



Assessing Student Thinking

What is it?

Following up with an individual student's solution, strategy, or question to have the student elaborate on their ideas.

Why do we use it?

Posing assessing questions not only provides an opportunity to check for understanding, but can also encourage students to communicate their ideas using mathematical language and sets the stage for moving the mathematics forward. Assessing can be in the form of a genuine question, or it could be for the benefit of the other students in the class. Furthermore, posing questions that require thinking helps to develop positive math identities and agency by positioning students as thinkers and doers of mathematics.

When Assessing Student Thinking...

Teachers are...

- planning questions based on their anticipation of student thinking
- asking questions that require explanation and justification
- asking questions that make the math more visible and accessible for student examination and discussion
- carefully listening to show students their thinking is valued and makes sense

Students are...

- thinking carefully about how to present their responses clearly without rushing to respond
- reflecting on and justifying their reasoning, not simply providing answers
- learning to ask questions of each other
- developing a positive math identity

Why does it work?

Please explain how you got that answer?

How do you know that?

Tell us about this part of your solution – what were you thinking?

Why do you think it didn't work?



Discourse Move: Assessing Student Thinking



Assessing students' thinking requires that we listen intently to what students are saying. We build relationships. And we see students as mathematicians so that they can come to see themselves, and their classmates, as such.



Support for Administrators

NC Professional Teaching Standards

Assessing Student Thinking aligns to Standard 1, Standard 2, Standard 3, and Standard 4.

- 1a.** Teachers use a variety of assessment data throughout the year to evaluate progress.
- 2d.** Teachers engage students to ensure that their needs are met.
- 3b.** Teachers bring a richness and depth of understanding to their classrooms.
- 4b.** Teachers collaborate with their colleagues and use a variety of data sources.

NC Portrait of a Graduate

Assessing Student Thinking aligns to the Critical Thinking and Adaptability competencies.

- Evaluate and prioritize solutions to difficult or complex problems.
- Analyze, assess, and reconstruct personal thought processes.
- Balance diverse viewpoints and beliefs to reach workable solutions.

Standards of Mathematical Practice (SMP)

Make sense of problems and persevere in solving them.

Understand the approaches of others to solving complex problems and identify correspondences between different approaches.

Construct viable arguments and critique the reasoning of others.

Compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is.

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



When working with a teacher, here are some questions to help coach the teacher to implement the discourse move of Assessing Student Thinking in their classroom.

Clarifying Questions...

- How do you use classroom discussions to evaluate the progress of your students? How does this practice inform your instructional decisions?
- How do you actively listen to or read the arguments of your students to move their learning forward?
- How do you collaborate with your colleagues and utilize a variety of data sources to inform your teaching practices?



Digging Deeper for Discourse

- How do you bring a richness and depth of understanding to your classroom through discourse? What strategies do you employ to enhance your own knowledge and expertise in order to effectively teach your students?
- How do you decide whether these arguments make sense and ask useful questions to clarify or improve them? How does this practice contribute to a deeper understanding and engagement within the classroom?

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.

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