Discourse Moves for Fostering Confident Math Learners

We ALL speak math

North Carolina Collaborative for Mathematics Learning www.nc2ml.org

Attributing Student's Mathematical Ideas

What is it?

Connecting students' mathematical ideas to the mathematical goal of the lesson and to one another's ideas by using student's names when referring to the idea.

Why do we use it?

This move highlights the strengths in student thinking by connecting their contributions to a relevant mathematical idea. By using student's names when referring to their ideas you are showing them that the idea is a valuable addition to the mathematical discussion. The goal is to acknowledge that the idea under consideration is "our" idea – we build and refine ideas together not in isolation.

Attributing Student's Mathematical Ideas...

Teachers are...

- using student's names to make clear who's idea, strategy, or representation is being referred to
- often following an attribution of a student's idea with an orienting move
- emphasizing important mathematical ideas and encouraging students to make connections among them toward the target goal of the lesson

Students are...

- explaining and reflecting on their own and other's thinking
- making connections between their own and other's ideas and the mathematical goal of the lesson
- seeing their ideas and their peer's ideas as valued contributions
- developing a positive math identity

Where is that outcome on Antonio's diagram?

Notice how Rob used Cathy's idea in his solution.

How does Kim's idea related to what we talked about yesterday?

How are Jenna's rule and Kaylen's rule similar? How are they different?

Let's call this "Lanre's formula" since it was her idea.

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Discourse Move: Attributing Student's Mathematical Ideas

Students are active, engaged and sharing ideas with one another. As a result, students feel capable, empowered and valued.

Support for Administrators

NC Professional Teaching Standards

Attributing Student's Mathematical Ideas aligns to Standard 1 and Standard 4.

1a. Empower students.

4a. Teachers know how students think and learn… They adapt resources to address strengths and weaknesses of their students.

4b. They engage students in the learning process.

NC Portrait of a Graduate

Attributing Student's Mathematical Ideas aligns to the Adaptability, Critical Thinking, Learner's Mindset, and Personal Responsibility competencies.

- Demonstrate flexibility when navigating challenging situations.
- Employ creative improvements to systems, processes, and organizations.
- Possess an ongoing desire to learn, unlearn, and relearn.
- Persevere through challenges.

Standards of Mathematical Practice (SMP)

Mathematically proficient students…

Make sense of problems and persevere in solving them. Explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends.

Monitor and evaluate their progress and change course if necessary. Construct viable arguments and critique the reasoning of others.

Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

COACHING UP

When working with a teacher, here are some questions to help coach the teacher to implement the discourse move of Attributing Student's Mathematical Ideas in their classroom.

Clarifying Questions…

- How do you empower students in attributing their mathematical ideas?
- How do you encourage students' active participation, collaboration, and contribution to mathematical discussions and problem-solving activities?
- How do you employ creative improvements to systems, processes, and classroom routines when it comes to attributing students' mathematical ideas?

Digging Deeper for Discourse

- How do you create a classroom environment where students feel confident and supported in expressing their thoughts and perspectives?
- How do you adapt your instructional approaches and strategies to accommodate different mathematical perspectives to foster a supportive and inclusive learning environment?
- How do you continuously seek innovative ways to enhance students' engagement, understanding, and ownership of their mathematical thinking?

By attributing ideas to specific students, it leads to an understanding that there are sometimes multiple answers or multiple ways to get to an answer.

Note: This resource is being co-designed by the NC math education community. We welcome feedback to inform its refinement at https://forms.gle/8PBWGsvqJQzcdtCF8 Check the website (nc2ml.org/high-school-teachers) for the most up to date resources.