Oregon Math Project
Practice Brief: Classroom Discourse

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What is the Issue?

Classroom research has established that all students learn by participating in meaningful discourse, and many teachers are changing the ways they teach to incorporate more student reasoning, ideas, and questions. Unfortunately, much of student talk in math classrooms is often limited to students providing short responses to teachers' questions. This practice brief explores how robust discourse can positively impact student learning and identity in math and it details steps educators can take to incorporate more meaningful discourse in their classrooms.

Classroom Discourse

The gestures, speech and written text used by teachers and students to communicate. These depend on the social relationships and communication system cultivated by teachers and students.[1]

Why it Matters:

- Affords deeper understanding: When classroom discourse asks students to justify their own thinking and make sense of the thinking of others, learning becomes a collaborative process in which students are able to make connections to mathematical concepts and gain insight into their own (mis)understandings.[2] Students develop the skills to support their thinking with examples, counterexamples, and logic, which are critical to mathematical proficiency. Constructing viable arguments and critiquing the reasoning of others (Math Practice #3, Common Core State Standards) is an essential part of mathematical discourse.[3]
- Positions everyone as a knower and doer of math: If the ideas and voices of only a select group of students are recognized as mathematically correct or useful, it may position other students as incapable or unworthy of learning mathematics. However, research demonstrates there are certain discourse moves which help to position students as knowers and doers of mathematics, particularly English Language Learners.[4] For example, when teachers "revoice" student ideas or ask another student to "repeat or rephrase" to highlight key mathematical thinking, students are recognized by their peers as having valuable ideas.[5] Using tasks that have multiple entry points and solution methods and that require students to work collaboratively provide opportunities for students to see themselves and each other as mathematically competent.[6] When students' identities are grounded in being mathematically capable, they are more comfortable sharing their own ideas, questioning others, and taking on the cognitive load of tasks and problem solving.
- Provides opportunities for formative assessment: By having students voice their thinking, rephrase peers' thinking, or add on with reasoning by agreeing or disagreeing to peers' thinking, teachers can assess understanding of concepts and gain insight into students' methods and reasoning.[5] Class discussions allow for frequent, formative, informal assessment, to gauge reasoning and comprehension. Activities where students capture their thinking through reflections can serve as both a check-in and an artifact of student progress.

Big Questions:

1. Do students feel they have the authority and responsibility to ask questions and drive discussions?
2. How can all student ideas be seen as valuable contributions?
3. What instructional opportunities engage students in meaningful discourse that deepens their understanding of mathematics?

Future Steps:

- Rough draft talk: Create a space where students share their initial ideas (i.e., rough drafts) without being evaluated. Instead, have students ask questions to help clarify ideas and give them time to revise their thinking before sharing ideas as a final draft. When students can share without the fear of being wrong and have the opportunity to revise their thinking, they develop the confidence to take intellectual risks and the understanding that learning/doing mathematics is an iterative process.[7]
- Model the discourse you expect: Since this type of discourse may be different from students' previous experiences, teachers must intentionally support the discourse practices expected from students.[1] This includes providing sentence stems, asking open-ended questions, using appropriate terminology, and providing enough time for students to think about and revise their responses.[8]
- Act on opportunities: In addition to incorporating high cognitive demand tasks which provide opportunities to leverage student thinking[9], teachers can also modify current tasks to incorporate more discourse by considering question that ask students to make their thinking visible.[10] Talk moves such as revoicing, restating, agree/disagree with reasoning, adding on, and wait time are discourse practices that can be used on a regular basis.[5] Additionally, look for ways to structure activities for students to work collaboratively and capture their in-process thinking using technology.
- Trust the process: Changing classroom discourse norms takes time for both teachers and students. Making explicit new discourse routines and behaviors helps to establish norms as does practice with authentic tasks that elicit reasoning.[9] Establishing and maintaining robust discourse norms requires persistence especially when students face challenging content or shifting norms across courses.[11]

In Oregon & Beyond:

- Curriculum for developing norms for discourse: District that utilize curricula that embed opportunities to build routinized structures for classroom discourse are providing teachers with resources and opportunities to build math classroom discourse. Curricula such as CPM[16], New Visions[14], and Illustrative Math[15] emphasize communication and justification as students collaboratively solve tasks. They also embed instructional routines for regular use to build classroom discourse norms.
- Bend La Pine School District: Teachers are encouraged to regularly use classroom discourse practices as a part of their instruction. To work on math discourse department wide, teachers engage in Studio Cycles[12] where they lesson plan and make teaching public via observation multiple times a year.
- Conferences: Teacher professional development opportunities around building mathematical classroom discourse include:
  - Teachers Development Group Leadership Seminar,
  - Oregon Math Leaders Conference
- Integrating Effective Teaching Practices[13]: A brief report that explains three teacher moves to use in establishing mathematical discourse with students and provides tips for structuring class time effectively.

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