

Coaching and Supervising Reflective Practice

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KEY CONCEPTS

- Using Thinking Maps® to improve supervision, coaching, and teaching
- Using Thinking Maps for lesson observation and collaborative reflection
- Using Thinking Maps to facilitate lesson study in mathematics

Milo Novelo and I walked briskly through the corridors of the New York City public school. Milo was one of my advisees in the Leadership in Mathematics Education program at Bank Street College of Education, and the purpose of my visit on this blustery November day was to supervise him in his role as mathematics coach. He looked forward to these site visits because they enabled him to do what an effective, skillful educator *must* do but is rarely supported in doing: reflect on, question, analyze, and improve his practice. As Milo put it, “When you spend a day walking in my shoes, you put a mirror to my work so I can stand back and look at it. You challenge me to examine what I’m doing and to question *why* I do what I do.” I looked forward to these visits because they gave *me* an opportunity to learn—to deepen my own understanding of mathematics teaching and learning and to reflect on and improve my skills as coach and supervisor.

On the day of the visit, Milo informed me that our destination was a fourth-grade class, taught by Anna, a novice and struggling teacher. Unfortunately, given the constraints of the school schedule, he was unable to have a planning meeting with Anna. This is often the case in schools around the country as *time* is one of the most significant barriers to the improvement of teacher quality through the completion of the full cycle of supervision or coaching. It was only this morning that he had touched base with her, introduced himself, and arranged for us to come into her class during the math lesson. Observations and consultations by several curriculum “experts” with disparate directives had failed to yield improvement in her ability to

manage and teach her students. The little self-confidence and joy she once had about teaching was rapidly eroding. As we entered her room, Milo tried to put Anna at ease by introducing me with his usual line: "Kathy's my advisor from Bank Street. She's here for the day to observe *me* and to help me do a better job as math coach."

Until that day, I had been dissatisfied with my techniques of scripting observations and my process of analyzing the observation data with teachers. At the beginning of each postconference, typically I would ask the teacher for his or her input: "What stood out for you regarding the children's work and thinking? What aspects of the lesson were you pleased with?" Although I was often successful at building upon and deepening the discussion with references to the teacher's observations and samples of children's work, there existed an uncomfortable disconnect between my observations, written in the moment, and those of the teacher, recalled after the fact. Upon further reflection, I discovered some unsettling patterns in my work.

In spite of the fact that my classroom observations often yielded pages of descriptive and accurate accounts of meaningful dialogue and action, they were not readily accessible to me, or to those I was coaching or supervising. There was little *transparency* or visible access by teachers to my notes, which, in turn, often led to a subtle loss of trust. Professional trust in the context of coaching and supervision is essential to the development of teacher improvement. Pragmatically, whenever I needed to retrieve an anecdote that was relevant to my debriefing conversation with a teacher, the flow of our discussion was usually interrupted while I hurriedly scanned pages of my notes, searching for the "gem" I knew was buried somewhere between the mountains of lines. There sat the teacher, passively, while I sat in control of the data (after all, they were written in my own "chicken scratch"—who else could make sense of them?). All too often these awkward interruptions gave rise to a cloud of tension that threatened to inhibit our conversation. I'd occasionally notice the teacher glancing uneasily at my notes, trying to decipher what I'd written. In these situations I tried to reassure the teacher that my purpose was not to evaluate his or her performance but to facilitate reflection and improvement in his or her practice. It was evident that *my* practice needed to improve. How could I more clearly and efficiently document events that I observed in the classroom? How could the retrieval of observation data and conversations about them be more inclusive and democratic for teachers? And how could my use of the lesson data facilitate inquiry and analysis focused on student learning and the *teaching*—not on the teacher?

TOOLS FOR FOCUSED OBSERVATION AND REFLECTION

The breakthrough occurred for me that day when Milo and I entered Anna's classroom. I began using a simple visual tool to help me graphically represent the flow of the lesson. As I settled into a chair at the back of Anna's class, I took out my clipboard and oriented it in a different way—horizontally rather than vertically. Today I was going to record my observations of Anna's teaching while also capturing Milo's coaching moves with a Thinking Map—a Flow Map—used to sequence events. I had recently been introduced to Thinking Maps, but I had not yet perceived them as tools for supervision.

It was evident from the beginning that Anna was not only unsure of the mathematics and the purpose of the lesson, but she lacked assertiveness and control of the class. As I watched her unsuccessfully lead the students through an introductory activity of identifying multiples of 8 on the hundred chart, I asked myself, "What's *important* to document? What questions, comments, prompts, and actions have the potential to stimulate conversations that can lead to improvement of her teaching?" I tentatively lowered my pen to the paper, wondering, "How do I document what I see and hear? Where does one event end and another begin? Is an action or a dialogue a new event or a *substage* of the previous event?" Trusting that there are multiple

ways to map a lesson, I cast aside my uncertainty and dove in. My pen flew across the paper as my questions guided me to make split-second decisions about *what* and *how* to document. Curiously, I discovered that the simple act of drawing rectangles around events as they unfolded brought visual clarity to my thinking, which, in turn, enabled me to focus on the essence of the teaching and learning. As the lesson ended and Milo arranged to meet with Anna at a time later in the day, I looked over my Flow Map. In spite of my “chicken scratch,” the representation of my observation was so visually clear that the classroom dialogue and action nearly jumped off the page. At long last I had data that were *readily accessible!*

Milo’s eyes widened as I laid out the Flow Map of the lesson on the table in front of us (see Figure 17.1). He and I sat side by side as I began to retell the story, pointing to each event as we went along. At times, it was Milo who deciphered my writing and joined in the storytelling. What amazed both of us was the ease with which we could retrieve events of the lesson and the comfortable, collaborative nature of this process. There was none of the anxiety or defensiveness characteristic of some debriefing conversations I facilitated in the past. Instead, our focus was on the map in front of us, with its clear, descriptive evidence of the teaching, coaching, and student learning.

We read the Flow Map of the lesson and discussed how Milo could rephrase some of the questions he had posed to students and the modeling he had done for Anna when he stepped in to give specific directions to the students. Then we examined the Flow Map through a different lens: We looked at how he could support Anna in her mathematics teaching. Anna had gotten off to a rocky start, failing to engage her students in the launch of the lesson, so we examined Event #1: *Anna in front of class using pocket 100 chart to help students find multiples of 8* and Event #2: *Students are inattentive*. I asked Milo, “What do you think *caused* the kids to be inattentive?” As Milo talked, I realized the type of thinking that we were both doing: cause and effect reasoning. I simply shifted to the use of the Multi-Flow Map and began recording his responses in a form that first showed the possible causes of the difficulties (see Figure 17.2). Milo proceeded to reflect on the possible reasons: Anna had not given the students a clear sense of the purpose of the lesson; as Anna highlighted multiples of 8 on the hundred chart, she used a yellow marker, which made the resulting pattern difficult for students to see; it was apparent that many of the students lacked prior experience in exploring patterns of multiples on the hundred chart—perhaps they should have begun with multiples of a number smaller than 8, such as 2 or 3.

Later in the day, Milo and I met with Anna to talk about the lesson. Knowing how disheartened and overwhelmed she was feeling in her role as a new teacher with no prior training in this mathematics curriculum, we decided to focus only on the beginning of the lesson. Milo opened the conversation by asking, “How do you think things went?” Anna responded, “I don’t really get the point of this lesson. . . . The kids had a hard time getting started, and when I gave them the activity sheet, they were confused. It helped when you stepped in and gave them directions.”

Moving his chair next to Anna, Milo said reassuringly, “We noticed some of the same things you did.” At this point, Milo re-created the partial Multi-Flow Map he and I had constructed earlier in the day, starting only with Event #2: *Students are inattentive*. He reiterated a cause that Anna herself had just identified—*purpose of lesson not clearly articulated*—and added it to the map. Milo then explained to Anna how an exploration of multiples on the hundred chart enables students to see visual and numerical patterns, which are essential to building a deeper understanding of multiplication and division. He suggested a way to introduce the activity to students. As Anna seemed to grasp the purpose of the lesson, Milo continued. “Something else we noticed was that the kids couldn’t really see the highlighting of the multiples of 8, so it was hard for them to find *other* multiples of 8.” Milo added another cause of students’ inattentiveness to the map: *patterns on the hundred chart not visually clear*. As he elaborated, Anna nodded in agreement, offering suggestions about how she could use colored

Figure 17.1 Flow Map: What was the sequence of events observed and documented in the lesson?

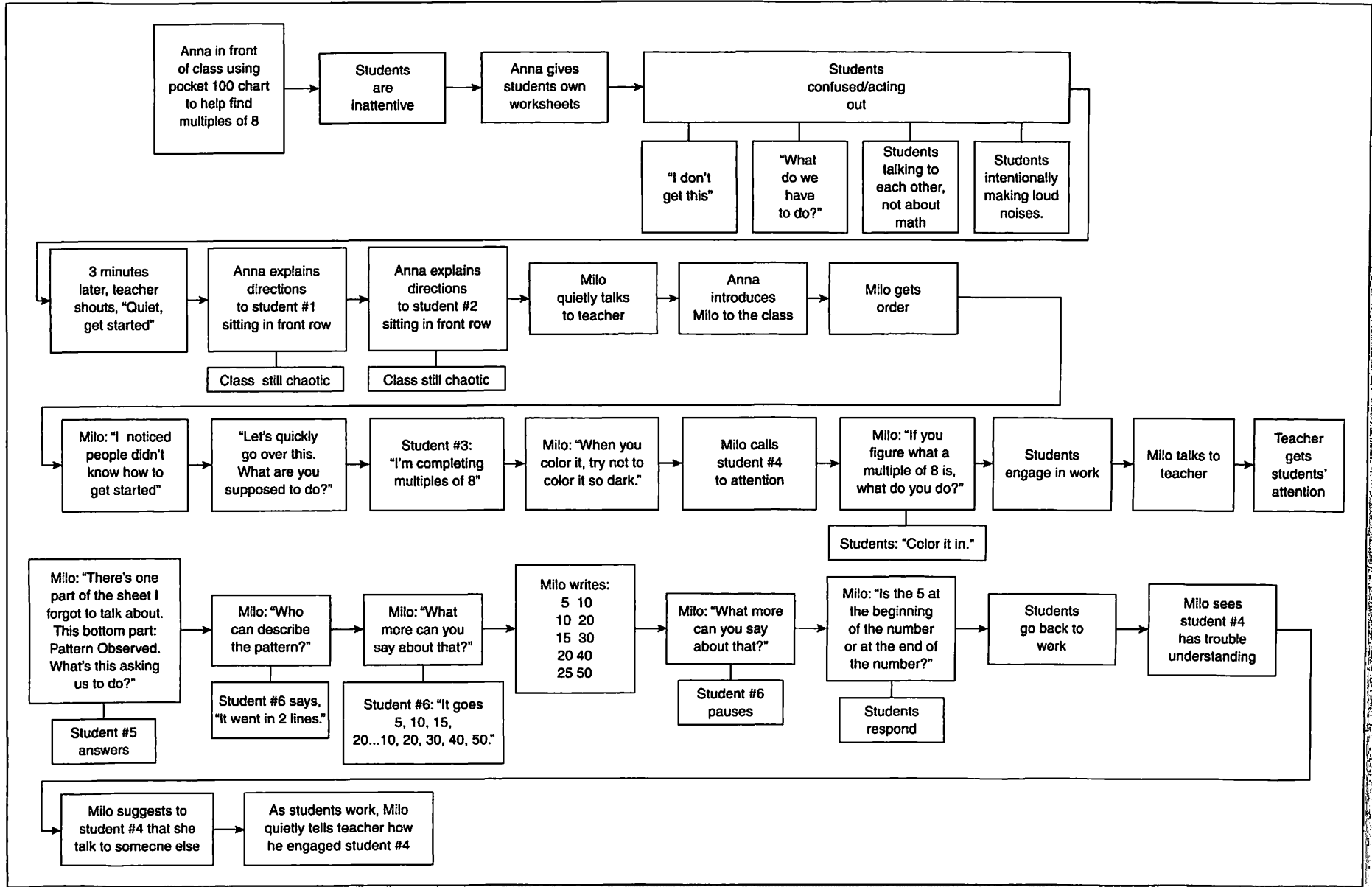
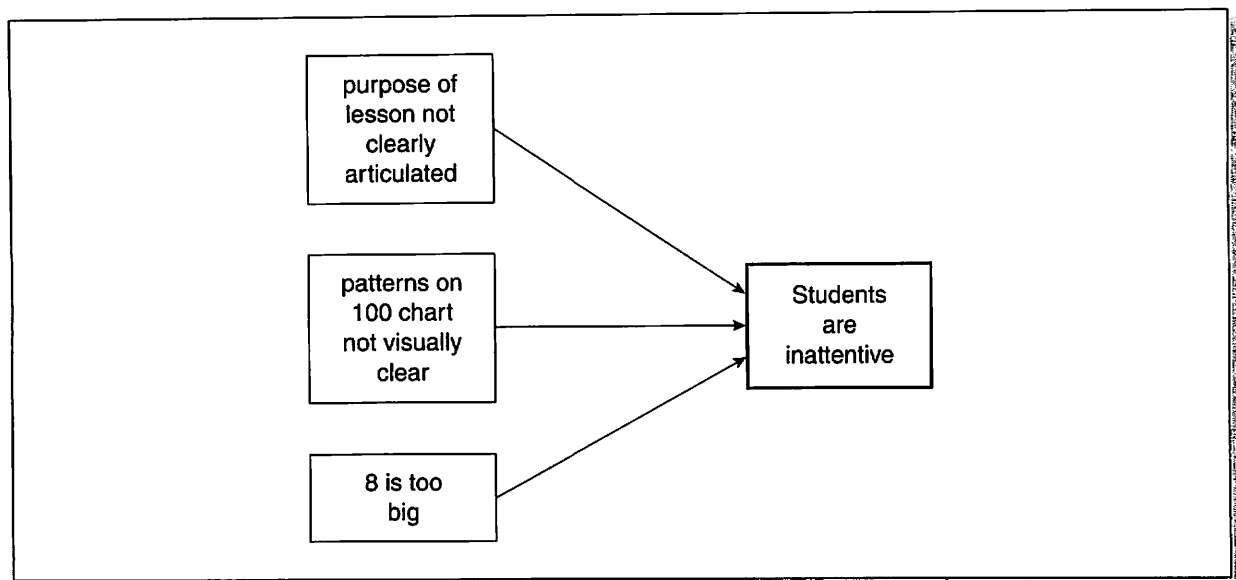


Figure 17.2 Multi-Flow Map: What caused students to be inattentive?



acetate squares to more effectively highlight the multiples. Finally, Milo shared his assessment of the students' relative lack of experience with the activity, and the ensuing difficulty they had with identifying patterns for such a large number. After adding this third cause (*8 is too big*) to the map, Milo engaged Anna in an exploration of multiples of 2 and 3 on the hundred chart, modeling the kinds of questions she could later pose to her students. At the end of our conversation, Anna looked at the partial Multi-Flow Map Milo had constructed and said, "So many people have come into my classroom with vague advice and comments that have just made things worse. This is the first time anyone's given me concrete suggestions about what I can *do*. This has been really helpful—thank you." The map in front of us, elegant in its simplicity, had not only facilitated clear thinking in our process of reflection, dialogue, and inquiry, but it was an immediate document of our conversation and a springboard for further action.

I had experienced something very powerful that day—the discovery that the use of Thinking Maps could so efficiently and effectively cause a qualitative shift in my postobservation conversations with teachers about their instruction and student learning. The visual representation offered a coherent cognitive map from which verbal inquiry could emerge. The Flow Map of the lesson had given Milo and me an explicit and immediate record of the class dialogue and actions that we could readily access and discuss *together*. The Multi-Flow Map had enabled us to analyze, together and later with Anna, the causes of student inattentiveness, which led to deep conversations about the mathematics, the mathematical thinking of the students, and ways in which Anna could engage her students and support their learning. Most important, the maps served as a third point—visual patterns of thinking before us—so that we could focus our attention on the *teaching*, not on the *teacher*. This shift, so difficult to attain in debriefing conversations, was naturally mediated by the visible representation of the lesson flow and the collaborative inquiry invited by the use of the Multi-Flow Map in the lesson analysis. The use of the maps had enabled Milo and me to do our best thinking, and as a result, the time we spent together was the most productive it had ever been. We also had an explicit, visual document of our work and thinking during the supervision process, which could be readily accessed and reflected on in the future. As I left Milo's school that day, I was struck by the realization that I could use Thinking Maps to significantly advance another aspect of my work—school-embedded professional development incorporating an adaptation of lesson study.

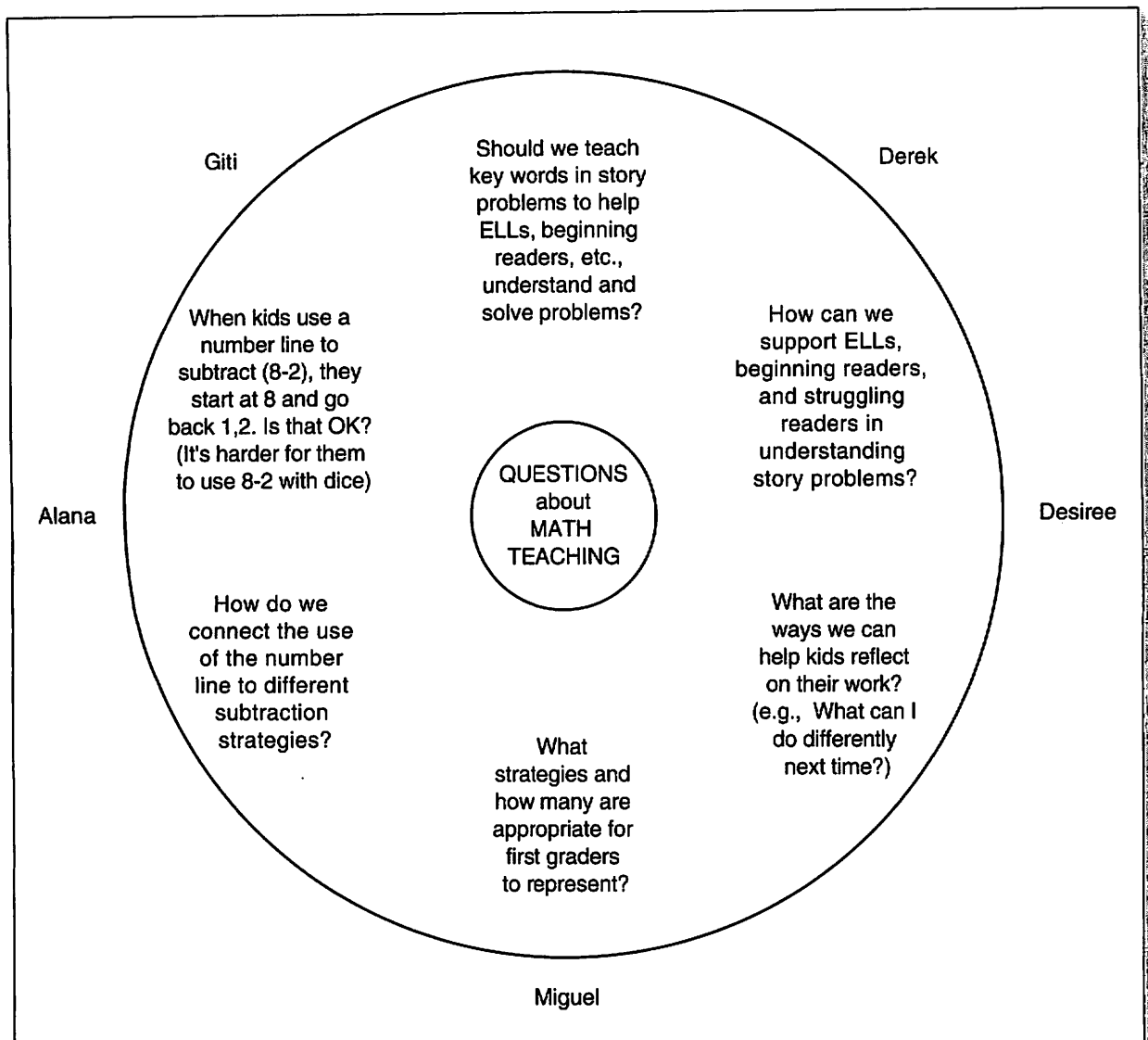
TOOLS FOR EXPLICIT LEARNING IN LESSON STUDY

A plethora of articles, research, and literature reveals the significant influence Japanese lesson study has had on practice-based mathematics professional development in the United States. As Stigler and Hiebert (1999) assert, "The premise behind lesson study is simple: If you want to improve teaching, the most effective place to do so is in the context of the lesson." Japanese lesson study has indeed improved instruction (Fernandez & Yoshida, 2004; Lewis, Perry, & Hurd, 2004; Stigler & Hiebert, 1999), and teachers and researchers in the United States have implemented various adaptations of lesson study with similar results (Jalongo, Rieg, & Helterbran, 2007; Lewis et al., 2004; Watanabe, 2002; West, Hanlon, Tam, & Novelo, 2005; Willis, 2002). As I experimented with the use of Thinking Maps in my own facilitation of lesson studies, I discovered that the maps maximize opportunities for teachers to deepen their understanding of mathematics, mathematics teaching, and learning. Like no other tools or techniques I had used in the past, the maps brought increased depth and rigor to teachers' conversations about lesson planning, teaching, and improving the quality of their instruction to more effectively meet the learning needs of their students. Thinking Maps have brought to the lesson study process a level of explicitness, effectiveness, and efficiency that I experienced that day supervising Milo.

Let me take you through a lesson study cycle of planning, observation, and debriefing I recently facilitated with a team of 5 first-grade teachers in a New York public elementary school. On the first day, in a two-hour session, we surfaced and addressed the team's questions about math teaching and learning and collaboratively planned the lesson goals, activity, and the sequence of lesson events. The next day, I taught the lesson as the teachers observed, and we met for almost 90 minutes to reflect on and debrief the lesson. The results of our work follow.

Part I. Surfacing Questions: Framing the Lesson Study With Teachers' Questions

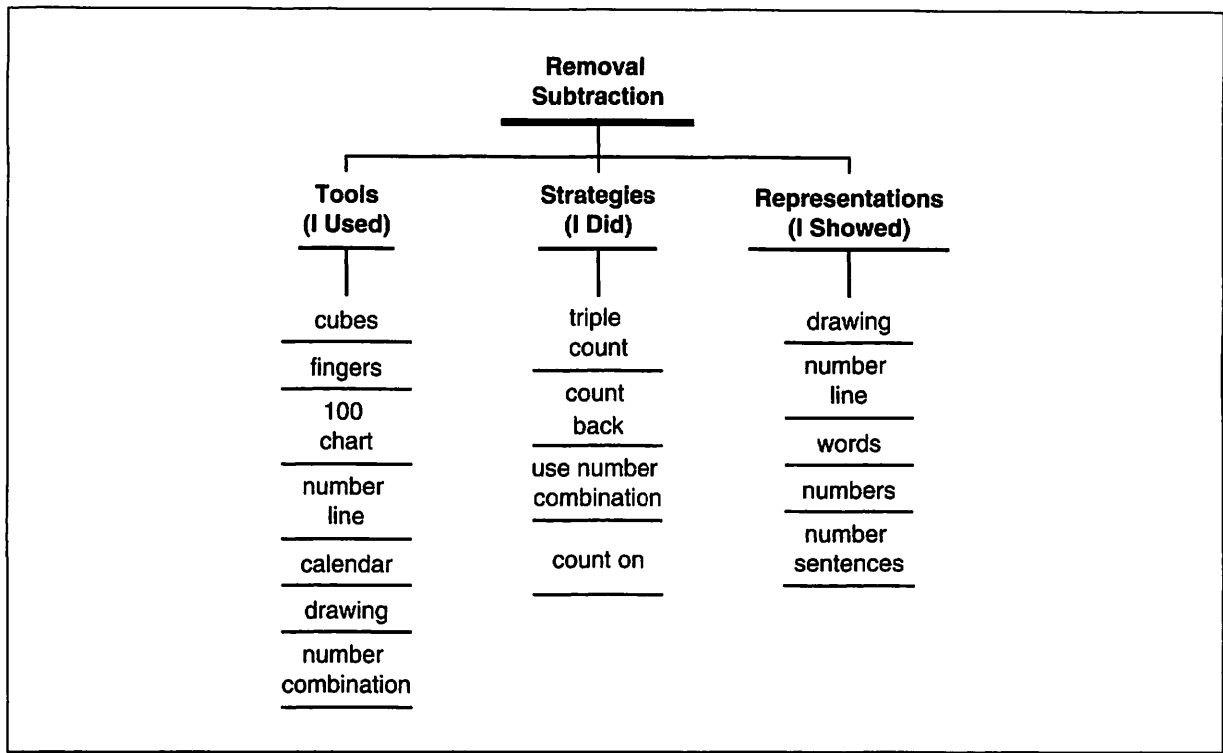
It had been three months since I last worked with the first-grade team, and after spending a few minutes getting reacquainted, I asked, "What questions do you have about math teaching and learning?" At the time of my visit, teachers were ready to introduce their students to solving and representing subtraction removal problems in a variety of ways, so their questions reflected this topic. I used a Circle Map (see Figure 17.3) to record their questions, which enabled me to determine the models, contexts, and strategies they used in their teaching and also to assess what support they needed from me. As we discussed their questions, we explored the mathematics and approaches to teaching and learning subtraction in the context of their observations of their students' work and thinking. The teachers were frustrated by a common phenomenon: Young children often solve a problem one way but choose a method of representation that is familiar to them but doesn't reflect the approach or strategy they used. As we delved more deeply into the problem of how to teach students to show *how* they solved a problem, it became evident that we lacked a coherent understanding of the differences among approaches, strategies, and representations. To clarify our thinking, I constructed a Tree Map, and asked, "What *tools* do children use to solve subtraction removal problems? What are the *strategies* they might apply? How might they *represent* their solutions?" As teachers shared their ideas, I recorded them in the appropriate categories (see Figure 17.4). Teachers were delighted by how the simple yet elegant visual clarity of the map enabled them to *see and understand* the differences among tools, strategies, and representations. This understanding subsequently sharpened the group's thinking about the planning, teaching, and assessment of student learning throughout the lesson study process.

Figure 17.3 Circle Map: What questions do we have about math teaching?

Part 2. Lesson Planning: Defining the Lesson Goals and Sequencing the Lesson Events

To define learning goals for students, we constructed a Circle Map (see Figure 17.5). We used the metacognitive frame to discuss and explore questions such as the following: What do students know and understand about subtraction? What tools do they use to solve subtraction problems? What subtraction strategies do they know and use? What are their misconceptions? What is their prior knowledge and experience in representing their solutions? Where does this lesson fit in the unit? How can the lesson engage students? What difficulties do you anticipate students will have? What extensions or modifications might students need? How do the lesson goals align with New York State standards? (Corresponding state standards are included in italics in the frame of the Circle Map.) These questions enabled us to define, with more specificity, what we wanted students to learn *in this lesson*, and they also focused our thinking on how to meet the diverse learning needs of students.

Figure 17.4 Tree Map: What are the differences among tools, strategies, and approaches in subtraction removal problems?



We then discussed a problem context that would engage students and developed a problem for students to solve and represent during the math workshop (student work time). Using a Flow Map, we sequenced the questions and prompts I would use in the lesson launch (introduction; see Figure 17.6). We also discussed what would be important for teachers to observe during this part of the lesson; observation prompts were embedded as substages so teachers would remember to record what they saw and heard.

What was important for teachers to observe as children worked independently on the problem? How could teachers support children who were struggling or in need of a challenge? We examined the Tree Map (see Figure 17.4) to anticipate the range of tools, strategies, and representations the children might use and then scanned the Circle Map defining the learning goals (see Figure 17.5) to determine the levels of support students might need. This information, so visually explicit and accessible, enabled us to efficiently construct, in a relatively short time, a Tree Map (see Figure 17.7) as a tool to categorize and focus our lesson observations.

Part 3. Lesson Experience/Observation

The next day, I met with teachers for about 15 minutes prior to the lesson to review the maps representing our work and thinking of the previous day. We reiterated expectations of what to observe during the lesson launch, workshop, and lesson summary (class discussion/ wrap-up). The Flow Map served as a visual observation tool of the lesson launch. Teachers used their Tree Map to focus and record their observations of children at work. At the end of the lesson, we brought our lesson artifacts—student work, class charts constructed during the lesson, and teachers' Flow and Tree Maps filled with descriptions of what they saw and heard—to our debriefing meeting.

Figure 17.5 Circle Map: What math will students learn in this lesson, and what knowledge and information influences our lesson planning?

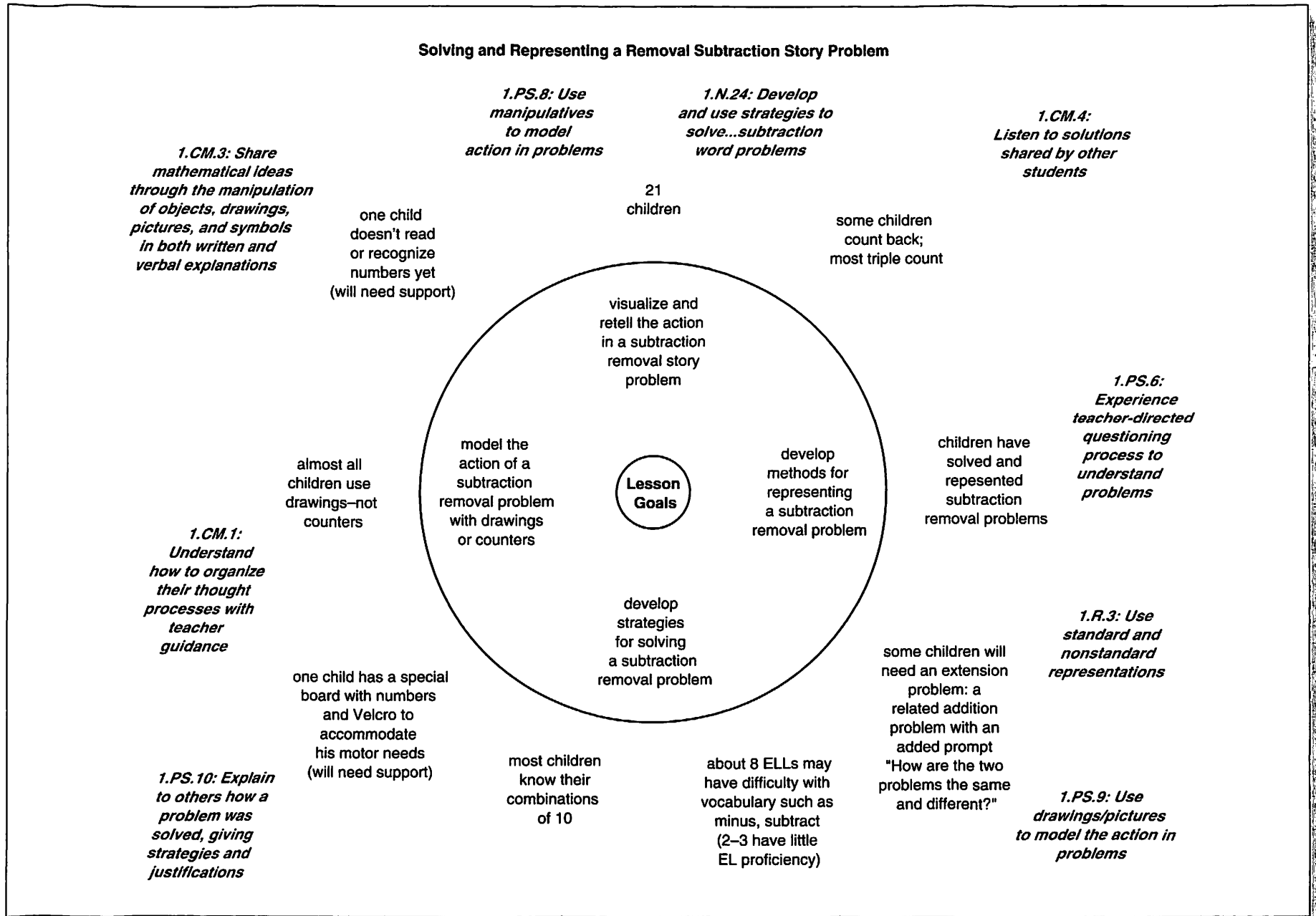


Figure 17.6 Flow Map of Lesson Launch: What will the teacher do and say to engage students in the lesson?

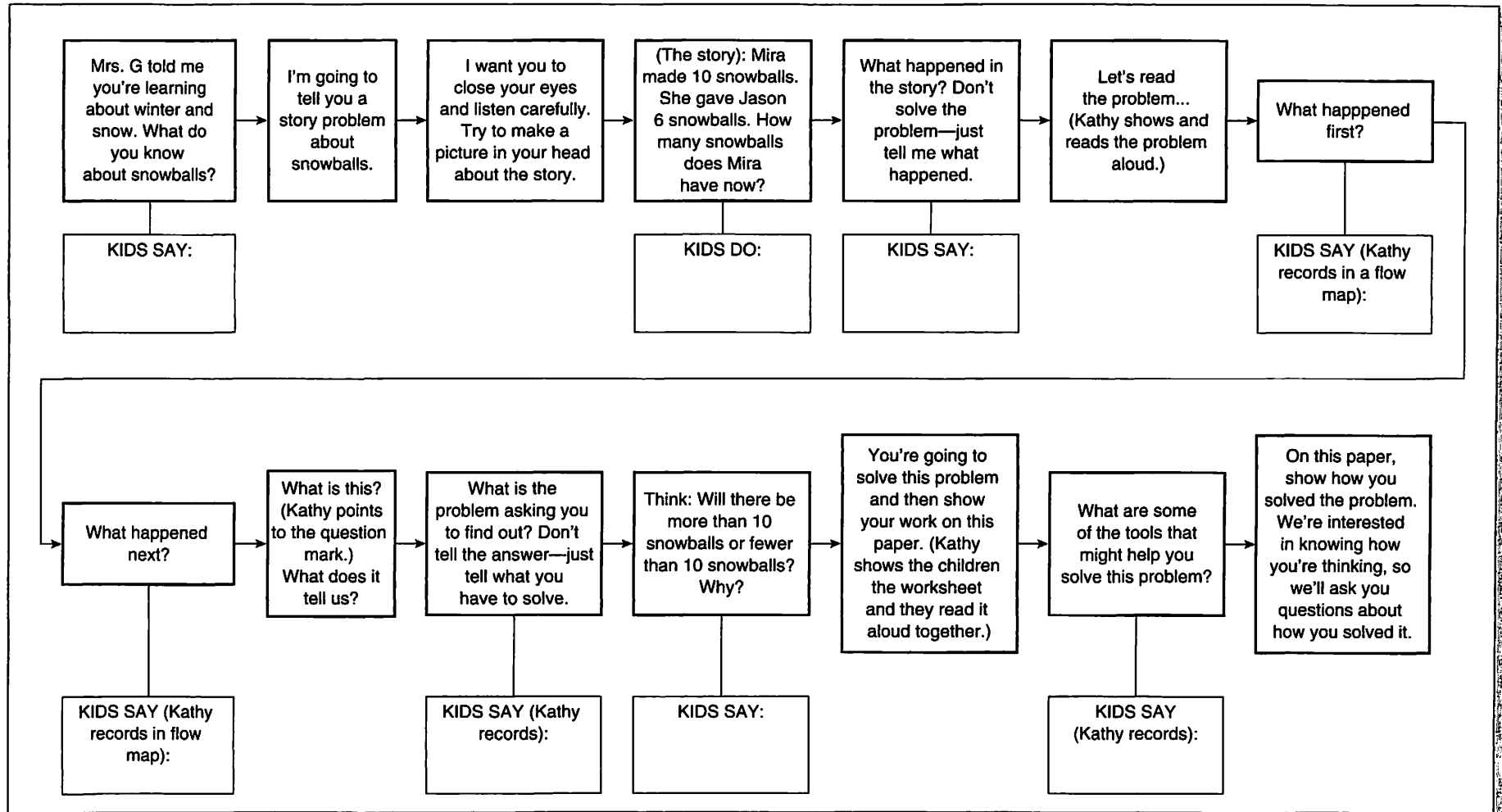
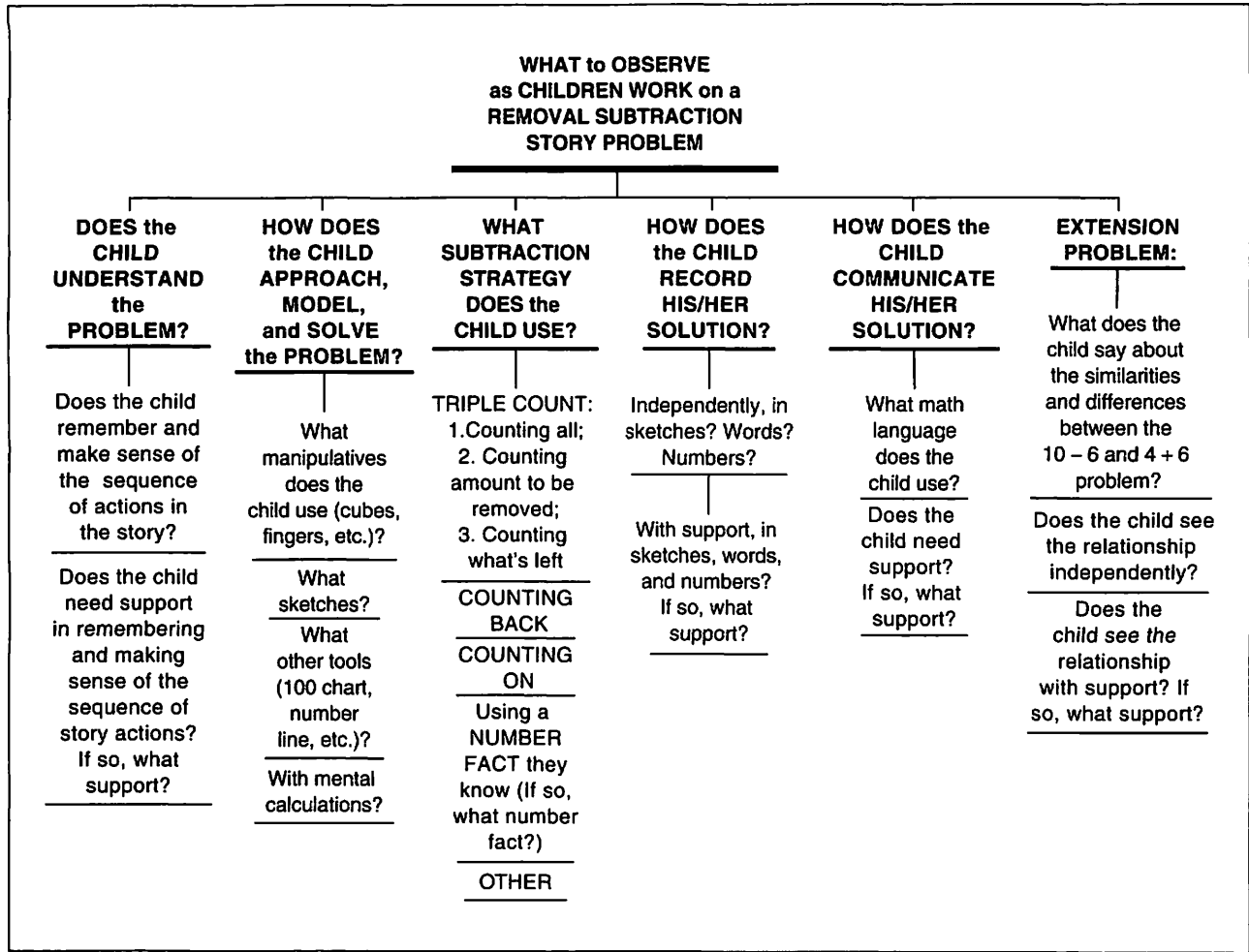


Figure 17.7 Tree Map: What is important to observe as children work on a removal subtraction story problem?



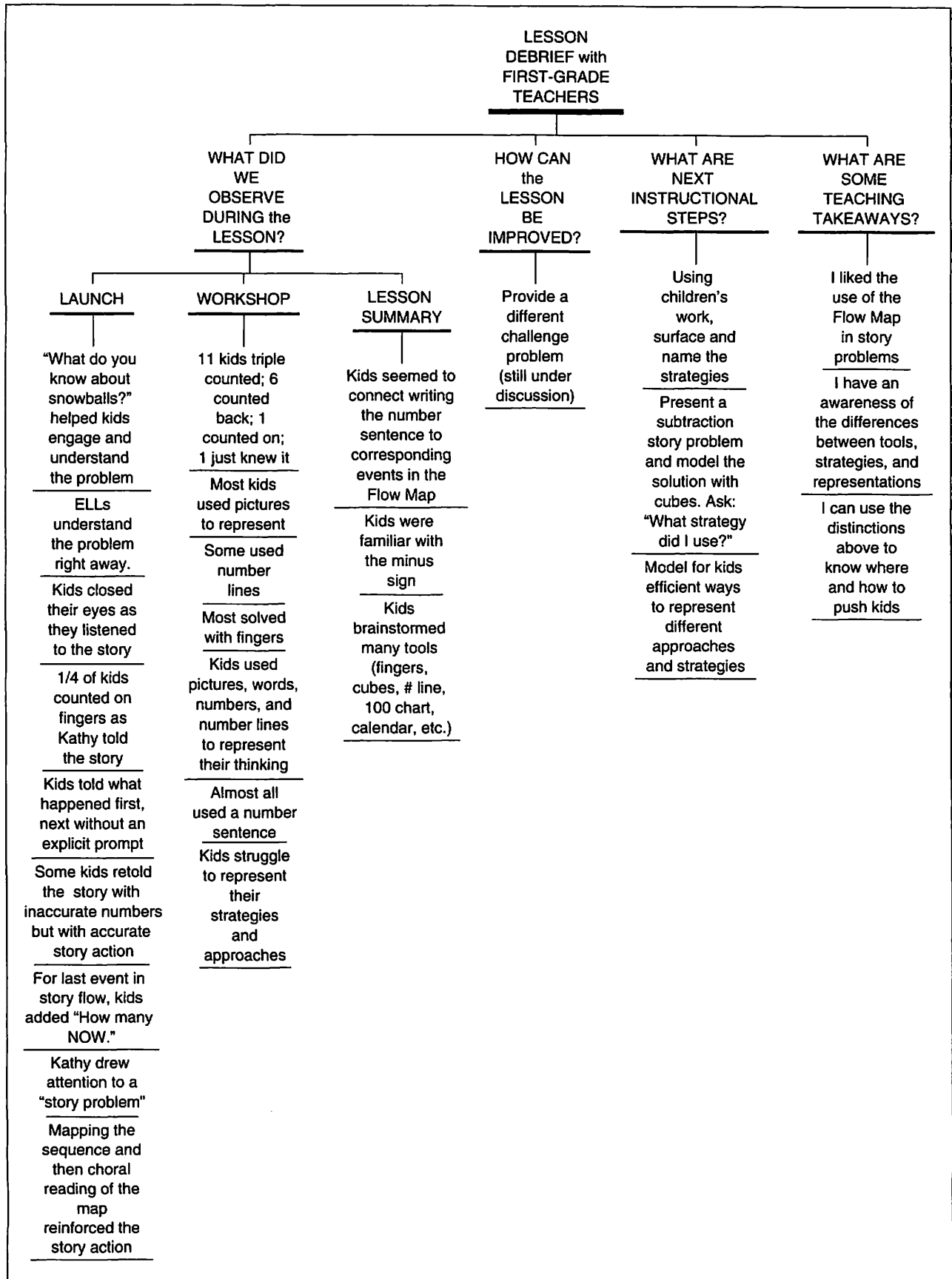
Part 4. Lesson Debriefing

In my version of lesson study, I structure the reflective conversation around the following questions:

1. What did we observe during the launch, workshop, and summary?
2. How can the lesson be improved?
3. What are next instructional steps for students?
4. What are some teaching takeaways?

We began our debriefing meeting with a collaborative retelling of the lesson launch. Referencing their observations written in sequence in their lesson Flow Maps, teachers readily retrieved and shared descriptive data about what children said and did in response to my prompts and to each other. As these observations were discussed, I charted them, for all to see, in the *Lesson Debrief Tree Map* (see Figure 17.8). Teachers noted how even students with limited English language proficiency had access to the problem because its context was meaningful

Figure 17.8 Tree Map: What is important to reflect on in our lesson debrief?



and the collaborative sequencing of events, charted in a visually clear Flow Map, enabled them to understand the problem. As teachers shared other observations about the launch, I added them to our Tree Map.

We then discussed our observations of children at work and sorted children's work samples according to the strategies they used. This process enabled us to readily identify, later in the lesson debrief, the next instructional interventions that were needed to support and advance the children's learning. Again, these observations were recorded in our *Lesson Debrief Tree Map* (see Figure 17.8).

Typically, by the time the teachers talk about what they noticed in the lesson summary, they have already surfaced aspects of the lesson that could be improved. This was the case with the team of first-grade teachers. They quickly identified the need to provide different challenge problems that would engage students in need of extensions. Although they had not yet decided on what problems would be more appropriate, they had a record of the problems that *didn't* advance student learning, so they were less likely to use them in this lesson in the future.

At the end of the lesson debrief, I asked teachers to reflect on what they took away from the lesson study process. There was general agreement that using a Tree Map to clarify the distinction among tools, strategies, and representations led to a deeper understanding of how they could improve the quality of their instruction to more effectively teach their students how to solve subtraction removal problems with *understanding* and how to represent their solutions *clearly and accurately*. In fact, the Tree Map had provided such visual clarity about these big ideas that the teachers constructed similar Tree Maps with their students, renaming the categories with kid-friendly language: "I used," "I did," and "I showed." The Tree Map provided students with a visual, metacognitive tool that enabled them to think about and access approaches, strategies, and representations in their problem-solving process.

CONCLUSION

Thinking Maps are essential tools for bringing explicitness, efficiency, and effectiveness to my work in supervising teachers and facilitating lesson study. As I discovered in my work with Milo, my use of the maps enabled me to facilitate a process in which the focus of the supervision postconference was on the *teaching*—not on the *teacher*. By providing a third point, the maps kept our eyes, questions, and analysis on the lesson data, shifting the power from *me* as supervisor to *us* as a collaborative team. This nonthreatening dynamic, essential to inquiry and learning, was also present in my work with the first-grade team of teachers throughout the lesson study process. Although I taught the lesson, we *all* were responsible for planning the lesson, writing our observations of the lesson experience, and analyzing and learning from the experience. The maps not only facilitated explicit thinking and learning throughout the process of our planning, observation, and debrief, but they served as visual imprints of the Habits of Mind that are inherent to what Linda Lambert (1998) asserts is the daily work of highly qualified teachers: reflection, dialogue, inquiry, and action. One quick glance at the maps constructed with the team of first-grade teachers gives the reader an explicit picture of the thinking and work throughout the lesson study process. This readily accessible documentation enables teachers to reflect on this work in the future.

As I continue to work with the team of first-grade teachers in lesson study, I will no longer teach the lessons—they will. They now have the tools and a process that enable them to establish the emotional safety essential to their collaborative inquiry and learning. I look forward to coaching them through a process in which *they* develop and sustain the capacity to keep the focus on the teaching and learning throughout their lesson studies—and to identify and implement actions that improve their teaching to meet the learning needs of their students.

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