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7 The Social Construction of Youth and Mathematics: The Case of a Fifth-Grade Classroom

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"The Dumb Denominator"

It is mid-February, and Ms. Ridley (T/R),[1] a fifth-grade math teacher at Johnson Middle School, introduces addition and subtraction of fractions with like denominators (e.g., $\frac{2}{4} + \frac{1}{4}$) for the first time. She tells the students, "Raise your hand and tell me what dumb people might do. Tell me some stuff people do at Johnson that's dumb." The students make comments such as "not studying for a test," "making stupid noises," "talking in the cafeteria from table to table," "starting a food fight," and "chewing gum." Ms. Ridley then asks, "What do smart people do?" The students suggest the following: "thinking before you speak," "raising hands for every question," "paying attention in class," and "not making the same mistakes again."

With her students' rapt attention, Ms. Ridley says quietly:

T/R: I have another little secret to tell you . . . . The denominator in our fraction is dumb. Since it's dumb, it never studies for the test. It comes time for the test—
T/R writes on the board: $\frac{1}{3}+\frac{1}{3}$
T/R: Think about a dumb decision. If you didn't study for the test.
M/St 1:[2] Leave your answers blank.
T/R: No, think about what happens on test day.
. . .
M/St 2: I just write down any answer, almost.
F/St 1: Cheat.
T/R: Yes! If the denominator's dumb, what do you think it's going to do? It's going to copy! The denominators copy because they're dumb, the numerators are smart, what are they going to do?
F/St 2: Add.

(FN, 2/14/06)[3]

Ms. Ridley returns to the example on the board. She tells the students to add the numerators ($1 + 1 = 2$) and that the denominator "copies" and remains a 3. Ms. Ridley exclaims, "Yes, let's try another one!"

However, before moving to another example, Ms. Ridley places a transparency on the overhead that contains "Rules for Adding and Subtracting Fractions" (see Figure 7.1).

Rules for Adding and Subtracting Fractions Fact #1: When we add and subtract fractions, the denominators must be the same. Fact #2: The denominators copy. Fact #3: The numerators follow the rules.

Figure 7.1 Notes on adding and subtracting fractions (FN, 2/14/06).

After the children have copied the three facts into their notebooks, Ms. Ridley announces, "If you want, you can put Johnson students in place of numerators. Almost like numerators are good Johnson students, they follow the rules. Denominators are like bad Johnson students, they break the rules." The students remain quiet, as usual. The class moves on to another example.

Social Construction of Youth and Mathematics

In this excerpt from a fifth-grade math classroom, both mathematics and youth are constructed in particular ways. The addition of fractional parts of numbers is constructed as a procedural task to be carried out with little understanding of the meaning of numerators, denominators, or the addition of parts of wholes, not to mention the multiple meanings that numerals represented as fractions may have (e.g., Thompson & Saldanha, 2003). Simultaneously, Johnson Middle School students are constructed as "good" and "bad." The talk in this segment both reifies what it means to be "good" and "bad" Johnson students and potentially identifies particular students as "good" or "bad," depending on their typical behaviors.

In this short segment of classroom instruction, we are forced to grapple with the reality that mathematics instruction is not a socially or culturally neutral process. Rather, as others have argued, mathematics instruction, like any type of instruction, is laden with social and cultural norms, expectations, and practices (Baker, Street, & Tomlin, 2003). However, in part because the discipline of mathematics is often constructed as an "objective science" (Dossey, 1992), the social and cultural assumptions and implications of instructional practices in mathematics classrooms have been less explored in comparison to humanities classrooms (for examples of such research in humanities classrooms, see Heath, 1983; Wortham, 2006).

In this chapter, I show how mathematics instruction involves the social construction of mathematics and of youth. As alluded to in the Dumb Denominator excerpt above, how children are constructed informs how mathematics is constructed and vice versa. Furthermore, I argue that the way that both children and mathematics were constructed in this school drew on discourses about poor children of color that circulate beyond the classroom. As a case in point, I illustrate how one instructional practice was consequential to how two students, Nikki and Timothy, and mathematics were simultaneously constructed in Ms. Ridley's class.

Nikki Martin and Timothy Smith were both African American youth from the same low-income neighborhood, attended the same schools, and were in the same fifth-grade math classroom. On the one hand, Nikki and Timothy were restricted mathematically in similar ways because of institutional discourses about poor, urban children of color as related to discourses about mathematics that circulated in Johnson Middle School. On the other hand, social construction is an interactive, dynamic process (Holstein & Gubrium, 2008), and Nikki and Timothy illustrate that individuals negotiate discourses about youth and mathematics in unique ways. As a result, their social and academic trajectories varied.

Mathematical Socialization and Social Identification

There is a rich tradition of attention to processes of socialization and social identification in studies of learning to speak, read, and write (e.g., Heath, 1983; Street, 1993). For example, it is well established that children engage in two concurrent, related processes when learning to speak: "*socialization through the use of language* and *socialization to use language*" (Schieffelin & Ochs, 1986, p. 163, italics in original). Children not only learn to speak the language around them (socialization to use language); they also learn about the role that language plays in socially and culturally organized ways of acting, and they use language as an entrée into mastering those ways of acting (socialization through the use of language). Furthermore, language socialization is an "interactive process," and "the child or novice . . . is not a passive recipient of sociocultural knowledge but rather an active contributor to the meaning and outcome of interactions with other members of a social group" (Schieffelin & Ochs, 1986, p. 165).

Sociocultural theorists argue that learning is as much about individuals experiencing a change in their understanding of some content as it is about changing who one is with respect to the community to which that content is central (Lave & Wenger, 1991; Packer & Goicoecha, 2000). Over the past 15 years, there has been an increasing number of scholars who have drawn on sociocultural theories of learning to understand students' learning of mathematics (e.g., Boaler, 1997, 2000; Cobb, Stephan, McClain, & Gravemeijer, 2001; deAbreu, 1999; Greeno & Middle School Mathematics Through Applications Project Group, 1998; Kieran, Forman, & Sfard, 2001; Martin, 2000; Nasir, 2002). Recent work has shown that, as with literacy, mathematics is embedded in social and cultural practices that are inextricable from power relations (Baker, Street, & Tomlin, 2003; Street, Baker, & Tomlin, 2005). Such situated accounts of learning mathematics have illustrated how mathematical practices are related to the development of "mathematical identities" (Boaler, 1999; Martin, 2000, 2006b; Nasir, 2002). In turn, mathematical identities afford and constrain different opportunities for learning and participation in wider contexts (Anderson & Gold, 2006; Martin, 2000, 2006a, 2006b).

Horn (2007) explicitly investigates the relationship among the construction of mathematics, students, and teaching practices. In a study of two high school mathematics departments in the midst of a detracking reform, Horn found that teachers' constructions of students hinged upon their construction of mathematics. Teachers who tended to construct mathematics knowledge as a "sequential" series of topics to be mastered tended to construct students in terms of their motivation, which in turn limited the pedagogical actions the teachers might take if students did not achieve at expected levels (p. 43). Alternatively, teachers who tended to construct mathematics as a body of connected ideas had more latitude in how they identified their students, and therefore, if students were not achieving at expected levels, they had more latitude in the pedagogical actions they might take.

Horn's work, as well as the body of situated accounts of learning mathematics mentioned above, has illuminated the need to attend to the social processes of learning mathematics. However, this body of work has been less attuned to how such social processes within local settings, like classrooms, are connected to discourses that circulate outside of local settings. An exception is the work of Martin (2000). Martin developed a model of "mathematics socialization" based on research of high- and under-achieving African American mathematics students in a low-performing middle school. Martin found that he could not explain (under)achievement in school mathematics among African American youth without attending to broader socio-historical and community forces. This led him to explore discourses about racially based differential access to mathematics that circulated among the communities and homes in which these students lived. Through interviews with students, parents, and community members, Martin found that individuals' experiences with mathematics were intricately connected to their cultural and social identification as African American. Significantly, Martin's work captured the relationship between culturally and socially organized discourses about mathematics, race, and individual achievement.

Martin contends that (under)achievement in mathematics, particularly for African Americans, but likely for other groups of students as well, is best understood as a dynamic interplay between processes of socialization and identity formation. According to Martin (2006b),

> *Mathematics socialization* refers to the experiences that individuals and groups have within a variety of contexts such as school, family, peer groups, and the workplace that legitimize or inhibit meaningful participation in mathematics. *Mathematics identity* refers to the dispositions and deeply held beliefs that individuals develop about their ability to participate and perform effectively in mathematical contexts and to use mathematics to change the conditions of their lives. A mathematics identity encompasses a person's self-understandings and how they are seen by others in the context of doing mathematics. (p. 150)

Martin's work raises an important issue—namely, there are various contexts in which socialization and social identification happen. For the purposes of my analyses, I investigate processes of socialization and social identification that happen in and across institutional and local contexts. In particular, I focus on the prevalence and deployment of particular discourses. I draw from the work of Jim Gee (1990/1996), in which he defines discourses as "ways of behaving, interacting, valuing, thinking, believing, speaking, and often reading and writing that are accepted as instantiations of particular roles (or 'types of people') by specific *groups of people*. . . . They are 'ways of being in the world'" (p. viii, italics in original). Discourses, for example regarding who is "good" at mathematics, regiment thought and action in that they shape (but do not determine) how individuals get recognized as particular sorts of people at any given moment given their actions (e.g., speech, behavior, dress).

In my work, then, when I discuss processes of social identification and socialization that operate at institutional contexts, I focus on discourses that circulate throughout institutions, like schools. By local contexts, I mean the discourses that circulate in particular classrooms, like Ms. Ridley's fifth-grade math classroom at Johnson Middle School. Institutional and local contexts are by no means isomorphic. Rather, discourses that circulate at broad, institutional contexts are inflected in particular ways in local contexts, like classrooms (Wortham, 2006). There was a distinctly local character regarding mathematics and youth evident in Ms. Ridley's classroom, as reflected in the Dumb Denominator excerpt above. However, I argue below that more widely circulating institutional discourses about poor children of color, particularly African American children, and their ability to do mathematics, shaped the local approach to mathematics. In other words, the peculiar way in which Ms. Ridley introduced the addition of rational numbers was not merely a product of idiosyncratic pedagogy.

Research Context

The data presented are from a 14-month study of how two African American 10-year-olds (Nikki Martin and Timothy Smith) and their families learned mathematics within and across home, school, and occasionally neighborhood contexts. The overarching goal of the study was to understand how individuals learn mathematics across distinct contexts and over time. I used ethnographic methods (e.g., participant observation, interviews, document collection) to document how the participants experienced, and made sense of, their participation in, across, and exclusion from, a variety of mathematical practices. There were four major sources of data for this study: fieldnotes based on more than 300 hours of participant observation in multiple sites; 35 hours of interview data; document collection at all of the sites; and 36 hours of video-taped recordings of 18 parent math classes held in the neighborhood that at least one of the focal children's parents attended. Although I began data collection when Nikki Martin and Timothy Smith were in fourth grade at their local elementary school, for the purposes of this chapter, I am only drawing on the data of the children's participation in the fifth-grade math classroom at Johnson Middle School, including fieldnote, document, and interview data. (For more detail on the research design of the study, see Jackson, 2007.)

My analyses for the larger study focused on how individuals interacted with other individuals and resources in particular events, as embedded in social practices. I traced contingent events to understand how strings of events amounted to longer time-scale (Lemke, 2000) processes of mathematical socialization and social identification. Because of space limitations, I have chosen to represent my analysis in the form of abbreviated narratives in this chapter. Rhetorically, I have organized these narratives around one key classroom practice, Math Royalty, which I explain below. I have chosen to focus on Math Royalty because it illustrates a daily practice in which personhood and academic understandings of mathematics were at stake.

(For evidence of other events and practices upon which both a construction of youth and mathematics were simultaneously contingent, see Jackson, 2007.)

This study grew out of my work with an Educational Scholarship Program (ESP) in a predominantly African American, low-income neighborhood in a large, Northeastern city in the United States. ESP provided full-tuition college scholarships to groups of low-income students upon successful completion of high school. In an effort to increase the chances that the students would graduate from high school, ESP provided academic and social support to the students and their families. Caregivers were given an opportunity to further their own education, and ESP children's siblings were given partial tuition to colleges of their choice.

My initial introduction to ESP was through a university-supported research project with ESP families, intended to provide parental support in mathematics. I continued to work part-time for ESP as a summer program mathematics coordinator and tutor for four years. Through this work, I developed close relationships with several mothers and children, including the families of Nikki Martin and Timothy Smith. I describe Nikki and Timothy in more depth throughout the chapter.

My researcher identity was central to my relationships with the families, the schools, the data I collected, and how I analyzed the data. I am a white woman, who at the time of the study was completing a doctoral degree in education. I differed from the families of Nikki and Timothy—racially, educationally, and otherwise. I intentionally discussed my analyses with the families through member check interviews and informal conversations on a regular basis. On the other hand, I did not differ racially from the majority of the teachers with whom I interacted. In both cases, the information that was provided to me, as well as how I made sense of it, was shaped by who I am and how the participants in this study made sense of me.

Discourses of Deficit and Change: Fifth Grade Mathematics at Johnson Middle School

Johnson Middle School was part of a national middle school reform network of charter schools in urban areas in the United States. The network's mission was to serve populations of students that they claimed were not being served in traditional neighborhood schools; it aimed to provide a rigorous, college preparatory education for predominantly poor children of color, who they described as "underserved" and "under-resourced." Johnson Middle School served students in grades five to eight. When I began my fieldwork, there were three classrooms of 30–35 students for grades five and six, and two classrooms of seventh graders at Johnson. (Eighth grade was added the year after I finished my fieldwork.) Because Johnson Middle School was a charter school, students were admitted by lottery.[4] Students traveled from all parts of the city to come to Johnson.

Sixty-nine percent of students in grades five through seven were African American, and 31% were Hispanic.[5] However, in fifth grade alone, 88% of the students were African American, and 11% were Hispanic. In the class I regularly observed, there were two Hispanic students out of 33, and the rest were African American. Eighty-six percent of Johnson's students qualified to receive reduced-price or free meals, and 15% of Johnson students received special education services. Of the 33 students in the mathematics class that I regularly observed, seven, including Timothy, received special education services.

Although Johnson's student body was majority African American, and all the students were of color, the staff was majority white. Of the 18 administration and teaching staff at the time of the study, 13 were white. To be hired to teach at Johnson, teachers had to have at least two years of teaching experience. Of the 15 full-time teaching staff, six were considered "highly qualified teachers," as determined by the state in which the study took place.[6] Most teachers were under the age of 30, and only the principal, a secretary, and a few teachers had worked at the school since its opening two years before I began my fieldwork.

Ms. Ridley was a white woman in her mid-20s. She taught math in a neighborhood middle school just 15 blocks from Johnson for two years prior to joining the staff. The year I conducted fieldwork was her first year at Johnson. She had an undergraduate degree in communications and a master's degree in education.

As I describe below, Johnson Middle School officials (e.g., administrators, teachers) were explicit about the school's mission to *change* incoming fifth graders, academically and socially, in particular ways over the course of the three years that they were likely to attend Johnson. Of course, all schools are in the business of changing students, in some way or another. However, Martin (2006a, this volume) argues that there are particular, racialized ways in which school officials often characterize African American students as change-worthy or as problems in need of solutions. Martin argues for the need to understand how it is that representatives of institutions, like university researchers and school officials, frame African American students in relation to mathematics. For example, drawing from the work of sociolinguists and sociologists on "framing," Martin (2007) convincingly shows how African American students are often constructed as less able than their white peers in mathematics through discussions (written and oral) of the "achievement gap." This frame, or way of understanding achievement discrepancies, focuses societal attention on African American students as the "problem" in need of fixing and away from the racialized social structures and practices that have created a system of inequitable opportunities for access to high-quality mathematics instruction for the majority of African American youth. In the case of this chapter, framing refers to the ways in which school officials characterized, categorized, and positioned the needs and accomplishments of the student body in relation to how mathematics was characterized, presented, and enacted in classroom practice. Below, I describe how fifth graders and fifth-grade mathematics were framed at Johnson Middle School.

Framing Students

In public relations documents, conversations with the principal and teachers, and in classroom talk, it was clear that Johnson staff framed incoming fifth graders in particular ways, rooted in their assumptions about, and experiences with, low-income, children of color educated in neighborhood, urban schools. Throughout the school, emphasis was placed on changing the "academics, behavior, and character" of the students. Underlying Johnson's focus on changing the students' "academics, character, and behavior" was an assumption that fifth graders did not arrive at Johnson with the necessary academic content knowledge, values, or behavioral norms. Fifth grade was framed as a year of "remediation."

All schools assume that students need to learn academic knowledge. However, the principal and teachers at Johnson repeatedly referred to the incoming fifth graders as "below grade level." Their judgement was not based on empirical data. The staff did not test the new entrants, nor did they use their district and state test scores or report cards as resources for evaluating the children's academic backgrounds. The principal and fifth-grade math teacher both told me that they "didn't trust the report cards of the neighborhood schools." Most of the staff had taught in the city's neighborhood schools for at least two years and held a view that "there was little learning" happening in the classrooms, and so little could be predicted from the children's previous grades.

In addition to an assumed deficit of academic knowledge, the staff also assumed the children arrived with behavioral deficits. Johnson held a three-week summer intensive "initiation" to the norms of Johnson for incoming fifth graders. The principal and teachers told me that they did this because the children were used to "being out of control" in schools where "teachers didn't care what the children did." In the words of one Johnson staff member, the children were "in need of discipline."

A focus on behavior went hand-in-hand with a focus on "building the children's character." Johnson Middle School drew on a popular six-stage theory of moral development (Kohlberg, 1984) to design its approach to "character building." The theory claims that children initially make moral decisions for purely extrinsic reasons. As they develop a sense of "right" and "wrong," they move "up" the stages to where they eventually make moral decisions for purely intrinsic reasons. Moral decisions were framed in terms of "good" and "bad choices" at Johnson. The staff believed that, in fifth grade, external motivation was necessary to get the majority of the children to make "good choices." As the fifth-grade math teacher explained to me, "We know that a few students, like Nikki, came to Johnson knowing how to act," but most of the fifth graders needed to be taught to make "good choices." Several practices were instituted to assist the students to move up the stages of moral development, including a monetary system of rewards and sanctions that governed all of the teachers' disciplinary actions.

Johnson Middle School was decidedly committed to securing a path to college education for its students. It was assumed that college attendance would lift students out of poverty, a common trope in educational interventions and programs aimed at poor children of color. Johnson's public relations documents reflected a "college prep" mission, and within the school there were several ways in which a focus on college attendance was reinforced. For example, all the homerooms were named after colleges and universities, and teachers and students identified one another by college/university names. Cohorts of students were identified by the year they were expected to graduate from high school and enter their first year of college. The youth I followed closely were the class of 2013. Every teacher had to display her college diplomas on her classroom wall, there were several days throughout the year when students were allowed to wear college t-shirts rather than their usual Johnson uniform shirts, and students occasionally took field trips to visit colleges and universities in the area.

Framing Mathematics

Related to the framing of the students as academically, behaviorally, and morally deficient, the approach to fifth-grade mathematics at Johnson Middle School reflected and constituted a deficit framing of the students. According to Ms. Ridley and administrators, fifth-grade mathematics was designed to "give the children basic skills." The staff acknowledged privately that the mathematics curriculum was at the fourth-grade level, but they did not share this with parents or the students. They said it "had to be low" because the children "didn't have basic skills." The assumption was the children were not able to do mathematics at grade level. Ms. Ridley offered that most of the students arrived to Johnson with limited mathematics knowledge.

> With fifth grade I have kids that are coming in [with] no times tables, no nothing. But then somebody like Nikki, she probably knew her times tables. So when we do times table chants, that's just review. You know what I mean? That's the, that's the struggle, is that with fifth grade we know we're going to be remediating and we're gonna do a lot of things that they should already know. (INT, 10/04/05)

Johnson Middle School used a fifth-grade mathematics curriculum created by members of the charter school network. It was not publicly available, although the fifth-grade teacher shared parts of it with me. The curriculum laid out lesson plans for each curricular topic. In sequential order, topics included memorization of multiplication times tables; addition, subtraction, multiplication, and division of multi-digit numbers; four operations on fractions and decimals; identification of geometric figures (including angles, lines, rays, and polygons); patterns (arithmetic and geometric sequences); solving simple algebraic equations (addition and subtraction); conversion of fractions, decimals, and percents; statistics (including finding mean, median, mode, and range and creating line and bar graphs); and simple probability. Although these topics are common in commercially packaged fifth-grade mathematics curricula, the pedagogy associated with them was somewhat unique to this curriculum and network of schools.

Ms. Ridley emphasized that her goal was to "make math fun." This goal rested on assumptions that some students were "scared of math" and that some were "frustrated" by math. Subsequently, Ms. Ridley believed if math was fun, students would do math "without realizing what they're doing."

> I think math has this negative stigma on it and it sucks because I love math. I think a big part of my battle, getting them in fifth grade, is that they've already been exposed to either possibly bad math teachers, possibly frustration with math where they don't understand it. So anything related to math is confusing, even if they don't try it. So you kind of have to break that up. Which is why

> Johnson is designed the way that it is, the math curriculum, because it's this idea that times tables can be fun. It doesn't have to be this idea of sitting there going 1 times 2 is 2, 2 times 2 is 4. It can be fun. So making math fun, so that they're doing it without realizing that they're doing it. Like subtraction, they don't even realize what they're doing. They're saying this little chant thing. But they're getting the right answer because they're having fun and they are able to scream stuff out. So I guess my philosophy [is] if you make it fun, it will be fun, and if you make it fun and it is fun, they will understand it. (INT, 10/04/05)

Ms. Ridley's pedagogical practices reflected this stance towards the teaching and learning of mathematics. As evident in the Dumb Denominator excerpt above, Ms. Ridley taught most of the content in a procedural manner. Children were expected to mimic steps that Ms. Ridley showed them. Emphasis was placed on producing a correct answer. There was little discussion of the reasonableness of answers or of alternative solution strategies. This pedagogy was suggested by the fifth-grade mathematics curriculum.

Ms. Ridley acknowledged her emphasis (as suggested by the curriculum) on developing a procedural understanding of mathematics:

> The one flaw in the Johnson fifth-grade math is that it's not conceptual. It's just drill and kill. But at the same time, because we know that sixth grade, seventh grade is not drill. They will do investigations, they will have to discover stuff. I prefer this kind of math myself. I was always the kind of math student, my teacher did not need to prove to me why base times height divided by two gave the area [of a triangle]. And that's very much how this is. There's a few things I've explained, like area. I showed them how that was like cutting a rectangle in half. But much beyond that, no. It's more just getting them to get the concepts and skills down, so that when they do go to [the sixth-grade teacher] she can have them understand it. (INT, 3/29/06)

The theory of learning described by Ms. Ridley and reflected in the curriculum, namely that a procedural understanding, needed to precede the development of conceptual understanding, was bolstered by the school's assumption that the children arrived without "basic skills." Ms. Ridley saw her job as providing the "missing" skills so that they could go on to "understand" the mathematics in a conceptual manner.

Emphasizing a procedural understanding of mathematics is not unusual in United States middle school mathematics classrooms; it is the norm rather than the exception (Stigler & Hiebert, 1999). Mathematics educators' analyses of classrooms that promote procedural understanding argue that children who learn mathematics procedures as disconnected from their underlying meanings will not be equipped to apply their understandings in novel situations (Boaler, 1998; Hiebert, 2003). However, how discourses about particular populations, like low-income children of color, that circulate at institutional levels are related to pedagogies that promote procedural understanding has been relatively unexplored.

Math Royalty

One daily practice that had significant academic and social outcomes for students was known as Math Royalty. Math Royalty, a practice suggested in the curriculum, was intended to lead to "mastery of basic skills" and altogether, it took about 25 minutes out of every 90-minute class period. It consisted of five math problems. Figure 7.2 is an example of a typical problem set.

The students worked individually on a new problem set at the beginning of every class period. Once a student believed that she had the correct answers to all five problems, she announced, "Done." In turn, Ms. Ridley assigned each student a number, from 1–33, to represent the order in which the students finished. However, by November, once she assigned numbers in the 20s, Ms. Ridley typically stopped whoever was still working and checked the answers with the students. Typically, between eight and ten students did not finish the five problems before the class checked the answers.

After the class had checked their answers, Ms. Ridley asked the children, starting with the first student to finish, to share publicly how many problems she or he had completed correctly. The first student to get all five correct was then crowned Math Queen or King. The Queen or King had to come to the front of the room and choose a tiara or crown that she or he wore for the rest of the period and then turn to the class and yell, "I RULE!" The other students in the class were expected to respond loudly and in unison, "YOU RULE!" The Queen or King wrote her or his name on the front board for the other classes to see throughout the day and added a tally mark to a poster hanging in the classroom that tracked how many Queens versus how many Kings were crowned throughout the year. In the class that I observed, there was a group of three students who routinely came to occupy the position of Queen or King, two girls (Nikki and Angela) and one boy (Terrence).

How does this practice of Math Royalty both reflect and constitute the construction of mathematics and learners in this particular setting? First, it is clear that quickness was valued, and to be successful in this mathematical practice, one must be both quick and accurate. Second, when checking answers, there was usually one valued solution strategy to a math problem. Third, the teacher provided the problems, and

February 15, 2006

1) $\frac{5}{25} + \frac{10}{25} =$

2) Reduce the sum in #1.

3) Compare 176 + 54 $\bigcirc$ 1,234 – 975

4) Draw parallel line segments.

5) Find median: 5, 3, 0, 8, 11, 0

Figure 7.2 Math Royalty problem set (FN, 2/15/06).

the students solved them. Students were not expected to ask questions about the problems, nor were they positioned as problem creators. This practice publicly recognized a "top" math student every day; the corollary was that it also made public those who were not "top" math students. In fact, those who did not finish quickly enough were not given numbers and effectively excluded from this daily ritual.

Math Royalty was a central practice in Ms. Ridley's classroom and was certainly central to the paths that Nikki and Timothy's learning of mathematics took in fifth grade. Importantly, as I show below, different students negotiated this practice in distinct ways, implying that processes of mathematics socialization and social identification are not monolithic. In other words, although institutionally the staff at Johnson Middle School tended to characterize all of their students in similar ways, the students experienced the same practice in distinct ways. Nikki and Timothy's trajectories were decidedly different in Ms. Ridley's class.

I acknowledge that the case presented here may appear "extreme," in that Math Royalty is not a staple of all middle school math instruction. However, the analytical points raised by this case implicate the importance of considering both what models of mathematics are being furthered by, and through, instructional practice and, simultaneously, how youth are constructed by and through their participation in those practices.

Nikki's Negotiation of Royalty

Nikki was quickly identified as a "model" and "top" student in Ms. Ridley's fifth-grade mathematics class and maintained this social identity throughout the year. Within the first two months at Johnson, Ms. Ridley identified Nikki as one of her "top" students. Nikki "followed the rules" at Johnson. She participated regularly in class, her homework was almost always complete, and she regularly received As on tests and quizzes. Nikki was awarded the fifth-grade female Johnson Student of the Year award and achieved "straight As" each quarter, earning her a special recognition of "high honors" at the end-of-year school-wide ceremony. Importantly, Nikki was not the only student to perform well on tests, complete her homework, and arrive on time at school. Yet, she managed to secure a social identity that, in Ms. Ridley's class, was granted to only a few students. The primary vehicle to achieving this identity was through Math Royalty. Even though Nikki was socially identified as "successful" and a "top" student, as I show and discuss below, the negotiation of this identity was not straightforward. Moreover, Nikki's success has to be understood against the prevailing model of mathematics in the room. This, I will argue, has implications for how we construct and assess success in mathematics.

Inheriting the Throne

During the three-week summer initiation program and most of September, Nikki was usually between the fifth and tenth student to finish Math Royalty. She often had all of her problems correct, but other students were quicker than her to finish. In late September, Nikki won the title of Math Queen for the first time. She finished fifth that day; however, the students who finished before her had answered at least one problem incorrectly. Ms. Ridley announced that Nikki had won. She approached the front of the room. With a grin and her head tilted slightly to the right, she shouted, "I RULE." The class screamed back, "YOU RULE." Nikki placed the pink tiara on her head and returned to her seat.

Over the next two months, Nikki regularly occupied the first, second, or third slot in terms of when she finished Math Royalty. And, her work was almost always perfect. As Nikki continued to win Math Royalty, she assumed other roles in the classroom that positioned her as a "top" math student, but simultaneously positioned her tenuously with respect to her peers. Ms. Ridley framed Nikki as teacher-like and regularly evaluated Nikki's responses in class positively.

Twice, Ms. Ridley had Nikki teach the class. During class on November 1, Ms. Ridley came over to where I was sitting in the back of the room and said, "Kara, I under-planned. I didn't expect this [lesson] to go so quickly." The class was working on three-by-two digit multiplication. To pass time, Ms. Ridley asked the class, "Anybody think they can stand up here and do it [go over the problem on the board] and I'll sit in your seat?" Several students raised their hands, including Nikki. Ms. Ridley chose Nikki to come to the front and asked her to go through the steps to solve 837×37 with the class.

Nikki went to the front. She faced the class and took a deep breath. She asked the class to join with her as they went step-by-step through the procedures for multiplying the numbers. She mimicked exactly how Ms. Ridley went over multiplication problems with the class. At one point, Nikki forgot to say one of the rhymes that Johnson used when multiplying. Ms. Ridley called out, "Teacher, teacher you forgot to say—" and Nikki said the rest of the rhyme with Ms. Ridley. Ms. Ridley then said to the class, "Tell Ms. Martin what to do next." At the end of every computation problem, Ms. Ridley asked, "Who can read me this number [answer]?" A student told Nikki that was what she should say next. Nikki smiled and asked, "Who can read me this number?" She called on a student who was raising his hand, and he read the product. Nikki commented, "Very good." Ms. Ridley announced to the class, "Round of applause for Nikki. Hard work, very nice." The class clapped for Nikki, and she took her seat. Ms. Ridley resumed her spot at the front of the classroom.

Both Nikki and Angela, another female student who won Math Royalty as often as Nikki, occasionally corrected Ms. Ridley's mathematics, which contributed to their positioning as knowledgeable and as teacher-like. When corrected, Ms. Ridley thanked them and apologized to the class. Ms. Ridley occasionally checked her answers against Nikki's and Angela's before sharing them with the class. For example, in mid-October, Ms. Ridley placed the answers to the homework from the night before on the overhead projector. Several students raised their hand to question the answer to a particular problem. Ms. Ridley said to the class, "So, if Nikki and Angela get the same answer, it must be right." Ms. Ridley then asked Angela what she got. "Nikki, did you get the same answer?" Nikki nodded in agreement. Ms. Ridley told the class that what she had written on the overhead projector was correct, since both Angela and Nikki had the same answer as she did.

Nikki had more control over how she was positioned in some of the practices than in others. For example, Nikki had little control over how Ms. Ridley explicitly positioned her in the classroom. Of course, had she chosen to disobey classroom rules, it is likely that Ms. Ridley would have identified her differently. I tracked the social identification of other students, including those who regularly disobeyed classroom and school rules, in the classroom over the course of fifth grade, and Ms. Ridley did not position them favorably. Ultimately, Ms. Ridley chose to praise Nikki for her work habits and to position her as teacher-like, in part because Nikki's approach to mathematics was in alignment with what Ms. Ridley expected. On the other hand, Nikki had a great deal of control over whether she won Math Royalty. I now return to Nikki's public identification as a consistent Math Queen; the discussion illustrates how complex it was for Nikki to negotiate and maintain an identity of a successful mathematics student in the context of the classroom.

Nikki's Abdication of the Throne

By December, Nikki wore the tiara nearly every day. She regularly occupied the first or second spot in terms of when she finished the five Math Royalty problems. Not only was Nikki accurate, she also increased her speed. However, by late January, the boys in the class began to react to Nikki's repeated success in Math Royalty.

In late January, some of the male students who rarely won the crown began to accuse Nikki of "cheating." They claimed she would say, "Done," and then make some changes on her paper. Nikki denied this. She said that occasionally she forgot to write her number down at the top of the paper, so she would go back and do this. My observations confirmed this. Ms. Ridley also maintained that Nikki was not cheating, and she told the boys who made this claim that they were jealous and that they should work harder to win. As Nikki continued to win, some of the boys began to make "sss" noises as she said, "I RULE." Nikki, in turn, began to turn away from the class and mumble, "I rule." The girls loudly responded, "YOU RULE," but many of the boys did not join them. Ms. Ridley did not acknowledge these behaviors.

On February 8, when Nikki said, "Done," other students said, "Dang!" indicating their surprise at how quickly she finished. Nikki was then crowned Math Queen for the fifth day in a row. Nikki mumbled, "I rule." Only the females responded with, "You rule." The males were silent. One male student told Ms. Ridley, "It's not fair that she always gets to be Math Queen." One of the male students said, "Come on boys. We got to pull it together." Ms. Ridley responded, "Don't give [Nikki] garbage. You all need to increase your skills so you can beat her. Don't be haters just because she's got skills." Nikki continued to win for the next several days. She continued to mumble, "I rule," and the boys continued to abstain from congratulating her.

On February 15, a critical event in Nikki's trajectory of participation occurred. Math Royalty was structured as usual. Angela finished first; a few seconds later Nikki announced she was finished. After the class checked answers, and it was established that Angela had completed all five of the problems correctly, Ms. Ridley announced that Angela was the Math Queen. The entire class, girls and boys, clapped and cheered when Ms. Ridley announced this. Angela came to the front to pick up her crown and complete the "I RULE!" and "YOU RULE!" ritual. She then wrote her name on the board, added a tally to the chart for Queens versus Kings, and took her seat. Ms. Ridley then turned to Nikki, and the following exchange ensued:

T/R:	Nikki, what was the running streak?
Nikki:	I don't know.
T/R:	You could look in your book, I bet it's 10 days.
Tanya:	She did it on purpose.
T/R:	You're just jealous.
Tanya:	No, she stopped and she didn't want to win so she waited for Angela to say one and then [she] said two.
T/R:	Nikki, is this true?
	Nikki nods her head yes. She begins to write on her paper.
Angela:	Should Nikki be number one?
T/R:	No, you won. Nikki, you're putting Angela in an awkward position. Stop writing.
	Nikki stops writing on her paper.
T/R:	What I'm saying, Nikki, is you're making her feel bad. In my mind, Angela, you won fair and square. Nikki, if you don't want to win, that's your decision. But I think that sucks that you don't want to win. I think you need to say something to Angela.
Nikki:	I don't know what to say.
T/R:	You're making her feel really bad.
Nikki:	(murmurs) Sorry.
T/R:	I could hardly hear that.
Nikki:	I'm sorry.
T/R:	Tanya, you're part of the problem. This is a waste of time. We should be going over homework.
T/R to Angela:	I don't want you to feel bad. You won fair and square.

After this brief exchange, Nikki began to rip up pieces of her binder. She did not raise her hand with the rest of the class.

Later that evening, I called Nikki and asked if I could come interview her about what had happened in class that day. She agreed. We talked about this event; she was still very upset by it. She said she had actually informed Ms. Ridley the day before that some of the boys had been teasing her for repeatedly becoming Math Queen. Maurice, another student in her class, had given a "shout out" (praise) in Science the day before for a male student who had beaten Nikki a while back. Nikki's decision to lose the contest was intentional. She said she did not want to be teased any more by the boys in her class. She also said that she told Ms. Ridley several times that Maurice, in particular, had been teasing her for continuing to win, but that each time she told her, Ms. Ridley said she was too busy to deal with it at the time but to remind her again at a different time.

This event, namely Nikki's "abdication of the throne," was contingent on a local model of gender, "boys versus girls," that, although not described in detail in this chapter, by this point in the year had been established through several practices, including the differentiation of Queens versus Kings. This local model of gender contributed to the collective male decision to boycott Nikki's title of Math Queen. Interestingly, attempting to offer a counter-discourse about women as inferior to men in mathematics, Ms. Ridley initiated a discourse of "boys versus girls" in the classroom. Boys and girls were expected to compete publicly for success in mathematics. Ms. Ridley's intention was to highlight for both the boys and girls that girls could be successful in mathematics. However, rallying by gender affiliation *against* successful members of the opposite gender was an unintended consequence of "boys versus girls" in the classroom.

After February 15, Nikki's participation patterns changed in the classroom. She volunteered answers less often and occasionally won Math Royalty, but not as often as she had before. When she did win, she continued to mumble, "I rule," and look away from the class. Although Nikki compromised winning Math Royalty on a regular basis, she still managed to maintain a public persona of a successful, smart student in mathematics. It remained a gendered position, in some respects, because of the local model of "boys versus girls" that continued to order interactions in the classroom. However, Nikki's move to forego a consistent identification as Math Queen could be interpreted as a challenge to the local model of gender. Nikki maintained outstanding academic standing, so much so that she was awarded Johnson fifth-grade student of the year, but removed herself from the daily pressure of "boys versus girls" evident in the Math Royalty competition.

Timothy's Negotiation of Competing Models of Mathematics and Personhood

Nikki exemplified the "successful" mathematical person in Ms. Ridley's classroom—quick, accurate, and satisfied with following the given solution path. Students who did not meet these criteria experienced varying degrees of failure in the class. Timothy was quickly cast as one of the slowest students in the class, and, although he was accurate and often satisfied with following a prescribed solution path, his speed meant that he maintained a peripheral position in mathematics across the entire school year in Ms. Ridley's class.

There was reason to believe that Timothy's relative "slowness" was due, at least in part, to a physical disability, which had cognitive ramifications. At birth, and then again at 18 months, a shunt was inserted into Timothy's brain to help monitor the flow of spinal fluid. As a result, Timothy tended to process information slower than his peers and he developed a stutter. Although Timothy qualified for speech services, he did not qualify for special education services at Johnson.[7] Ms. Sanchez, the fifth-grade special education teacher, included him in a small group whom she pulled out of math class for the first 30 minutes of every class period. She argued that he benefited from small group instruction where speed was not of primary importance, and Ms. Ridley agreed. Ms. Sanchez was a young Puerto Rican woman who had completed her undergraduate degree in special education, taught two years in Puerto Rico, and then moved to the U.S. mainland and took a position teaching special education at an urban, neighborhood middle school. She left that school after a few months and began to work at Johnson. She was in her second year at Johnson when I began this study.

From September through January, the pull-out group met with Ms. Sanchez Monday through Wednesdays. I accompanied Timothy on Tuesdays and Wednesdays. However, in January, it was decided that the special education group of students needed to stay in the mainstream classroom for the entire period to ensure they did not miss out on math instruction. Instead of pulling out the group, Ms. Sanchez circulated in Ms. Ridley's classroom to assist her group of students.

Timothy participated in distinct ways in the two classroom settings. He participated in Math Royalty in both settings; however, as I describe below, he experienced the practice quite differently because of the different models of mathematics at play in the different classroom settings.

The Social Construction of Timothy in Relation to Mathematics in Ms. Ridley's Class

Ms. Ridley repeatedly identified Timothy as "slow" in class, in part because he tended to take longer than his peers to start and finish activities. He was often one of the last students to get in line to leave the cafeteria for math class, usually because he was struggling to finish his Morning Work, a sheet of math problems students were expected to complete at breakfast, before class. On days that he did not finish Morning Work, he was sanctioned and lost money from his "paycheck" at the beginning of class for being "unprepared." (Students received a weekly paycheck as part of the behavior management approach. The money earned could be redeemed in the school store for school supplies. Maintaining a certain average was necessary in order to participate in school-wide activities, like field trips.) This sanction was made publicly. Timothy then had to copy the daily objective, his homework, and the Math Royalty problems. He rarely had everything copied by the time Math Royalty started, which meant that he seldom finished Math Royalty by the time Ms. Ridley checked answers. As Timothy told me in late November,

> I feel bad that when I'm, everybody else gets to wear the [Math Royalty] crown but not everybody else does. If everybody got the answers right . . . I'm almost like the only person that's not done copying down the math royalty. Sometimes I can look back and sometimes they is some other people who is not done but I never get to be the math king in Ms. Ridley's class. (*His mother hears him tell me this and says, "Well maybe you'll be king one day. Just keep trying."*) Mom, I can't write that fast! Mom I be stopping to write my daily objective and heading down then I write that first . . . But I don't be having answers, I be the last one to finish. I didn't say "done" and they be going over the answers without me. And I still be doing the work. (INT, 11/26/05)

The pattern of Timothy being left behind continued throughout the lesson. He often did not copy the notes as quickly as others, which meant that, instead of raising his hand to participate in discussion, he continued copying notes that he got from others, or, on occasion, Ms. Ridley gave him her overheads to copy. This meant he started his classwork late, which in turn meant he often did not complete his classwork.

Based on my data, these patterns were established by mid-September, and by early October, Ms. Ridley had established that Timothy was "lower than" and "not as ambitious" as other students:

> Timothy . . . is special ed and he's obviously a lot lower [than Nikki]. Umm, and stuff does not come as easily to him as Nikki. They're almost like opposite ends of the spectrum academically, which is frustrating. But, umm, not that Timothy can't do the work, it's just that sometimes his disability sometimes can limit what he can do in my class . . . . He doesn't ask for help . . . quickly . . . . I have to, like, coax it out of him. Like, "Are you sure you get this?" "Oh, I'm fine, I'm fine." I'm just like, no you're not. You know what I mean? I know you need my help . . . . So, but I mean like, it's not like he's like, he can do the work. It's more just like, he's definitely not as ambitious. (INT, 10/04/05)

However, she acknowledged that he was capable of completing the mathematics problems she posed, but believed he did not display participation patterns similar to the higher-achieving students. Across the year, Ms. Ridley characterized him as "lazy" and "coddled by his parents," indicating that the source of his relative slowness was his lack of motivation coupled with "too much support" from his parents:

> I don't even know if the speed is the disability, I feel like in a way it's like this baby thing. Like speed it up man. I don't know if it is a disability. I can visualize him doing homework at night and it taking 3 hours because he's just putzing. I don't think this child has a problem, I think this child has just been allowed to take his good old time on everything and then he comes into an environment like this where it's just not OK. We've had many run ins with his dad complaining about stuff we're doing here. And it's like, you know, if you don't want to follow our rules, take him back to [his neighborhood school]. But you obviously want him here for a reason. So when we come up with something and we have a certain rule that you don't feel good about, our school works, we must be doing something right. I in a way feel like he's been mislabeled and not pushed because of his personality, and the stuttering too. I feel guilty sometimes, I call on him in class and he gets all anxious. But he's getting a little better. (INT, 3/29/06)

The Construction of Timothy and Mathematics in Ms. Sanchez' Pull-Out Sessions

Timothy was not as reserved in Ms. Sanchez' class as he was in Ms. Ridley's classroom. And, notably, he was not positioned as "slow." As it was, "slow" was relative. Even though Ms. Sanchez supported Ms. Ridley's pedagogical strategies in the pull-out sessions, in that she reinforced the same procedures that Ms. Ridley emphasized, she did not place an emphasis on speed. And, of the seven students in the pull-out session, Timothy tended to have a better understanding of the material than some of the others, although this was variable.

For the last 10 minutes of every pull-out session, Ms. Sanchez conducted her own version of Math Royalty. She recognized that this group of students could not viably compete in the classroom because speed was not their strength. She also knew that several of them, including Timothy, felt badly that they never won Math Royalty. Ms. Sanchez assigned five or six problems but did not reward speed. Instead, when everyone had finished, she made sure that they each had correct answers. Then, before they left the classroom, she picked one of their names out of a jar to be named Math King or Queen for the day. She usually put a sticker on the King or Queen's forehead, which the students laughed about. The students typically moved the sticker to their shirts or notebooks before returning to Ms. Ridley's classroom. Timothy only won Math Royalty once during my observations. He was incredibly proud, as the following excerpt illustrates.

Ms. Sanchez wrote six Math Royalty problems on the board (see Figure 7.3). The students began to copy the problems onto their individual white boards.

Ms. Sanchez saw that Timothy was the only one who had not finished copying the problems. She finished writing them for him and then told the group they could start. Timothy finished fourth. When everyone finished, Ms. Sanchez went over the answers with the group. She announced, "I'm going to explain these because many of you are making silly mistakes. Timothy, you're the one I think pretty much got it." Ms. Sanchez took his white board from him, looked at it and then returned it. She proceeded to question the students about how to solve each of the problems. At

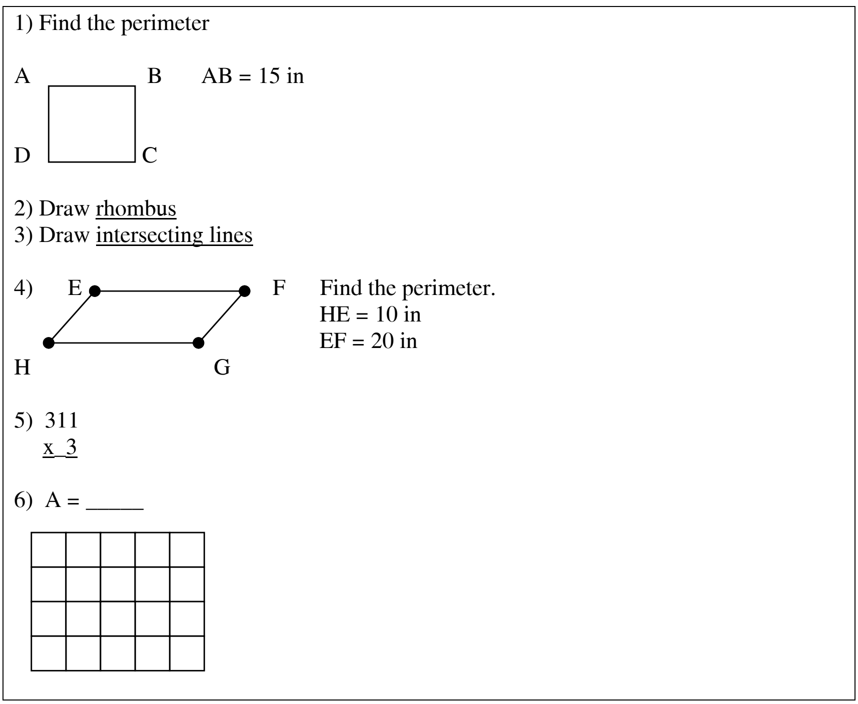

Figure 7.3 Math Royalty with Ms. Sanchez (FN, 12/13/05).

the end of the class, she picked Timothy's name from a jar. "Timothy, you got it. What do you say?" He grinned and yelled, "I RULE!" His peers responded, "YOU RULE!" The students gathered their belongings. On the way back to Ms. Ridley's room, Ms. Sanchez patted Timothy on the back and said, "Good job. You really get this!" Timothy smiled and nodded his head yes.

Ms. Sanchez recognized the difference between how Timothy positioned himself in her class and how he did so in Ms. Ridley's class:

> I think he definitely participates more in the small group than he does in the classroom. He does participate in the classroom sometimes, but not as excitedly as he does in the small group. I think his whole demeanor is different when he's with me than in the classroom. I think his whole stuttering and his whole, "Am I wrong or am I right when I answer questions?" [change when he's with me]. . . . He's not gonna want to participate as much [in Ms. Ridley's classroom]. I mean, he does but he does not act excited [when he's in Ms. Ridley's classroom]. (INT, 1/18/06)

In comparison to how Ms. Ridley described Timothy—in terms of what he lacked—Ms. Sanchez described Timothy's strengths in mathematics, including his neatness, his organization, and his understanding:

> He's very neat. Even though he's slow he's still very organized in his own little way. He has his papers and his work that he turns in, it's always great work that he turns in. I think that he enjoys being here and I think he pretty much understands. . . . I think just the fact that he seems to enjoy being in his classes is a strength for him. Even though he knows he's slow and he knows those things. But he's kind of trying to work with it, so he can be on the same level as his other classmates . . . . He's definitely capable of understanding, but at another speed. So you might have to explain things to him, but he's gonna get it. (INT, 1/18/06)

I asked Ms. Sanchez what she knew of how other teachers characterized Timothy. She explained that they thought he was "slow," but couched this in a critique of the uniform way in which Johnson teachers tended to approach their students:

> They see him as slow. I think that sometimes teachers get so involved in what they're doing that they just don't realize that all of our kids aren't the same. Just because all of our teachers are so involved and hard working themselves it's really hard to kind of, and it's not lowering your standards, but it's kind of having different expectations for the students. And sometimes the comments I hear are he's slow, his parents baby him, that kind of stuff. But it's like, regardless, he's a child. He doesn't necessarily have a learning disability but he does learn at a slower pace than everybody else. This needs to be reinforced and I try to let them know, and I think teachers forget that. (INT, 6/09/06)

Timothy, too, recognized a difference in how he was socially positioned in Ms. Sanchez' class in comparison to Ms. Ridley's. He described several times over the course of the year that he appreciated Ms. Sanchez, especially that she "helped us to . . . solve answers" (INT, 7/15/06) in the special education group. He described how he felt comfortable raising his hand in the small group. He did, however, tell me that while he enjoyed the pull-out sessions with Ms. Sanchez, he was happy that in February, they no longer missed Ms. Ridley's class. When I asked him why, he explained: "When I left the classroom, I be coming back and have to copy everything I missed." Timothy was referring to the daily objective, agenda, and homework that they were responsible for copying every day, even when they had a pull-out session.

Mathematical Socialization

Processes of socialization and social identification matter in contexts, like schooling, in which there is knowledge of academic content and personhood at stake (e.g., Heath, 1983; Rymes, 2001; Wortham, 2006). Although mathematics and language differ in important ways, if we assume that social relations are implicated in learning mathematics as they are in learning to speak, read, and write, then it is worthwhile to consider what it might imply to conceptualize mathematical socialization as a two-pronged process, analogous to language socialization: learning to do and use mathematics (*socialization to use mathematics*) and how the doing and using of mathematics is related to who one might become in particular communities (*socialization through the use of mathematics*).

Both Nikki and Timothy were socialized into a construction of mathematics that emphasized speed and accuracy over process and involved completing procedures that were absent of mathematical meaning. They were denied access to challenging and academically purposeful mathematics. This impoverished construction of mathematics, which was facilitated through practices like Math Royalty, was rooted in institutional discourses about Johnson's youth and their previous schools as deficient. A lack of "basic skills" went hand-in-hand with a construction of the youth as academically deficient. Johnson Middle School officials' construction of the youth as deficient was used to justify pedagogy aimed toward a procedural understanding of mathematics.

Nikki and Timothy experienced Math Royalty, and fifth-grade mathematics in general, in different ways. Nikki was "successful" in mathematics, and the public identification as Math Queen helped solidify her identification. However, she deliberately compromised her position as "Math Queen" mid-way through the year because of the social consequences. On the other hand, Math Royalty facilitated the identification of Timothy as "slow" and he was constructed as a peripheral participant in Ms. Ridley's classroom. However, in Ms. Sanchez' classroom, the practice of Math Royalty did not have a negative social effect as it did in Ms. Ridley's classroom. But, if we consider both Nikki and Timothy's experiences beyond the local setting of the classroom, their narratives raise an important question: Through doing mathematics as it was constructed in fifth grade, for what were Nikki and Timothy being socialized?

There is ample evidence that constructing mathematics as a series of procedures is limiting to students—both in relation to more immediate use of mathematics in schooling situations (Hiebert & Lefevre, 1986) and in relation to what mathematicians and professionals who make use of mathematics do (Ball & Bass, 2000). It is not likely that the procedural understanding of mathematics that was given primacy in Ms. Ridley's class would support Nikki, Timothy, and the other 31 students as they moved forward in their academic and professional careers. Somewhat ironically, Johnson Middle school officials framed Johnson as a college preparatory middle school. It is hard to imagine that the type of understanding of mathematics advocated in Ms. Ridley's classroom will serve these students in a college-level mathematics classroom, given that college level-mathematics classes tend to require and further conceptual understandings of mathematics.

It is useful to maintain a finding of language socialization research at the forefront of this discussion—that indeed, socialization is an interactive process. However, this does not mean that individuals have complete freedom in how they position themselves with respect to a classroom. A practice like Math Royalty, as enacted in Ms. Ridley's classroom, perpetuated a narrow construction of mathematics, along with a narrow choice of who students might be positioned as with respect to that practice. In the case of Nikki, she negotiated a limited model of mathematics and personhood. Given the power dynamics of the classroom, Timothy had little room to negotiate how Ms. Ridley positioned him. Math Royalty, as enacted in Ms. Sanchez' classroom, perpetuated that same, narrow construction of mathematics; however, there was more fluidity in terms of whom students might be with respect to the practice. With Ms. Sanchez, Timothy was able to attain success in part because Ms. Sanchez had a wider range of what constituted success in mathematics.

Maintaining a focus on socialization processes inherent in learning mathematics helps teachers, teacher educators, and mathematics education researchers identify and shape both what we intend youth to do mathematically in the immediate and what we intend for youth to do and become, with respect to mathematics in the future. The analysis presented in this chapter highlights the complexity of structuring learning environments for mathematics. Ms. Ridley's classroom, as all classrooms, was a nexus of discourses about youth, about mathematics, and about pedagogy. The local practices were influenced by discourses about poor children of color and mathematics that circulated outside of Johnson Middle School. In order for Ms. Ridley to "do" mathematics teaching differently at Johnson, it is likely that she would have had to interrogate the assumptions that Johnson made about the fifth graders who walked through their doors. In other words, it is likely that focusing only on the pedagogy absent a focus on how youth were constructed would have changed little about the teachers' practices. At the same time, it is likely that had Ms. Ridley engaged the students in challenging mathematics aimed at developing conceptual understanding, she might have challenged the prevailing discourses about the youth in Johnson Middle School.

Notes

1 All names of people and places are pseudonyms.
2 "M/St" indicates a male student spoke. "F/St" indicates a female student spoke. Repeated instances of "M/St 1" or "F/St 1" refer to the same student speaking.

3 "F/N" and "INT" refer to fieldnote and interview data, respectively. Only interview data were audio-recorded. The words I attribute to individuals in fieldnotes are based on my memory of the interaction. While I recognize the danger of attributing words to others, I attempted to preserve individuals' speech as best as possible in my fieldnotes. In the case of classroom observations, I took notes as the interactions unfolded.
4 Students who lived in the city district (with their parents'/guardians' signature and permission) had to complete an application in the spring before the academic year they wanted to enroll. Enrollment by lottery meant that the school then randomly selected students from the applicant pool to fill the slots that were open. Once a child in a family was admitted to Johnson Middle School by lottery, her younger siblings were automatically granted admission to the school grades five and above.
5 The school used the categories of African American and Hispanic.
6 "Highly qualified" meant that a teacher (1) was certified by the state; (2) held a Bachelor's degree; (3) completed a content area major; (4) passed a content area test; and (5) completed teacher education coursework.
7 Ms. Sanchez explained to me that, in order to qualify for special education services, Timothy would have had to demonstrate a discrepancy on his performance on a series of tests used for qualifying purposes. He "scored low on all of the tests," thereby disqualifying him from receiving special education instructional services.

References

Anderson, D.D. & Gold, E. (2006). Home to school: Numeracy practices and mathematical identities. *Mathematical Thinking and Learning, 8*(3), 261–286.

Baker, D., Street, B., & Tomlin, A. (2003). Mathematics as social: Understanding relationships between home and school numeracy practices. *For the Learning of Mathematics, 23*(3), 11–15.

Ball, D.L. & Bass, H. (2000). Making believe: The collective construction of public mathematical knowledge in the elementary classroom. In D.C. Phillips (Ed.), *Constructivism in education: Opinions and second opinions on controversial issues* (pp. 193–224). Chicago: The University of Chicago Press.

Boaler, J. (1997). *Experiencing school mathematics: Teaching styles, sex, and setting.* Buckingham, U.K.: Open University Press.

Boaler, J. (1998). Open and closed mathematics: Student experiences and understandings. *Journal for Research in Mathematics Education, 29*(1), 41–62.

Boaler, J. (1999). Participation, knowledge and beliefs: A community perspective on mathematics learning. *Educational Studies in Mathematics, 40*, 259–281.

Boaler, J. (Ed.). (2000). *Multiple perspectives on mathematics teaching and learning.* Westport, CT: Ablex Publishing.

Cobb, P., Stephan, M., McClain, K., & Gravemeijer, K. (2001). Participating in mathematical practices. *The Journal of the Learning Sciences, 10*(1&2), 113–163.

deAbreu, G. (1999). Learning mathematics in and outside school: Two views on situated learning. In J. Bliss, R. Saljo & P. Light (Eds.), *Learning sites: Social and technological resources for learning* (pp. 17–31). Oxford: Elsevier Science.

Dossey, J.A. (1992). The nature of mathematics: Its role and its influence. In D. Grouws (Ed.), *Handbook for research on mathematics teaching and learning* (pp. 39–48). New York: Macmillan.

Gee, J. (1990/1996). *Social linguistics and literacies: Ideology in discourses.* London: Routledge.

Greeno, J.G., & Middle School Mathematics Through Applications Project Group. (1998). The situativity of knowing, learning, and research. *American Psychologist, 53*(1), 5–26.

Heath, S.B. (1983). *Ways with words: Language, life, and work in communities and classrooms.* Cambridge, UK: Cambridge University Press.

Hiebert, J. (2003). What research says about the NCTM Standards. In J. Kilpatrick, W.G. Martin & D. Schifter (Eds.), *A research companion to Principles and Standards for School Mathematics* (pp. 5–23). Reston, VA: National Council of Teachers of Mathematics.

Hiebert, J. & Lefevre, P. (1986). Conceptual and procedural knowledge in mathematics: An introductory analysis. In J. Hiebert (Ed.), *Conceptual and procedural knowledge: The case of mathematics* (pp. 1–27). Hillsdale, NJ: Erlbaum.

Holstein, J.A. & Gubrium, J.F. (Eds.). (2008). *Handbook of constructionist research.* New York: The Guilford Press.

Horn, I.S. (2007). Fast kids, slow kids, lazy kids: Classification of students and conceptions of subject matter in math teachers' conversations. *Journal of the Learning Sciences, 16*, 37–79.

Jackson, K. (2007). *Under construction: Learning mathematics across space and over time. Unpublished Dissertation*, University of Pennsylvania. Philadelphia, PA.

Kieran, C., Forman, E., & Sfard, A. (2001). Learning discourse: Sociocultural approaches to research in mathematics education. *Educational Studies in Mathematics, 46*, 1–12.

Kohlberg, L. (1984). *The psychology of moral development: The nature and validity of moral stages.* San Francisco: Harper & Row.

Lave, J. & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation.* New York: Cambridge University Press.

Lemke, J.L. (2000). Across the scales of time: Artifacts, activities, and meanings in ecosocial systems. *Mind, Culture, and Activity, 7*(4), 273–290.

Martin, D.B. (2000). *Mathematics and success and failure among African-American youth: The roles of sociohistorical context, community forces, school influence, and individual agency.* Mahwah, NJ: Lawrence Erlbaum.

Martin, D.B. (2006a). Mathematics learning and participation as racialized forms of experience: African American parents speak on the struggle for mathematics literacy. *Mathematical Thinking and Learning, 8*(3), 197–229.

Martin, D.B. (2006b). Mathematics learning and participation in the African American context: The co-construction of identity in two intersecting realms of experience. In N. Nasir & P. Cobb (Eds.), *Improving access to mathematics: Diversity and equity in the classrooms* (pp. 146–158). New York: Teachers College Press.

Martin, D.B. (2007). Beyond missionaries or cannibals: Who should teach mathematics to African American children? *The High School Journal, 91*(1), 6–28.

Nasir, N.S. (2002). Identity, goals, and learning: Mathematics in cultural practice. *Mathematical Thinking and Learning, 4*(2 & 3), 213–247.

Packer, M.J. & Goicoecha, J. (2000). Sociocultural and constructivist theories of learning: Ontology, not just epistemology. *Educational Psychologist, 35*(4), 227–241.

Rymes, B. (2001). *Conversational borderlands: Language and identity in an alternative urban high school.* New York: Teachers College Press.

Schieffelin, B.B. & Ochs, E. (1986). Language socialization. *Annual Review of Anthropology, 15*, 163–191.

Stigler, J.W. & Hiebert, J. (1999). *The teaching gap: Best ideas from the world's teachers for improving education in the classroom.* New York: Free Press.

Street, B.V. (Ed.). (1993). *Cross-cultural approaches to literacy.* Cambridge: Cambridge University Press.

Street, B.V., Baker, D., & Tomlin, A. (2005). *Navigating numeracies: Home/School numeracy practices.* Dordrecht: Springer.

Thompson, P.W., & Saldanha, L.A. (2003). Fractions and multiplicative reasoning. In J.

Kilpatrick, W.G. Martin & D. Schifter (Eds.), *A research companion to Principles and Standards for School Mathematics* (pp. 95–113). Reston, VA: National Council of Teachers of Mathematics.

Wortham, S. (2006). *Learning identity: The joint emergence of social identification and academic learning.* New York: Cambridge University Press.