

WHAT TYPES OF THINGS DO YOU typically notice as you watch your students in class each day? For instance, when the bell rings at the start of class, what do you look for as you scan the room? Later on, when you see a group of students interacting, what do you tend to notice about their work together? And in class discussions, which of the ideas that students raise stand out to you and why?

Noticing is an important part of being a teacher—where we focus our attention has a strong influence on what we understand about our classrooms. Yet deciding what to notice is not a simple task in an environment as complex as teaching. Here we invite you to consider how to strengthen your own ability to notice what is happening in your classroom.

We begin by introducing three reflective prompts that can help to guide one's efforts to notice classroom interactions. We then present the experiences of three middle school teachers who approached "learning to notice" in different ways. Finally, we provide suggestions to help you begin to develop your own successful approach to "learning to notice."

What Is Learning to Notice?

FOR THE PAST THREE YEARS, WE HAVE BEEN examining what it means for teachers to notice classroom interactions and how the ability to notice develops among both new and experienced teachers (Sherin 2001; van Es and Sherin 2002). On the basis of this work, we identified three key elements of learning to notice that are represented by the reflective prompts shown in **figure 1**. First, noticing involves identifying what is important in a situation. The classroom is a complex environment with

1. What is important here?
2. Can I understand what is happening here?
3. What is this a case of?

Fig. 1 Teacher prompts for noticing

many things happening at once, and one cannot possibly pay attention to everything with equal weight. As a teacher, you select what to pay attention to in a given lesson. In doing so, try to ask yourself, "What is important here?"

Second, teachers must do more than simply identify the crucial moments of interaction; they must also interpret them. Once you have identified an important event, ask yourself, "Can I understand what is happening here?" This question may involve making sense of a student's strategy, analyzing why a particular concept was confusing for the class, or exploring how an explanation did or did not respond to a student's question. The goal is to understand the reasons for, and meaning behind, what occurred.

Noticing also involves moving from specific situations to more general principles of teaching and learning. For each important event that you identify, ask yourself, "What is this a case of?" (Shulman 1996). See if you can categorize several events as being instances of the same overarching principle, such as equity, discourse, or student thinking. (See the Principles listed in the NCTM's *Principles and Standards for School Mathematics* [2000] for additional examples.) For example, perhaps several instances of mathematical discourse or multiple events occurred in which students helped one another learn. Categorizing events in terms of general principles of teaching and learning can help you see

A New Lens on Teaching:

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patterns in what is happening in your classroom within one lesson, over the course of a unit, or across the whole year.

Teachers' Approaches to Learning to Notice

A VARIETY OF TECHNIQUES CAN HELP SUPPORT teachers' efforts to learn to notice. In what follows, we describe the experiences of three middle school teachers, each of whom uses a different medium to reflect on instruction and to learn to notice. As you read these examples, consider how you might experiment with one or more of these approaches in your own classroom as a way to investigate how learning to notice can support your goals for mathematics instruction.

Judy Whitcomb

Judy Whitcomb carries a digital camera as she moves around her classroom. Her goal at this point is to focus on the first prompt "What is important here?" Thus, as she teaches and interacts with her students, Judy identifies interesting things that are happening and takes a picture of them. Judy explains that the camera helps her to capture "classroom pearls," those moments of instruction that might otherwise remain hidden unless she knew to be on the lookout for them.

After class, Judy reviews the photographs on her computer and tries to understand what she sees. "This is a strategy I've never seen before. I've done that graphing problem for maybe five years now." The photograph prompts Judy to try to understand the student's method and why this year for the first time a student took a very different approach than Judy had seen in the past.

Finally, Judy considers the third prompt "What is this a case of" by writing a title for each photograph. She then organizes the photographs by date and by title. Using this method allows Judy to investigate collections of photographs in particular areas, such as "group work," "student explanations," or "ideas about functions."

This process of taking photographs of her class and studying and organizing them has helped Judy learn to look more closely at what is going on in her classroom. In some ways, the act of carrying the camera with her makes Judy feel like she is putting on glasses or binoculars. She has learned to view her instruction through the eyes of one who is trying to capture the classroom pearls.

David Louis

Twice a week after school, David Louis spends thirty minutes writing in a journal. He begins by selecting a particular event from his class to write about. On one particular day, he uses his journal to consider a comment that one of his students made in class. "We discussed different ways to express data from a survey . . . I noticed right away that what Tony said was mathematically incorrect. But it was interesting anyway." After describing what happened in class, David moves on to the second prompt and tries to interpret what took place. David provides a detailed explanation of Tony's idea and discusses why the statement was mathematically incorrect. In addition, David explores how Tony might have understood the situation. "I'm thinking that Tony did one of four things. Maybe Tony didn't realize that the question was referring to 40 percent of

Learning to Notice



all the students. . . . Or maybe he didn't realize that a percent has to be out of some whole. . . ."

David also uses the journal to think about three larger goals that he has for instruction—to encourage students to (a) explain their ideas, (b) build on each other's ideas, and (c) generalize beyond the specific mathematics of a given problem (Sherin, Mendez, and Louis 2000). In this situation, David describes the difficulty that students faced trying to understand and talk about Tony's idea and the lack of evidence of students' "building on each other's ideas." In this way, David uses the journal to both reflect on the specifics of what occurred and, more generally, to reflect on whether he was meeting his goals for the school year.

This approach to noticing influenced David's instruction in several ways. First, he would return to teach the following day armed with new understandings about what had occurred. David felt prepared now to follow up on students' ideas or to address particular issues that had not been resolved. In addition, David found that the journal writing also helped him to be more reflective *during instruction*. "The process of writing in the journal helped me be more reflective about what was happening in the classroom while it was happening. Because I had to think deeply about really specific things that were happening . . . I kind of unpacked situations on paper, and that helped me realize that I could do that in the moment [of instruction]."

Emily Kemp

Once a week, Emily Kemp participates in a video club (Sherin 2000). The teachers in the video club take turns bringing excerpts of video from their

classrooms to share and discuss as a group. The discussions typically begin with one of the teachers asking, "What do you notice?" In response, Emily and her colleagues point out a number of different things that they see in the video. "I think my question

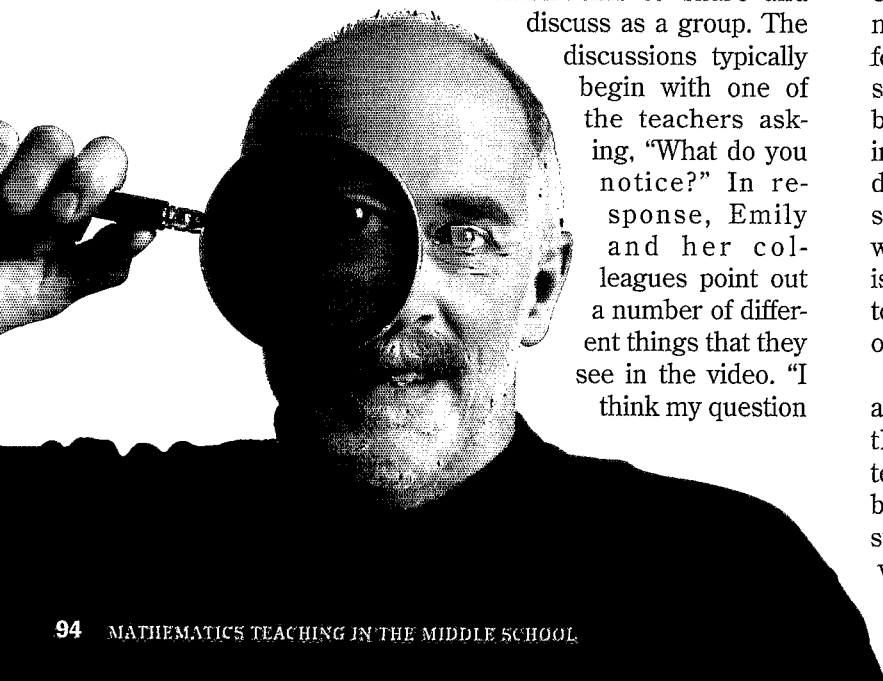
confused them." "Were the students agreeing or disagreeing?" "Ben came up with a really interesting idea." The group next selects one or more of these topics to pursue in greater detail, using the video as a resource for looking deeper into what took place. The video club participants also spend time talking more generally about what they see. One week, for example, they examined a video for evidence of "student reflection"; another time, "mathematical discourse" was analyzed. In this way, the video club provides participants with an opportunity to explore all three reflective prompts.

Through her work in the video club, Emily became confident in her ability to locate important features of instruction that appear on video. Emily explains that this process of selecting and analyzing video from one's classroom is "essential for practicing teachers because it gives us an opportunity to look at our own practice with a more trained eye." In addition, Emily believes that this experience influenced her teaching in positive ways. She explains that sometimes during teaching she finds herself doing the kind of analyses that she learned from being in the video club. "You get 'video-head.' You're teaching and then, all of a sudden, you're also watching what's happening. . . . Your own teaching becomes an object of reflection while you're teaching." This kind of reflection helps Emily understand what is happening in her classroom and why, and she then uses that analysis to decide how to proceed in class.

Discussion

MATHEMATICS EDUCATION REFORM CALLS FOR teachers to make decisions in the midst of instruction (NCTM 2000). Teachers are expected to listen closely to the ideas that students raise and to the mathematics under discussion and then use that information to decide how to proceed. This adaptive style of instruction requires, among other skills, being able to "notice" critical features of classroom interactions. Yet teacher education and professional development generally focus on "learning to do" instead of "learning to notice." Even veteran teachers who have a great deal of experience "seeing" what is happening in their classrooms may need to learn to focus on new aspects of instruction in the context of reform (Smith 1996).

The teachers described here each found a valuable way to learn to notice. And in all three cases, the reflective prompts helped to guide the teacher's work in this area. Furthermore, noticing became an integral part of the three teachers' instruction. For Judy, having the camera with her was a constant reminder to be on the lookout for



“classroom pearls.” And as she observed students or listened to their ideas, Judy found herself frequently working to identify what was interesting or important about what a student was doing or saying. Similarly, David and Emily found themselves analyzing ongoing lessons in the way that they had done through journal writing or in the video club. Thus, even though they initially began by developing their ability to notice outside of classroom instruction, it was a skill that they now found valuable during teaching. As David said, “Noticing helps me understand my classroom better. I listen to my students more now. It’s helped me to be conscious about that. I’m teaching, but I’m also looking for important things that are going on. That’s part of my teaching now.”

Getting Started

TO CONCLUDE, WE OFFER THREE SUGGESTIONS intended to help you develop your own approach to “learning to notice” (fig. 2). First, select a medium that you want to use to examine classroom interactions. As discussed above, taking photographs, keeping a journal, and videotaping have all proved to be effective approaches. You might also want to consider collecting student work or audiotaping portions of instruction. Although each of these approaches provides a somewhat different lens for exploring what is happening in your classroom, they all provide a valuable record that can then be used for more in-depth analysis.

Second, regardless of the medium you choose, try to make this approach workable for you. For example, begin by selecting only one or two activities during which you will take pictures of what appears interesting in class. Or in the case of keeping a journal, decide in advance when, where, and for how long you will write in your journal. If you select to videotape your teaching, you might want to explore the possibility of joining (or establishing) a video club so that you will have an opportunity to hear about other teachers’ experiences viewing videos of their teaching. Note that if you plan to photograph or videotape students, you will need to ask permission first. And although one might imagine that students will behave differently when being videotaped, we find that this is generally not the case, and that after an hour or so of taping the camera goes mostly unnoticed by students.

Finally, as you become comfortable with an approach, review the noticing prompts discussed earlier. An important goal is for you to notice key features of what is happening in your classroom, but try also to understand and interpret what is happening and to see if different events are connected

ISSUES TO CONSIDER	EXAMPLES
1. Select a medium to use to focus your attention.	Journal writing Collecting student work Videotaping Audiotaping Photographing
2. Decide how to incorporate this approach into your routine.	Which part of the lesson will I photograph or record? When and where will I write in my journal? Can I join a video club?
3. Reflect on your use of the noticing prompts.	What events or ideas stand out to me? How can I make sense of these events or ideas? How are these events or ideas related?

Fig. 2 Designing your own approach to noticing

in some way. Taking these steps can help you develop new understandings of the teaching and learning that takes place in your classroom. As the teachers we have worked with explain, nothing is more exciting than exploring new ways to study your own classroom.

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