TWO INSTRUCTIONAL MOVES TO PROMOTE STUDENT COMPETENCE

Teachers can use these strategies to encourage student proficiency and authority in situations when confidence breaks down.

Jen Munson

Mrs. Hobbs's fourth graders are struggling. And it is working. This year, instead of teaching the state standard on unit conversion by showing students a procedure to follow, Hobbs asked her students to work in groups to develop a method. She is excited to promote more reasoning, problem solving, and use of varied solution pathways, in line with the NCTM's *Principles to Actions: Ensuring Mathematical Success for All* (2014). This is worthy work. But in some moments, for some students, the struggle does not feel productive. Several students are hesitant and lack confidence. A few give up easily. Hobbs does not want to go back to telling students a procedure, but she does not want to leave them to flounder.

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"YOU HAVE AN IDEA."

Struggle remains productive only if students have the conceptual tools, mathematical practices, disposition, and intellectual community to support them (Bass and Ball 2015; Hiebert and Grouws 2007). As teachers like Hobbs transition from teaching students to avoid struggle to encouraging it, students are particularly vulnerable (Lampert 2001). They might not yet believe that struggle can be productive. Their identities as math learners are being disrupted. And the mathematical practices that help learners navigate struggle are very much under construction (compare Makar, Bakker, and Ben-Zvi 2015). So, what should Hobbs do to support her students? Teachers can use moves to *position students with competence* (Cohen et al. 1999; Gresalfi et al. 2009). These moves imply publicly that a particular student is competent to tackle the task at hand and has the intellectual authority to do so. Such moves have been shown to have a meaningful impact on long-term student learning, as they not only boost a student's immediate engagement in the task but also shape a student's identity as a learner. Such instructional moves have a differential impact on the learning outcomes of those most marginalized as math learners, making positioning moves an important tool for equity (Langer-Osuna and Esmonde 2017; Turner et al. 2013). Over time, students come to see themselves as powerful agents, capable of driving their own learning through the use of mathematical practices such as critique, argumentation, and persistence.

Moves that position students with competence must put the *authority* to determine the answer to mathematical questions within students. The teacher does not hold all the answers or serve as the ultimate arbiter of correctness. I recently conducted a study of conferring in mathematics, which examined how teacher-student interactions during math work time can advance student thinking in the moment (Munson 2016). I found that conferring involved first *eliciting* student thinking, then *nudging* that thinking forward in ways that maintain student ownership over sense making. Teachers used a variety of moves to advance student thinking. In this study, I identified eight classes of moves that support this nudge, one of which was *positioning students with competence*. In this article, we look at two moves in this category that are both effective at promoting student competence and particularly adaptable to a range of situations.

In the two moves that I discuss below, Hobbs finds ways to maintain student authority without leaving students adrift. In the right circumstances, these moves can make the difference between giving up and persisting. In the next section, we will take a close look at each move, when you might use it, and how it works.

The state-and-inquire move: "You have an idea. What is it?"

Lukas and his partner were working on developing a method for converting a height of 64 inches to feet and inches, as we typically express a person's height. When Hobbs approached the pair to talk about their thinking, Lukas indicated that he had selected a ruler to help him but was confused about how to use it. Hobbs pushed Lukas to grow his thinking with the following exchange:

Hobbs: OK. Well, what do you understand about it, though? [*pausing*] What are you going to do with this?

Lukas: I, uh, I, I have another ruler but I don't know where is it.

Hobbs: OK.

Lukas: Maybe she [his partner] does—

Hobbs: OK, so, so what are you going to do with that, though?

Lukas: I want to circle the number, and then I want to see, by foot. Then I, then I—

At this point, Lukas struggled to put his thinking into words and fell silent. In the audio recording of this moment, Lukas's crumbling confidence is audible as a crackling, fading voice. Hobbs held the wait time, giving Lukas a chance to think, but he did not continue. After a long pause, Hobbs used a move that proved to unlock Lukas's thinking.

Hobbs: You have an idea. What is it?

Lukas: My number is sixty-four. My number is sixty-four inches, so I want to continue 'til to get to sixty-four—

Hobbs: Oh, OK.

Lukas: And then we don't get to sixty-four, we put inches.

Teacher: Alright. OK, sounds like a plan.

After the teacher said, "You have an idea. What is it?" Lukas rallied. He was able to articulate his plan to use the ruler to count by 12 inches in each foot until he reached or got close to 64 inches. More than this, his voice returned. He spoke more, and more quickly, with excitement and confidence.

What it is

This instructional move supports students who have been thinking or working but under questioning lose confidence. Students may associate being questioned with being wrong and crumble when you attempt to elicit thinking. Use the move to establish your confidence in a student when you believe he or she has thoughts on the task but is beginning to shut down. This is a critical move for promoting equity by supporting students in finding their voice; those whose voices are silenced or diminished are marginalized. When we as teachers create opportunities for students to develop an authoritative mathematical voice, sense making and learning are fostered (Ruef 2016).

How it works

Three features of this move are important. First, the declaration "You have an idea" implies this is a fact on which we can agree and that the idea belongs to the student. By making this a statement, instead of a question (e.g., "Do you have an idea?"), the teacher is expressing confidence that the child does have an idea. There is no doubt from the teacher. Second, the use of the word *idea* is meaningful. The student does not need to know a fact or procedure or even be correct for his or her thinking to have value in this moment. An idea—in any stage—is enough. Finally, the question, "What is it?" says that the teacher is not looking for something new, but something the student already has inside of him or herself. Just tell me.

Possible variations

Consider the many ways you might make a statement that is both factual and confidence-building, and then ask about it. You might point to a student's paper and say, "You've done some work here. Tell me about it." Or upon seeing a student's silent but thinking face, say, "I can see you're thinking hard about something. What is it?" When a young child silently moves hands or fingers but will not talk, you might say, "I see you're using your hands to do some thinking. What are you doing?"

The could move: "What *could* you do?"

Later in the week, Hobbs's students were extending their work with measurement by creating polygons with a perimeter in a given range of forty to sixty inches. Many partners dove right in to make shapes, but some struggled to revise their initial figure if its perimeter was either too large or too small. This was the case with Marisol and Anna, who first made a triangle but discovered that their shape had a perimeter of only 38 inches. When Hobbs approached, they seemed stumped. As Marisol put it, "We're trying to make this, but it's not working out." The students had stopped working and looked to Hobbs for direction. Instead of offering them an idea or a strategy, the teacher put the question back to the students:

Hobbs: Hmm. So, what *could* we do to change that perimeter? Or to increase your perimeter?

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“WHAT COULD YOU DO?”

Marisol: Hmm [*pausing*]. I don’t know.

Hobbs: You have any ideas? How *could* you increase your perimeter?

Marisol: We could always do six: six and six [*pointing to each side of the triangle*].

Hobbs: OK, you could try that. Why don’t you try that?

All Hobbs appears to do here is to ask the students the very question that they have been asking themselves. She repeats it, and given a moment to think, Marisol comes up with the idea of adding 6 inches to each side. The teacher closes the interaction by encouraging them to give their idea a try, and it is entirely *their* idea as Hobbs never made any suggestions. Marisol and Anna move from expecting an idea from Hobbs to generating one for themselves.

What it is

This move pivots students from seeking help from the teacher—and relying on the teacher as the authority—to generating their own ideas. When students get stuck, they often look for someone else to provide an answer or hint, but this move keeps the responsibility for reasoning squarely with students. Use it when you want to establish clearly that students are competent to generate their own ideas.

How it works

The use of the word *could*—with clear emphasis—in a question creates a space of possibility. *Could* prompts brainstorming. Imagine how different this kind of question would feel if the word used were *should* or *would*, which each imply a single correct pathway. Instead of encouraging students to fumble for the “right” answer or strategy, *could* indicates that there are probably several ways to address the obstacle, and we need to think creatively. Further, the teacher hears students’ struggle and puts their question back to them, refusing to offer hints or take ownership away from students. She communicates a belief that these students are competent to think of an idea, and her questions affirm their authority to do so.

Possible variations

In the most straightforward situation, when students ask for ideas for what to do next, one can ask, “Well, what *could* you do?” The variations using *could* are seemingly endless and depend on the context, as in the example above where the question became, “How could you increase your perimeter?” If students were struggling to represent their thinking on paper, you might say, “What *could* a picture of your strategy look like?” Or if students wanted to model a problem with cubes but were unsure how to proceed, you might ask, “How *could* you use the cubes to show the story?”

Affirm—but stay

In all the situations, students were reaching out to the teacher for help. She does help, but not in the way they have come to expect. She does not tell or take over. She maintains their authority to solve the problem. But crucially, she also stays. She does not simply assert confidence (e.g., “You can do it!”) and walk away, leaving them stuck or hesitant. She expresses through these moves her belief that her students can find their own way, and she literally stands by them as they think, searching for words or ideas. She then affirms their ideas as worth trying, and only then does she leave.

Positioning students with competence must happen countless times to solidify into students’ identities. Children come to see themselves as competent learners through the cumulative effect of our interactions with them and their interactions with mathematics. And the moves made by teachers in the course of repeated small interactions matter for equity and long-term student outcomes (Boaler 2002). Because moves to promote competence are cumulative, note that they serve a purpose in the moment and well beyond. These two moves are not magic; they will not always work in a specific moment to unlock a new idea. However, belief in students’ authority and competence is still communicated and has value in the long-term effort of promoting positive math identities. The moves revealed in this research study give

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teachers two new tools for keeping struggle productive and supporting students as they come to own their own authority.

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