The Role of Communities of Practice in Developing Teacher Leadership

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This chapter explores a model of professional development in which teacher leadership and improvements in classroom practice are directly linked. We will begin by tracing the origins of our community in the individual words of the chapter’s five co-authors. After that, we will follow the journey of one teacher in our learning community as she improved her practice. In the concluding sections, we reflect on our learning as members of this community.

Origins of the Learning Community: Questions Posed

The following five sections introduce the voices of key members of our learning community: a professional staff developer, two teacher leaders, one principal, and one math coach. (We are defining a teacher leader as someone who serves as a model or support to other teachers in her school or district.) We do this to highlight how the questions we each initially sought to answer were the starting point for our collaboration to develop teacher leadership in mathematics.

Toni, a Professional Staff Developer

My question: How might a classroom-based learning community be used to simultaneously improve teacher practice and develop teacher leaders? This question emerged from two insights
I had as a staff developer for the Mathematics in the City project (MitC). (This project [www.mitccny.org] is a national center of professional development for K–8 mathematics education located at the City College of New York.) First, I noticed that many workshops for teachers—even those facilitated by highly skilled and respected mathematics educators—only minimally affected teacher practice. As I visited classrooms, I saw firsthand that what teachers implemented from workshops was often a reinterpretation or a misinterpretation of what they had learned, a watering down of powerful mathematical ideas and pedagogies (Lieberman and Miller 2008).

Second, from consulting in many different classrooms and schools, I knew that working classroom-by-classroom and school-by-school would never create deep or lasting change. What I was doing was systematic (that is, I was using the same co-teaching model with the individual teachers I was coaching), but it was not systemic. To create systemic change, I needed to find a different model for professional development, one that had the power of on-site co-teaching and collaboration but was also able to influence a larger number of educators. Additionally, for the change to be systemic, the professional development model needed to be self-generating—a model in which, at some point, I was no longer needed. I therefore focused my work on creating a network of teacher leaders.

The general need for a new professional development model focused on developing teacher leaders has led to the creation of communities of practice (Wenger 1999). These have existed in a variety of forms: school-based, district-based, and city-wide. The Collaborative Communities of Practice (CCP) and the MitC Learning Communities were two examples of such communities. (The CCP was a project developed by the NYC Department of Education; MitC ran the mathematics component of these communities.) Both projects focused on (1) developing leaders across school roles (coach, teacher, and administrator); (2) creating lab-site schools and classrooms (these were the collaboration sites that hosted the learning communities); and (3) using discourse as the primary tool to engage and challenge participant thinking (Herbel-Eisenmann and Cirillo 2009). Each collaboration also used a co-teaching model of professional development. This meant that I (Toni) coached the classroom teacher (or coach) in the actual moment of teaching (or coaching) (West and Staub 2003; West and Cameron, in press).

In these learning communities, educators opened their practice to visiting teachers, coaches, and administrators. Hosting teachers would talk publicly about their teaching and invite visiting educators into their classrooms to observe them co-teaching math lessons (Stein, Silver, and Smith 1998). Visiting educators participated in planning and debriefing the lesson, and they also took notes during classroom visits on the teacher’s facilitation of the lesson and the role of student communication in learning. These notes were used to deconstruct the lesson in the debriefing session and to create a coherent vision of mathematics teaching and learning.

Later in this chapter, we will see an example of how a learning community supports and develops teacher leadership by using one school, PS 24, to highlight one teacher leader’s journey. (PS 24, Brooklyn, is a NYC public elementary school. Of its 770 students,
95 percent are from low-income families, and approximately 50 percent of the ELLs live in the mostly Latino, immigrant community of Sunset Park.) First, though, let’s hear from the other key members of our collaborative community.

**Glenda, Teacher Leader I, PS 24**

My question—*Why learning communities?*—was answered when I discovered how radically different they are from other professional development experiences. I had never participated in a structured, collaborative forum that connected adult learning to student learning—a place where, for example, a mathematics problem explored by adults in the morning was later presented to students in the classroom. How surprising it was that our struggles were their struggles, that our ah-ha’s were their ah-ha’s! How powerful it was that the facilitation of our thinking mirrored theirs, too. We were challenged to create, justify, revise, and reflect on our learning, and so were they (Lampert and Ball 1999). What became clear to me was that this community gave adult learners opportunities to construct mathematical ideas related to the content they were expected to teach and to bump against their previous understandings. It was transformative because teachers were challenged to think in new ways about their practice and to share their ideas publicly.

**Frances, Teacher Leader II, PS 24**

My question—*How can I be a more effective teacher?*—grew out of my struggles as a beginning teacher. Glenda had just come to PS 24, and whenever I passed her classroom I felt an emotional and intellectual life resonating within her classroom. Her students exuded such confidence. I approached Glenda with questions about her practice, and, to my delight, she welcomed my inquiries. Her openness led to ongoing conversations about teaching and learning.

Because Glenda was generous with her time and knowledge, I learned a great deal about classroom setup, how to empower students, and the critical role discourse plays in developing student thinking (Alexander 2004). Working with Glenda made me keenly aware of the power of collaboration. Listening to her voice helped me find my own, and her open door became my open door. Together we invited other teachers into our conversations as part of the MitC learning communities.

**Christina, Principal, PS 24**

My questions were intertwined: *How could I support the great teacher synergy I saw developing between Glenda and Frances?* and *How I could use this collaboration to support the learning of other teachers at PS 24?* I put their classrooms side by side, so that cross-fertilization could easily occur. I offered them many opportunities to participate in mathematics professional development together. Their collaboration made them ideal candidates to host MitC learning communities. This collaboration led to other teacher collaborations, which flourished as more teachers became immersed in this work.
Mayra, Math Coach, PS 24

My question was: *How do we support a community of adult learners at PS 24?* Christina and I had participated in MitC learning communities and we knew how powerful these could be in affecting change. When the opportunity arose to host one, we seized it. But none of this was possible without creative uses of resources (time, money, and scheduling) and the development of systems (i.e., common planning time) to foster teacher collaboration. One way Christina supported teacher learning was to build in time after each community for participants to share their learning. This meant that Christina provided classroom coverage to grade-level teams for planning and inter-classroom visitations.

The Collaboration of Toni, Glenda, Frances, Christina, and Mayra

Our collaboration melded our individual needs, passions, and questions. For our community to thrive, we needed to believe that everyone had something important to contribute to our collective work (Louis and Kruse 1995). The community could not have functioned without the careful attention to organizational details provided by Christina and Mayra; nor could it have survived without teacher leadership—Glenda and Frances’s willingness to publicly reflect on their teaching in conversations facilitated by Toni. Our goals were twofold: (1) to develop teacher leaders whose practice would be the focus in discussions about the teaching and learning of mathematics; and (2) to create networks of teachers to continue the conversation long after the MitC learning community ended. However, the heart of our collaboration was the development of teacher leadership.

Why teacher leadership? For us, creating changes in mathematics teaching and learning is directly linked to improving classroom practice. One of the most effective ways to support this needed change is to have teachers who are able to influence their peers. To do this, however, teacher leaders need a complex set of skills. These include being able to collaborate and open their practice to others, able to facilitate adult learning, and able to challenge opinions and be comfortable with the disequilibrium that ensues. Teacher leaders also need content and pedagogical content knowledge deep enough to be able to unpack and teach a mathematics lesson (Ball, Thames, and Phelps 2008).

In the remainder of this chapter, we will explore how our collaboration supported the development of teacher leadership within and across schools (York-Barr and Duke 2004). Specifically, we will use transcripts of discourse in our community to trace the professional development of Frances, a teacher leader at PS 24. We will also share the reflections of Melissa, a participating teacher from another school, whose growth can be directly linked back to her experiences in a learning community hosted by Frances.

Discourse in the Learning Community

In this section, we highlight transcripts from two different learning communities as a means for illustrating (1) how Toni’s facilitation of discourse in our community of adult
learners supported and challenged teachers’ thinking about student work and proof (transcript 1); (2) how Glenda, an experienced teacher leader, and Toni refocus and elevate the whole-group discussion while honing Frances’ pedagogy (transcripts 1–3); (3) how Frances’ public reflections generate changes in her practice (transcripts 2 and 3); and (4) how the goals Frances sets for improving her practice ultimately impact student learning in her classroom (transcripts 5–7).

Cultivating a Teacher Leader

The first three transcripts are taken from a fifth-grade learning community, co-hosted by Glenda and Frances and facilitated by Toni. We begin by illustrating Frances’s journey as a teacher leader. In transcript 1, the team is analyzing student work in preparation for a math congress, which will be co-taught by Toni and Frances. (A math congress differs greatly from the norms for sharing children’s solutions seen in most classrooms. In a math congress, specific children’s ideas are presented before the mathematical community, and the congress is carefully designed so that student ideas, modeling, and/or questions become the tools for extending children’s thinking.) The discussion here is about the “The Box Factory,” a unit in Context for Learning Mathematics (Jensen and Fosnot 2007). The conversation is focused on children’s strategies and whether or not their posters show that they have found all the possible rectangular box arrangements for twenty-four chocolates (see fig. 13.1).

![Fig. 13.1. Sample of student work under discussion by teachers](image-url)
In this brief segment, Glenda names the strategy—doubling and halving—that students are using to solve the task. This begins a discussion about the difference between a systematic strategy and a proof (Shifter 2009). When Toni emphasizes that a “system is not necessarily a proof,” she wants teachers to think about their own experiences with proof. In response, a teacher poses a question about student solutions and proof that actually hints at a problem confronting the group: If we don’t know how to prove we have all the possible ways, how could we recognize a proof in student work? When Frances asks, “Could we prove we have all the possible ways?” we see her emergence as a leader. Frances understands and uses the subtext of a teacher comment to challenge the learning of the group. She recognizes that the real issue is not student proof, but teacher understanding. Her reframing of the teacher’s question shifts the adult learning by refocusing the lens they are using for analyzing student work. This challenge has the potential to create disequilibrium in the group, but as a leader, Frances takes that risk.

The conversation in transcript 2 takes place after teachers have visited Frances’s classroom and viewed a math congress. This particular congress was designed to juxtapose students’ solutions (shown on posters) with their justifications for saying they had found all the possible box arrangements for twenty-four chocolates.

This kind of sharing is enormously difficult for teachers to facilitate because of the
challenges associated with helping structure discourse around children’s ideas and confusions (Brent and Simmt 2003). Often, as teachers deal with student confusions, they lose the mathematical focus (Fosnot and Dolk 2001).

**TRANSCRIPT 2—**

**Toni:** How do you feel after your congress? [The debriefing session usually begins with the teacher and facilitator starting the discussion. This gives the teacher a chance to reflect publicly before others share their noticing.]

**Frances:** Confused!

**Toni:** Why confused?

**Frances:** In the end, I’m not really sure what the kids got out of it.

**Toni:** Perhaps the conversation at the end of the congress needed to be more precise.

**Glenda:** Exactly. We need to say, “We’ve shared so many ideas that I’m feeling confused. Could we name something that we got from this congress and what we’re still confused about?”

**Frances:** And see what kids say?

**Toni:** Or send them off to write in their journals. You can say something like, “We had a lot of confusion; some really important insights—what are you taking away from this math congress?”

**Glenda:** Dina was a good model. She said, “Now I’m changing my ideas.” You could say something like, “Wow! This is what our congress is designed to do. We have some ideas. We’re reporting to a community of mathematicians and we’re forced to defend or revise our thinking.”

In this segment, Toni and Glenda help Frances think about why confusion is important for learning. They outline three things crucial to learners: (1) emotions occur in learning and are nameable (such as *I’m confused*), (2) self-reflection develops thinking (*What do I understand from this discussion?*), and (3) defending and revising one’s thinking (*I’m changing my thinking now*) is part of the process. They also name specific ways Frances can help students reflect on their learning (e.g., journal writing).

The post-lesson conversation continues as Toni and Glenda name specific pedagogical tools that teachers can use to slow the conversation and help children process the ideas being presented (Chapin and O’Connor 2007).
TRANSCRIPT 3—

Frances: I struggle to keep my focus on the big ideas and integrate what kids say into that.

Toni: The share and pulling children's ideas together is probably the most difficult thing. It's so messy. As I was facilitating, I was listening for certain things and I went with them. What moves facilitated the conversation? It might help to think about when I wrote on the board, what I wrote, and why I chose to write at that moment. When did I slow things down with pair talk?

Glenda: When did kids show the models? That was a turning point. We're not talking in the abstract; here's what we're talking about. Now we can manipulate this thing and use it as evidence, as Roberto said.

Toni: These are important pedagogical tools, but then you have to internalize them into your practice.

Frances: It's not that I don’t do these things; I guess it’s just recognizing when to do it. That takes practice. It’s having the ideas in your head, being ready, and having the presence of mind to focus in on what kids are saying and interpret it. And I’m just not there yet … This is something I really want to work on and need help with.

In this transcript, Frances names her struggle: how to keep the discussion focused on mathematical ideas and simultaneously entertain student confusion. Toni and Glenda name specific pedagogical tools (wait time, pair talk, and the use of board space and mathematical models to illuminate key ideas) that will help Frances keep a mathematical focus and deal with students’ needs for processing ideas. Two of these tools—wait time and pair talk—create thinking space for students by slowing down the conversation. They also give children a chance to reflect on and communicate their understanding with their peers (Choppin 2007).

The Emergence of a Teacher Leader

That Frances integrated the pedagogical moves suggested by Glenda and Toni becomes evident in the next four transcripts. These narratives were collected in her classroom the following year. Here Frances is facilitating a math congress before a visiting fourth-grade learning community. (It is important to note that Toni is not co-teaching with Frances in this math congress; this is a major shift in her development as a teacher leader.)
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TRANSCRIPT 4—

Frances: Who wants to share what they remember from yesterday’s congress? [Uses wait time] Ana?

Ana: One idea we talked about is that all the even multiples of 3 that are factors of 24 are factors of 48.

Frances: Who can remember that? [Few hands are raised] Let me write this on the board to help you remember. This was a conjecture, right? So the conjecture was that [writes] “all the even multiples of 3 …”

Ana: … that are factors of 24 are factors of 48.

Frances: Thumb on your chest when you remember some of the things we talked about yesterday. [Scans the room and waits for children’s thumbs] Okay, it seems like at least one person in each partnership is starting to have some memories. Talk to your partner about what you remember from yesterday’s congress.

In this transcript, Frances begins her congress by asking students to reconstruct yesterday’s learning (a conjecture created by another student). She uses two tools (wait time and writing) to support children’s learning. Careful scaffolding like this sets the stage for a new idea to enter the community and for children to grapple with it.

The conversation in the following segment occurred after two children, Mela and Jose, presented their strategy to the community (see fig. 13.2). Specifically, the students were discussing how the factors of 24 are also factors of 48; once you know the factors of 24, you double them to know the factors of 48 (e.g., $1 \times 24$ becomes $2 \times 1 \times 24$ or $2 \times 24$ or $1 \times 48$).

TRANSCRIPT 5—

Frances: Let’s take a minute to process what Mela just said. Raise your hand if you understand her [Some do]. Raise your hand if you’re confused [Others do]. Could someone paraphrase this idea? Yesenia?

Yesenia: What Mela is saying is that if she knows that 24 is the half of 48, then all the factors of 24 will fit equally on the other half of 48.

Frances: [To Mela] Is that what you’re saying? [To the class] Have we seen this idea before, or is this a new idea?

Children: New idea!
Frances: This is a new idea for us. So let’s take a minute to process this with our partners. Turn to the person next to you, and try to make some sense of what Mela and Jose are saying.

Fig. 13.2. Student work of poster being used by Frances in her math congress

In this transcript, Frances anticipates and acknowledges student confusion and uses wait time, pair talk, and paraphrasing—key discourse tools—to support learning. Frances also names Mela and Jose’s strategy as a new idea and highlights a critical learning behavior: When new ideas are encountered, learners need time to process them (Cobb, Wood, and Yackel 1993).

After pair talk, Frances brings other children into the conversation that follows. Including more children in classroom discourse is a way for Frances to check student understanding and deal with confusions still in the community.

Frances: Who would like to give back to the community about this idea? David?

David: What I understand is that all the factors of 48, if you cut them in half, they could fit in the other half?

Mela: [Shakes her head no.]
Frances focuses on children’s understanding; this is evident in her facilitation of their talk. She does not correct, paraphrase, or lead the conversation. The flow of the discourse is generated by student ideas and confusions. Because she celebrates self-awareness (“Good for you for being aware of that!”) and risk-taking, her children rise to her expectations to be public learners (Costa and Kallick 2000).

Following this, much time is spent discussing Mela and Jose’s strategy. At the end of the congress, a different student offers a conjecture.

**TRANSCRIPT 6—Continued**

*Frances:* [To Mela] That’s not what you’re saying? Okay, so speak back to David about this.

*Mela:* We said that the factors of 24 fit in this half since you know that this 24 is the half of 48.

*Frances:* David, does that make sense to you?

*David:* [Shakes his head no.]

*Frances:* That doesn’t make sense to you. Good for you for being aware of that! Can anyone speak back to this idea that David and some of the other folks are still confused about?

**TRANSCRIPT 7—**

*Frances:* Javier, do you think you could explain Ana’s idea?

*Javier:* What Ana is saying is that every factor that’s in 12—like 3 is in 12—you just double it and everything will be the same.

*Juan:* It’s like a copy.

*Frances:* It’s like a copy, huh? Ana, are you saying that if we look inside the 24 that we can see the same idea we’re talking about in 48? Because 12 is half of 24, I can look at this same idea and think about the factors of 12 fitting into 24. Oh, my goodness! Would this work with other numbers? [Long pause] Okay, this is a good place to stop. Today some new ideas came into our community. I want to give you time to synthesize them, reflect on them, and write about them in your math journals. What are some of the new ideas and understandings that came up for you and what are you still not sure about?
Frances recognizes that Ana’s conjecture—her leap in thinking is too broad for many of her students to follow (Reid and Zack 2009). She uses their language (“It’s like a copy”) and chooses an opportune moment to end the congress by having children reflect on their learning by writing in their math journals. This facilitation move was suggested in the third narrative. There, Toni suggested that student writing could be used as a tool to simultaneously help students reflect on learning and give the teacher insights into student understanding.

In these final four short transcripts, we can trace Frances’s development. She has developed specific content and pedagogical content knowledge that she is using in her own practice. She has developed ways to notice student behaviors and can now use these noticings to support learning (Sherin, Jacobs, and Philipp 2011). Her powerful facilitation of mathematical ideas, her comfort with the messiness of children’s learning, and her use of important pedagogical tools to support discourse can be directly linked to the work of the previous year’s learning community and to the goals Frances set for herself as a teacher. From this collaboration, a teacher leader has emerged.

Reflections on Teaching and Leading: Frances, Glenda, Mayra, and Christina

We can unequivocally say this learning community had significant and lasting impact on our teaching and leading, and on the PS 24 school community. We think this happened for several reasons. First, we rooted our learning in conversations about our practice. Second, by publicly sharing our practice and acknowledging our weaknesses, we were able to grow (Darling-Hammond and Richardson 1999). At our school, teachers who participated in our learning community became more willing to share their practice (i.e., become leaders). As teachers opened their doors and invited their colleagues in to watch them teach, they brought new teachers into the conversation (Stein, Silver, and Smith 1998). These collaborations and conversations have also helped us establish clear goals and standards for children’s mathematical learning in our school. Third, as a community we got used to, and even embraced, having our ideas and beliefs challenged. Christina writes:

As Frances gained experience as a teacher leader, her meticulous, supportive classroom environment and her disciplined teacher practice were an example for the faculty. However, her influence on others was significant in more unexpected ways. For instance, once she became involved in a heated debate with a math cluster teacher over the value of teaching the traditional algorithm. Many faculty members became aware of this debate and a healthy whole-school conversation ensued. Certainly, Frances’s willingness to speak up, and her fearlessness in rocking the boat, had a lasting positive effect on the culture of our school.

Reflections on Teaching and Leading: Toni

For me, teacher transformations occur because connections are being made among individuals in our learning community as they share ideas, ask difficult questions, and
challenge each others’ beliefs and practices. That these connections are deep and live on beyond the life of the community is demonstrated in the reflections of Melissa, a participating teacher in the fourth-grade learning community:

I am currently serving as a teacher leader co-facilitating a MitC learning community at PS 230. Several years ago, I attended a learning community at PS 24 co-facilitated by Frances and Toni. This experience changed my thinking about what it means to do and teach math. I had never heard a teacher talk so openly and passionately about what she did in her classroom, or thought it possible that a single math lesson could be planned in such depth and with such a discerning eye for student learning. I had never been in a classroom where I saw students empowered by their own ideas speaking clearly about those ideas and defending them. I remember thinking, “This is what I want my classroom to look like; this is how I want my students to be as learners.” One of my biggest insights was that Frances herself was the model for student learning! The expectations she had for her students she had for herself. Just as Frances’ generosity changed my teaching, that’s how I want to collaborate with others and pass on to them what was given to me.

This quote reflects the generative power of teacher learning in a collaborative community. One teacher’s passion for learning generates another teacher’s enthusiasm. A teacher’s excitement and willingness to publicly learn has the potential to both transform her practice and impact student development. A teacher’s willingness to take risks—to open up her practice for observation and critique—reflects a major change in mindset, a movement from focusing solely on her own teaching to thinking about how to influence and support the teaching of others (Little 1999). This shift in perspective exemplifies the journey from teacher to teacher leader.

The true power of the learning community is that the ideas shared are generative. In this model, that generative process included a pay-it-forward concept of growing teacher leaders who supported newer arrivals in the community, who in turn grew into teacher leaders. As we share, as we challenge ourselves to grow as teachers, we set in motion ideas that have the potential to live beyond us.

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