LEARN TO LISTEN

USE STUDENT INTERVIEWS TO DRIVE PROFESSIONAL LEARNING

BY NICORA PLACA

As a mathematics coach and researcher, I sit in on many teacher team meetings across different schools and districts. I see teachers spending a lot of time talking about students: They talk about how students learn, how to best plan lessons for them, and how to understand their written work using different protocols. We know that when these conversations in team meetings and professional learning communities (PLCs) are thoughtful and done well, they drive change in schools (DuFour & Eaker, 2009; Schmoker, 2005).

However, as I listened to the conversations in these meetings, I started to wonder where the student voice was. Why weren't we spending some of this time listening to what students had to say? Instead of hypothesizing about what a student might do on a task or why a student made a certain mistake, why weren't we just asking the student to tell us?

Research suggests that listening to student thinking is important. For example, research on Cognitively Guided Instruction (CGI) demonstrates that teachers who participate in professional learning focused on student thinking develop greater understanding of children's mathematical strategies, and this impacts their instruction and their students' problem-solving ability and confidence (Carpenter & Fennema, 1992; Fennema et al., 1996; Franke, Carpenter, Levi, & Fennema, 2001).

Based on these experiences and research, I started to incorporate student interviews in team meetings at strategic points so that teachers could listen to students. Conducting these interviews has had a big impact on the teams' learning that translated to changes in instructional practice.

WHY IS IT SO HARD TO LISTEN?

In classrooms, there is so much going on that we educators often have trouble listening to what students are saying. Before I started using interviews in teams, I would visit classrooms and

hear teachers trying to guide students down a particular path instead of listening to what the students were saying. This happened even more often when a student arrived at an incorrect solution.

For example, a student would write the following on their paper:

1/3 + 1/4 = 2/7.

This is the conversation that would follow:

Teacher: I see you added the numerators and denominators. Are those the same size pieces?
Student: Yes?
Teacher: Are you SURE those pieces are the same size?
Student: Um. No?
Teacher: Good! So what do we do if they aren't the same size?
Student: Um ….
Teacher: I'll give you a hint. We worked on it yesterday. We need to find ….
Student: The same size?
Teacher: Yes. We need to find common …
Student: Ummmmm … denominators?
Teacher: Yes. Very good! We need to find common denominators. Why don't you review the notes from yesterday or look at the anchor chart on how to find the common denominator and then redo this?

The problem with this approach is that the teacher has not learned anything about what the student is thinking. She leads the student through the process again, but the student hasn't learned why the solution works, so he will likely make the same mistake again on a subsequent problem.

Why do so many of us engage in this kind of leading conversation and make the missteps described in the sidebar? Why is it so hard for us to stop and listen to students? Often, it's because there is so much to attend to in a classroom.

We feel such an urgency to help our students get to the correct answer as quickly as possible that we often skip over the important step of listening to them. I was guilty of this when I first started teaching. But we can and should do more for our students.

HOW DO WE DEVELOP LISTENING SKILLS?

Using student interviews in team meetings can be powerful in developing our listening skills and our ability to understand student thinking. I have used these interviews with students of all ages, starting with kindergarten and going up through high school.

The teacher teams I work with will ask students to come into team meetings, explain the purpose and attempt to put them at ease, and ask them to think aloud as they work on a carefully selected task. A team member asks probing questions designed to help us understand the student's mathematical thinking as the rest of the group listens and takes notes.

We often bring in a number of students to work on the same task so that we can compare and contrast different responses. After the students leave, we analyze the interviews and develop next steps for planning and instruction.

The goal of these interviews is to gather as much information as possible about how a student is thinking. They are not designed to be teaching sessions. They require flexible questioning to

COMMON MISTAKES

Here are common mistakes that keep educators from listening to students:

- Listening only for the right answer.
- Listening only for a particular solution path.
- Thinking about the next instructional move instead of listening to the student.
- Assuming that students are thinking the same way we are thinking.
- Not listening for what students know.
- Not listening for the informal knowledge students bring to the problem.
- Not trying to make sense of what students are doing.

determine what the student is thinking that is producing the behavior.

In my experience, team members develop both questioning and listening skills through these interviews, and these skills translate direcly to the classroom.

HOW CAN YOU USE INTERVIEWS WITH YOUR TEAMS?

When you begin using student interviews, these three steps are helpful.

1. Select a task.

The first step is to select the mathematical task you want students to work on. The task you choose should depend on your goals.

For example, you may want to use interviews before starting a new topic to assess what students already know about it and what intuitions they have about it. A middle school team I worked with was about to start a unit on positive and negative integers, so we gave students an integer operation task related to temperature. Many team members were surprised to find that students brought many informal understandings about how to find the difference between two temperatures by using a number line, even though they hadn't been taught formally about integer operations.

This knowledge changed how they approached the start of the unit. They began with contexts that involved temperature and used a vertical number line to help students reason about negative numbers.

You might want to use interviews when you notice students are struggling on a particular assessment item. If you have examined the student work but still have questions, interviews are a great way to gather more data about what's going wrong.

For example, when over 70% of 2nd graders in one class answered a test question incorrectly, we asked some students to think aloud with the teaching team about the word problem. Many students shared they were using a keyword strategy — that is, they circled numbers and underlined certain words, such as all or each, and performed operations they were told related to those words.

We recognized that using this strategy kept them from reading the problem fully. They were circling numbers and words and choosing an operation without truly understanding the question. This led the team to an interesting discussion about the flaws of teaching students with a keyword strategy as opposed to helping them make sense of the problem.

HELPFUL INTERVIEW QUESTIONS AND PROMPTS

- How do you know?
- How did you figure that out?
- Why did you … (e.g. write that, draw that)? How did that help you?
- I noticed that you stopped what you were doing just now/crossed something out. What were you thinking there?
- Why did you change your mind/answer?
- I don't know what you mean by that. Will you show me with a picture/with the manipulatives in front of you?
- Can you tell me what _____ means?

COMMENTS AND QUESTIONS TO AVOID

- That's right!
- Good job!
- What if you …?
- You know that if you just …
- Remember what we did in class last week …
- Oh, I see what you did. You …
- Do you mean …?

2. Conduct the interview.

Setting expectations with students and making them feel comfortable are important. This includes:

- Explain the purpose to students.
- Ask students to think aloud.
- Explain that when you ask questions it doesn't mean they are wrong.
- Ask probing questions.
- Avoid leading questions.
- Avoid making assumptions that the student is thinking the way you are.

Remember that it can be intimidating for students to walk into a room full of teachers. It's important to explain that they are there to help you understand more about how students think about math. Ask them if they can share what they are thinking as they work and think aloud while they solve the problem.

Be clear that it is not a test and that the team is going to ask a lot of questions. Many students have learned the norm in school is that if a teacher asks you why you did something, you should change your answer, so make sure they know you're asking questions for other reasons.

The types of questions you ask are important. The key is to ask questions that uncover the student thinking. Avoid leading students to a particular line of reasoning or using the interview to try to teach them or correct a misconception. See the sidebar at left for question stems and prompts that can be helpful as well as questions and prompts that you want to avoid.

As you or one of the team members conducts the interview, the rest of the group should be listening carefully. The following questions can guide what they are listening and looking for:

- What representations, visuals, or manipulatives does the student use to facilitate his or her thinking?
- What kind of reasoning does the student use?
- In what way(s) do the student's explanations make sense?
- What misconceptions do you notice the student has about the problem?

- What informal knowledge or intuition does the student bring to the problem?

It can be helpful to take notes during the interview or videotape the interview so that the team can review it if needed. It's also helpful to collect the student work at the end for reviewing and discussing later.

3. Debrief.

After several student interviews, the team debriefs. During the discussion, we try to make sense of the students' strategies. We focus on what the student understands and then move to what their misconceptions might be.

The assumption we make throughout the discussion is that what the student did makes sense to them even if it doesn't make sense to us. Our goal is to figure out why they solved the problem the way they did and what the implications are for our next steps.

The following questions are useful in facilitating the analysis:

- What did the student understand?
- What did the student struggle with?
- What would be some next steps for the student?
- What would be some next steps for our instruction?

Sometimes next steps include modifications to unit or lesson plans, or designing specific re-engagement lessons to address misconceptions. It is also helpful to document and share what you learn so that other teacher teams can have access to the findings.

IMPACT ON INSTRUCTION

In my experience, including student interviews in team meetings impacts professional learning in a variety of ways.

It improves the team's mastery of the math content they are teaching and often introduces them to new strategies students developed. It allows the team to take an asset-based view of the students as they are looking at what they bring to a problem as opposed to only looking at what they don't understand.

In addition, it brings a different mood to team meetings. The interviews create a culture of curiosity about student thinking. And when a student comes into a team meeting, the energy can shift and the team can focus on the student in front of them.

Finally, conducting these interviews can have an impact on how the team listens to students in their classrooms.

Let's go back to the example from the beginning and see how the student-teacher conversation can work differently and how both parties can benefit from it.

Student work: 1/3 + 1/4 = 2/7.
Teacher: Can you tell me how you got your answer?
Student: Is it wrong?
Teacher: I don't know. Why don't you explain it to me and we will try to figure it out.
Student: Well, here you have one out of three things (pointing to one-third) and here you are adding one out of four things (pointing to one-fourth). So basically you now have two out of seven things.
Teacher: Interesting. Can you try using these fraction strips (or number line or fraction circles) to show me another way to solve the problem?
Student: OK. Let me take the one-third fraction strip and the one-fourth fraction strip and put them together to show one-third plus one-fourth.
Teacher: Thanks. You said the answer was two-sevenths. Can you show me two-sevenths with the strips?
Student: Sure. (Student makes two-sevenths.) Oh, wait. They aren't the same size. Two-sevenths is much smaller than the one-fourth and one-third together. Something is wrong. I think I need to change the strips so they are the same size. Maybe I could multiply the denominators and make them twelfths. Let me try.

When we shift to listening to what students say, we are able to help make sense of their thinking and respond to their needs in the moment. This in turn can help us develop interventions to push their thinking and understanding, not just get them to the right answer on a single problem.

Using student interviews in team meetings can be a useful tool in helping teams develop these skills so that everyone develops deeper understanding.

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