How to
Look at
Student
Work
to Uncover
Student
Thinking

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Looking at Student Work

Lunchtime. A student teacher and her cooperating teacher, from a self-contained 2nd grade class, are sitting in the school library eating lunches they brought from home. Other teachers are at the table as well. Some conversation can be heard, but not much. Most of the teachers are using the time to catch up on what they call "grading papers." They have between 20 minutes and half an hour, depending on when they are assigned to pick up their students from the cafeteria or recess. The 2nd grade teacher has a particularly tall stack of papers in front of her, so she is grading more than she is eating; she has already asked her student teacher not to bother her. Although she calls it grading papers, she is not really assigning grades to the work. She is marking a check on papers that are completed properly, or mostly so, and circling errors. She is not going to enter this morning's results in the gradebook, just hand the papers back to the students to keep for their Friday take-home packet.

The teacher is grading by herself; she does not seek the student teacher's opinion about the children's work. However, the student teacher is eager to watch and learn so that she knows what to do in the future. Most lunches are like this, her cooperating teacher explains. It's a good opportunity to get

through the pile. In 20 minutes, almost a hundred student papers from four different assignments are checked and ready to return. The student teacher did, in fact, learn this approach to looking at student work, and she did the same thing with the work of the 3rd graders in her first teaching position the next year.

That, unfortunately, is a true story. The teacher was a respected member of her elementary school faculty with a reputation as a good teacher. She was not doing anything her colleagues didn't do as well. Grading papers in this manner was standard practice in this school. The student teacher in the story learned that the main reason for looking at student work was just to get through it, and that it was one of a teacher's least enjoyable obligations.

As outsiders looking into that scene, we might have some questions. What, exactly, was the content of the worksheets—did students really have a whole morning of instruction where they were not called on for anything beyond simple right or wrong answers, which might justify this approach? Or was there more information about learning on those pages than the teacher saw, because she was only looking for right answers? Did students' performances on those papers have any effect on the teacher's instruction that afternoon or the next morning? Was this lunch a giant missed opportunity or time wisely spent for the 2nd grade teacher?

Unfortunately, we can't tell you the answers because these are questions we were not asking at the time, and we no longer have those student papers. We do hope that, after reading this book, you come to see student work on well-designed assignments as an important source of information and evidence about students' learning and your teaching, and not as something you need to get through. We're not against efficiency, and we definitely love lunch, but we don't want to miss opportunities.

Student work is the primary means of learning in most if not all classroom lessons and, at the same time, the primary source of evidence about that learning. In their work, students put themselves out there, exposing themselves as learners and as members of the community of learning that is their classroom. Students see their work as an extension of themselves and have a personal stake in teachers' and others' responses to it. Student work is a complex concoction of evidence of student learning, prior knowledge, paying attention, following directions, interest, teacher instruction, and more.

Sometimes teachers look at student work using a simple "who got it and who didn't?" approach. Research shows, and our experience as educators

confirms, that many educators look at student work to ascertain its correctness rather than to describe what it shows about student thinking. "Got it/ didn't get it" thinking is summative thinking. "Who got it?" is what you need to know when instruction is finished. Formative thinking is much more helpful for teaching and learning: What did students "get," and how are they thinking about it? What do they still need to understand or be able to do? What next steps in instruction might help students take next steps in learning?

The purpose of this book is to help readers move from looking at student work for correctness to looking at student work as evidence of student thinking. Why might you want to do this? Well, for one thing, it's fun. There is something appealing about students' writing, drawing, and problem solving that was probably one of the reasons you decided to enter teaching in the first place. There are weightier reasons to look collaboratively at student work, as well. The teachers we work with are delighted to be looking at student work because they easily see how central it is to everything they do. Student work showcases teaching and learning in a grounded, authentic manner. In addition, looking at student work collaboratively is a great source of professional learning that benefits teachers and, through them, their students.

The main theme of this book is that looking at student work for evidence of student thinking more than correctness provides more, and more actionable, information for both teaching and learning. In this book, we focus on the student work that results from students' responses to assignments and assessments. That means the student work is partly dependent on student thinking and partly dependent on the nature and quality of the learning goals, instruction, and assignments.

Origins of the Method of Looking at Student Work

Our work in this area builds on a solid foundation of work done by others, both researchers and practitioners. We will describe a few of their projects in more detail in Chapter 5. For now, we want to introduce some of the foundational efforts in this section and highlight some findings in the following section. Then, we will describe our own experience with teachers looking at student work.

Interest in looking at student work can be traced back to at least the school reform movements of the mid-1990s to early 2000s (Little, Gearhart, Curry, & Kafka, 2003). Little and colleagues conclude, "There is something

important to be learned by giving close attention to students' experience and students' actual work" (p. 185), and "There is emerging evidence that some versions of looking at student work yield benefits for teaching and learning" (p. 186). They described three projects, based in Harvard Project Zero, the Coalition of Essential Schools, and the Academy for Educational Development, respectively, that used looking at student work as a vehicle for school reform. Common elements of these successful projects included the following: (1) bringing teachers together to look at student work collaboratively as opposed to alone, which is how teachers typically look at student work; (2) focusing on student work, which did not have much of a footprint in professional development; and (3) structuring conversations with protocols to make sure the collaborative talk was a productive way to develop teacher community and school reform. From these school-reform beginnings, protocols took hold as a useful tool for looking at student work (Blythe, Allen, & Powell, 2015) and eventually all kinds of other teacher collaborative activity (Easton, 2009).

From the mid-2000s to the present, the focus of looking at student work has moved from general reform efforts to professional development in formative assessment. For example, Gearhart and colleagues (2006) reported on the Academy Program, in which teams of three to four teachers and one administrator (per team) looked at instructor materials, especially assessments, and the student work that resulted. Dempsey, Beesley, Clark, and Tweed reported on the Assessment Work Sample Method—AWSM, "awesome," get it?—for professional development in formative assessment in middle school mathematics (Beesley, Clark, Dempsey, & Tweed, 2018; Dempsey, Beesley, Clark, & Tweed, 2015, 2016). Cleaves and Mayrand (2011) reported on the Mathematics Learning Community (MLC) project.

The evolution of the movement to look at student work shows two major shifts from earlier professional development methods. First, looking at student work represents a switch from looking at teaching to looking at evidence of learning. That shift requires redefining "evidence of learning" to include evidence of student thinking, not just correctness. Second, looking at student work represents a move to make students, as represented by their work, more central to professional development that has so often involved teachers working on instructional materials without students.

We are excited about both of these shifts, because we think they represent an effective way forward and a way to bring valuable student evidence into the professional development picture. These shifts demonstrate a more

general trend toward students and learning that is taking place in both scholarship and practice, especially in the area of formative assessment. As Lee, Chung, Zhang, Abedi, and Warschauer (2020, p. 125) concluded in a review of literature on formative assessment, "Overall, over the past decade, there has been a shift in the focus of formative assessment work from the teacher to the learner." Gradually and sometimes painfully—old habits die hard—both scholars and practicing educators are moving from an "instructivist" approach to education, emphasizing the transmission of content from teacher to student (Box, Skoog, & Dabs, 2015, p. 973), toward a more constructivist approach to education, emphasizing that students construct their own knowledge from exposure to various learning opportunities, as current learning theory states. If students construct their own knowledge, then to be effective, teachers need to know how students are thinking. This impetus toward the formative and the growing acknowledgment that students construct their own knowledge make looking at student work a particularly timely approach to teaching and to professional development.

Demonstrated Benefits of Looking at Student Work

The projects we described above, and some other research, converge on four important outcomes. Research suggests that these four outcomes are improved when teachers look at student work for evidence of student thinking more than correctness:

- Understanding what students are thinking about concepts and skills they are learning.
- Providing effective feedback that feeds student learning forward.
- Deciding on next instructional moves.
- Supporting professional development.

Understanding Student Thinking

Understanding student thinking requires teachers to reason formatively: not just "Did they get it?" but "What did they get?" (Otero, 2006, p. 254). This requires a shift in teachers' conceptions of and beliefs about learning in general, and formative assessment in particular, from the views they often hold when they leave preservice teacher education. Otero's study showed that this

shift can happen, but it is difficult, and by no means did all of her preservice teachers get there.

Working with inservice science teachers, Furtak and colleagues (2016) showed that, in professional development using learning progressions to design formative assessment in science, teachers increased their abilities to do many things, including interpreting students' ideas. Kazemi and Franke (2004) documented two changes in teachers' participation in professional development that featured facilitated group examination of student work in mathematics. The first, which occurred early in the project, was a move toward paying attention to the details of students' thinking, accompanied by "surprise and delight in noticing sophisticated reasoning in their students' work" (p. 213). The second change followed from the first. As teachers noticed more precisely the content and quality of their students' thinking, they began to think in terms of instructional trajectories they could use that would build on that thinking.

Heritage and Heritage (2013, p. 176), working with one expert teacher, showed that student-teacher dialogue, with the teacher interpreting student thinking in real time, was "the epicenter of instruction and assessment"—in other words, that being in tune with student thinking is at the very core of clinically effective yet student-centered, relational teaching. Cleaves and Mayrand (2011) showed that teachers' own mathematical content-area thinking improved as they discussed student work, as well.

Providing Effective Feedback

Providing effective feedback requires that teachers understand what students are thinking. Effective feedback does not mean making every possible comment on a piece of student work, but rather suggesting the next steps that would be most useful for students to make progress toward the learning goal in question. Obviously, you can't do that until you know where students are in that learning trajectory—what they're thinking now and what they should experience next. In addition to growth in interpreting student thinking, the science teachers in Furtak and colleagues' (2016) study increased the quality of their feedback after working with learning progressions and formative assessment. The teachers in Gearhart and colleagues' (2006) study reported that as they looked at student work more closely than they had before. One realized she could now give students feedback that they might be interested in (p. 245); another reported she had been forced to realize herself what she

wanted every student to know (p. 256), so that she could give feedback that was deeper than "got it" or "didn't get it." For the math teachers who worked with Beesley and colleagues (2018), the greatest area of improvement was in feedback. They improved on two specific measures of the quality of their feedback more than on any of the other aspects of formative assessment measured in the study.

Deciding on Next Instructional Moves

Deciding on next instructional moves is similar to feedback in requiring that teachers understand student thinking and what specific next steps the students should take. It goes one step further, in that teachers must plan and implement lessons where those steps are taken. Otero (2006) showed how making instructional decisions and determining intermediate objectives follows from knowing a student's conceptual understanding at a given point in time. There is some evidence that most teachers, without any special focus on student work, find this very difficult to do (Heritage, Kim, Vendlinski, & Herman, 2009; Schneider & Gowan, 2013).

We have already mentioned that Kazemi and Franke (2004) found that once teachers began to consider student thinking, they moved to considering the implications for instructional trajectories based on that thinking. Steinberg, Empson, and Carpenter (2004) reported a case study of one mathematics teacher whose involvement in understanding students' thinking changed dramatically within the first few months of focusing on the thinking evidenced in students' discussions. Her focus on student thinking became a catalyst for improvements in her instruction that were still in evidence three years later. Those instructional changes centered around facilitating interactive discussions that gave students opportunities to voice and share their thinking and to respond to their peers' ideas.

Supporting Professional Development

Looking at student work is a particularly powerful way to *support professional development*. Windschitl, Thompson, and Braaten (2011, p. 1311) showed that using student work artifacts in an induction program allowed more than one-third of their first-year science teachers to develop the kind of "ambitious pedagogy" usually associated with expert science teachers. The first-year teachers made the most progress in asking students for evidence-based scientific explanations in their work, a practice that grew out of their collaborative

experience of looking at student work for evidence of student thinking. As they became more aware of what students were thinking, they in turn were able to work out how to provide more precise scaffolding for their students in subsequent instruction.

All of the studies we have cited in this chapter made the point that bringing student work to the table brings students and their learning into the professional development process—where it arguably should have been in the first place. Another way looking at student work supports professional development, about which we'll have much more to say throughout the book, is that it is a way into professional development for teacher-learners at all levels. All teachers, regardless of their level of content knowledge and pedagogical knowledge, give students work to do and see in that work a reflection of their instruction and their students' learning. Differentiation for different professional learners is built in, as well. Otero (2006) showed that teachers with differing levels of prior knowledge respond to student work with differing levels of depth of interpretation—but they all could and did respond. As teachers' knowledge deepens, so do their depth of understanding of student thinking and the quality of the feedback and instructional moves that follow.

Looking at Student Work with Teachers

Our professional development using student work has been based on Sue's classroom assessment design work (Brookhart, 2017; Moss & Brookhart, 2019) and Alice's expertise in teacher coaching and professional development. As a method, we adopted a professional learning community (PLC) format structured around looking at student work. Alice facilitated the PLCs.

We invited people to participate by choice, to make sure that teachers were interested in the project and did not feel coerced. They could join as grade-level teams or as individuals and had a choice about scheduling. They could attend our sessions before school, during school (by giving up a planning session), or after school. We designed a series of meetings across several weeks so teachers could examine student work, go back and apply ideas, and then meet again. Groups were small, about four teachers each.

To our surprise, we had no problem getting teachers to join in this project. Because time is always limited in schools, we purposefully limited direct