Content-Focused Coaching℠
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Transforming Mathematics Lessons

Lucy West
Fritz C. Staub
continued from p. iv


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Foreword

It would not be surprising for the general public to come across images in a newspaper, on a television show, or in a weekly news magazine of two physicians, or two lawyers, or two architects huddled together talking about a patient, a court case, or designs for a new construction site. It is rare, however, for the public to see images of two teachers lost in conversation about a new course of study, a particular lesson, or the performance of a group of students. Perhaps, it would be even more surprising for noneducators to discover that one of those teachers, the one with more expertise in a particular subject area, is coaching his or her colleague, helping the less-accomplished teacher become a more effective one.

In this book, *Content-Focused Coaching*SM, the authors Lucy West and Fritz Staub help us understand how such collaboration is not only possible, they demonstrate why such frequent, scholarly, and well-designed “meetings of minds” is essential, if educators are to rise to the ranks of the well-respected professional across this country and throughout the world.

As the superintendent of a large urban school district in New York City, there are many reasons why I will be recommending this book to a wide range of colleagues, including staff developers, teachers, principals, and superintendents. First and foremost, Lucy and Fritz demonstrate how Content-Focused Coaching, a clear, manageable, and precise staff development structure, can prevent teachers from becoming technicians by providing them with the confidence and know-how to maintain themselves as decision makers. In other words, Lucy and Fritz reveal practical ways for teachers to become more thoughtful, deliberate, and essentially smarter about the work they do. Theirs is no touchy-feely, loosey-goosey mentoring approach, but rather a rigorous and respectful system for guiding and supporting teachers as they go about making changes in their teaching. Certainly, in these days of high attrition rates for teachers it becomes essential to wrap teachers in the kinds of support that keeps them energized, passionate, and informed about their fields of study and well equipped to help all of their students succeed. Content-Focused Coaching is just such a support system.
Then too, the authors have raised the bar when it comes to knowing what high-quality staff development looks, feels, and sounds like. Using the teaching of mathematics as their centerpiece, they help us understand why staff development must be content-rich and site-specific. It must also involve time for meticulous co-planning and thoughtful reflection. Through accompanying CDs, as well as through transcripts of coaching conversations and teaching moments, the authors cut off the tops of their heads and let us look inside, demonstrating how such teaching essentials as knowing content deeply, carefully preparing the teaching environment, anticipating students’ responses, following students’ lines of thinking, asking probing questions, and making other deliberate teaching moves can help students acquire difficult concepts and increase their academic performance. Throughout, the authors demonstrate how the qualities of honesty and clarity strengthen their abilities to coach well, but it should also be noted that these qualities are present in their writing, making this text an accessible and essential resource for all those involved in the professional development of teachers. Although steeped in the mathematics arena, West and Staub’s big ideas have implications for all teaching and learning interactions including staff development in literacy, science, and social studies.

Of course, this book also provides the reader with opportunities to view constructivist mathematics teaching in action. The descriptions of the planning and teaching moments are so detailed and engaging that together with the accompanying CDs, readers will feel like Kathy, Dave, and Katherine are teaching just down their hallways. Certainly these brief teaching glimpses will leave the reader hungering for more information about the Investigations curriculum, with increased understanding of what it means to teach number sense, fractions, and division. So too, the reader will find themselves jotting notes about the role of curriculum materials, the use of blackboard space, and the importance of continually asking oneself, “What is the mathematics in this lesson?” Above all, teachers will long to have the kind of professional company that Lucy and Fritz describe.

Additionally, Content-Focused Coaching is a must-read for principals who are determined to live up to their roles as instructional leaders. The authors provide administrators with much food for thought concerning the meaning of pedagogical content knowledge, the look and sound of a well-designed lesson, the search for evidence in student learning, the need for professional collegiality, and the roles staff developers can play in the life of a school. For those administrators who have been attempting to apply the Principles of Learning to their schoolhouses (a framework developed by Lauren Resnick and colleagues at the University of Pittsburgh), this book will illustrate clearly
how those principles support best practice in teaching and learning. Such concepts as Accountable Talk, Socializing Intelligence, and Clear Expectations are woven into each staffroom conversation and classroom scene. As Lucy processes her coaching moments, she highlights how those principles have informed her staff development work and improved the mathematics instruction in the classrooms she knows best.

Finally, and most personally, I am incredibly privileged to write a foreword for *Content-Focused Coaching*, because so much of the research that forms the basis of this work took place in the district that I call home. Lucy West, in collaboration with Fritz Staub and alongside an incredible staff of mathematics coaches and teacher leaders, has revolutionized the teaching of mathematics in Community School District 2 in New York City. This incredible team has empowered and enabled thousands of educators to know what it means to think mathematically, to share the finest of mathematical teaching with their students, and to understand how the art of Content-Focused Coaching has enabled them to reach glorious professional heights. Our school district is forever in their debt.

—Shelley Harwayne
Foreword

There has probably never been a more challenging time for educators. More is expected of them and the stakes are higher than ever. All children, not just a privileged few, are to be taught a high-demand curriculum with, ideally, an expectation of understanding and thoughtful performance. And, just as the expectations for students are pushing teachers into uncharted territory, accountability systems in some places seem to be making unrealistic demands.

At the same time, more is understood about how both children and adults learn, and powerful new systems of instruction are being created to help teachers meet their new professional demands. We know, for example, that understanding of complex concepts in mathematics and other fields is within reach of all children, but that understanding develops in uneven and individual “bursts” that require patient teaching and continuous student effort. We know how well crafted combinations of student activities and guided talk work to build knowledge and understanding. We know that posing questions that help students reason things out for themselves and directly teaching important information and concepts are not conflicting philosophies of education, but rather twin essential elements in a powerful process of assisted learning. Finally, we know that intelligence and aptitude for learning can be created through targeted effort, and that students’ identities as learners are intertwined with their specific learning efforts and activities.

Achieving a balance between imparting fundamental knowledge and teaching processes for using and even creating that knowledge is perhaps teachers’ greatest challenge. Good thinking is impossible without a solid core of knowledge. Yet learning basic facts and concepts requires using one’s mind. So we can’t teach the facts first and let thinking follow any more than we can teach thinking first and let the facts come later. Academic rigor and the thinking curriculum need to be part of the same package, not—as some have proposed—an either-or proposition.

All of this takes us well the beyond mathematics of our childhood—unless we were among a small minority who learned the subject from a mentor rather than from a textbook. Research and practical
experience show that our children can meet these new expectations if they have the opportunity to learn a rigorous mathematics curriculum under the guidance of expert teachers—teachers who understand fundamental mathematics concepts, know how to establish tasks and ask questions that engage students in grappling with these concepts, and are skilled at interpreting students’ responses. A smaller but equally convincing body of research and experience shows that teachers too are up to the challenge—if they are offered the opportunity to learn the craft under the guidance of skilled mentors.

Enter the promise of coaching. No one expects an athlete or a musician to become great without a coach—an over-the-shoulder mentor who pushes and supports, watches and intervenes at critical moments, analyzes learners’ actions and challenges them to become self-critical analysts of their own performances. Just so with teaching. It is a demanding craft, requiring of its practitioners both careful planning and finely tuned adaptation to the flow of classroom activity and conversation. The craft can be learned, but not from a textbook. It must be learned through guided practice.

The idea of coaching for teachers is not new. But the concept of content-focused coaching is. If the heart of powerful learning is combining deep knowledge with powerful thinking, then coaching must be focused squarely on the specific knowledge to be taught and learned. General principles and friendly questions are not enough to produce the kinds of mathematics instruction that today’s standards and expectations call for. The effective math teaching coach must know the mathematics in depth and be able to show teachers how to set specific learning goals for a lesson, devise or select powerful tasks, analyze the knowledge—correct and “misconceived”—that children are likely to bring to the tasks, and plan instructional conversations that are contingent on student responses and hence open to improvisation.

Content-Focused Coaching is part of a broad movement away from drill and recitation as the primary mode of education. But it is not generic “constructivism” of the kind that nudges educators away from focusing on the knowledge that students are to acquire or advises against telling students anything directly. We might say that Content-Focused Coaching is about knowledge-based constructivism. Or, alternatively, it is about intellectually engaged instructivism. Either way, it is something new in the world of teaching.

It gives me great personal pleasure to see this book on Content-Focused Coaching in mathematics come to fruition. Throughout a career first as a scholar of learning and then as an education reform “activist,” I have been fortunate to be surrounded by colleagues who have taught me how constructivism and instructivism can work together. Two such individuals came together at the Institute for Learn-
ing in Pittsburgh in the late 1990s. Lucy West, an artist of mathematics instruction, was building a coaching system for teachers in Community District 2 in New York City. At the same time, Fritz Staub—a visiting postdoctoral student who became an international fellow of the Institute when he returned to Europe—brought the Swiss tradition of deep subject matter analysis by teachers to our learning community. Others, including Donna Bickel who was developing a program for literacy coaches, joined the conversation.

The fusion of research and practice in the Institute for Learning provided a nurturing setting for these conversations. The extraordinary environment of District 2, where continuous learning was expected of everyone and supported in a series of “nested learning communities,” provided a setting in which details of coaching practice could be molded into shape. Here is the result, a theoretically grounded yet practical manual for coaches of mathematics teachers, and a vision of the possible for American public schools. Enjoy it. Use it. Watch the lights go on in your teachers’ and children’s eyes.

—Lauren B. Resnick
The authors of this book met at the Institute for Learning in 1995 and began an unusual collaboration between researcher and practitioner. Our ongoing interaction has sculpted the practice of Content-Focused Coaching in teaching elementary and middle school mathematics in Community School District 2, New York City. Content-Focused Coaching is grounded in a conceptual framework developed by Fritz C. Staub in interaction with the Institute for Learning at the Learning Research and Development Center, University of Pittsburgh, and with Community School District 2. The Institute for Learning continues to use this professional development model in mathematics and is currently working on applying this framework to other subject matter areas.

The development of the practice of Content-Focused Coaching in District 2 would not have been possible without the cooperation and support of many people. The professional learning community fostered by the visionary and supportive leadership of Anthony Alvarado, superintendent; Elaine Fink, deputy superintendent; and Bea Johnstone, assistant superintendent, provided fertile ground for Content-Focused Coaching. Many principals and teachers were eager to work with the mathematics staff developers as we ventured into the complex and demanding task of improving mathematics instruction for all students. A special thank-you goes to Anna Switzer, principal of Public School 234, who served as personal mentor and friend to Lucy West and opened the school’s doors to the mathematics initiative from its very first days. Her leadership and support were unwavering. Anna Marie Carrillo, principal of Public School 116, provided greatly appreciated encouragement, support, and innovative leadership in the change process. Thanks also to Alice Young, principal of Intermediate School 131, for sharing her insights and enthusiasm. We acknowledge and appreciate the insights and encouragement of Elizabeth Gewirtzman. We offer heartfelt gratitude to Kathy Sillman, Dave Younkin, and Katherine Casey, the three teachers who generously allowed us to use their work as case studies in this book. We consider them to be exemplary dedicated teaching professionals.
A special thank-you goes to the mathematics staff developers and technology staff in Community School District 2 who played a key role in the implementation and refinement of Content-Focused Coaching, without whom there would be no Mathematics Initiative in the district. Each and every one of them generously shared their wisdom, their skills, and their insights with us. Without the technology support provided by Lynel Kantor, we literally would not have been able to complete this book, which to a large extent was written via email message between Switzerland and New York. Thank you Ginger Hanlon, Susan Picker, Gary Shevell, Deborah Flaum, Christina Santiago, and Anne Samartine for taking added responsibilities and keeping the Mathematics Initiative in full swing. Thanks, Elizabeth Sweeney, Charlene Marchese, Suzanne Werner, Sarah Ryan, Deborah Altenau, Deborah Flaum, and Linda Methnetsky, for allowing us to use your voices in the last chapter. Thanks to all of the mathematics staff developers who incorporated Content-Focused Coaching into their practice and kept us informed of how it played out in the field. In particular we would like to thank Sandra Nye, Elizabeth Sweeney, Sarah Ryan, Nina Liu, Jean Risolo, Joan Backer, Karen Cardinale, Kerry Cunningham, Charlene Marchese, Phyllis Tam, Monica Witt, Toni Cameron, Kate Abell, Kevin Tallat-Kelpsa, Anne Burgunder, Jennifer DiBrienza, Maggie Siena, Brenda Strassfeld, Christine Calliandro, and Ronald Feinstein. Jennifer Li provided invaluable clerical support.

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Thanks to Shelley Harwayne, superintendent, District 2, for her encouragement, and for her foreword to this book.

We extend deep gratitude to Lauren B. Resnick, the founder and director of the University of Pittsburgh’s Institute for Learning, for her vision, her guidance, her support of our work, and her foreword.

We recognize the contributions of Victoria Bill, a resident fellow at the Institute for Learning, and Andrea Miller, a professional developer in the Monaca, Pennsylvania, school district, who were the first to collaborate with Fritz C. Staub and to use the emerging conceptual frame and tools of Content-Focused Coaching for professional development in elementary mathematics. We greatly appreciate their collaboration, encouragement, and feedback, which have been instrumental in the development of this model. During the 2001–2002 school year, the Institute for Learning worked with the school districts of Sharon, Pennsylvania, and South Beaver, Pennsylvania, under the leadership of Victoria Bill, to implement Content-Focused Coaching in elementary mathematics.
The initial collaboration between Fritz C. Staub and the Institute for Learning was made possible by a fellowship of the Swiss National Science Foundation and an invitation from Lauren Resnick to work as a visiting scholar at the University of Pittsburgh’s Learning Research and Development Center. Since 1997 the University of Pittsburgh has provided the funding and the University of Zürich/Switzerland has made available additional resources that have made it possible to continue this collaboration across cultures and between practice and research.

We are also grateful for the vision and financial support of the United States National Science Foundation and in particular to Diane Spresser, Anna Suarez, and Skip Fennel.

In 1999 Donna DiPrima Bickel, a resident fellow at the Institute for Learning, began to use and develop strategies to implement the framework and tools of Content-Focused Coaching as a professional development model in elementary literacy. During the 2000–2001 school year, she developed a course with Nancy Artz to train thirty elementary literacy coaches in Providence, Rhode Island. During the 2001–2002 school year, she and three other resident fellows at the Institute for Learning, Donna Micheaux, Annette Seitz, and Lillie Sipp, worked with the school districts of Austin, Texas, Los Angeles, California, and Providence, Rhode Island, to implement the Content-Focused Coaching model in elementary literacy. Our collaboration with Donna Bickel helped to refine the communication of the general framework of Content-Focused Coaching and her work began to broaden its application to a different subject area. To honor this collaboration and her help in editing Chapter One, “What Is Content-Focused Coaching?” we acknowledge Donna as coauthor of that chapter. We are also grateful for Donna’s leadership and support in arranging for high-quality videotaping of coaching sessions in District 2, which two of the CDs included in this book are based on. The video material for the third CD has been recorded as part of the High-Performance Learning Communities (HPLC) project at the Learning Research and Development Center (LRDC) under Office of Educational Research and Improvement (OERI) research contract, which studied the work in Community School District 2. We are grateful to HPLC for allowing us to use this document as an example of the practice of Content-Focused Coaching. For the editing of the videos we were fortunate to have someone as competent and keen as Luise Caster, of the NetLearn project, at the Learning Research and Development Center.

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We thank Alan Huisman for his editorial help in making the first chapter reader friendly despite its theoretical content. Finally, enormous thanks to Victoria Merecki. You are the most patient, caring, and encouraging editor, and for sure we couldn’t have done it without you.
Education is undergoing profound and challenging changes. An increasingly complex world has high, and often conflicting, expectations for the knowledge and skills to be acquired by students in schools. These expectations have caused some educators to flee the profession, others to dig their heels in and proclaim allegiance to tradition, and still others to open to a world of possibilities. Content-Focused Coaching is a professional development model designed to assist educators to engage in thoughtful dialogues that result in improved teaching and learning—dialogues that can rekindle a passion for meeting the challenges of teaching. In Content-Focused Coaching, teacher and coach collaboratively plan, teach, and reflect upon classroom lessons. This collaboration is designed to provide teachers with individualized, adaptive, and situation-specific assistance focused on content, pedagogy, and student learning.

Becoming and being a wonderful and effective teacher is an ongoing, career-long process. Sustainable improvement requires more than superficial changes in methods, the adoption of a new curriculum program, or the latest educational jargon. It requires changes in one’s underlying knowledge base and beliefs, coupled with time to understand and implement those beliefs. Over the past three decades, new theoretical developments and a vast field of highly specific empirical research on learning and teaching have led to new ways of thinking about student learning and teachers’ roles. Yet this research and the actual practice of teaching have too often been disconnected. Researchers leave it up to practitioners to make sense of and apply the vast number of highly specific findings. Practitioners tend to remain captured in their personal experience and the demands of local settings in which time for and access to research is limited.

We think it is the role of educators, as members of a professional community, to keep abreast of the research about how students learn and consider its implications for best teaching practices. The road from theory to practice runs through highly complex terrain and is often long and uncharted. We assume that all teachers can learn to be effective, empowering educators—there is no teacher gene. Teaching is a learnable craft—it takes effort, support, deep and flexible content
knowledge, a large repertoire of learning strategies and teaching methods, and basic understanding of theories of learning. We take the stance that professional dialogue on learning and teaching at the school site, in relation to particular students, in specific academic domains, is necessary for developing successful and replicable practices of teaching. We envision teachers engaging in frequent professional conversations with colleagues and researchers. Content-Focused Coaching is a vehicle for teachers to continue to become smarter about teaching and learning and to develop, share, and refine best practices. Content-Focused Coaching can serve as a bridge to help schools become vibrant learning organizations in which teachers not only learn from each other, but get the support they need to use research that has been transformed into tools for practice.

This book is designed to explain the general tenets of Content-Focused Coaching and to provide specific examples of Content-Focused Coaching in action in elementary and middle school mathematics. The first chapter presents the general model and the underlying principles. Chapter Two, “Working with Teachers,” provides practical advice for getting started and outlines the basic structure of coaching sessions. Next we present three case studies that illustrate Content-Focused Coaching in practice. The accompanying CDs contain video footage from both the coaching sessions and the lessons described in the case studies. They also contain full transcripts of the video segments and are designed to be used along with the book or independently as tools for study groups. The chapters titled, “The Principal” and “The District” situate the role of the coach or staff developer in the landscape of a school district and provide practical advice for negotiating that landscape. The final chapter highlights some strategies that can be used to transition teachers from teaching to coaching. It includes voices from the field—coaches speaking out about challenges, frustrations, and lessons learned as they valiantly strive to meet the needs of a changing and challenging profession.

The work described in this book is evolving. It has had a positive impact on our efforts to cultivate a professional learning community in Community School District 2 in New York City. Over a period of five years, 1997–2002, twenty coaches and sixty teacher leaders have been engaging in content-focused dialogues and working side-by-side with about 1,000 teachers and principals across the district. These efforts continue. We have a common curriculum and agreed-upon principles of learning, and we continue to collaboratively hone our teaching skills and deepen our content knowledge on a regular basis.

Through this book and the accompanying CDs, we offer our work as a catalyst for conversation among educators. We know that Content-
Focused Coaching can be one of many useful models of professional development in the quest to positively affect teaching and learning. We offer our experiences with it in the spirit of joining a national conversation on improving mathematics education.
Coaches who have been classroom teachers themselves understand the complexity of teaching and its centrality to helping all students achieve high levels of learning. Professional development adds another layer of complexity because it focuses on the teacher’s learning in order to improve student learning. The coach needs to not only understand what is involved in teaching children, but also have the skill set to work with adults as they navigate the change process and build their own content and pedagogical knowledge. Coaches need to become astute at diagnosing the stated and unstated needs of the teachers they work with, mapping the relationships in a school, getting the pulse of the school culture, and developing a repertoire of strategies that allow for differentiated staff development. This is analogous to learning to meet the needs of a range of students in a math class.

In-classroom coaching is a piece of the puzzle of systemic change and coaches need to situate their work with individual teachers into the large picture. Keeping the larger picture in mind can, in turn, provide focus for work with individual teachers. For example, if the larger school community is focused on effective strategies for developing computational proficiency among students, the coaching work with individual teachers should reflect this goal. Each teacher is an inter-dependent facet of a loosely connected complex system. The coaching with each teacher will have a ripple effect on the professional community at the school. By the same token, if teachers are also attending workshops on developing effective instructional strategies for teaching computation and on deepening their own understanding of number operations, it will complement the coaching. The object is to create a learning community at the school level that is aligned with the work on the district level. In practical terms this means focusing
on building relationships with and among teachers by helping them build the skill set needed for effective instruction, and helping them create self-sustaining networks that will result in ongoing improvement. Thinking about the larger picture and situating the individual within it helps the staff developer prioritize the scope of the work.

**Diagnosing Teachers’ Needs**

It is essential to consider what teachers know and can do and what they need to learn and be able to do. The gap between the two is the scope of the coaching work. “Where do I begin?” is a lament of many a novice coach. While there is no recipe, we will consider the following areas:

- content knowledge and disposition toward mathematics
- pedagogical knowledge and underlying beliefs about learning
- pedagogical content knowledge
- diagnosing children’s thinking and assessing prior knowledge
- habits of planning and engagement with curriculum materials.

While all of these are interwoven and get worked on simultaneously, usually one of them is more glaringly a need or a strength than the others are. Considering the teacher in relation to these five areas helps the coach get an overview of the scope of the coaching work that’s to be done.

**Content Knowledge and Disposition Toward Mathematics**

Content knowledge involves a deep and flexible knowledge of the mathematics that is to be taught. This includes an understanding of the network of concepts that relate to the specific concept to be taught and of how that network is connected to the mathematics in the year-long curriculum as well as to the curricula of the previous and following years.

Sometimes it is evident early on that a teacher is “math phobic” and lacks confidence in her or his content knowledge. A teacher’s attitude toward mathematics will, of course, impact her or his effectiveness in teaching mathematics. Clearly, you cannot teach what you do not know. Sometimes, however, teachers are reticent to express a dislike of the subject or insecurity about their content knowledge; they act as if they know, and are defensive about their practice. Teachers, like most people, fear making mistakes and exposing what they don’t know. Other teachers have inflated confidence in their knowledge of
mathematics. As a result, coaches often find themselves trying to teach content in the planning session, doing the mathematics with teachers as they prepare to teach their lessons. Coaches are often classroom teachers who are relearning mathematics themselves, and who continue to do so in their coaching role. This can become an opportunity for coach and teacher to explore mathematics together. Coaches will also have to work with colleagues who know more mathematics than they do. In this way, teachers and coaches are truly collaborative learners. We are not suggesting that mathematics can be effectively taught during coaching sessions. A teacher who needs to learn more mathematics in order to teach the curriculum will have to attend workshops or classes designed to increase content knowledge. For many of us, giving a specific and meaningful answer to “what is the mathematics in this lesson,” is often a challenge. The commitment should be to continue learning mathematics content.

**Pedagogical Knowledge and Underlying Beliefs About Learning**

Pedagogy includes developing and maintaining a classroom environment that is conducive to learning, management structures that provide opportunities for self-management of learning and behavior, and instructional strategies and techniques that serve the needs of a range of learners. Evidence of learning is the bottom line. Coaches must be very careful to give teachers leeway in finding a teaching style that suits them and results in rich, deep, flexible learning. A coach’s dogmatic insistence on a particular pedagogical stance usually leads to the teacher’s digging in of the heels rather than to a willingness to reconsider beliefs.

Coaches need to be very aware of their own beliefs about learning and biases about pedagogy. To engage teachers in genuine dialogue about their underlying beliefs about learning and teaching, coaches must respectfully understand the teachers’ beliefs, whatever they may be. It is a good idea to avoid ideological entrenchment and to look for common ground that can provide openings for constructive collaboration. Teachers become engaged in collaboration and learning through working side by side and deliberating with a coach who demonstrates an open and curious mind and a constant willingness to learn from personal experience as well as from research.

The key is to keep evidence of student learning at the core. If a teacher is more authoritarian in management style and a coach is more democratic in approach, these differences will need to be noted and considered in relation to student learning. Reformers in mathematics education tend to be child-centered in their pedagogical approaches and to value teaching methods that are based on constructivist notions of learning. Some teachers embrace notions of teaching that are more
directive, in which students are expected to employ only demonstrated procedures and strategies and to develop understanding through practice. These differing belief systems usually result in very different management styles and classroom cultures. Reformers want to develop “learning communities” in which students are required to think, listen, argue, and puzzle over mathematical ideas with their peers. The more traditional approach expects students to listen to teacher explanations and to work independently. The latter approach often results in behavior modification structures that are controlled by the teacher, such as stars for “good” work or behavior and visits to the time-out chair for “bad.” The former requires that students regulate their own behavior and develop effective interpersonal skills. Teacher and students engage in conversations during which mutually agreed-upon rules and codes of behavior are made explicit.

If there are serious management issues in a classroom, it is very difficult to focus on the content: If students are not listening to each other or the teacher, if they call out and distract each other, and if the teacher resorts to yelling or punitive strategies, it is very difficult to have meaningful conversations about mathematics. If this is the case, coaching dialogues will revolve around developing a culture in which learning can take place. The coach needs to be able to articulate and model clear and specific methods and strategies for a teacher to try if progress is to be made. One way to approach this is to begin with an inquiry into the teacher’s image of an ideal class. Can the teacher imagine what it would look like, feel like, and sound like if the class were working in the way he or she wanted? If the teacher can articulate that and make it explicit, he or she can then make explicit agreements with students about how they will function in class. Often the teacher’s ideal is similar to the coach’s, although their beliefs about creating the ideal may be different. If there is a common destination, the coach can assist the teacher in creating the ideal class.

Guiding all students to proficiency in mathematics involves being willing to become aware of one’s biases and beliefs about who can learn and how learning takes place. Staff developers disagree about whether people must change their beliefs before they change their practice or whether a change in practice brings about a change in beliefs. In our experience, it is often a combination of new practices, new curricula, and a willingness to suspend belief and reflect on evidence of learning that assists people in the process.

*Pedagogical Content Knowledge*

Pedagogical content knowledge is the knowledge base that is specific to effective mathematics instruction, including curricula and knowing
how to unpack big mathematical ideas into accessible concepts for students. It includes the selection of appropriate tasks and curriculum materials and the creation of visuals, mathematical models, and explanations that give all students entry into the conceptual domain that’s under study.

For example, when teaching fractions, it is effective to use both an area model and a division context to help students develop a flexible understanding. In one of the cases presented in this book, the teacher uses Geoboards as an area model to explore halves, fourths, and eighths. In another case, the children share a given number of brownies among a given set of people, thereby working with fractions as division. Pedagogical content knowledge in this case lies in being aware that both of these contexts contribute to a robust understanding of fractions.

Teachers may know a great deal of mathematics but not know how to make it understandable to their students. They forget what it was like to not know, or they never had to struggle to grasp the concepts in the first place. It is difficult for people for whom mathematics came easy to understand the difficulties and confusions of those for whom it doesn’t. Teachers who can’t make their own knowledge understandable tend to lack pedagogical content knowledge.

*Diagnosing Children’s Thinking and Assessing Prior Knowledge*

Elementary school teachers often take several courses in teaching reading, at least one of which involves diagnosing reading problems. This is not the case for mathematics. In many states, teachers are required to take only one class in mathematics education and rarely does this course revolve around diagnosing children’s struggles with understanding mathematics. Beyond some very basic early number ideas, most teachers do not really know how to diagnose children’s thinking about mathematics, and they are at a loss in determining the gaps in children’s knowledge.

Coaching sessions should include making explicit what children are likely to do or say in relation to the activity under discussion and what aspects of the concept might cause confusion. During the lesson, the coach and teacher should focus on what children actually do and say in order to build their knowledge base. Coaching sessions should often include activities like looking at student work together and reflecting on student comments as ways of building the teacher’s knowledge about how children learn mathematics. These activities can lead to intelligent experimentation with interventions that might help children move through the various stages of development.
Many staff developers and teacher leaders are learning how to listen to children and how to think about the trajectories of development, misconceptions, partial knowledge, and common confusion that children experience as they learn mathematics. This is an area in which teachers and coaches can work as collaborative partners. In District 2, staff developers take courses (such as Developing Mathematical Ideas [DMI] see, Schifter, Bastable & Russell 1999a, 1999b for course materials) that are designed to help teachers learn to listen to children as they try to articulate their ideas, then discuss the implications for teaching. The staff developers then share this work with teachers.

**Habits of Planning and Engagement with Curriculum Materials**

Lesson planning and long-term planning need lots of attention in the coaching process. Many teachers think that they need to work with curriculum materials as if they are scripts to be followed almost mindlessly. At the other extreme are teachers who think they need to create each lesson from scratch. There is a steep learning curve for most people in becoming familiar with new curriculum units and learning to use them effectively. A great deal of the staff developers’ work in District 2 revolves around helping teachers consider new ways of thinking about the role of curriculum materials. It is rare for teachers to try out activities before they ask children to do them. Teachers often lament the lack of time to plan thoroughly, and they sometimes admit to being unsure of how to plan effective mathematics lessons. Here, the Guide to Core Issues in Mathematics Lesson Design (Figure 1–3) is helpful. When used as a map for lesson planning, this tool helps teachers and coaches internalize pivotal questions they might ask themselves when planning lessons.

**Getting to Know the Teacher**

The first conversation between coach and teacher is one of exploration. The long-term goal is that the coach and teacher will establish a professional partnership that results in all students learning at high levels. Getting to know one another’s strengths and styles, professional dreams and goals, and philosophies and beliefs is part of the journey.

The purpose of the first conversation is to establish a mutual agreement to work together, to begin to define the parameters of that work, and to lay out a plan of action, or at least a framework, that feels comfortable and productive to both parties. As in all productive human
relationships, it is important that the dialogue be open and that there be no hidden agenda.

There is no recipe for what should be discussed in the first coaching session. The immediate goal is to uncover the teacher’s needs as quickly as possible and translate them into a course of action. To get the ball rolling, the coach informally interviews the teacher by asking questions like the ones that follow.

**How long have you been teaching?** New teachers generally have different issues than experienced teachers do. Management and routines, for example, may be plaguing the new teacher, while for a veteran teacher management may no longer be an issue. However, the management structures that a veteran teacher has employed to date may need to be modified if they do not allow for student discourse and active, collaborative, problem solving.

New teachers may or may not have taken classes in their preparatory programs that were in line with research-based best practice or standards-based pedagogy. Veteran teachers may have never experienced the kind of learning environment they are now being asked to create and manage. This may trigger resistance to the new methods, or a sense of inadequacy that plays out as defensiveness or denial of the need to change. On the other hand, a veteran teacher who is a lifelong learner may have signed up for every institute or workshop offered and be delighted to have a partner with whom to bounce off ideas and extend her or his repertoire. Experience level influences the focus of the work, but stereotyping based on experience level is not conducive to productive rapport. All teachers are unique individuals who have been influenced by their teaching experience in myriad ways.

Another factor to consider is the experience level of the teacher in relation to the experience level of the coach. Coaches tend to enjoy working with new teachers because they feel they have a lot to offer to novices. The confidence this gives them helps them to dive in. In most instances teachers new to the profession are eager for support and guidance. However, when a senior teacher works with a coach who is quite a bit younger and has less teaching experience, the coach often experiences doubt and fears that she or he will not have anything of value to offer. Coaches often worry that they do not have the right to offer advice to veteran teachers, or to colleagues in general. Content-Focused Coaching is a collaboration in which each person respects the knowledge base and perspectives of the other and learning is reciprocal. The coach is not expected to arrive on the scene with a completely planned lesson. The teacher’s input is always part of the coaching dialogue. It is often helpful for both teacher and coach to put
these issues on the table and speak honestly about what they are feeling in order to set a productive tone for the work. Explicitly acknowledging that they will learn from each other and that each brings some piece of the puzzle to the table not only reduces insecurity, it is also the disposition needed in any learning community.

What are your favorite subjects to teach? How often do you teach mathematics? If teachers do not mention mathematics among their favorite subjects, that is a clue that they may not enjoy mathematics or feel confident in their content knowledge. If this is the case, they may not be giving mathematics adequate instructional time. Inadequate instructional time turned out to be one of the main reasons for poor student performance in District 2. (The rule of thumb in the district is that five hours a week should be dedicated to mathematics instruction.) In some schools, the overall schedule adversely impacts a teacher’s ability to devote the necessary amount of time to teaching mathematics. The teacher may, in fact, be frustrated by the shortage of time allowed for mathematics instruction. If it is a schoolwide issue, the staff developer will have to make it a long-term goal to get the principal to consider mathematics instructional time when creating the overall school schedule. In the meantime, the coaching and teaching work will have to proceed within the given parameters. This is a very common scenario and one that often requires a year or two to remedy.

What are your feelings toward mathematics? A teacher’s disposition toward a subject is important to the effectiveness of his or her instruction (Ma 1999). If a teacher dislikes the subject, part of the coaching sessions may be spent in finding ways to get the teacher to engage as a learner in a new way and to experience success in doing so.

What’s your math history? If the previous question seems too direct or doesn’t yield a useful response, asking the teacher to share an anecdote from their personal mathematics history may help. “I remember my second-grade teacher embarrassing me when I couldn’t recite my facts fast enough” sheds a different light than “I always did well in math.” Emotions play a big role in change, and applying emotional intelligence is a core coaching skill. It is important to not make assumptions based on statements like the ones above, but to instead use such statements as springboards for further probing.

Tell me about your students. It is important to pay close attention to the things a teacher says about her or his students, because further probing will likely reveal a lot about the teacher’s beliefs about teaching
and learning. For example, consider the statement “I love these kids, but they come from such dysfunctional homes.” Is there an implication that pushing these students would be in vain because they will never have the kind of preconditions necessary to be successful learners? Or is there an implication that we may need to be really creative in helping children whose home lives are challenging develop the skills to learn at high standards? Either is plausible. The former belief implies an ability-based view of learning and the latter implies that the teacher sees it as her job to find a way to reach every student. Teachers’ beliefs about students will impact student self-efficacy, which plays a pivotal role in success.

**Are there colleagues you enjoy working with? What kinds of work-related things do you do together?** These questions are aimed at mapping the relationships in the school, determining the level of collegiality, and helping you plan your schedule. You will want to build on existing relationships. In a case where two of four fifth-grade teachers on staff are already collaborating, ask the principal to give them a joint preparation period and combine their preconference to serve both. Because the goal is to build capacity, it is important to be on the lookout for ways to increase the number of teachers who can be served without decreasing the quality of service. If a cadre of teachers who are willing to start the journey can be identified, in no time at all the staff developer will have friendly allies who will assist and advise as she or he learns to navigate the culture of the school. They are likely to talk to their colleagues about the successes they are enjoying, which in turn will inspire others to get involved.

At the same time, it is important not to alienate those who may not be ready to plunge in. Eventually, if a school is going to have a coherent, effective, empowering mathematics program, all teachers will need to sign on. It will become more difficult to develop a professional learning community that serves all teachers on the staff if those who are eager to start are seen as elitists and those who are more reluctant to sign on are alienated. Suffice it to say that coaches must do their best to maintain the fine balance between inviting people into the fold and giving people the time and space they may need to come aboard voluntarily.

**What are your goals as a learner? What are you curious about in relation to teaching and learning?** Questions like these imply that learning is part of the professional domain and is ongoing. They also begin to move the conversation to the specifics of the work. Here, too, listening carefully to a teacher’s response can be revealing. A
teacher who has some clear and specific goals is likely to be a self-motivated learner. If the motivation for learning is intrinsic, a teacher will be committed to the work that is codefined in coaching sessions. A teacher who can’t think of any areas she or he would like to know more about may not be habitually self-reflective about her or his practice; that teacher’s locus of motivation might be external. People who are externally motivated will often comply with the changes being demanded of them, but will not necessarily internalize the underlying principles. Often they implement the more superficial aspects of the improvement program and their essential practice remains unchanged. For example, they might change the room arrangement from desks in rows to desks in clusters of four, but give assignments that almost all call for independent work. If this is the case, the coaching might focus on searching for evidence of student understanding. Focusing on the assessment of learning sometimes helps teachers understand the heart of the matter more profoundly than focusing on lesson planning does.

What specifically are you interested in working on together? This question focuses on the specific work you will embark on and allows you to prioritize your goals. Asking what the teacher’s agenda is begins the process of setting mutual goals and sets the tone for collaborative dialogue. The coach must establish the collaborative nature of the relationship and respect the teacher’s goals, as well as add to those goals the things the teacher may not have identified. For example, the teacher may want to work toward improving her or his questioning techniques and the coach may suggest that the goal be broadened to the domain of classroom discourse. In this way, the focus would encompass the teacher’s questions, the students’ responses, and the teacher’s responses to the students. It can be further broadened to include student-to-student discourse, which begins to push the envelope to developing a learning community. This in turn entails working with students to develop and self-manage their discourse skills. This broader focus is likely to affect many aspects of classroom life because its underpinnings are three principles of learning: accountable talk, socializing intelligence, and self-management of learning.

If a teacher is unclear about where to focus the work, the coach can offer a menu of suggestions and let the teacher select the starting place. The main areas correspond to the ones explained in the section on diagnosing teacher needs. For example, the coach might ask whether the teacher would like to begin with a focus on implementing the new curriculum materials, on assessing student understanding, or on a specific aspect of the content, such as computational
fluency. The coach might bring the Guide to Core Issues in Mathematics Lesson Design into the picture as a means to prioritize the work.

**What are your major mathematical content goals for your students this year? Which aspects of the content do you feel confident teaching? Which aspects are you less secure about?** Is the teacher aware of the big ideas that are crucial for the grade level? Does he or she have some overall logical sequence for the concepts to be worked on? Can he or she identify a connected network of concepts that relate to the main mathematical topic?

It would be overwhelming to ask all of these questions in one sitting, so some of the questions listed above can be raised in subsequent meetings. The point is to gather as much information as early as possible in order to sculpt the work to match the teacher’s needs.

**Observing a Teacher Before the Coaching Begins**

Before the actual coaching sessions begin, it is a good idea for the coach to come in and observe the teacher working with the class. This gives the coach a sense of the classroom environment and routines, the teacher’s teaching style, and the students’ behavior patterns and attitudes. From this observation the coach can begin to formulate the initial focus of the work. This observation is not an evaluation but a “getting to know you” visit.

It is important that the coach understand and respect the teacher’s comfort level. In some schools, visitation among teachers is not a common occurrence. In some schools, working with a mentor or coach means there is something wrong with your teaching and you need help. In other schools, there is a star mentality in which competition among teachers is the norm. A competitive environment is not conducive to a learning environment. In a learning environment everyone is working to improve the collective skill level of all involved. Whether the coach is invited to observe a lesson depends not only on the teacher’s comfort level, but also on the norms and culture of the school. A coach must be sensitive to these things and have a flexible repertoire of places to begin. If the coach begins by observing a lesson in the classroom, it is still advisable to have a brief talk time before the observation so that the coach can be informed about the teacher’s goals and objectives. If that is not possible, questions regarding what the teacher wanted to accomplish can be asked after the observation. It is essential that the coach refrain from making assumptions about the lesson and use the post-conference dialogue to reflect on specific events or classroom discourse.
before offering conjectures, thereby maintaining a stance of inquiry during the debriefing conversation.

**Getting Started**

Scheduling and formats are logistics that need to be negotiated. How often and when will we be working together? Will we have time for both pre- and postconferences on a regular basis? If not, which conference is preferred? If we have time allotted only for a preconference, how will we give each other feedback? If we have time allotted only for a postconference, how will we share the planning?

Staff development without talk time is generally ineffective. It is important to establish that time to talk about the work is nonnegotiable. Planning time during the school day is very precious, and it is rare that you will have both a pre- and a postconference on a regular basis. In our experience, if you can have only one talk time, it is generally preferable to opt for the preconference.

**The Preconference—Planning the Lesson**

Often the act of lesson planning is a good place to begin the work of coaching. A preconference focused on lesson planning gives the coach an opportunity to get insight into the teacher’s planning habits. The Framework for Lesson Design and Analysis (Figure 1–1) and the Guide to Core Issues in Mathematics Lesson Design (Figure 1–3) are helpful mental maps. Is the teacher clear about the mathematical focus of the lesson? Has she or he actually done the activity or the problem? Does the activity chosen align with the stated lesson goal? Is the teacher using the curriculum text as a script? Is the teacher creating her or his own lessons? If so, what is the rationale for creating the given lesson and where does it fall in a sequence of lessons? Is the teacher using a variety of resources or bound to one series? If the teacher is using a variety of resources, what is guiding the choice of activities? Do the activities revolve around important mathematical concepts? Is the teacher considering the students in the class? Does the teacher know the students well? Does the teacher underestimate or overestimate what the students are capable of? Does the teacher seem to understand how children learn mathematics and the kinds of things they might say or do to demonstrate their developing knowledge? The coach does not necessarily ask all of these questions, but rather listens to the teacher’s plan to get a sense of what aspects of planning the teacher is already incorporating and what aspects may be introduced over the course of time.
Teaching the Lesson

There are three basic formats for sharing responsibility for teaching a collaboratively planned lesson: the coach teaches the lesson, the coach and teacher coteach, or the teacher teaches the lesson. A coach might initially invite the teacher to select which of these formats would be most comfortable as a starting place. Eventually all three formats can be used, depending on the focus of the given lesson. All of these formats ideally include pre- and postconferences.

The Coach Teaches the Lesson

At the school level, the coach is a potential team player with a unique challenge. She is an outsider inviting people to both “play” with her and allow her to lead. Her power to influence is “with” others, not “over” others. By rolling up her sleeves and engaging in the messy business of classroom practice, she maintains both credibility and humility. She holds her practice out for scrutiny again and again as a way to entice others to do the same. The most respected coaches “walk their talk” and as a result are instrumental in cocreating vibrant professional communities.

It is essential for coaches to be willing and able to teach children in the classrooms in which they assist teachers. It is often useful for a coach to teach a lesson or even the first few lessons in a given classroom in order to gain credibility and to set the stage for the kind of instruction she has in mind. (Other teachers can be encouraged to observe these lessons.)

We do not advocate that coaches do all the teaching; rather, it should be one of a repertoire of coaching practices. Yet we also recognize the reality that the staff developer teaching the lesson is the most popular format for a good portion of the first year that staff developers work at a school. The key to effective use of this format is that the teacher must participate in the planning and debriefing and must actively observe the lesson. For example, active observation might include noting every question the staff developer asked of students in order to examine the role of questioning in a good mathematics lesson. When a coach teaches a lesson, the coach and the teacher should have a debriefing about the lesson in the same way that they would if the classroom teacher had taught the lesson. The message is “We are here to learn from each other in the real, complex world of teaching.” However, modeling lessons for the teacher should not be the only format a coach makes use of. For the coach to more fully assist teachers in practice it is necessary to move to the formats described in the next two sections.
Coteaching

The second format used in Content-Focused Coaching is one in which teacher and coach share the responsibilities for implementing a lesson. This format is rarely a starting place, though it can be. It takes trust and excellent communication skills, and it is a very effective format. For example, a teacher may feel comfortable presenting a problem to students, but less secure about facilitating whole-group conversation after the students have solved the problem. The coach might agree to facilitate the class meeting in this case. During the preconference the coach and the teacher can discuss what the teacher’s focus should be during the class meeting in order for the teacher to gain confidence in facilitating student discussions of mathematics content.

Another coteaching scenario is one in which the teacher and the coach work side-by-side during small-group work time, working with individual students or small groups of students as they work through the assignment. The coach may observe the teacher’s interactions and offer immediate feedback, or vice versa. Teachers often feel unclear about what constitutes appropriate interventions with students who are struggling or students who need to be challenged. By working side-by-side during this part of the class period, teacher and coach can build a set of explicit intervention strategies that the teacher can use when the coach is not present.

The Teacher Teaches the Lesson

Once coaching has been established in the school, observing the implementation of coplanned lessons is a common format for Content-Focused Coaching. Classroom observation skills are required of coaches (and teachers) if assessment of teaching and learning is to drive instruction. In this case, assessment of both teaching and learning is guiding the coaching sessions. If the Guide to Core Issues in Mathematics Lesson Design is used in planning lessons, coach and teacher will be addressing content, pedagogy, and evidence of student learning. The coach needs to document evidence of student learning or confusion while observing the lesson. Notes about what students say during classroom discourse are a source of information that allow the teacher and coach to reflect on student learning during the postconference. In addition, the coach should document the questions the teacher posed and the notations that the teacher made on the blackboard. This type of data is a source for reflecting on the effectiveness of the pedagogy. The more specific the data, the more useful.

In the following we provide some exemplary perspectives—related to the Corre Issues—for observing lessons.
Is there evidence that important mathematics is at the core of the lesson and that the teacher understands the content? One thing to look for is the visuals or models the teacher has prepared or improvises to explain a concept. Another is whether the teacher has given a clear and accessible summary of concepts that students have been grappling with in the course of a lesson. A third is the teacher's ability to respond to unexpected student questions or insights. Can the teacher discern between important mathematical conjectures and superficial or tangential ones? What generalizations, if any, have the teacher or the students posited?

What is the nature of the interactions between teacher and students and among students? Are people respectful when they speak to one another? Are students confident and comfortable in raising questions, sharing ideas, and working together? Who is doing most of the talking? Is the teacher asking probing questions and giving students time to think? Are students talking to each other about their ideas, or does the dialogue always follow a teacher-student-teacher-student pattern? How do people react to mistakes or wrong answers? What, specifically, do students state or ask that show an understanding or misunderstanding of the content under discussion? These are examples of questions that can be used to analyze the degree of accountable talk in the class.

It is important to take copious and specific notes on what is actually said in a discussion in order to be able to reflect on the lesson in detail afterward. It is useful to collect student work, and especially student writing, in relation to the mathematics that may have been generated during the lesson in order to determine next steps. Many coaches do not take specific-enough notes, resulting in debriefing conferences that are too general to effect change.

To what extent does the teacher use visual aids and models to make public and facilitate student understanding? For example, the blackboard and the overhead projector are instructional tools that need to be considered carefully in lesson design because they serve different functions. Blackboards provide a lot of contiguous space, so solutions can be viewed simultaneously for comparison. The teacher can model good note-taking skills on the blackboard. It is helpful to make a sketch of what was written on the blackboard during the lesson in order to reflect on whether it helped or hindered students' understanding. An overhead projector is useful, for example, when manipulatives are going to be part of the lesson and a teacher or student needs to demonstrate with objects that are too small to be seen by everyone unless they are projected onto a large screen. These details need to be-
come part of what a coach observes when watching a lesson in order to be cognizant of choices when planning lessons.

**Are there grouping structures or modified sets of tasks to address individual student needs?** Has the teacher thought about which children and how many children should work together on a specific task? Has consideration been given to the accessibility of the problem for each of the learners? Do the tasks pose an appropriate range of challenge?

**What management style is being employed and is it conducive to the development of a learning community?** Do children have an opportunity to reflect on their behavior and work ethic and to assess their academic achievement, or are they simply expected to follow directions and keep quiet? Do students have input into how they will monitor their behavior and improve their achievement levels? Do the teacher’s decisions lead to student autonomy or dependency? It will be easier to get students to think, reason, and problem solve in math if they are thinking, reasoning, and problem solving in many areas of their lives.

**Do the room arrangement and placement of supplies help or hinder the learning goals?** Is the room arrangement conducive to collaborative work and does it also provide some private spaces for students who may need to work independently? Is the room neat and organized in a way that promotes autonomy? Who controls access to supplies? Are mathematician’s tools—calculators, rulers, compasses, protractors, etc.—available? Are a variety of manipulative materials available?

If the necessary equipment is not available, the staff developer may have to find ways of getting them for the teacher. Removing obstacles is an important coaching move. Going to bat for the teacher with the principal or district is a way to win friends and make progress. Many a staff developer loans personal materials to colleagues in order to keep the work moving forward.

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**The Postconference**

Ideally, the coach and teacher meet shortly after the lesson while memories are still fresh. It is helpful to take a few minutes between the lesson and the postconference to reread and make sense of notes taken. This also allows the person who taught the lesson to jot down his or her thoughts. The coach will tentatively prioritize the main issues to be addressed in the conference.
Beginning the dialogue by asking the teacher to reflect on the lesson first is generally a good move, and allows the teacher to express his or her feelings and to develop the habits of self-monitoring and self-reflection. It gives the teacher a sense of control over his or her own learning and the course of the postconference. Giving a teacher the opportunity to be the first to raise issues, concerns, or questions related to the lesson allows the coach to recognize points of agreement and to address issues that are genuinely important to the teacher. This move also prevents the coach from jumping right in with statements that may sound critical or judgmental to the teacher. Often, the teacher is a more severe critic of his or her practice than the coach is.

The main purpose of the postconference is to reflect on the lesson from a perspective of student learning. A strong focus on student learning also helps deflect the tendency to criticize teachers with respect to superficial aspects of implementing particular methods. Teaching moves are discussed as much as possible in relation to evidence of student learning. For example, if students seemed confused or reticent to answer a particular set of questions, the coach and the teacher could analyze the wording of the questions with respect to clarity and intent (assuming the coach took copious, verbatim notes). The more specific the coach’s feedback in relating teaching moves and student learning, the more likely it will be useful to the teacher.

Ways to know what the teacher is learning in a postconference are to ask him or her to paraphrase suggestions offered by the coach and to invite the teacher to verbalize his or her questions and new insights. Teachers ought to feel free to question, modify, or even reject suggestions offered by a coach. What matters is the quality of reasoning manifested in such joint deliberations on the design of lessons and teaching moves that assist student learning.

Whenever possible, student work should be brought to the postconference for analysis and guidance in planning the next lesson. When studying samples of student work, the coach and the teacher focus on student understanding of the mathematics. They can ask whether the task and the assignment were clearly presented as evidenced by the quality of the work. Did the teacher clearly communicate his or her expectations? They could ask questions about student understanding of the mathematics based on the various solution strategies, types of errors, and range of responses found in the student work. All of the information gathered guides the planning of the next lesson. And as always, it is a good idea for the coach to ask the teacher how he or she can be most helpful in relation to planning the next day’s lesson.

In the real world of school life, it is not always possible to have a meeting with a teacher after the lesson. When this occurs, it is good
practice for the coach to give the teacher his or her notes on the lesson. If the notes had not been written with the intention to give them to the teacher after the lesson the coach should take the time to rewrite the notes and take into account that written communication is more exacting than verbal communication. It is important that the teacher receives feedback and comments that are not likely to be misconstrued as judgmental or evaluative. The notes are written in the same spirit, as the conversation would be guided by: We are colleagues doing our best to collaboratively improve the teaching and learning of mathematics in this classroom. The more specific the notes the better. It is useful to clearly indicate opinions, suggestions, or questions from the coach and to separate these from descriptions of classroom discourse. Sometimes, just providing a teacher with a clear, unedited description of what occurred in a pivotal teaching episode is most useful.

Evidence of Progress

Over the course of the year, the coach will need to document evidence of progress. It is important to think about what might constitute progress early on and to make the benchmarks of progress clear and explicit to all concerned parties. Most people tend to think about progress in terms of improved student test scores. Though this is an important piece of data, it has many limitations. First, test scores for standardized high-stakes tests only come out once a year, often at the very end of the year. We need to assess progress throughout the year. Second, test scores are just one indicator that students are progressing. Often in the first year of an initiative, test scores are not affected; they may even dip slightly as people transition from one curriculum or methodology to another. Coaches and teachers need to consider other ways of collecting data about student performance, such as student writing in the subject area or specific assignments that will double as assessments.

Change in teacher behavior and thinking is the second area to consider. Assessing teacher progress is not the same as evaluating teacher performance in the traditional meaning of the word. While formal evaluation is the job of the principal, the coach needs to look for signs that the coaching is productive. Sometimes these signs are small and can be overlooked when people are engaged in the work. All the information the coach collected when diagnosing the teacher’s needs can be translated into benchmarks for progress. For example, if a teacher who once hated math is beginning to look forward to teaching it, that’s progress. If a teacher only wanted the coach to model
lessons and is now willing to coteach a lesson, that’s progress. If a teacher once doubted that the students were capable of talking and listening to each other about important mathematics, but now believes it possible and is beginning to consider ways to increase student discourse, that’s progress. If a teacher used to follow the curriculum guide as if it were gospel and is now making slight variations based on students’ needs, that’s progress. If the teacher is beginning to ask students what they think and to provide explanations in their own words, that’s progress. If yelling and shushing were the predominant management techniques and now there are clear expectations about behavior and strategies for managing behavior that involve student self-management, that’s progress. If a teacher simply did not understand that there is more to mathematics than memorizing facts, but is now willing to go a bit more deeply into the reasoning behind a procedure, that’s progress. If a teacher thought the only thing that mattered was high test scores and is now beginning to realize that it is possible to maintain high test scores and develop deeper understanding of mathematics, that’s progress.

Substantive change can also be seen in various ways that are more related to lesson design. Substantial change indicators would include a teacher internalizing the core issues of lesson design expressed in the Guide to Core Issues in Mathematics Lesson Design. For example, when a teacher begins to come to preconferences having done the mathematics activity and names more specific concepts, skills, and applications of the problem, that is significant progress. When a teacher begins to habitually ask, “What is the mathematics?” and is not satisfied with broad definitions such as “multiplication,” but rather wants more specific answers, such as “the distributive property of multiplication,” that’s progress. When a teacher starts to independently speculate about the phrasing of questions; what visuals to use; what aspects of the lesson may be difficult for students to grasp; and how to give students entry into the mathematics—without prompting from the coach—real, enduring progress has been made.

A staff developer has to become a detective for progress. And progress should be recognized and celebrated. This is a key to improvement. This is long-term, complex work that is difficult to maintain until it becomes part of the professional culture. All steps in this direction should be noted and built on.

Change is not linear in nature. It often happens in spurts, then peters out and needs to be infused with new formats, new structures, new focuses, and the like. When energy seems to be waning, it is important to make the time to take stock and make midcourse changes that will reinspire people.
Maintaining Progress

One way to ensure that teachers will want to continue the work is to ask which things you are doing are useful and what you might need to do that you hadn’t thought of. It is not only the teacher who must be accountable—accountability is reciprocal. The hardest thing for some coaches to ask is “How am I doing?” “What can I do to improve my end of the work?” It feels threatening. You are vulnerable. What if the teacher says something you don’t want to hear? Ironically, it is exactly this kind of move that has the greatest impact on the relationship. If someone tells you that they need something other than what you have been offering, you have a good chance to renegotiate the work in a way that will be more productive for both of you. It feels a lot worse to find out at the end of the year that a teacher wasn’t satisfied about some aspect of the work but did not feel comfortable raising the issue.

On the other hand, it is a good idea to ask the teacher, “What did you learn from this coaching session that you can generalize and use beyond this lesson?” In this way, you make what was learned explicit, and you do so on the teacher’s terms. The teacher’s answer may be an example of progress that you had not even imagined.

Building a Professional Community

Professional relationships are complex—and relationships are key. If colleagues enjoy each other, working together is usually easy; if disagreements arise, there is intrinsic motivation to resolve them in a win/win fashion. Respecting each other’s differences and allowing those differences to become the grist for growth can be challenging. In professional relationships, the willingness to see this challenge as an opportunity can lead to innovative and profound changes in practice. For example, one teacher believes that students learn best when they sit quietly and are called on when they raise their hands. Another teacher believes that children thrive when they can converse with their classmates as they grapple with confusing and complex ideas. It would be ideal if both teachers could consider the grain of truth in each perspective: There are situations in which each belief may be true. All too often, one person tries to convince the other that they have found “the truth” and discount the possibility that what is true in one case may not be true in another. This attitude is one sure way to shut down communication and lose momentum in professional community building. If lines of communication can be kept open, there is a good chance that shared coherent views can be
created over the long haul. In the short term, people can get as far as to agree to disagree; at worst each continues to try to convince the other that they are right and the other is wrong. The coach’s job is to create conditions in which various views can be considered and evidence of student learning becomes the bottom line criteria for validity. Keeping conversations focused on evidence of learning makes coach and teacher less likely to get bogged down in rhetoric and more likely to make progress. The coach should view herself not as the teacher’s only hope, but as more of a pragmatic architect ready to build the unique bridge that will lead to an enthusiastic and self-sustaining professional learning community at a particular school.

Teachers are going to have different reactions to coaches, and vice versa. They will bring different levels of skill to the collaboration process. Some will have difficulty working with colleagues with whom they may have a negative history. The difference between coaches and teachers is that the coach is invested in creating working relationships, while teachers appear to have the option of not getting involved. This dynamic is often difficult for new coaches. A coach who has a fear of rejection or takes things personally will have to overcome those tendencies. This is a great opportunity for personal growth if the coach shifts perspective from “it’s about me” to “it’s all about the work—it’s not personal.” Keep the big picture and the long-term goal in mind and trust that people are a lot smarter and more caring than we often give them credit for. Many issues that arise in this work are the result of miscommunication and can be avoided if we practice listening to one another and asking questions until we are sure we understand each other.

Skillful staff development engages staff members in nonthreatening ways that help them discover what they do not know, and nurtures their willingness to learn and practice more effective methods. We can develop a healthy anxiety when we become starkly aware that the status quo is insufficiently addressing the needs of students and that our practices may be part of the problem.

All change initiatives require emotional intelligence because most of us find uncertainty unsettling and admitting imperfection often triggers high anxiety and defensive patterns. People engage in reform efforts when they see a reason to. Sometimes it is painful to realize that you have not been as successful as you imagined. Containing anxiety is also necessary and is often as simple as saying to someone, “You were doing the best you knew how and now that you know better we will work together to find ways to do better. Let’s start from where we are and build from here.”
In Summary

Maintaining progress is often more challenging than getting started. Building self-sustaining professional communities that are focused on improvement takes patience, courage, perseverance, emotional intelligence, and skill. Staff developers should create multiple entry points for teachers and a variety of structures that provide opportunities for teachers who are at different levels and at different points in their careers to get involved. They should recognize movement in its myriad forms. Coaches should take a stance of curiosity as they look and listen to classroom discourse; study student work; talk with students about what they are learning; and watch teachers teach and make explicit to them what is working, what is changing, and what is improving. Coaches should talk with teachers and students about practices, strategies, content, assessments, and pedagogy and ask for their views about what is working, changing, and improving in order to help teachers and students begin to self-manage their own progress. In this manner, everyone is involved in cocreating learning environments in which students thrive. Through such ongoing conversations the entire learning community will gradually become smarter about teaching and learning.
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