

Students' Ownership and Relinquishing Control

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MY EIGHTH-GRADE students come into the classroom on a day in November of 2005, some joking with one another or catching up on the latest gossip; others solemnly walk in a straight line to their desks, which in turn are arranged in straight lines. Animated conversation continues as the class bell rings, supposedly signifying the start of mathematics class, but the students' behavior does not change. Desktops are covered with notebooks that have not been opened. Students are turned around in their chairs, continuing their all-important talk.

A minute later, I, their mathematics teacher, walk to the overhead projector, engage in a little small talk with someone—although from the reactions of the students it is hard to ascertain exactly with whom I am speaking—and turn on the overhead projector, which contains a transparency that states today's date, the learning goal for the day, and the homework for that night.

JM: Thanks for showing up on this beautiful day. [One student says something inappropriate to another student.] Excuse me? That's kind of a harsh word. Were you just playing around?

Joe: It's raining out.

JM: From tornados on the weekend to snow supposedly later on. Not necessarily here, but it may to the north. Um, the assignment due today was nothing. We, uh, cross that off, because at the end of the period we just realized that it

would probably be better to go with my longer plans and spend today working on it. Especially because we had a number of people absent yesterday, so it worked out better to keep it in terms with those same plans. The assignment tonight, you could cross out “tonight” and say “today in class” because that’s what you’re gonna be working on in class is, um, calculating area and perimeter, and the way I approach this is, starting off on Friday you folks were supposed to read about it on your own, because it’s a review of sixth- and seventh-grade material. And then the focus today really is to try and call upon the knowledge that you already have and then to practice the form of it, how you write it out as much as anything else. Um, what’s gonna serve as quote “the lesson of the day” is our warm-up. And really it should take about ten minutes just for me to finalize and make sure you know what you’re supposed to do, and then you’re off on your own the rest of the period. So if you have that down for your assignment, you can put [it] away. You hopefully have a calculator. You hopefully have your learning logs out. And I’ll review this. If you weren’t here yesterday, what we did is kind of finish up on those four-column notes that you worked on on Friday of last week.

And I continue as I reveal the warm-up problems for the class. The four warm-up problems are on perimeter and area of a parallelogram, triangle, and trapezoid and the area of a composite shape. As the students get started, I remind them of the three steps that the textbook suggested they take to solve the problems:

JM: What I would suggest to you is that you look at your notes from yesterday, if you were here, and especially look at those three steps, in general, that you’re supposed to do. The first one is supposed to be, um, write down the formula. The second one is supposed to be substituting in the value of the variable. The third one, you were supposed to come up with your answer. And practice on the form, especially on these three. Because those are pretty clear-type formulas. And then number four, I think Andrew’s quote “formula,” or way of solving these, you have in your notes also, and try to, and go ahead and do these on your own

the next couple of minutes. I'm just gonna walk around and pick people to write these up on the board. If you weren't here yesterday, try the best that you can based on what you read over the weekend. And you are about a day behind, but hopefully today you'll get caught up. Question? ...

As students begin to work on the problems at the board, the student I had had a conversation with in the hallway at the start of the class walks into the room and proceeds without a word to her desk in the back. Students quietly work on the problems as I drink water from my travel mug and then hand out papers by walking around to every student and placing a graded paper on his or her desk. More than six minutes have gone by, and I have not invited the students to join in any talk while I have spoken more than three hundred words.

The class continues with my picking certain students to go up to the board and write out their model answers—answers that I know will be correct because I had previously checked them while walking around as the students worked on them. After the students write out their answers, they turn around and walk back to their seats. I explain their solutions to the class. On the last problem, I reference another student's solution and how it provided an alternative way to solve a composite area problem. Students then proceed to work quietly on their assignment.

If an administrator had been doing an evaluation of this class period, a class period which, for me, could be referred to as fairly typical that year, she or he might have checked boxes that said things like "teacher exhibited control of the classroom" and "students were well-behaved." But as I grew aware of how I controlled aspects of my classroom I simultaneously grew more concerned about the effect that this control was having on the students' learning. In the following pages I provide background information, analyze several classroom exchanges to illustrate how I sometimes controlled students in ways that were surprising to me, and discuss how I am now giving up some of this control by structuring activities in ways that facilitate students' involvement and ownership. I conclude by pointing to where I hope to go from here.

Background

My teaching assignments over the past thirteen years have ranged from teaching first-year algebra to an accelerated group of sixth graders at a middle school to teaching geometry to ninth through twelfth graders this past year at the high school. The transcripts in this chapter

are from an eighth-grade general mathematics class during the 2005–2006 school year and from a geometry class during the 2007–2008 school year.

The first few years of teaching middle school were an exhilarating experience for me. The unofficial mentors in my department formed the bedrock of the school district's mathematics teachers. With their support, I was able to carve out my own teaching identity. At the same time, however, I felt tense as I watched them teach in the same Initiate-Respond-Evaluate (IRE) format I had experienced as a student and that I ultimately implemented as a teacher. Although I expanded my knowledge about multiple intelligences, created lessons to appeal to different types of students, entertained (at least I thought I did) my students with monologues of jokes and witty references, and required my students to write in journals and do projects, I still assigned traditional homework and filled up entire class periods with my words and my actions.

Very few “whys” could be found in my questioning patterns (see chapter 3 for more on questioning patterns); instead, I threw out a question to my students and they responded with an answer. I typically then followed with another leading question that either dismissed or accepted their answer or even provided the students with the answer that I had wanted them to get. Although I could not articulate it at the time, I sensed that I was interfering with their learning, for, as Franke, Kazemi, and Battey (2007) said, “learning is not about receiving information; it is about engaging in sense making as we participate together” (pp. 228–29).

The feedback I was getting from administrators, both at the school level and at the district level, was still positive and complimentary, but what I was seeing in my classroom on a daily basis did not always merit praise. I knew things had to change—I even considered changing careers several times—and then went to a meeting about voluntary participation in a research project about “discourse” (whatever that meant!). A conversation with chocolate-croissant-armed Beth and Michelle and a reflective moment on my part about how I could use this opportunity as a vehicle to relieve the tension I was feeling in my teaching sealed my involvement with the project.

Although I am still uncertain about the exact reasons for the change—maybe a combination of frustration with changes in administration, changes in students' and parents' attitudes, and changes within myself—I finished teaching at the middle school during the 2005–2006 school year and then took an offer extended by a former colleague to

join her at a high school in the same district. My classes at the high school level are much more racially diverse than those I taught at the middle school. More than 40 percent of the high school's population is eligible for free and reduced-price lunch, and many different languages are spoken in the hallways.

At about the same time as the school change occurred, I read an article by Robyn Zevenbergen (2001) titled "Mathematics, Social Class, and Linguistic Capital: An Analysis of Mathematics Classroom Interactions." A section that resonated with me was her summary of work done by Heath (1983) that said that students from "socially disadvantaged backgrounds are more likely to be exposed to declarative statements when expected to undertake tasks. In contrast, middle-class parents are more likely to pose a pseudoquestion when requesting that their children undertake tasks" (Zevenbergen 2001, p. 202). This quotation helped me understand that different students might come to school with different understandings and interpretations of the ways I was giving them directions and instructions. This realization made me leery about what I wanted to try in my much more racially and economically diverse high school classroom. The more diverse the students, the more potential that arose for misinterpretations of the ways in which I was trying to control—and now limit control of—students' social and mathematical behavior.

A Look at the Beginning Videotapes: Controlling the Classes

One of the first observations that was videotaped in September of 2005 made apparent the extent to which I controlled students—not only by the number of words I spoke but also by how I was speaking to students. The following transcript shows an interaction between myself and a student as I introduced the concept of slope by having students stack books, measure the height of the stack of books, record the height for each iteration, and make predictions based on the height and the resulting equation:

JM: Yeah, right. Now think, hold that thought, OK. Because you're not only just finding the thickness of twenty-five books, but you're also gonna put them on top of your desk. So what would you have to do after you found the thickness of twenty-five books?

Angie: You have to add forty-one and [inaudible].

JM: Does it sound plausible to you?

Angie: Yeah.

JM: OK, think about that, and work through that on number six, try [parts] A and B and then see if your answers to A and B are about the same as what those guys came up with. They're not gonna be exact, but they're gonna be close. And then go back and try number five. Wait a minute, now, this isn't quite—tell me what you did.

The exchange lasted only one minute, yet I essentially gave the student ten commands, ranging from think to work to tell. Again, not only did I utter a high number of teacher words compared with student words and not only is the IRE framework alive and well, but I also seem to exert a sense of control in the choice of words that I used: think, work, see, wait, and tell. I noticed that I did not use pronouns or students' names to refer to the people I was interacting with; rather, I used these words alone as depersonalized commands. In reading the transcript, I cringe as I think about the impersonal nature of these types of directions and wonder what kind of impact it had on the students. Were these commands the type of requests that this student was used to in her home life? Did the impersonal nature somehow make her feel disconnected and compel her to give up ownership of her learning in the classroom? Did my awareness of issues in her life outside school affect my word choice and tone? Did my perception of her socioeconomic status influence the manner in which I spoke to her, as Zevenbergen mentioned in her book chapter? Or did I bring some of my personal history to the classroom and direct her in a manner that I myself was directed as a student?

The following year, in my ninth-grade class at the new school, I experimented with suspending certain "normal" classroom talking rules, most notably the raising of hands before a student's contribution. I attempted to talk with the students about how they talked, and I encouraged the act of students' explaining to one another whenever questions arose. I feigned ignorance and adopted a shrug-of-the-shoulders approach in response to many questions. On many of the "good" days, students readily answered the questions that were raised by others, whether in their own small group or in other groups somewhere else in the room. On the equally many "bad" days, students seemed to be uneasy with my purposefully decreased use of commands and redirection of questions to class members.

The focus class for my action research project was a geometry class of twenty-three students, mainly ninth and tenth graders. Although I would like to think that no "typical" pattern of discussion was evident in my classroom, I noticed that, even after two years of reading articles about classroom discourse, the pendulum of change swung back hard to the days of teacher-dominated talk and students' passivity even when the activity was set up for students' discussion.

The transcript that follows is from a day in January of 2008. The students were arranged in small groups and given an assignment that involved reading and discussing a problem and then presenting a solution to the class. The following transcript begins about twenty minutes into the class period, when the students begin to present their work to the rest of the class:

Julie: [standing at the front of the room] It says that a biconditional is a true statement about the conjunction of two conditionals. We said they are not false [inaudible few words], and then we said our example is, If it is freezing out if and only if it is cold and thirty-two degrees and then, then [student is staring at the transparency].

JM: Where does it fit in the big picture of things?

Julie: Oh yeah. We think it will deal with proofs and stuff like that, conditionals [inaudible].

JM: Thank you. Does anyone have any questions or comments for Miss Julie? [Pause] How about do you have any [drawn out "e"], any concerns about her example? [Pause] How do you know it's a biconditional?

Students: [overlapping, inaudible responses]

JM: If and only if. What else? So it can work backwards. So if it is below thirty-two degrees, it's freezing then.... [Pause] Is it considered freezing? [Pause] I don't see anything wrong with it either. So, nice job. Thanks.

Although the student was in front of the room, I nonetheless stole the student's thinking during the whole-class presentation in this exchange. The format of the exchange fits the IRE format, too, even with the student in front of the room. The students in the classroom neither actively acknowledged nor questioned any part of Julie's presentation.

By the end of the period, I had spoken as many words as all the students combined.

When reflecting on what happened in the class period, I remember thinking that small-group work followed by the whole-class presentation was a success because even if students were not vocal during the whole-class portion, most of the students were engaged during the small-group portion. Still, I was not happy with my tendency to jump into the silence that overtook the room at times.

Several days after the class period just described, I made up a quick two-question survey that asked students to respond to the prompt “What do you expect when you come into the mathematics classroom?” Since I had begun watching some of the videotapes from various class periods and thinking about the parts of the class period that really irritated me—and the start of the class periods definitely did!—I wanted their perceptions on, and expectations for, how the class ought to start. Below are examples of responses that I received from the students:

- We come in the room to our desks, sit down, check homework, then work.
- Some students get in trouble.
- I think it’s OK but we should play games once in a while.
- The teacher tells us what to do ... and then beams when we get it right.
- Just about the same as what we did in other math classes.

Generally, their responses indicated that at least some of them understood that there was a routine in class, such as the student who wrote the first comment above or the students who said something about copying down the goal of the day and then attempting the warm-up problems. Some comments were difficult to understand. (One such was the “get in trouble” comment: I never really understood that one, although I do know that if you ask students to get out paper or to take their seats, some may interpret that instruction as “getting in trouble.” I am not really sure why.) The types of students’ comments that really struck me, however, were the ones that revealed that the students believed that they were receptors of information (such as the last two in the list) and that they were not really being active in the learning process.

From an informal survey that I did at the start of the school year, I remember typing up responses to the question “How do you best learn?”

The overwhelming majority of the students replied with comments that centered on the teacher's explaining concepts "good" or "completely." The tension that I felt during my earlier years of teaching came back with a greater force than I had experienced before. Here I was, four years after my initial realization and effort to change, and none of my students told me they learned best by being active contributors. Nearly all their responses focused on being observers and note takers and not doers and risk takers. Not only were the students' responses a source of tension for me, but tension also arose between the knowledge I had acquired from my participation in the project and my years of being a student and a teacher. Once again I felt the tension between trying to get students to take more ownership and what students expected of me.

Attempts to Resolve the Conflict and Tension

In April of 2008, Maurice sat in the front of the geometry classroom with the tablet PC. Students were sitting in straight rows—not by my choice but because of issues with sharing the room with another teacher. Maurice started class after I prompted him from the back of the room.

JM: Now, Maurice, I apologize. I probably, I couldn't remember what problem I gave you exactly. So, um, hopefully while, I don't know if that's the exact same one I gave you or not, but hopefully it's close enough that you can figure... [student comment] OK, just wait for them to do it.

At the time, I thought that I would do Maurice a favor by saying something that could keep him from being embarrassed, since I had given him different problems to work on the day before in preparation for being the "student teacher of the day." However, I think I was trying to hear my voice and make my presence known—a sort of subtle way of trying to control some aspect of the class. The subtle control resurfaced throughout the next ten minutes as I supposedly "removed" myself from the warm-up problems.

[Students are working on rational equation problems amidst a low-level buzz of conversation.]

Maurice: Why doncha' raise ya'all's hands when you gets the answer?

[A few hands go up, and students seemingly compare answers with a person near them. Maurice calls on Juan to explain the answer.]

Maurice: What's the first thing you do?

Juan: You, uh, do two...

Maurice: Two to the what?

Juan: x equals t over...

JM: [to Maurice] Um, you may have to click on the pen icon at the, above the 'D.' There you go, yeah, now it's working.

Maurice: So x equals what?

Student: t plus two [inaudible].

Maurice: Mr. Marks, where can I write this?

JM: Um, you could do it to the left, and then you might have enough room on the right to substitute in or something. Unfortunately, with this program it's hard to erase some things.

The warm-up problems continued with Maurice trying to write on the PC tablet and with me interjecting comments every so often, sometimes about technology issues as shown above, sometimes not, as shown below:

[Another minute has passed—now 7.5 minutes into the class period.]

JM: Now the second problem, I did not give Maurice the second problem. But this, oh, this problem is from the test. The next problem is also from the test. These two were very frequently missed on the test. That's why I put them up here. Um, so, now go ahead and try this one. Maurice, you might want to work this one out on a scratch sheet of paper. You might just rely on the studio audience to help you out in a couple of minutes. Your choice, but that one in red is also frequently missed on the test.

Again, as at the beginning of the class period, I seemed to be providing a statement to keep Maurice from being embarrassed while at the same time justifying the choice of problems by mentioning that students missed them frequently on the test. In hindsight, if the problem was worthy of their attention, it should be able to stand on its own and not require my opinion. Instead, my comment seemed to be an instance of

"marking importance" (Lemke 1990, p. 67), in which I, afraid of losing control of the class discussion, indicated that the topic at hand "was a matter of special importance." The irony in this situation is not lost on me: there I am trying to relinquish control and allow for student ownership, yet I act in a manner that is at odds with this goal.

What I notice from the videotape of this first day (in which I am attempting to minimize my footprint at the beginning of the period and give more students an opportunity to have a voice) is that, although I gave one student the opportunity to be in charge, I often felt the need to interject, either clearing up technology issues or giving the student in charge an excuse should he make a mistake. Whether I stepped in for control or whether I wanted to provide a "face-saving" (Bills 2000) measure in the event that Maurice stumbled is difficult for me to ascertain. Either way, I seemed to have difficulty allowing a mistake to occur—in much the same way that I controlled the answers in the transcript from November 2005 at the middle school.

On the positive side, I noticed that more students were contributing. The number of words spoken by the students grew compared with the word counts from the baseline data. Unfortunately, owing to the quality of the videorecording, I was not able to decipher many of the students' conversations.

Several days after the period in which Maurice was student teacher of the day, Alem agreed at the last second to lead the class. Although the students had readily agreed to take turns in leading the class, on some days I had neglected to clarify, in advance, who was going to be in charge of a particular class period. I knew Alem well, since he had been a student in my class the previous year, and I "volunteered" him to be in charge as he walked into the classroom.

As students came into the classroom, they were asked to put up solutions from their homework assignment to randomly chosen problems that focused on naming coordinates on rectangular prisms, finding midpoints, and finding distances. I did not think much at the time about calling students to the board without giving them prior warning, but several issues with this impromptu decision have stayed with me.

First, students were held accountable for their assignments, although they were not immediately put "on the spot" because the problems were solved ahead of time as homework. In fact, in the videotape, a couple of students are seen conferring with one another about their solution. From all the reflecting I have done regarding the choices I make in the classroom, I think that I am really aware of students' being

uncomfortable in the mathematics classroom. Whether I have come to that feeling because of a number of students' comments over the years or because my wife never had a positive experience in mathematics class is unclear. I just know that I do have this feeling.

Second, in hindsight, I wonder what the impact would have been had I turned the task of assigning problems to students as they entered the classroom over to the student leader of the day. Envision Alem at the door informing the students of the problems they were expected to explain while in front of the room. This act would have minimized my presence at the start of the class even more and would have given the students more ownership of the beginning of the class.

Finally, going back to that day, I saw students in the videotape talking to one another, standing up at the board, and writing problems on the board before, during, and a bit after the bell rang. Alem readied himself in the front of the room with the teacher's edition of the textbook. Students finished recording the solutions on the board and moved to their seats. I moved to the back of the room, and Alem (who spent the first six years of his life in rural Sudan) started off:

[Miscellaneous chatter is occurring.]

Alem: Good mornin', class. How ya doin'?

[Several students comment, including a male student asking "Who are you?" Papers rustle, and low-level chatter continues.]

Alem: OK, I'm going to read off the questions.

[Alem reaches out to a student who was handing him Alem's own homework assignment.]

Alem: Is everyone ready to check?

JM: Maurice, turn around please. [I motion with a circular hand gesture to a student who is off-camera. The class becomes quieter, but some quiet conversation is still apparent.]

Alem started reading the answers while one or two students who had yet to get out their assignments softly cried out, "Wait, wait." Alem continued to read answers to the questions that I had not asked students to put on the board. I had omitted these solutions because I assumed that no one would have difficulty with the first few homework problems.

Although Alem's reading of answers lasted a couple of minutes, I privately spoke to a student in the back to get him to pull his assignment out so that he could be ready if Alem needed him. When I compared this class beginning with the videotape from three years earlier, I saw that the students in the classroom were chattier, at least after the person "in charge" started the class, but some of that talk was because the class had started with students' putting problems on the board. The big change I saw was that several minutes after the bell had rung, I had spoken only four words in front of the class ("Maurice, turn around please").

The period continued with Alem reading the answers to the "easier" questions, and then opening the discussion:

Alem: Now we have number eleven. Whoever did number eleven, could you go up to the board now?

[Ned gets up and goes to the board.]

Ned: I got negative one, negative one, negative one [ordered triple $(-1, -1, -1)$] because, because that's what the answer is.

[Laughter by several students]

Peter: Could you explain the problem?

Ned: [interrupting Peter]: 'Cuz zero minus two divided by two, negative two, is negative one [Ned points to the other answers in the ordered triple]. And it's the same number.

Alem: Any questions for Ned?

[Some other indecipherable comments are made by other students. Most are asking one another what Ned said because he was relatively soft-spoken. A few students chuckle.]

Safet: Over here. Yeah, I have a question. How did I get negative two, negative two, negative two [ordered triple $(-2, -2, -2)$]?

Tom: 'Cuz you added wrong.

Safet: Are you serious?

Peter: You add the integers.

Ellen: I don't think you, did you not square-root it?

Safet: I don't know.

[A chorus of students say, "What!?" which makes Ellen's question hard to hear. Safet's response occurred at the same time. Ellen laughs and says, "Wait, that's wrong too!"]

Now the class was in collective disarray. Several students were laughing. A couple of other students told Ellen, "No, you square-root the distance formula." Peter also attempted to explain the problem to Ellen, and one male student was now checking his cell phone. Alem, who was still sitting at the front of the class, said something to the class. I intervened to get the class to focus on the problem:

JM: Hey, hey, Ned, can you show your work on this? So, yeah.
Tom, can you loan your book to Ned so he can see the problem?

I continued to walk around the classroom with my grade book in hand as the students showed me their homework assignments. Since moving to the high school, I had adopted the practice of other mathematics teachers in the department of giving "credit" for completion of the assignment. Although I am walking around the room, my contact with the students was fairly brief and did not seem very controlling or authoritative. In the class that day, the students were exhibiting a lot more ownership of both how the class was running and the grades they were receiving on their assignments. I am not quite sure now, however, how much more beneficial this outcome was to the students' learning. In fact, much of the students' sharing focused on the procedures and steps students took rather than why the answers made sense (for more about this aspect, see chapter 3). Progress was evident, however, in students' ownership of the activities taking place.

Ned continued writing the problem on the board with Peter's help. Some discussion occurred about the difference between subtracting positive numbers and adding negative numbers. I refocused the class again because it seemed that about half the students were watching Ned and half were not.

JM: So, in general, Ned, how do you find the midpoint?

[Class is now totally silent.]

Ned: You take, um, x one, x one minus x two.

JM: Careful.

Peter: Plus x two.

Ned: Plus x two.

Peter: Which happens to be negative.

Ned: So when you add, it's like subtracting.

Alem: Any questions?

A number of other students chimed in, either to their neighbors or to Ned, who was standing at the board. Judging from the videotape, fourteen of the eighteen students who were present that day appeared to have interacted either with the whole class or with a person sitting near them.

A couple of other random comments and questions were made. Alem then thanked Ned, who returned to his seat. Alem returned to reading homework answers. I continued to walk around the room to record assignments. DeJone walked to the side blackboard, seemingly getting ready to explain his problem, then sat down as Alem went on. Alem backtracked, and DeJone wrote his work out on the board, with his back to the class, then quietly read his answers. Again, he was thanked, a few students clapped lightly, and more answers were read by Alem.

As Alem read the answers to the part of the assignment involving calculating distances, Julian asked if someone could explain. I told him that, on the next one, someone would explain up at the board, and he replied with an "OK."

Tricia: [as she approached her solution on the board]: OK, so the origin is just zero, zero, zero [(0, 0, 0)]. So you just take two minus zero, which is two. Then you square it, and you get four. And since all of these are the same, you do four plus four plus four, which is twelve, and then you have to take the square root of twelve, which is this [pointed to her answer].

A smattering of applause occurred as she walked back to her seat, and Alem went back to reading the answers. Nine minutes into the class now, and I thought that my presence at the start was minimal. The conventions and routines of the classroom worked on that day. As with other successful moments in my classrooms, I think that several small components worked together. The consistent reinforcement of classroom expectations for behavior, the daily greeting of students as they walked

into my classroom, the routines of the class, the choice of the student to lead the class, and the topic being studied each played a role in why the class functioned well that day. Students worked together to go over homework problems, talked to one another, moved around the room, shared solutions, and so on. Furthermore, I relinquished much of my control over the beginning of the class period.

A Glimpse into the Future

Students come into my classroom on a day in 2012. The students' conversation does not subside. Rather, it changes its focus from being social to being about derivatives of functions. After a quick check-in with the teacher, the students are soon at their desks, arranged in groups of three or four, and continue with an exploration of the rate of change of cooling liquids. The classroom procedures have already been discussed and rehearsed so that off-task behaviors are minimized and learning opportunities are maximized.

All students are expected to be able to report their findings to the whole class at some point. Working on ensuring the accuracy of their findings, some students are seen moving quietly from group to group and occasionally going to the whiteboard, where they have more space to write out ideas and discuss a solution in front of a larger group of students. I am not seen as the primary source of knowledge. Rather, I remain out of the spotlight and mingle with the groups of students to monitor their progress on the task at hand. I am not the final judge of right and wrong answers, nor do I need to control all the interactions.

To get to this stage, I need to have many more conversations with my students and make explicit the behaviors I want to see. Something I recently tried to do is occasionally make more personal connections with students so as to create a safe environment for them to work. In my own experiences as a student, I know I was not willing to take risks socially or mathematically until I felt safe and felt a connection, and this reservoir of experiences is a driving force for many of the things I do as a teacher. Although very few students have commented to me about how I sometimes start the class period with a quote of the day, a comic strip or poem related to mathematics, or even a few lines from a song that I think might connect with students' experiences, I envision that, as I try to turn over the start of the class to the students, they will be compelled to share lines from their own favorite songs or poetry or quotes. I hope that this kind of sharing can be an entrée into creating an environment in which students will feel safe taking mathematical risks. I just need to remind myself to set the boundaries and let the students engage

in making sense of mathematics together. I continue to work toward more careful decisions about when and how I intervene and control. This process will evolve every year, and I hope to continue to relinquish control so that students feel safe to share ideas and to challenge one another in mathematically productive ways.

Reflecting and Connecting with Practice



- ◆ Administer a short survey to, or have a brief discussion with, your students about what they expect in your classroom in terms of participating and actively engaging with mathematics. What expectations and assumptions do your students have about mathematics or mathematics class?
- ◆ Consider suspending some of your “normal” classroom talking rules, such as raising hands before student contributions. What might be some benefits of this change? For two weeks, tell students that they do not have to raise their hands to contribute to the discussion. How does this change seem to influence the ways in which students participate?
- ◆ Select an activity structure from your own classroom that you think you would like to change, and try some of Jeff’s suggestions for turning over more ownership to students. What are some of the challenges? What are some of the payoffs? Do you invite your students to participate in mathematics every day? If so, how? If not, what might you do to extend this invitation?
- ◆ Jeff considered both social and mathematical aspects of his control in the classroom. When and how do you see yourself intervening socially? When and how do you see yourself controlling the mathematics? What are your reasons for controlling each of these aspects of the classroom? What may you be losing by controlling each of them? What may your students be losing because of your control in these situations?
- ◆ Jeff ended his chapter with a description of a hypothetical scenario from his classroom in the future. Reflect on what your “ideal” classroom discourse would be, and write about your future classroom. What goals do you have for your discourse? For your students? What kinds of tasks are they engaged in? Who is facilitating the discussion?

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