thinking, and so that the teacher can hear from many students

Provide a purpose, prompt, and product

When Should Teachers Facilitate a Turn and Talk?

Check understanding

A. Allow students to process an idea and language before a full group conversation

B. When no student offers to share an idea during whole class discussion

C. When teachers need to hear student ideas in order to make a decision in the moment

D. When every student is eager to share an idea

E. All of the above

Turn and Talk

Steps of a Turn and Talk

1. Pose (and possibly record or project) a clear question or prompt.

2. Provide a sentence frame or starter to prompt partner talk.

3. Provide a time estimate (that you may adjust as you listen to students).

4. Listen to students as they discuss, select, and sequence responses.

5. Reconvene the class and remind them of the prompt.

6. Purposefully call on students to share their thinking and transition back to a full group discussion.