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Integrity in Teaching: Recognizing the Fusion of the Moral and Intellectual

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In this article we examine the relationship between teaching as a knowledge endeavor and teaching as a moral enterprise, using episodes from our own elementary school teaching as sites for our analysis. One episode concerns the teaching of social studies, the second the teaching of mathematics. We first describe the episodes themselves, highlighting the ways in which they shed light on issues of pedagogical content knowledge and reasoning. We then revisit each episode with a different lens: that of teaching as moral work. Our framework consists of two essential components: concerns for subject matter and for students. This analysis is meant to be neither a complete delineation of teaching as a moral enterprise nor an exhaustive analysis of pedagogical content knowledge. It is meant to show that, in teaching, concerns for the intellectual and the moral are ultimately inseparable.

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Since Shulman (1986) introduced the idea of pedagogical content knowledge into the discourse about teaching, a number of critics have expressed concerns about the emphasis on knowledge that such a concept entails. Arguing that teaching is fundamentally a moral enterprise, they claim that talk about the "knowledge base of teaching" unduly emphasizes the technical in teaching. The cost is high, some say, for it draws attention away from the fundamentally moral and contextualized character of practice (cf. Sockett, 1987; Tom, 1984).

In our previous work on teaching, we have both used our own teaching and the teaching of others to examine the interplay of different kinds of knowledge (e.g., Ball, 1991, 1993a, 1993b, 1993c; Wilson, 1990, in press, in press). Many others have done similar analyses (e.g., Grossman, 1991, 1992; Grossman, Wilson, & Shulman, 1989; Gudmundsdottir & Shulman, 1987; Lampert, 1992; Leinhardt, 1990; Leinhardt & Smith, 1985; Marks, 1991; Peterson, Carpenter, & Fennema, 1989; Peterson, Fennema, Carpenter, & Loef, 1989; Shulman, 1986, 1987; Thompson, 1984; Wilson & Wineburg, 1988, 1994; Wilson, Shulman, & Richert, 1987; Wineburg & Wilson, 1991). As teachers and teacher educators, we have found such inquiry helpful, for we often wonder about what teachers need to know if they are to teach well.

Yet even as we wonder about knowledge, we see teaching as a moral enterprise. Establishing and maintaining one's integrity in teaching depend on a complex interplay of commitments, values, beliefs, and understandings of students and subject matter, professional communities, and parents. These interact as teachers strive to act in students' best interests. But what does it mean to "act in the best interest of students?" In this article, we attempt to answer this question by considering two dimensions of teaching: the knowledge entailed and the moral nature of the work. We do so through the notion of *pedagogical reasoning*. Drawing on Schwab's (1961/1978) notion of the substantive and syntactic disciplinary structures, our conception of pedagogical content knowledge includes both substance and syntax. We assume that this domain of knowledge includes particular ideas; representations; and understandings fashioned from knowledge of students, subject matter, and pedagogy. We add that it includes ways of thinking, warrants for knowledge, and modes of discourse—means of knowing that are characteristically pedagogical. It is at once a descriptive and normative concept. We are concerned both with how teachers reason and how they *ought* to reason (Buchmann, 1986; Fenstermacher, 1990, 1992).

In this article, we explore the relationship between teaching as a knowledge endeavor and teaching as a moral enterprise. We argue that the same sites that offer possibilities for analyzing pedagogical content knowledge are equally rich sites for examining various moral aspects of teaching. We begin our analysis with two episodes from our own third grade teaching—one from a social studies class, another from a mathematics class. We first describe the episodes themselves, highlighting the ways in which they shed light on issues of pedagogical content knowledge and reasoning.

We then revisit each episode with a different lens: that of teaching as moral work. Our framework consists of two essential components of teaching: concerns for subject matter and for students. This analysis is not meant to be a complete delineation of teaching as a moral enterprise nor an exhaustive analysis of pedagogical content knowledge. It is meant to examine ways in which concerns for the intellectual and the moral go hand in hand.

Government and Fractions: Two Stories of Teaching

The stories we tell here come from our experiences teaching in two different professional development schools associated with the university.[1] For 3 years, Suzanne worked with two full-time third grade teachers, collaboratively teaching an integrated social studies-language arts-science curriculum. This school enrolls White, African-American, and Latino children from middle- and working-class homes. Meanwhile, Deborah taught mathematics in the classroom of a third grade teacher in another professional development school in a neighboring district.[2] This school is noteworthy for its high concentration (over 50%) of international students with limited English, in addition to a racially and ethnically heterogeneous group of U. S. students. We begin with Suzanne's tale of teaching about government at the beginning of the school year. Then we move to Deborah's story about teaching fractions at the end of the year.

Government[3]

During the first part of the school year 1991–1992, I (Suzanne) was responsible for teaching students about government. While teaching the previous year, I had learned that third graders seemed intrigued with government, in part because they lived in Lansing, the state's capital (Wilson, in press). I knew that most of them could tell me that Lansing was the capital of Michigan. But I also learned that, although they "knew" that Lansing was the capital—some because they had toured the impressive building—third graders typically could not explain *why* this was so.

I had several goals for this unit: I wanted students to begin developing a sense of historical interpretation, multiple causation, and historical narrative. How Lansing became Michigan's capital is perfect grist for such an intellectual mill. Moreover, many of the reasons are ones that third graders' minds can readily grasp: greed, equity, fear. I also hoped that students would learn something about local history. Furthermore, the idea of capital—as it relates to cities, states, and governments—is tied to things that I hoped to explore later in the year, helping students to make distinctions between bodies politic and geographic. Finally, as is always the case at the beginning of the year, I was working on helping the class develop both norms for discourse and habits of mind. To do this, I wanted a topic that was accessible to as many students as possible. I needed and wanted everyone's participation. Talking about their hometown seemed a good bet.

For the purposes of this analysis, I use three episodes in our work. Each

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embeds a duality of meaning that emerged during, and complicated, our explorations: capitals versus capitols, ownership versus leadership, and social responsibility versus individual responsibility.

Capitols or capitals? Even though Lansing is now Michigan's capital, Detroit was the first capital. Various historians tell different versions of the reasons why Lansing became the capital. Running the risk of oversimplification, I will list a few here:

- Detroit was too close to Canada, and the legislature wanted a site that would keep the government out of harm's way if there was ever another war.
- Some people believed that capitals should be centrally located in a state and that they should not be in major commercial centers.
- Some people believed that state institutions should be distributed across a number of towns and cities, and not concentrated in one. The fact that Jackson was the site for the state prison and Ann Arbor was the site for the state university, then, entered into the debate.
- A gentleman by the name of Seymour offered the state a free site for the capital (he failed to mention that Lansing lacked any "official" roads, settlement, or that it was full of disease-nurturing swamps).
- One map that was distributed to the state legislature during their deliberations placed Lansing in the center of Michigan and did not include the Upper Peninsula, thereby misrepresenting Lansing's centrality.

Near the beginning of the unit, I asked students where they would put the capital. Looking at a map of Michigan, students had several ideas: Autumn[4] and Josh, both White children,[5] thought it should go in the middle of the state because lots of people would see it in their travels. Vicki wanted to put it by her house—maybe in her backyard—so that it would be close by. Red-headed Brian said that he would probably go all over the state, find the nicest place, and then put the capital there. It would probably be near the ocean, he thought, since the nicest places in the state were near the seaside. Justin, Tim, and Bruce thought this was a good idea because the people could go swimming and fishing after work and during their breaks. Brendan, on the other hand, argued that there would be more space in the middle of the state where there weren't so many people.

After we got these ideas on the board, I told the class that Detroit had been the first capital. I pointed to Detroit on the map and asked them to hypothesize about why some people thought it should be moved. I intended, in this part of our work, to get as many of their ideas out on the board as possible, to think about the connections between those ideas and the facts of the case, and then to make some decisions about where to go from there. When I pointed out Detroit's location, I was thinking—wishing—that someone would notice how close it was to Canada. Perhaps someone would wonder if its proximity to another country might be accompanied by

a fear of invasion, a threat to power. (After all, many 8-year-old boys love to talk about war and power struggles.) I also hoped that someone might notice how far to one side of the state it was. In previous years, students had made such observations.

The conversation was lively. Amanda, a younger African-American student, suggested that there might be Indians in Canada who would come over and attack the capital in the night. Miranda thought that, because Detroit was getting all the business from the car companies, it might be nice to put the capital somewhere that didn't have so much business already. Shanda, half African-American, half Latina, said that it wasn't fair to have the capital all the way over on one edge of the state. It would be far away from everyone who lived on the other side.

Suddenly, Matt jumped into the conversation: "If there's a hurricane, it would be bad."

"Why?" I asked.

"It would slip into the water."

"Or it might get drowned by the waves," his friend piped in.

"Yeah, if it was in the woods," Miranda explained, "it would be easier to hide."

Matt agreed: "Yeah, it would be more protected."

Even though it was the beginning of the year, I had a sense that Matt would become a powerful voice in the class. He spoke passionately and authoritatively. He always stood when he wanted to make a point, partly because he liked to sit in the back corner of the room and watch what happened. I was happy with the range of participants in this discussion, but unsure of what to do next.

Most of my energies during such discussions are focused on listening to students' ideas as a source for insights into what they know, what we should explore, where we might go. In this brief discussion, my mind was already awhirl. Vicki, in saying that she wanted the capital close to her house, made me think that students would be able to consider why Seymour offered to give the state the land for the capital. Brian—and several other students—thought that Michigan was surrounded by an ocean. Should I do anything about that misimpression? Brendan's argument that one would want a capital somewhere not so congested might be something I could tie to the idea that legislators wanted to move it from a marketplace center. And Amanda might be saying that she believes that Indians were always attacking people. However, her comment that Indians might come from Canada to try and take over Detroit was also reminiscent of the fear that many had about potential Canadian threats after the War of 1812. Shanda's worry about it not being "fair" to have the capital on the side of the state is related to the idea that one would want to have the capital centrally located, although equidistance and equity are not necessarily synonymous. And I sensed some trouble, for Miranda thought cars were being produced in the 1840s.

But it was Matt's comment that made me stop. He was thinking about

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capitols (buildings) rather than *capitals* (seats of government or abstract notions related to political leadership). He was worried about the physical building and whether it was protected from environmental forces. Although I was taken with this notion—after all, one would not want the capitol blown over in a tornado—and although I wanted to create a conversation in which students' ideas were treated seriously, I did not want to emphasize this one. I was thinking that we should explore Shanda's concern about equity and Amanda's comment about Canada's proximity. But I was worried about what meaning the students had made of the conversation thus far. Did they think we were talking about a building with a gold dome? Or did they think we were talking about a government center? Every sentence that had been uttered could have been interpreted in vastly different ways, depending on the meaning given to *capital*.

Leadership and ownership? One of the most important lessons that I have learned as a teacher is the significance of thinking about what my students know. Connecting their knowledge and beliefs to new ideas is an important part of my pedagogical thinking, and I am constantly trying to bridge between their world—the familiar—and the new ones—less familiar. I want to know what students are thinking and use what they know to help them learn new things. Throughout this unit, I found myself trying to learn what the students knew and trying to use those insights wisely.

As we delved further into the unit, for example, we worked on the idea of government. One of the first questions that arose concerned leadership. Students made several comments about governors and presidents. I decided to press here, to try and get a sense of what they thought about leaders and leadership. I asked students to help me fill in a chart (see Figure 1).

As we filled in the chart, I asked students what these people did. Gradually—over the course of a 30-minute conversation—it became clear that they equated leadership with ownership: The governor owned the state; the president, the country. Wondering what to do, I asked, "But I thought I owned my house. Does the governor own my house?" "No," Henry explained, "you both own it together—sort of. Well, really, the governor—or maybe it's the mayor—just owns the land in between the street and the sidewalk."

I was curious about how to work on this idea of ownership and

country (United States)	president
state (Michigan)	governor
city/town (Lansing)	mayor

Figure 1. **Suzanne's chart for leaders and bodies politic**

leadership. I wanted the students to develop a sense of leadership that related to mobilizing forces, providing vision and mission, delegating authority. I thought about what they know already that could help. I thought about the school, and its principal. I thought that maybe they would think of the principal as a leader of teachers, parents, and students. Maybe I could use this analogy to help develop their sense of *leadership*. Again, I started this exploration with a question:[6]

"Who is the leader of this school?" I asked, hopefully.

"Dr. Tough," they replied in unison.

"And what does that mean?" I probed.

"That she owns the school. That's why she gets to tell everyone what to do," Henry elaborated.

We talked a little while longer. Matthew stood and carefully explained how Dr. Tough became principal of the school: She looked around in the area for schools that were for sale that she might want to run, and then she bought the one that she liked the most. I was pretty sure that not everyone in the class had thought that Dr. Tough owned the school, but, for those who had spent little time thinking about how she actually did become principal, the explanation was persuasive, especially because it fit with everything we had said—thus far—about governors, presidents, and mayors.

I felt like I was being sucked into a black hole of student understanding, a veritable whirlpool of misconceptions. Every time I looked for something that students knew that would help us move forward, I found out more about what they believed. Clutching at straws of their own knowledge, my hands did not come back empty. Rather, I found out even more about things we needed to examine, to question. At the same time, I felt like I was getting pulled further and further off the central topic: Why Lansing was the capital of Michigan, and what a capital was.

Individual and social responsibility? Near the end of the unit, we were discussing governments: Why they exist, the services they supply, their organization, and composition. The class generated a slew of ideas, ranging from taxation to road crews, from police to social services. We drew several lists and charts on the board trying to sort out the different kinds of governmental responsibility.

At one point in the conversation, the issue of collective versus individual responsibility emerged. Several students were upset that other students assumed that governments should do everything: protect everyone, employ everyone, feed everyone.

Tabitha, agitated, stood up and announced: "You have to do some things by yourself, you know. After all," she explained, "If a homeless person came to your door and said, 'I have no money, no food, no place to sleep,' you should help that person. It's your responsibility as a *person*."

Matt was quick to respond, "But what if you let the homeless person in and when everyone was asleep, he woke up and killed you?"

Again, I was thinking many things: I did not want to encourage Matt to

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carry around inappropriate stereotypes of the homeless (especially since he seemed to have a growing power over other boys in the class). And I cherish the caring and nurturing spirit of children—children who themselves do not always receive the care they deserve—so I wanted to celebrate Tabitha's budding social commitment. Tabitha comes from a troubled household with a mother who struggles to feed three children on her own. I loved the fact that Tabitha wanted to argue for some collective care. But when I looked across the room at towheaded Tim, just one of the beautiful, small, and wonderful 8-year-olds with whom I work, I was reminded that I don't want my students—or any children for that matter—getting into the cars of strangers, opening the door while they are home alone, or placing too much faith in the kindness of adults.

I asked Matt to say more and asked Tabitha to respond. More children raised their hands, wanting to contribute their reactions to this debate. The time of the class drew to a close. I was frustrated and nervous, not knowing what to do next.

Over the weekend, I read an essay in the Sunday *New York Times Magazine*. In it, the author, Robert Grossman (1993), told a story of answering the doorbell late one night. At the door stood an agitated young man whom Grossman invited in. Claiming to have run into car problems, the young man asked for some money, promising to return it in the next day's post. Quickly, the stranger provided Grossman with his address and phone number as assurance. Later that week, Grossman called the number, not so much looking for his money, but worried about the young man. He discovered—to his chagrin—that the youth had a drug problem and had probably taken the money to buy his latest fix. His mother begged Grossman not to give the young man any more money if he returned.

In the essay, Grossman wondered aloud about the danger in which he had placed himself and his family. He had welcomed a stranger into his home, one with a drug problem as it turned out. In the essay, the pain Grossman felt was clear: Caught between wanting to treat strangers with charity and wanting to protect his family, he did not know what to do.

I realized that my job as a teacher entailed—in part—preparing students to face—sensitively and sensibly—the kind of dilemma that Grossman discussed. I wanted to teach students to be citizens who *would* feel some responsibility—like Tabitha. Yet I also wanted them to be careful. Being a good citizen requires juggling collective and individual responsibilities. And knowing when to do what in social settings is difficult. I thought about how hard it is for students to develop dispositions important to me: how to be kind but careful, to be open-minded but cautious, to be thoughtful and committed, and to recognize that there are seldom right and wrong answers to the problems with which our lives present us. Yet I also thought about how these were important lessons. Once again, I left the class with questions: How could I teach children the difference between social, collective, and individual responsibility? How could I teach them to be

cautious without trampling their kindness? What is the most important thing for students to learn about the role of government? How do you deal with children's preconceptions about others—for example, Matthew's assumptions about the homeless?' In my efforts to engage my students in serious explorations of their social and political worlds, I uncovered a host of issues that raised doubts and questions for me about how best to proceed and toward what end. We will return to these challenges below.

First, we move across town to another class of 8- and 9-year-olds—those taught by Deborah near the end of the school year—and shift from explorations of government to investigations of fractions.

Fractions

During the 1989–1990 school year, I (Deborah) was teaching third grade mathematics. By the end of that particular year, I had a class of about 20 children. Across the year, we had worked to develop discourse patterns that permitted us to negotiate interpretations, representations, and meanings. As the teacher, I felt responsible to keep my eye on the mathematics and my ear to the students (Ball, 1993c). I worried about my students' mathematical understandings and about what they were learning about themselves. Did they feel competent? What was it like to present a conjecture which was later refuted by the class? How did it feel to have math class end with no resolution to the problem at hand?

As the year drew to a close, we were working on fractions. The students had used manipulatives and had learned to use drawings to represent and reason about fractional quantities. We had explored proper and improper fractions and, in the context of word problems, compared fractions to investigate the question of "which was more." For example, students had compared 4/4 with 4/8, situating the comparison in a story about two children: "If Riba has 4/4 of a cookie and Matt has 4/8 of a cookie, who has more?" Students drew pictures of cookies to explore the question. Early on in our investigation of fractions, I had promoted the use of rectangles— "like Fig Newtons"—rather than the ubiquitous circles in making fraction draw-

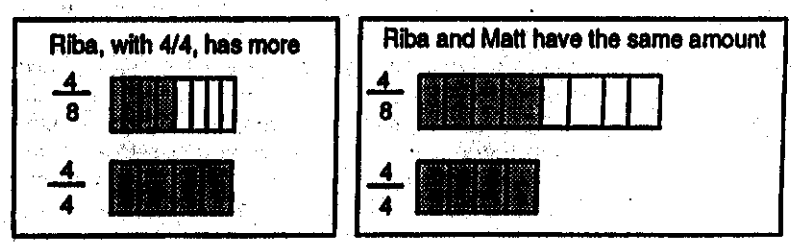


Figure 2. **Two alternative solutions to the problem: "Riba has 4 / 4 of a cookie. Matt has 4 / 8 of a cookie. Who has more?"**

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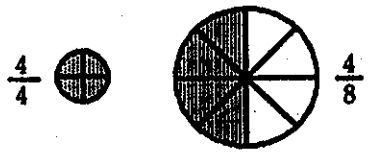


Figure 3. **Lucy's evidence that 4 / 4 is more than 4 / 8 using drawings that are not the same size**

ings. Rectangles are easier to draw and to divide up evenly into any number of parts. With circles, students were always struggling to make the divisions. So, in order to explore "who had more cookie," many students made two rectangles: one divided into four pieces, the other into eight. Controversy erupted. Examining the drawings, those who made the two rectangles the same size argued that Riba had more cookie than Matt. Others, who made the cookie that needed to be divided into eighths twice as long as the one that was to be divided into fourths, concluded that Matt and Riba had the same amount of cookie (see Figure 2).

Out of this disagreement grew a conversation about whether "the two things need to be the same size." Keith, who had initially believed that 4/8 and 4/4 were the same amount and later changed his mind, claimed that it was crucial to make the two cookies the same. Riba agreed with him. She argued that, if you didn't do this, you would use your drawings to draw an incorrect conclusion. But then Lucy, a child who loved to draw, went to the board and demonstrated—using circular cookies—that you could still reach reasonable (and correct) conclusions without making the two shapes the same size: "You can see that this one is about half the cookie. And this one is the whole thing" (see Figure 3).

Many children were impressed. Riba modified her original position that, in order to compare two fractional quantities, the drawings should be the same size: "This is not true with circles," she explained. Moments later, Betsy extended the point, demonstrating that the drawings need not be the same size with rectangles either.

This was a significant debate: In fractions, the referent is especially important: 4/4 of what? 4/8 of what? On one hand, 4/4 can be understood to mean "all of whatever you are talking about," and 4/8 can be understood to mean "half of whatever you are talking about." But the question of "which is more" assumes that you are comparing 4/4 of something with 4/8 of the same thing—in this case, the same cookie. If you ask, which is more—4/8 of a giant chocolate chip cookie or 4/4 of a miniature shortbread wafer—the context shapes a conclusion that is reasonable in the particular case. For instance, you have "more cookie" with the 4/8, but that is not generalizable to understanding the mathematically principled quantities represented by 4/4 and 4/8.

During our work on fractions, the children had reached a number of

important conclusions. They developed understandings of what the "top and bottom numbers" (the numerator and denominator) of a fraction represent, and they were able to work with fractions of groups of items as well as fractions of single items (e. g., 3/4 of a dozen pencils, 3/4 of a cookie). Among their conclusions was a conjecture: "If you have the same number on the top and bottom of a fraction, you have the whole thing" (e. g., if you have 7/7 of something, you have all of whatever it is). As the school year drew to an end, I reflected on what they had done, pleased with all they seemed to have learned. There was evidence of sophisticated reasoning and understanding in their writing and talk. And so I was surprised near the end of the school year when a disagreement about equivalence erupted.

Mei, a small Taiwanese child who often contributed to class discussion, had made a conjecture near the beginning of class on June 7. She had noticed that the larger the "number on top" of a fraction, "the bigger the piece you'll end up [with] after you shade in." She demonstrated her conjecture with an example. (See Figure 4.)

Mei's conjecture was interesting in its incompleteness. With a common denominator, her conjecture would, of course, be true. However, reasoning about fractions involves taking in their multiplicative structure: the relationship between two quantities. This is fundamentally unlike students' prior work with integers, where *three* denotes three *things*. Understanding three fourths means noticing not just that there are *three* things but that there are *three out of four* things. Mei's conjecture was somewhere in between integer and fractional reasoning. Holding the denominator constant, she reasoned that a larger numerator would take up more of the whole than a smaller numerator would. However, her conjecture would necessarily not hold up in the case of two fractions with different denominators: 2/3 and 5/12, for example. I hoped that in discussing her conjecture, the children would think more about the relationship between numerator and denominator.

I asked other students if they thought Mei's conjecture would always be true. Sheena, an African-American girl, thought it would be. I asked how we could find out. Sheena suggested that they "try her conjecture with a whole bunch of numbers." Trying to involve everyone in this task, I sought students' ideas: "Can anyone think of a couple of numbers we could try?" I called on Jeannie, an often quiet White child, who proposed 4/4 and 5/5. As a class, we confirmed that 5/5 had a bigger numerator than 4/4, and I asked the students to make a picture of 4/4 and 5/5 in their notebooks.

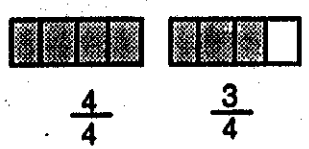


Figure 4. **Mei's conjecture**

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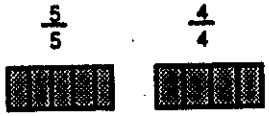


Figure 5. **Daniel's drawings of 5 / 5 and 4 / 4**

I liked the example because it provided an opportunity to examine the claim with fractions of different denominators. It was a good counterexample for the conjecture—or so I thought. The children had worked on understanding fractions that had "the same number on the top and bottom," and I was confident that everyone would soon realize that 5/5 did *not* have "a bigger piece shaded in." From there, we might be able to figure out the conditions under which Mei's conjecture would be true and to revise and qualify her assertion. We were on a good track. I was sure. Walking around the room, I was pleased to see that everyone was involved, sketching drawings of 4/4 and 5/5 in their notebooks.

I asked who would like to show their pictures on the board. Daniel, a student from Indonesia who was developing English language skills slowly, drew his carefully, and everyone agreed that he had represented 4/4 and 5/5 correctly (see Figure 5).

With great assurance, and looking ahead to where we would go next, I asked: "What did you decide about Mei's conjecture? She says the bigger the numerator, the bigger the piece you'll shade. Did that happen with 5/5 and 4/4? Did the bigger numerator one have a bigger piece shaded?" I was sure the students would recognize that 5/5 did not have "a bigger piece shaded." But, to my astonishment, the students chorused, "YES!" 5/5 did have a bigger piece shaded. I was startled. Everyone had the pictures as Daniel had drawn them, and everyone agreed that these pictures correctly represented 4/4 and 5/5. How were they able to look at these drawings and say that 5/5 had a bigger piece shaded? Lucy, a White child, who spoke rapidly, almost inaudibly at times, explained: "I agree with Daniel that Mei's conjecture works because, um, on 4/4, four of 'em are colored in and four of 'em—there's four pieces. And on 5/5, five of 'em are colored in and there are five of—and there's five pieces in there. And 4/4 is more than five. 4/4 is less than 5/5."

What to do? Knowing that they had already agreed that, "if you have the same number on the top and bottom of a fraction, you have the whole thing," I considered pointing out that 5/5 and 4/4 are both cases of this. I thought of reminding them that they had already agreed on this. But I decided that I first needed to understand better how they were thinking.

I asked for comments about what Daniel or Lucy had said. Mei raised her hand. "I disagree with both of them," she said, and walked to the board where she drew two identical rectangles:

> I disagree because—just because the number is on there. Let's say—here, I'll just . . . (draws two equal-sized rectangles under Daniel's picture.) You have to use the same shape and—here it doesn't tell you the size of the shape. It tells you to divide this—4/4 tells you to divide this in *four* pieces, and 5/5 tells you to cut this in *five* pieces.

Cassandra, a tall African-American child, older than the rest of the children and a frequent participant, started to interrupt. Mei jumped back in:

> I'm not done yet. And then—in five pieces and you take five pieces and then you take four pieces and that's the—they're both the whole square so they're actually the same.

I asked if anyone had a comment. Cassandra disagreed, emphatically.

> Cassandra: Five, 5/5 is not the same because they are different numbers just like three and two are different numbers. So how could they be the same?
>
> Mei: (voice rises) I'm not *saying* the *numbers* are the same! I am saying that they—the part you shade *in* are the same.

I worried about Mei and Cassandra—each was so sure she was right. Each restated her position, a little more definitely, almost defiantly. Was this dispute mathematical or social? It was difficult to know. At times, my third graders seem motivated out of stubbornness; at other times, out of confidence. Sometimes their ideas drive the discussion, sometimes their relationships. More often than not, it is some combination of the two. I was having trouble reading between the lines of this disagreement. Cassandra, at times, seemed to enjoy disagreeing with classmates, not always attending to the evidence of others. She would nonetheless engage with relish. And Mei had often been in the position of maintaining a particular view while others in the class argued with her. Sometimes her position was mathematically correct and sometimes not, but she seemed at ease arguing for a position in the face of challenges. As such, I was not sure whether a disagreement between these two girls would lead us to resolve the issue.

I considered the two girls' apparent understanding of the content. I wondered about what Mei was saying. What did she mean when she said, "I'm not saying the numbers are the same. I'm just saying the part you shade in is the same"? Did she think 4/4 and 5/5 both represented one whole? And what was Cassandra focusing on? Numerals? The number of pieces in each rectangle?

Equivalence is a complicated idea, not quite like *the same as* and different from *similar to*. I tried to think of an analog for *equivalent*, but I was at a loss. I could have reframed the question: "If Mei has 4/4 of a cookie and Cassandra has 5/5 of an identical cookie, who has more cookie?" I thought this might help them reach agreement that 4/4 and 5/5—in this

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context—are the same amount. But, even the notion of *the same amount* is problematic, as I gradually grew to understand. I also did not know what others in the class were thinking.

Jeannie, talking for the second time that day—and she often did not speak in large group discussion—moved right to this notion of the referent:

> I agree with Mei, because those are both two cookies, and they're both the same because they're the same size. You just split them up in different, um—in more or less pieces. And then if you eat all of them, then you still have the same amount—a whole, a whole cookie.

Pleased, I tried to underscore her point by repeating it:

> Cassandra, do you understand what Jeannie just said? She said, if you ate the whole cookies, you would have eaten the same amount both times.

Cassandra shook her head, disagreeing. Sheena jumped into the fray. She didn't agree with Mei either:

> The only reason it looks the um, same size—it looks like the same amount to *you* is because you made them both the same *size*, and I think 5/5 *should* be a little bit larger—because you have one more piece.

She proceeded to demonstrate her point by drawing two circular cookies. (See Figure 6.) She divided them each into four pieces, stood back, and considered how to get one of them to be in fifths. With her characteristic generosity, Mei, who was standing close by, suggested that she simply add a line to one of the pictures. She was helping Sheena challenge her! "Just do this," she offered, and she drew a short line. That the resulting picture of fifths was not in equal parts seemed of little immediate import to either

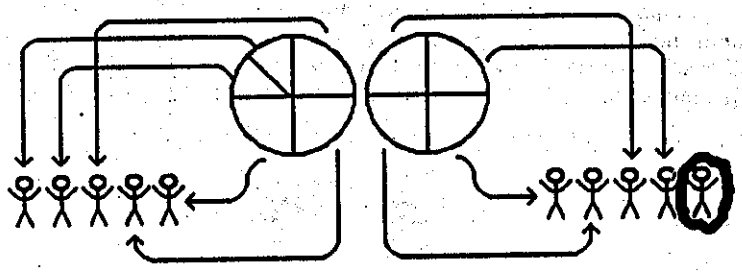


Figure 6. **Sheena's demonstration that 5 / 5 of a cookie is more than 4 / 4 of a cookie**

girl. With her picture complete, Sheena resumed her argument. Emphatically, she made her point: "With 5/5 there is enough to pass out one piece to each of your five friends, but with 4/4 one friend will not get any cookie."

So what is the question really? I wanted the students to understand that 5/5 of a cookie is the whole cookie and that 4/4 of a cookie is also a whole cookie. Mei and Jeannie both seemed to grasp this, but so did Cassandra and Sheena. But *did* they understand what it means for 4/4 and 5/5 to be *equivalent*? How could I determine what it means to Mei that "the part you shade in is the same?" She was reasoning with area. Cassandra and Sheena, on the other hand, were reasoning with number. Five is more than four, so it seemed ridiculous to them to argue that 5/5 and 4/4 are the same. I could see why this seemed silly. How could I help?

I was very discouraged, for I had no idea that this would be controversial. Using 4/4 and 5/5 as an example with which to investigate Mei's conjecture had led us into an unanticipated argument. These four girls had shown me a new mathematical complexity: Believing that 4/4 refers to a *whole* is not sufficient to support the belief that two such fractions are both referring to a whole and are, hence, equivalent. Using the language of "the same amount" to represent equivalence was clearly problematic. I was beginning to see how this representation was complicated. Sheena's argument was compelling. Five fifths of a cookie will serve more people than will 4/4 of a cookie, albeit with smaller portions.

I worried about what was in the best interest of the children. Which children? Only 4 out of 19 children were waging this battle—all girls. Two of the four—Jeannie and Sheena—were not regular participants in whole group discussions, and I was glad to have them involved. But I wondered what others were thinking. Were they engaged with this argument, and, if so, what was their position? I wanted to help all the students learn, not just teach four children, while the others observed. But how best to do it?

I felt pressed. We were within 3 days of the end of the school year, and I found myself not wanting them to finish third grade thinking that 5/5 is more than 4/4. In February, I might have felt less pressed, assuming that we would have time to explore the idea in different contexts. But I was out of time, and, to part of me, it seemed irresponsible not to correct their interpretation. But I also doubted my power to effect this. Having worked hard to create a classroom culture in which mathematical ideas were established with evidence and argument, I found that many students were

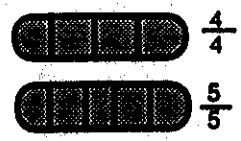


Figure 7. **Showing that 4 / 4 and 5 / 5 are equivalent with fraction bars**

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no longer so influenced by my views. In matters of convention, I still had a strong voice, but this question was not one of convention.

I considered the array of contexts and tools the children were using to wrestle with this problem. Mei was using an area argument, drawing rectangles to prove her point. Cassandra was looking at numbers. Sheena created a story. I was excited to see the children's resourcefulness in using multiple representations to explore the question for themselves, for representational flexibility is crucial to constructive mathematical thinking. Still, this was not yet permitting them to reach consensus or approach the mathematical conception of equivalence. I could have constrained the context here—passing out fraction bars, making up a story problem with a finely focused question—and I could have (perhaps) gotten the students to get this right. With fraction bars, 4/4 would quite obviously be equivalent to 5/5 (see Figure 7).

But would this guarantee that the children would get it right? What does it mean to understand that 4/4 and 5/5 are equivalent? On one hand, I know the arguments for connecting the mathematical explorations of children to real-world contexts. But at the same time, I want students to develop a repertoire of tools for working on mathematical questions that enables them to move across contexts and begin to wrestle with mathematical abstractions.

I polled the class: "How many people think that 4/4 and 5/5 are the same amount?" (I was still stuck with this unfortunate phrase.) Seven children raised their hands: Keith, Ofala, Harooun, Betsy, Mei, Jeannie, and Sean. "Okay. Who thinks that 5/5 is more than 4/4s?" Eight children raised their hands: Cassandra, Sheena, Sihki, Riba, Terry, Lucy, Daniel, and Sean (again). I asked if anyone thought that 5/5 was less than 4/4. Sean still had his hand raised. Was he attending, unsure, or just idly sticking his arm in the air? When I asked whether anyone thought that 5/5 is less than 4/4, his hand was the only one up. Four children volunteered no answer. I wondered if there was any pattern in who was taking what position, but the African-American, White, and international children were roughly equally distributed between the two positions, as were girls and boys. Yet, when I thought about the four girls who had been leading the debate— Jeannie and Mei, one White and one Asian—they seemed to be arguing that 4/4 and 5/5 were the same amount, while Sheena and Cassandra, both African-American, were arguing that 5/5 was more. Even if both views can be seen as quite reasonable, in school, Jeannie and Mei's position would be held as correct, Cassandra and Sheena's as wrong.

I am responsible for helping all my students learn, and I had only two more days before summer vacation, and then fourth grade. I wanted my students to be able to reason mathematically and to learn the mathematics that they would need the next year. I wanted their next teacher to see them as competent, and I wanted them to feel themselves capable. What was the most defensible next step—in general, and for each of these distinct

individuals—seemed to me far from clear. I felt pulled by my commitment to open up the mathematical discourse of the class to novel ideas and conjectures and by my equally strong commitment to help each of my students learn mathematics.

Unclear still, I decided to take action. "We need to stop for a moment," I announced. "This isn't getting us anywhere. People are just kind of holding their own idea and not really thinking about'[an idea] we've already talked about." I decided to "just tell" them directly that 5/5 was not more than 4/4 and that they were equivalent, something impatient observers sometimes urge me to do. I would show the children that the mathematical issue was not the number of pieces: What mattered instead was the whole. I pulled out 2 large white envelopes and, with the children's help in interpreting what 4/4 and 5/5 meant, cut one into four pieces and one into five pieces. We talked about the two "cookies," as the children called them. We taped the pieces back together to see that they could be pieced back to make the original "cookie." I demonstrated how 4/4 and 5/5 were each still the whole cookie and explained that these two cookies were the same size. Still, the confusion continued as we tried to talk with this example. Some of their comments included the following:

> Lucy: I think they both have the same. Because you are using an envelope and it's just a cookie or an envelope, and it's the same size and you're cutting it—and it doesn't matter if—'cause [one] has less papers, they're both the same size.
>
> Daniel: I disagree because that one (4/4) has lots less. . . . 'Cause it gots four, and it gots five.
>
> Riba: I agree because [that one—5/5] has more pieces than [that one—4/4].

At a loss, I pressed insistently, "I didn't ask which one had more pieces. I asked which one had more cookie." Class was almost over—we had less than 5 minutes remaining until recess. I asked the students to write in their notebooks what they thought about the comparison of 4/4 and 5/5.

Later that day, when I examined the notebooks, I saw that their thinking about this question still spanned the alternatives. I was again humbled to see that, even when I do choose to tell students something, there are no guarantees, and I remembered that this was one of the things that spurred me to make my classroom more centered on the children's thinking in the first place. But I was reminded of the discomfort this kind of teaching can produce. Evidence that students may not understand is not always intriguing: It can be quite uncomfortable.[8] One major source of teachers' sense of efficacy and satisfaction is the sense that they can help students learn (Lortie, 1975; Smith, in press). I know that, if I do not ask my students to voice their ideas, I can reduce my risks. In asking students to talk and otherwise represent publicly their thinking, the gap, between their thinking and mine, between their ideas and accepted mathematical ones, becomes more visible.

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And I struggle with my fascination with their thinking, my desire to take them and their ideas seriously, and my responsibility to equip them for success as defined by others.

Learning to Look Both Ways: Moral Work That Involves Knowing

Pedagogical Content Knowledge: Interweaving Knowledge of Subject Matter and Students, Pedagogy and Context

We turn next to an analysis of the two stories. Where is pedagogical content knowledge in these stories? What kinds of understandings, ideas, and assumptions were shaping our practice as teachers? For the purposes of this analysis, we focus on two central tasks of teaching: (a) constructing and using instructional representations and (b) interpreting and responding to students' ideas.

Constructing and using instructional representations. When Suzanne found herself struggling with the confusion about leadership and ownership, she searched for an alternative avenue into the discussion, some way to help students begin to distinguish between the two. She hit on the idea of a metaphor, hoping to draw a connection between leadership in the school and leadership in the state government.

Because she had not tried using analogies of any kind with this class before, she started this part of the discussion by saying something about them.

> Suzanne: I don't know whether this will work. I want to help to move this conversation along, and I want to try to use something called an *analogy* (writes *analogy* on the board). What do you think I would mean if I said, "Wow! Dr. Wilson's family stands out like a bunch of skyscrapers!"

No one responded; the children looked confused.

> Suzanne: What is one of the first things you notice about skyscrapers?
> Student: They're like boxes!
> Suzanne: Do I look like a box?

Several students responded in unison, some giggling.

> Students: NO!!
> Suzanne: What else do you notice about skyscrapers?
> Students: They're tall.
> Suzanne: What if I told you that I have a brother who is 6 feet, 10 inches tall and another who is 6 feet, 6 inches tall?

The class broke into a mountain of giggles and exclamations. Suzanne was beginning to worry, but she persevered: "So when I say that my family stands out like a bunch of skyscrapers, I don't mean that we look like buildings. I mean that we're all really tall. That's an analogy." She then proceeded to provide them with several other analogies before asking them about the leadership in the school.

The search for representations is a complicated one. Suzanne had a topic—government leadership—that she wanted to help third graders understand. And so she tried to generate some instructional representations of the idea. At the heart of her reasoning were questions about what students both can and should learn about particular ideas. Some scholars claim that young children are incapable of understanding many complex concepts in social studies and history; they are not yet developmentally prepared. Having never taught third grade, but having lots of experience with inquisitive children, Suzanne doubted this claim.

In trying to teach third graders about leadership, Suzanne could have done any number of things. She could have staged an election. She could have had a guest lecturer. She could have given students a list of presidential rights and responsibilities. Ultimately, she decided to experiment with a metaphor. In searching for useful representations, she drew on her own understanding of leadership and government. She also sought a vehicle that would help these 8-year-olds move away from their notions of leaders as owners. Research on student thinking has rarely explored areas in social studies, and little research exists on young children's notions of government. In seeking ways to engage students productively, Suzanne—like most elementary teachers—was on her own to construct, choose, and experiment with representations, all the while trying to keep one eye firmly on the subject matter and the other on her students' thoughts.

Deborah, too, faced questions about representing fractions. Unlike Suzanne, however, she had available to her a wealth of material, tools, and ideas about how to teach third graders about fractions. Fractions has been a focal topic for mathematics educators, and many instructional ideas have been developed and disseminated. There are manipulatives—fraction bars, pizza pieces, pattern blocks, and fraction pieces. These colorful plastic

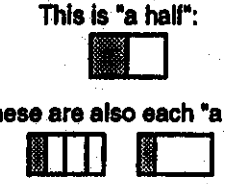


Figure 8. **Children's multiple and co-existing conceptions of "half"**

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models are designed to assist students in learning to name, compare, and operate with fractional quantities. All textbook programs include numerous lessons for exploring and applying fractions. But Deborah was also skeptical, for prior work with third graders had shown her that students' notions about number—about integers and fractions—were much more complicated than their correct answers sometimes suggested (Ball, 1992, 1993a; Erlwanger, 1975). She had noticed, for example, that particular materials could lead students to *say* the "right" things. When she probed, she would discover that students were often thinking very differently that what she, as an adult listener, would have assumed. For example, students would identify one part out of two equal parts as "one-half." But they would also call one part of two unequal parts one-half and one part out of four parts one-half (Ball, 1993a) (see Figure 8).

Depending on what they are doing and in what context, then, students' understanding of one-half varies. Another example of the variegated nature of knowledge is that third graders may add one sixth and one sixth and get two sixths—the correct answer—when working with manipulatives. When they look at a symbolic expression—1/6 + 1/6—they may claim that the answer is 2/12. As adults, we assume that, when students confront this apparent inconsistency, they will work to resolve it. In fact, however, Deborah had seen many third graders be quite comfortable that the answer is one thing when working with pattern blocks and another thing "with numbers" (Ball, 1992). That students' understandings are constructed in specific contexts both enhances and raises special problems for learning mathematics where power lies—in part—in its capacity to generate abstractions.

In searching for productive contexts in which to investigate fractions, Deborah searched for representations that were at once accessible, interesting, appropriate, and generative. Should she use manipulatives? Hesitating, she worried about so constraining the students' investigations that they would necessarily come up with right answers. For example, when using fraction pieces, most students will say that 4/4 is equivalent to 5/5. The medium compels the conclusion—in this case—without developing a deeper understanding of equivalence.

Decisions about how much to structure the context are central to choosing representations wisely (Nesher, 1989). Deborah could also have framed a real-world context—a story about kids sharing pizzas, perhaps—with a question that might have shaped students' thinking. For example, she might have posed the following: "Betsy ordered a medium pizza. It came cut into fourths. How many fourths did she have? Harooun also ordered a medium pizza. It arrived cut into fifths. How many fifths did he have? Who had more pizza?" She chose instead to encourage students to generate their own drawings. These drawings constrain the context of the students' investigations less, affording Deborah more opportunity to see what students are thinking. But by generating their own drawings—and the companion narratives—students' thinking is guided less. When Sheena developed a story in which the question really became "Who can serve more friends?" she was complicating the question of equivalence. In fact, it was through Sheena's and Cassandra's arguments that Deborah learned to appreciate the complexity of equivalence. And in the end, when she tried to show the children that 4/4 and 5/5 were both one whole and therefore equivalent to each other, her presentation was unconvincing to many.

As both Suzanne's and Deborah's stories reveal, decisions about representation are uncertain. Moreover, there are no singular "right" answers to the question, "How should I work with this idea and my students?" Of course, we don't imply here that anything goes, for there are better and worse ways to teach all subjects. However, without inquiring, testing, and documenting those ways in analyses such as these, we cannot understand the full range of possibilities. Yet these are the challenges of practice. Teachers' understandings of subject matter, pedagogy, and their students influence how they reason in the face of such challenges. Differences among students and subject matters are also critical to the generation of representations. Mathematics and history are two very different disciplines, for although they might both entail some degree of argument, discussion, interpretation, and proof, the sources of evidence, the questions pursued, and the rules of argument are strikingly different. Knowing what there might be to discuss is central to holding a class discussion; being able to generate analogies requires flexible understanding of central ideas. Choosing and using representations wisely are matters that draw on concerns for essential subject matter ideas as well as draw attention to what students believe and how they learn. The question of knowing about students is the one to which we now turn.

Attending to students. In teaching about how Lansing became the capital, Suzanne discovered that 8-year-olds might focus on a building, rather than a government. She also learned that some students confounded leadership with ownership. What she was learning helped her to reason pedagogically. But her deliberations were not simply about what students knew; they were also about how students might feel. When the class was discussing social responsibility, for example, the issue of welfare arose, a subject about which Suzanne's students held fierce opinions that affected their participation patterns.

Knowing about students is not limited to understanding their cognition. Children's ideas are tied to experiences that have deep affective roots. Recall that Suzanne did not introduce the idea of welfare into the conversation—her students did—maybe because that is where their experiences lay. Many of the students came from homes supported by welfare. The same is true of other social services: Drug and alcohol abuse programs and shelters for battered wives and children were not rare experiences among Suzanne's students. Those programs were among their connections to government, as well as the police, firefighters, and tax collectors.

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Growing up as a middle-class White woman, Suzanne had scant personal experience with welfare. She wondered if some children might be embarrassed by talk about social services. Indeed, there were a few who were. But there were an equal number who articulately explained how, even though their mothers were on welfare, they were striving to find ways to get off of it. Tricia said, "It's like a crutch when you break your leg, Dr. Wilson. You use it for a while to help you get better." Tricia, with this understanding firmly in hand, was quite capable of arguing with Matthew when he claimed that everyone on welfare was lazy and no-good. But just because Tricia did not find the conversation threatening does not mean that all students felt comfortable as the class tried to argue positions about individual and social responsibility, using examples that touched close to home: welfare, child care, Medicare, drug abuse centers, homelessness, and child abuse. Charged with emotion and experience, these topics were central to the debate and tender territory for Suzanne to navigate.[9]

Deborah, too, was faced with the challenge of figuring out what students knew and believed. The territory was less tender, but no less uncertain. From an adult perspective, it seemed that making drawings that showed that 4/4 and 5/5 were each one whole would be sufficient to establish equivalence. Listening to the children, Deborah learned to appreciate the complexity of equivalence. She had not anticipated what she witnessed: that her students were all able to represent 4/4 and 5/5 correctly and yet believe that 5/5 was more than 4/4. She saw that, to some, something with more pieces should be considered "more." Number seemed to dominate over area. What counted as evidence for these children was grounded in the specific representational context. Because you can serve more friends with five fifths of a cookie than with four fourths, 5/5 is convincingly more than 4/4. In learning about students' thinking, Deborah wanted both to make sense of and respect their ideas. At the same time, she had to consider how their ideas varied from accepted mathematical ones and decide what to do.

Beyond the students' ideas about fractions, Deborah also tried to watch her students' involvement and participation. Only some children were speaking during the discussion comparing 4/4 and 5/5. What were the others thinking and doing? Were they daydreaming, not engaged in the controversy? Or were they listening and thinking? Deborah wanted to help her students share their ideas. She wanted them to learn to make mathematical arguments, to comment on others' arguments, and to disagree with their classmates' conjectures and proofs. Yet she also wanted to respect the children's different styles and preferences. Some were shyer than others, some more eager to present their pictures. The children's English skills varied widely, as did their facility with making pictures. A number of alternative ways to participate existed: talking and listening during the whole group discussion, writing and drawing in individual notebooks, talking with others at their tables, working with a partner or in a small group. Deborah

needed to investigate what students were doing and what they were making of the controversy. She walked around, peering at students' notebooks and watching children who were not volunteering during the discussion. She also called on students who did not volunteer. She wanted to encourage more reticent children. Yet she did not want to make shyer ones anxious.

Simultaneously trying to encourage participation, honor multiple forms of participation, and respect variation in style, comfort, and interest feels like walking a tightrope. In the course of teaching, we both needed to be actively engaged in learning what students were thinking and how they felt. No course, article, or presentation could adequately equip either of us with insights into how students would think about leadership or welfare, capitals or chronology, equivalence or wholes. No background reading or curriculum could reveal to Suzanne what her students' assumptions about social services might be. Although it is more likely that some such reading or curriculum material might illuminate children's knowledge of fractions, Deborah would still need to know at a much greater level of detail. Both of us needed skills of questioning, listening, and observing. And we needed to know a great deal about the terrain we were exploring with our students so that we could *hear* our students' ideas and beliefs. To be prepared, the more we know about the ideas, the better we are able to discern students' thinking. Self-knowledge matters as well: The more we know about ourselves, the more we are able to learn about the children's experiences, often different from our own. Knowing our own assumptions and beliefs can help us learn about theirs.[10]

The kind of knowing we discuss here is neither static nor unidimensional. It includes both commitments and values (respecting students and their ideas, inquiring into their mental life, e. g.). It involves knowledge of subject matter and students (what makes leadership and fractions complicated substantive issues, what students know about capitals or whole numbers, e.g.). It is a knowing that grows over time through inquiry and investigation, conversation and collaboration. In merging understandings about students and subject matter in pedagogical content knowledge, we see such knowledge as a necessary—but not sufficient—condition for responsible, caring teaching.

Moral Dimensions of Practice

Noddings (1984) refers to teaching as the "prototypical caring relation":

> The one-caring as teacher. . . has two major tasks: to stretch the student's world by presenting an effective selection of that world with which she is in contact, and to work cooperatively with the student in his struggle toward competence in that world. (p. 178)

To steer students' investigations in ways that are at once responsive and

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responsible is to act on teaching's basic commitments: care for students and for knowledge (in the broadest, most complicated, least technical sense of the word). While both of these stories provide useful sites for thinking about the ways that knowledge and belief shape teaching, they also offer productive sites for examining how teaching is an inescapably moral undertaking.[11] Balancing the dual commitment to students and to knowledge is never easy. We agree with Fenstermacher (1990) when he explains:

> Nearly everything that a teacher does while in contact with students carries moral weight. Every response to a question, every assignment handed out, every discussion on issues, every resolution of a dispute, every grade given to a student carries with it the moral character of the teacher. This moral character can be thought of as the *manner* of the teacher. (p. 134)

The moral aspects of teaching are threaded prominently throughout the central decisions of practice. For example, in the two episodes, we made decisions about which ideas and topics to explore with students, the way those ideas would be represented, as well as the substance and style of our interactions with students. Each of these decisions had moral dimensions. An obvious one, for instance, entails our stances toward our respective subject matters. Historians differ in their views of facts and interpretation, the rules and uses of evidence, the goals and purposes of history, the Schwabian structures that they apply to their work.[12] Likewise, mathematicians differ. Plato and Lakatos have very different views of the nature, role, and purposes of mathematics. Our work as teachers is informed by an on-going exploration of various epistemological and disciplinary debates in mathematics and history, science and literary criticism. The assumptions and selections we made about what kind of history and what aspects of mathematics to teach were value laden and woven into the moral fabric of our classrooms, our pedagogical decisions, and our actions.

Of the myriad aspects of our teaching that we could examine through a moral lens, here we choose two issues: intellectual honesty and classroom discourse. We begin by discussing our concerns for intellectual honesty and then move to a discussion of the moral aspects of the discourse communities that we were trying to create in our classrooms.

Intellectual Honesty

Teachers are responsible for helping students gain access to the world of ideas. Disciplines are part of the world of ideas, and teachers need to respect the values and the mores of the subject matters they teach. When they do not represent the subject matter in ways that are honest and true, teachers act unethically, for they disenfranchise the learners: If students walk away from school with misinformation about subject matters, they may lose the interest, motivation, or desire to pursue those subject matters—or others. Students who leave school believing that mathematics is part magic, part

mystery, may be discouraged from using it or engaging in it. Students who believe that history is a parade of dates, or the political efforts of White men will not see themselves as actors in a historical play still unfolding, and their capacity to act as empowered, responsible citizens in that drama will be compromised. Kerr (1987) explains:

> In educating, the teacher is carrying out the moral responsibility of teaching. That is, in attending to the student's development as an autonomous, critical agent, the teacher is helping develop a requisite of moral agency. The understanding that beliefs and values can and should emerge from disciplined thought and not "mere opinions" liberates a person from the grip of prejudice and bias. It is, then, teachers' moral responsibility not just to introduce students to the forms of knowledge as the disciplined ways with which others inquire and structure experience but also to help all students understand the importance of making their own choices as well on the basis of disciplined beliefs and values. That is, to act as a moral agent is to assume oneself the role of critical inquirer. Hence, the teacher is responsible not only for introducing students to the forms of critical inquiry but also for inviting and encouraging students to demand such disciplined thought of themselves. (pp. 35–36)

Note, here, that the decision to include critical inquiry is but one aspect of the decision to educate students as "moral agents," for, as we have noted elsewhere, critical inquiry takes many forms within both of our disciplines. Thus, selecting which form (or which collection of forms) mathematical or historical inquiry will take in our classrooms is another aspect of that decision.

In making the claim that representing the subject matter in intellectually honest ways is a central aspect of the moral work of teaching, we have been profoundly influenced by our reading of Dewey, Schwab, and Bruner. We have been particularly captivated by Bruner's (1960) claim that

> any subject can be taught effectively in some intellectually honest form to any child at any stage of development. It is a bold hypothesis and an essential one in thinking about the nature of curriculum. No evidence exists to contradict it; considerable evidence is being amassed that supports it. (p. 33)

What counts as an "intellectually honest form"? Somehow, what teachers do with children should be honest, both to who their students are and to what teachers are responsible for helping them learn. Intellectual honesty implies twin imperatives of responsiveness and responsibility. But how do teachers create experiences for students that connect with what they now know and care about but that also transcend their present—that, as Noddings suggests, stretches them while cooperating with them? How do teachers value their interests and also connect them with ideas and traditions growing

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out of centuries of human exploration and invention (Ball, 1993c; Cobb, 1994)?

Bruner's commitment to intellectual honesty implies a bifocal vision: Not only must the teacher carefully consider the subject matter but also students and their ideas and ways of thinking. Throughout our deliberations in teaching fractions and government, we were struggling to find ways to be both responsible and responsive to our students (Ball, 1993a). As Suzanne wondered how to get students to understand the difference between *capital* and *capitol* or deliberated on helping them construct a more refined and accurate sense of leadership in government, she was thinking about what students know and believe, what it is possible for them to know and believe, and judging their knowledge against her own understanding of those terms.

Research on students' knowledge and learning in the social sciences and history is thin, and Suzanne has little of that evidence to rely on as she constructs her curriculum. But students are capable of understanding complicated subjects. When asked at the end of the unit on government what the difference between *capital* and *capitol* was, Heather (who had just returned from the bathroom, bangs recently combed, hair soaking wet) shot up out of her seat: "Dr. Wilson, you mean the *three* different meanings for capital," Heather said, correcting Suzanne's request for two.

"Three definitions?" probed Suzanne.

"You know. The building. And the government, like the people who run the government and then, you know, the *spirit* of capital," she explained.

"The *spirit*?" Suzanne asked, not grasping the distinction.

"Yeah, like you said, Dr. Wilson. Even if there wasn't any building where they could work, you'd still have people working together to run the government. We would still need people to make sure that the people got what they needed, like police and food and firemen. You know, the *spirit* would be there even without a fancy building."

Using her own vocabulary, Heather had developed an abstract notion of government. Without a building to work in, without an organized bureaucracy, a community might still have a group of people who worked together to get things done. They would have a government. And that government would have a set of responsibilities. Suzanne recognized and appreciated that Heather's notion of *spirit* captured something important.

While it is heartening to discover that students really can grapple with abstract ideas, making the decision to teach in intellectually honest ways is a commitment. Whether one has the capacity or can develop the capacity to fulfill that commitment is another matter. And the commitment involves costs, for teaching is dilemma-ridden work. As Lampert (1985) explains:

> It is widely recognized that the juxtaposition of responsibilities which make up the teacher's job leads to conceptual paradoxes. . . . from the teacher's point of view, trying to solve many common pedagogical problems leads to practical dilemmas. As the teacher considers alternative solutions to any particular problem, she cannot hope to arrive at the "right" alternative in the sense that a theory built on valid and reliable empirical data can be said to be right. This is because she brings many contradictory aims to each instance of her work, and the resolution of their dissonance cannot be neat or simple. Even though she cannot find their right solutions, however, the teacher must do something about the problems she faces. (p. 181)

As Deborah tried to help her students pursue Mei's conjecture about the numerator of a fraction, seeking evidence that could support or refute the claim—authentic mathematical activity by any standard—she and her students became mired in a complicated debate about what it means for two fractions to be equivalent. Mathematical conceptions of equivalence and students' notions were not aligned: How, then, ought she to respond wisely? What would count as teaching in intellectually honest ways, in ways that respect mathematics as a system of human thought and also value students' genuine participation in that system?[13] At any given age, what counts as convention? What is grounded in accessible assumptions and logic?

A *dilemma* can be considered a "position of doubt or perplexity," "a fix" (*Oxford English Dictionary*). Dilemma brings with it shades of complexity and doubt, of competing goods and concerns. As teachers, we constantly find ourselves in such fixes. Consider, for example, Deborah's struggle with how to respond to the four girls as they debate whether 4/4 is the same quantity as 5/5. Cassandra and Sheena have formulated the question in context as one of sharing cookies with friends. It is no surprise that they employ such a context: In their world, sharing is important, and much of their informal knowledge of fractions and division grows from their experiences with sharing. Moreover, even in school, in the spirit of "real-world contexts," stories of sharing pizzas dominate the narratives with which teachers try to help children learn about fractions. In this case, Sheena creates a story that leads her and others to conclude, quite reasonably, that, if the question is "How can you share your cookie with more friends," then 5/5 is more than 4/4. It has more pieces. Sheena and Cassandra are working to make sense of mathematics on their own. They display confidence in their use of tools to help them reason. Their conclusions are warranted. But their conclusions and standards of evidence are also askew from those of mathematical proof. Figuring out how to respond to their ideas raises dilemmas of commitment and knowledge.

The aim of intellectual honesty challenges teachers to attend both to issues of knowledge and concerns for the moral. The subject matter of history, for example, involves interpretation, analysis, debate. So does mathematics. If one is committed to education, then one tries to enable students to participate in those conversations, or—at the very least—to be critical consumers of the products of such conversation. While Kerr (1987)

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speaks of teaching students to be critical inquirers, Goodlad (1990) has a slightly different perspective:

> The most frequently and clearly articulated goals for schools define a central role of promoting intellectual processes through encounters with knowledge. Unfortunately, knowledge too often is translated into inert bits and pieces—in a sense, the garbage left behind in the human dialogue rather than the stuff of the dialogue itself. Large numbers of teachers and, of course, their students fail to realize that embedded in the subject fields of the school curriculum are the ordered ways created by humankind for structuring experience. These are the tools for understanding the physical universe, comparing cultures, appreciating the arts, communicating in a wide range of circumstances, feeling at home in one's environment, and so on. (p. 22)

It is all well and good to speak of the goals of subject matter learning as involving learning tools of thought and reasoning. Intellectual honesty implies engaging students in the conjecturing, investigating, and argument that is characteristic of a field. But responsibility to students means grappling with the consequences of students reaching conclusions that their next teacher will see as wrong. How should teachers reconcile an emphasis on reasoning with a concern for particular ideas?

Sometimes the dilemmas of what we want students to learn emanate from the very content itself. In talking with her students about homeless people, Suzanne was pulled by conflicting commitments shaped by her responsibility to students. On one hand, she wanted children to respect other human beings, and she wanted their perceptions of others not to be shaped by prejudice and stereotype. On the other hand, real concerns for children's safety led her to worry about the risks entailed in being too open, too trusting. What would count as a wise resolution of this problem? How can Suzanne help students learn about other people, honoring both her intellectual commitments to a society in which diversity is respected and her moral commitments to protect students from harm? Moreover, how does she think critically about her own goals, for example, deciding to emphasize individual and social responsibility (not the choice all Americans might make)?

Responsibility, Responsiveness, and Respect in Classroom Discourse

While representation of subject matter embeds difficult moral dilemmas, respecting and involving students deepens the challenge of teachers' work. Central to many of the contemporary curricular reforms is an emphasis on discourse. One source of justification for such an emphasis is the world of knowledge and invention: Unlike many school children, mathematicians, historians, biologists, and art critics discuss and debate their ideas. Through

a variety of modes of expression—conferences, plenary talks, drafts of papers, seminars—scholars put their ideas (sometimes more formed than others) out into the public domain. It is in that domain that the ideas take on a sharper image, become more refined, more sophisticated. Submitting this manuscript for review, for example, helped us clarify and sharpen our own reasoning and understanding. Representing the subject matter in intellectually honest form to our students, as we have argued above, means creating analogous opportunities to engage them in authentic investigation and discourse.[14]

Other sources for justification exist for an emphasis on such modes of classroom discourse. Some current learning theorists would argue that discussion and debate—social endeavors—more closely match the ways in which individuals learn or construct their understandings. Thus, if one is aiming for the development of robust understandings, lively social settings are required. These settings should aim to engage students in meaningful investigations with opportunities to express and represent their ideas within a community.

While both of these justifications are sound, another one arises, one that we consider close to the moral core of teaching. Access to knowledge and access to power connect to Deborah's story and then again to some aspects of Suzanne's. Teachers are fundamentally responsible for providing access to knowledge, to cultural capital that provides power and access (Delpit, 1988). As such, an undifferentiated respect for students and their ideas, however precious and engaging, can be—paradoxically—profoundly irresponsible. Concerns for the discourse of the class—how it is shaped, what it focuses on, what its norms are—must be grounded in attention to students and what it means to serve their interests. Who talks in class? How are their ideas treated and responded to, by teacher and classmates? How do these ideas fit with accepted knowledge? When is honoring diverse interpretations and conclusions evidence of respect, and when is it dishonest and irresponsible? Dilemmas about authority grow from the commitment to respect students' thinking in the context of authentic activity. When teachers seek to represent the subject matter in intellectually honest ways, they must wrestle with questions of what counts as the basis for knowing something. If knowledge is not to be that which the teacher delivers, then what might be the moral parameters of the teacher's role? How does the particular subject matter affect these concerns? How does who the students are shape the challenge?

In Deborah's class, the debate about equivalent fractions was being conducted by four girls, three of whom were students of color. On one hand, Deborah may be pleased to note that participation in this particular discussion diverges substantially from the common patterns often documented in classrooms. It is near the end of the school year, and she is seeing evidence of these girls' confidence in their ideas, their willingness to take risks and to disagree in decent and principled ways. Certainly these are worthwhile

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aims about which teachers should care. Still, two of the four girls are arguing that 5/5 is more than 4/4. Moreover, the two girls who are arguing that 5/5 is more than 4/4 are African-American. Cognizant of Delpit's argument that teachers must make sure minority and poor students acquire the conventional knowledge that can give them access to power and opportunity, Deborah worried about her choices. Delpit argues that pedagogies emphasizing process at the expense of content (e. g., the writing process approach) disadvantage minority and poor students because these children will often be less likely to acquire the conventional knowledge on their own outside of school. This knowledge constitutes a code of power and cultural capital necessary for success in our schools and society. Knowing that equivalence was a matter of area and amount, not pieces and number, is part of the conventional mathematics knowledge that Cassandra and Sheena needed. Making their own reasonable but nonfractional solutions would be seen by many merely as evidence that these girls lacked basic mathematical skills, not that they reasoned with mathematical and intellectual imagination.

At the same time, what counts as the important characteristics of who students are? Concerns for gender issues pulled Deborah in other directions. Knowing that many girls experience school mathematics as senseless and defeating of their own intuitions, she wanted to reinforce Cassandra and Sheena's sense that they can think, that they can reason sensibly about mathematics. She did not want the girls to only have school experiences where their ways of thinking, their knowledge, are somehow wrong. Thinking of them as girls raised other questions for Deborah, adding to the challenge of teaching with integrity.

Tough moral dilemmas, who the particular students are, and what it means to act in their best interests are inherent in concerns for students. While valuing their sense-making and confidence, Deborah had to contend with worries about standard mathematical ideas of equivalence. What will these children's fourth grade teacher think of them and of their mathematical understandings? Will she appreciate their confidence and their capacity to make mathematical arguments? Or will she see them as lacking mathematical knowledge and judge their competence accordingly? What is right or good here? Perhaps it is irresponsible to allow Cassandra and Sheena to think—and to try to convince others—that 5/5 is more than 4/4. 5/5 is not, after all, more than 4/4, even if their interpretation of this is sensible. But perhaps it is wrong to invite students to think, only to refute their ideas when they do not match accepted mathematical ones. And how does who they are—and the characteristics one considers as relevant in thinking about particular students—shape what counts as good practice?[15]

Moral issues are no less embedded in the discourse of Suzanne's classroom. For Suzanne to connect her students with ideas about what governments do, she needed to know what they already knew and believed. Still, to ask about their experiences with welfare, or what they believed about social services, is a delicate matter. This is an area that could be

considered private. Perhaps she as teacher has no right to probe their experiences with public assistance. Certainly, she tended to shy away from such explorations for fear that some children would feel embarrassed or threatened or violated. Yet when teachers engage in more adventurous forms of teaching (Cohen, 1989), they become more and more dependent on their students—on what they contribute to the conversation, in what directions they steer the class explorations, on what they are willing (or not willing) to do. Although Suzanne might prefer to keep away from bringing students' personal experiences with social services into the class conversation, her invitation to the students to participate brings with it a loosening of the reins of control.

And so one sees the inescapable challenges that teachers face as they attend to students and subject matter while attempting to construct opportunities for children to interact about ideas. At any one moment, one might be thinking about how many children have spoken or about the kinds of warrants they are using to support their ideas. Alternatively, one might be wondering how to find out what the silent children are thinking or how to use the discourse of the subject matter to shape the work of the class.

Embracing the Complexity of Integrity

We set out to examine relationships between the knowledge and moral dimensions of practice. We argued that integrity in teaching was fundamentally rooted in intersections of the two. However, as we worked on our analysis, we found it difficult to attend separately to moral dimensions on one hand and knowledge dimensions on the other. As we analyzed the challenges inherent in representation or attending to students, we focused on issues that were at once moral and intellectual. We saw that questions of knowledge and understanding are threaded with moral issues of value, voice, and perspective. Are some conclusions or ways of thinking to be privileged over others? Similarly, questions of right and value are profoundly influenced by understandings and ideas—about the subject matter, students, and the sociology and politics of schooling. In this section, we frame and discuss three questions highlighted in the interconnections of the knowledge and moral dimensions of practice. These questions, we think, have implications for researchers, teacher educators, and policymakers alike—for all those who would examine and change the processes of schooling. Fundamental to our claim is the argument that, in teaching, matters of knowledge are moral and moral questions entail issues of knowledge.

What Does It Mean to Respect Both Students and Subject Matter?

We agree with Hawkins (1974): Respect for students means taking them seriously, as thinkers, as people with lives and interests and thoughts. It means valuing who they are and what they know. Although it means helping them to develop capacities and understandings that have value in their worlds, it also means helping them to develop potentials for the worlds they

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might want to inhabit or create. Eight-year-olds, as the stories we told reveal, are skillful thinkers and reasoners. That their ideas are not necessarily conventional does not mean that they are not reasoned or reasonable. Teachers, wanting to value students' ideas and concerns, must struggle with the implications of validating those ideas. Although ignoring students' nonstandard inventions may be to deny them respect, withholding students' access to other perspectives is no simple alternative. If Suzanne were to encourage her third graders to invent their own explanations for the placement of the capital of Michigan, and not offer them some historians' theories, she might actually restrict her students' opportunities to learn, for they would know neither what historians think about history nor how historical interpretations are developed. Yet were she to merely present them with one or two of the most developed expert explanations, her students might not grow to see themselves as capable of historical interpretation. History would be something others do, not them. Respecting her students while also respecting history plunges the teacher into a complicated well of conflicting understandings and commitments. In considering curriculum, and in contemplating what it means to connect with students, teachers face a complex set of issues over what counts as worth knowing and what is entailed in respecting students as learners.

Knowing About Students: What Can We Know and What Ought We to Know?

Teaching in ways that are responsive to students, that connect with their worlds, experiences, and assumptions, implies that teachers need to know much about their students. Researchers could aim to learn more about students and provide teachers with insights about what students are likely to know, care about, and be able to do. But what are the things that would be helpful for teachers to know? What students know and believe is contextualized and particular. Would investigations of students in Lansing be useful to teachers elsewhere? What is possible to learn—that is, what are children able to express and explain? What are young children willing to tell strange adults, no matter how frequently they come around and no matter how friendly they are? Separated often by race and class, as well as age and sometimes gender, children may not wish to share their ideas and feeling with interviewers. And such probing may tread on personal ground. Do researchers have the right to investigate children's private thoughts and feelings? Yet, without more grounded, situated insights into who students are and how they see their worlds, the narrowness of research perspectives may fail to illuminate useful insights about learners.

Once again, in broadening the lens to include more than just the knowledge aspects, new dilemmas are raised for the conduct of research on teaching, for what might be helpful to understand in order to honor the moral nature of teaching may in itself violate the respect which students are due. Should researchers investigate what children's parents tell them about

fractions or welfare? Do researchers have the right to probe children's feelings about their teachers or classmates? A commitment to value students' ideas and ways of knowing implies the need to know more about students, and yet the need to know may often place both researchers and teachers in sensitive territory. Moreover, the things we—as teachers—know (in our heads, hearts, or bones) about Sheena and Tabitha, Tim and Cassandra, will not always be explicable. There might be things that teachers need to know that ought not or cannot be documented for public consumption and deliberation.

What Is Versus What Ought to Be: Whose Voice Counts?

In analyses of teaching, appraisal is required; assumptions about what makes teaching good, wise, or just must be made explicit. But whose perspective counts in such an undertaking? From whose vantage point is teaching good or not? What counts as a wise or justifiable decision, and who gets to say?

Shared standards do not exist in teaching as they do in other professions. In most other professions, there are codes of ethics, standards boards, and review processes. Teaching, however, is not a formally organized community or discipline, with explicit standards for what counts as proper action, good reasons, or adequate evidence. Thus, if researchers attended to the moral dimensions of teaching, they would confront ambiguities of judgment and appraisal within teachers' perceptions of and responses to dilemmas of practice. For example, who gets to decide whether Deborah should have told Sheena that 4/4 and 5/5 are considered equivalent, that her way of thinking about it was clever, but wrong? Who has the authority to determine what Suzanne should have tried to teach her students about homeless people? With no definition of where—or with whom—the right to judge resides, we must accept ambiguity in trying to identify, examine, and evaluate dilemmas of practice.

Yet we would be disingenuous if we implied here that ambiguity reigns, for teachers must act, making decisions about what is the right thing to do, in a moment or on the next day. Thus, while we recognize the ambiguous and undecided nature of who decides what ought to be, we also admit that as teachers we do—and argue, *must*—make decisions about what we think is right *all* of the time. However, as teachers and scholars, we also believe that those decisions are more often conjecture and hope than truth and right, given the uncertainty, incompleteness, and conflicted nature of knowing and caring in teaching.

Conclusion: Merging the Moral and the Intellectual in Practice

We have argued that the moral and intellectual are—and ought to be—fused in teaching. As such, it follows that research on teaching ought to aim to examine its interconnections and relationships. If this is our aim, how can we reshape the very language about practice to blend the moral with the

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intellectual? How can we represent the complicated and dynamic nature of pedagogical reasoning to reflect not only what teachers know and believe but also what they are committed to and think is right? Doing this means developing a more adequate language, a rhetoric of inquiry that honors both knowing and caring and seeks ways to embrace and illuminate the connections among ideas and understandings, concerns, and values, wishes and dreams. Such a language would enable analysis that did not feel awkward and full of uncomfortable, problematic distinctions. Talk of "the knowledge" and "the moral," "the intellectual" and "the ethical" implies that those things are somehow distinguishable. We agree with Noddings (1984) when she claims that, "The ethical self does not live partitioned off from the rest of the person" (p. 100). And so, to paraphrase T. S. Eliot, we close by returning to the beginning. Teachers do not separate their knowledge from the moral aspects of their work. The two are interwoven, necessarily inseparable in the moment-to-moment challenges of teaching. As researchers, we too need to find ways to embrace, reflect, and honor the complexities of integrity in practice.

Notes

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[1] The work we discuss here was supported by several agencies: the College of Education at Michigan State University, the Michigan Partnership for a New Education, the Center for the Study of Elementary School Subjects, the National Academy of Education, the National Center for Teacher Learning, and the National Science Foundation.

[2] For more detailed information on these collaborations, see Ball and Rundquist (1992), and Wilson, with Miller and Yerkes (1992).

[3] In the stories that follow, we adopt the first person singular for ease of reading. Throughout the rest of the article, we speak in the first person plural.

[4] All names are pseudonyms.

[5] Who the children are in our classrooms encompasses a wide range of attributes—social, intellectual, cultural, physical, linguistic, individual. And many of these attributes are socially constructed and contextually bound. Articulating to readers the numerous characteristics of each student would be an impossible task. Yet such aspects are nonetheless central to the class ethos and discourse, to our deliberations as teachers, to the children's experience and learning. Representing—in writing—who the children are requires us to make choices about which attributes to include. This is not easy. For any one child, a myriad of possible characteristics exist. But, of these, which ones are we, as teachers, aware of? To which are we attending at any given moment? And how do we choose which to represent to the reader? In this article, we provide information on race, gender, and, in some cases, individual characteristics or habits. This choice does not imply that we think these are necessarily the only important characteristics of our students, but they are ones that are too often left invisible to the reader.

[6] Throughout the stories that we both tell in this article, there is a heavy emphasis on asking students what they think and less emphasis on our—the teachers'—telling them things. We do not mean to imply that we think "telling" or direct instruction is not part of teaching for understanding. Sometimes we chose to provide information to redirect what students seemed to be thinking, to add something crucial to the discussion, or to challenge a trend. Sometimes we even pointedly corrected something a student said. In

fact, in Deborah's story, this issue comes more to the fore in the particular lesson than it does in Suzanne's, and we examine some aspects of what shapes her decision to tell in this case. That it does not come up in Suzanne's lesson is a result of the story we selected for this article rather than a general rule of her practice. See Chazan and Ball (1995) for a more thorough analysis of when and how "telling" might play a role in teaching that embraces constructivist theories of learning.

[7] There are those who would say the answers to these questions are to be found in good elementary school curricula that are focused on developing the citizenship of children. I am not convinced. While good intentions abound in such curricula, I have not found examples that recognize the complicated understandings that children bring with them or the complexity of ideas like democracy, equity, equality, or social responsibility.

[8] Of course, students can also display exquisite understanding of very complex ideas, glimpses of which are breathtaking. I concentrate deliberately on the less rosy side of listening more closely to students' thinking, for I think it has important implications for the moral and intellectual dilemmas that confront teachers who try to teach for "understanding."

[9] Some educators would argue that Suzanne should avoid such topics for fear of alienating students who feel uncomfortable in this terrain. Some might say that, if she reined in the conversation more, she could expertly skirt such dangerous territory. But here another dilemma arises. As students are given more control over classroom discourse (either because teachers want more time to hear their thoughts or so that they have more invested in the subject matter in question), teachers have less control over what is discussed. Judging how and when to allow students the choice of topics to be discussed is yet another dilemma that teachers must manage. See Cohen (1989) for a theoretical and historical analysis of this problem and Lensmire (1994) for an illustrative case.

[10] A final note here on the issue of "teaching as telling" as it relates to these stories and this analysis. If teachers are committed equally to concerns for subject matter and for children, and there is a dearth of readily available information about students, it seems predictable that we would err—perhaps too often for now—on the side of having students talk more. Our classrooms are our primary source of ideas about children's thinking. Sometimes this leads to another dilemma: Our interest in and commitment to learning how children think requires hearing them talk. But such talk necessarily takes time, time that is all too precious. And, as Deborah's story makes vivid, the impulse to help comes into conflict at times with figuring out what students think.

[11] There are many scholars who have thought much more about the moral aspects of teaching than we have. We see this article, not as a thorough and complete analysis of how concerns for knowledge and moral merge in practice, but rather as an initial foray into that territory.

[12] For a simple, but compelling, example of one difference, see Gordon Wood's (1991) review of Simon Schama's (1991) *Dead Certainties*.

[13] Cobb (1994) discusses the pedagogical tensions inherent in the interaction of constructivist, social constructivist, and sociocultural ideas about learning.

[14] Yet it is also important to note that we do not assume an isomorphism of disciplinary discourse and classroom discourse. There are patterns of talk in the disciplines which one would not want to replicate in schools, for they run counter to some central goals. For example, many scholars can be quite dismissive—even rude or narrow—about ideas presented by their colleagues. Scholars may accept ideas on the basis of status rather than evidence, and voices of some are silenced or ignored. But disciplinary practice can also offer images for new norms of classroom discourse that locate more authority for knowing in the use of conjecture, claim, evidence, and critique.

[15] Jeremy Price, Sarah Theule-Lubienski, and Margery Osborne have contributed substantially to our thinking about this tangle of issues.

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