Chapter 1

Defining the "Technology of Good Instruction"

[As with dual jugglers] the teacher introduces the ball into motion, building in the students the needed skills to enter the activity and keep the ball in the air. As the students gain expertise, more balls may be thrown in, new moves and rhythms attempted, other items included—a pin, a plate, a knife—thus filling the space with a rich array of knowledge, planned and unplanned. Any of these expansions may be initiated by either partner. To be successful, there must be constant synergy. This relationship is reciprocal; if one falters, the balls drop. (Saginor, 1999, p. 188)

The metaphor of tandem jugglers depicts what I have called "the space between the teacher and the students" (Saginor, 1999). What would a classroom be like that embodies that space where the magic occurs, where something that the teacher does, says, or sets in motion creates new meaning in the students, which we commonly call learning? The teacher must put the ball in play and carefully monitor and manage the process, all while opening the door for the unexpected. Every relationship, every aspect of the classroom culture, every conversation whether between teacher and students or among students alone reflects the quality of the decisions made and the level of understanding of the teacher. Capturing this very complex tangle of elements (the plan, the content, and the environment) is the object of Diagnostic Classroom Observation (DCO). We have become accustomed to referring to teacher actions recommended by the growing body of research as "best practices." Without putting all the pieces together, best practice can quickly degenerate into random acts of teaching, creating a veneer that looks on its surface as if it should be working but that frustrates both teacher and students in their inability to produce enduring learning.

This chapter will introduce you to the concepts underlying DCO, connect those concepts to some of the research that influenced its development, outline the elements that distinguish it from other observation protocols, and demonstrate how, in its entirety, it offers hope for the achievement of more than best practice: "best learning." The name, as it implies, describes a set of protocols that allows a classroom observer to look more deeply than was possible before into the complex dynamics of a classroom lesson, to diagnose the strengths and weaknesses, and to work with teachers to own the results of their teaching and to finally improve student performance. Using DCO and its accompanying protocols will allow you to break through the veneer of best practice and get at the stubborn habits that keep teaching practice from being its best.

Teacher observation protocols have typically focused on the teacher—what he or she says, does, or fails to say or do (Danielson, 1986; Glickman, 1990; Saphier & Gower, 1997). Assessments focus on student achievement—what students remember or can perform. New research about student discourse (Ball & Friel, 1991) directs teachers to listen to student conversations so teachers can analyze students' thinking in the moments of development. There is now some work that asks observers to note the ways the teacher interacts with student (mathematical) thinking to guide it from emergent stages to full conceptual understanding (Grant et al., 2002). The new edition of *The Skillful Teacher* (Saphier, Haley-Speca, & Gower, 2008) speaks about "getting inside students' heads" or "cognitive empathy." Analyzing either teacher practice or student performance alone tells only part of the story. It is in the interplay between the teacher and student, planned lesson and resulting learning, that the effectiveness of a teaching event can be judged. A teacher can implement the most well-thought-out plan with the most engaging activities, and students can score well on performance tasks or written tests, but neither of these measures the nature and depth of learning. We see teachers lead a lively discussion or plan an innovative activity, and we see students with their glitzy presentations at the end of a unit or passing a test with respectable scores, but these can leave us wondering how much of what they produced was a direct result of exposure to the teaching. It is in analyzing the interaction between the teacher's teaching and the students' learning that we begin to see how effective that teaching really is.

There has been much quality research about teacher practice that has informed the field and the creation of DCO (Danielson, 1986; Horizon Research, 1997; Saphier et al., 2008). DCO is completely compatible with these protocols and systems, and indeed, it draws on much of the same research that informs them. "Cross-walks" between these three evaluation tools appear in Appendix E. The work in teacher supervision, which focuses on classroom techniques that intentionally engage students in a more constructivist learning environment, forms the basis of Assumption 1 of DCO. Many schools have adopted some of these observation protocols for their supervision and evaluation systems. These school districts, pleased in general with an improvement in teacher practice, have not necessarily seen a rise in their student performance scores. In the face of new national standards, something more specific to the content pedagogy of each subject (Shulman, 1987) is necessary.

DCO is not a "values-free" approach. It is based on several basic assumptions that underlie the elements of the instrument. These assumptions, supported by research and experience, when implemented together, produce the highest quality teaching and learning. While these assumptions are not groundbreaking in and of themselves, applied together in this protocol, they are the essential building blocks of our best vision of the teaching and learning events known as lessons. This book

documents dozens of actual classroom observations throughout the country where, despite the practices so well described in the current body of research and literature and so familiar in discussions in the field, classrooms operate as if the research either doesn't exist or is completely irrelevant to real-world classrooms. Some teachers continue to practice their craft behind closed doors, only intermittently challenged by their building principals, who are overwhelmed with safety issues, legal and budget battles, pressures from parents and school boards, and worries about test results. Ironically, the pressure of test results will only be relieved if principals pay attention to the details of instruction that create the conditions under which the learning measured by those test results takes place.

The book also contains many examples of exemplary practice, also from directly observed classrooms. There is much expert teaching happening in our schools, and not only in the best endowed of them. There is a generation of school leaders steeped in the best practice of the research whose schools embody the specific practices that the research extols. I have worked with and observed many of those teachers and their leaders. The essence of DCO comes from a blend of the research and my experiences as a building- and state-level school leader, a researcher, and a consultant.

ASSUMPTIONS UNDERLYING DCO

Assumption 1: The Best Instruction Happens in an Active, Investigative Environment

Ever since *hands-on* became a familiar term in our educational lexicon, teachers and textbook companies have developed ways of putting materials into the hands of students. Unfortunately, "hands-on," while clearly better than watching the teacher from afar, is necessary but not sufficient to fully engage the learner in understanding new concepts (Ball, 1992). We are now looking more deeply into what the materials that the students have their hands on are, what they are being asked to do with those materials, and how much of their own intellect is being required in the carrying out of learning tasks. The words *inquiry* and *investigation* have been used to describe the best lessons. Educators quibble about whether these take too much time to teach concepts taught more efficiently by teacher explanations or demonstrations. At the root of this argument are several forces. With the range of standards and high-stakes assessments driving many decisions, time becomes more precious to teachers. Administrators are pressured to ensure that all standards are included in the curriculum. But if student learning (and therefore performance on assessments) is the central concern, I would argue that the inefficiency of spending the time teaching content that few students will learn well and even fewer will be able to apply later is a more egregious waste of time than the use of inquiry as a regular part of an instructional program. A well-designed investigation does not have to be overly time consuming, and not every activity needs to be an investigation, but students should have multiple opportunities to engage in the active figuring out of concepts. While some teachers may argue that children need to have some content knowledge before they can be expected to handle an investigation, it is precisely through carefully designed active investigation that the content is learned—that very content that is seemingly more efficient if fed to the students by the teacher at the outset.

The Research Supporting Assumption 1

> Students come to the classroom with preconceptions about how the world works. If their initial understanding is not engaged, they may fail to grasp the new concepts and information that are taught, or they may learn them for purposes of a test but revert to their preconceptions outside the classroom. (National Research Council, 2000a, pp. 14–15)

Research beginning in the late 1980s is showcased in a video series called *A Private Universe* (Annenberg Foundation/CPB, 1987). The researchers were curious about why it was that students of Harvard and the Massachusetts Institute of Technology, when randomly asked some simple questions about general scientific knowledge at their graduation, gave, in large numbers, naïve and incorrect answers similar to those given by elementary students to the same questions. In this study about student misconceptions, they noted that teacher explanations, regardless of their clarity and accuracy, do not interfere with previously held ideas unless challenged directly by the student's own new experience and thinking.

Box 1.1

A Private Universe: Can Teacher Explanations Shake Loose Previously Held Misconceptions? (Annenberg Foundation/CPB, 1987)

Perplexed at the number of Massachusetts Institute of Technology graduates who were unable to light a bulb with a single battery and wire, researchers examine an honors high school physics class in which concepts of electricity were taught. A top student is chosen by the teacher to be the subject of the study. The video episode follows the teacher as he explains complete circuits, light bulbs, and various concepts about electrical currents. Hands-on activities with sockets, wires, and bulbs follow the explanations with a few challenges built in.

One month following the unit, the researcher presents the student with a bulb, battery, and wire and asks her to light the bulb. Completely stumped, the student is unable to move forward because the researcher has not provided her with a socket as she had in her physics lab. Probing by the researcher further reveals that not only does she not know how to light the bulb, she has no idea why. She cannot explain the role of the socket and cannot correctly diagram how the bulb could be lit if she did have one. As a matter of fact, the mistakes she makes reflect the *very same misconceptions* she had about light bulbs when she was given a pretest at the beginning of the experiment. In other words, her prior misconceptions had not been challenged by the learning activities presented to her in class, although one presumes she must have done well enough on unit tests to have been chosen by her teacher for the research project.

Heavily influenced by this research, DCO uses the word *grapple* to denote what teachers need to orchestrate and principals need to look for when determining the likelihood of new learning for students. The teacher in Box 1.1 has done all the thinking for the students. His well-intentioned explanations and follow-up activities had not given the class the opportunity to put together the concepts for themselves.

A "metacognitive" approach to instruction can help students learn to take control of their own learning by defining learning goals and monitoring their progress in achieving them (National Research Council, 2000b, p. 18).

The important piece frequently overlooked is metacognition, even by teachers who, with the best intentions, have integrated investigation into their math or

science classroom. An unlit bulb, a single battery, and a wire presented with an open challenge from the teacher ("See how many different configurations you can use to successfully light the bulb") can engage the students in *grappling* with the materials, hypothesizing, and finally concluding what exactly does make a light bulb light. The metacognitive element is introduced as students are asked to articulate in a variety of ways (diagramming, writing, orally explaining, or discussing) what that concept is and how they came to understand it. This is a prime example of *actual learning* taking place in an active and investigative environment. Investigation, coupled with articulated conclusions and metacognition, leads us directly to Assumption 2.

Assumption 2: Content and Process Do Not Eclipse Each Other; Both Are Needed and Work Together for Sound Instruction (Beware the "Neat Activity Syndrome!")

To develop competence in an area of inquiry, students must (a) have a deep foundation of factual knowledge, (b) understand facts and ideas in the context of a conceptual framework, and (c) organize knowledge in ways that facilitate retrieval and application (National Research Council, 2000b, p. 16).

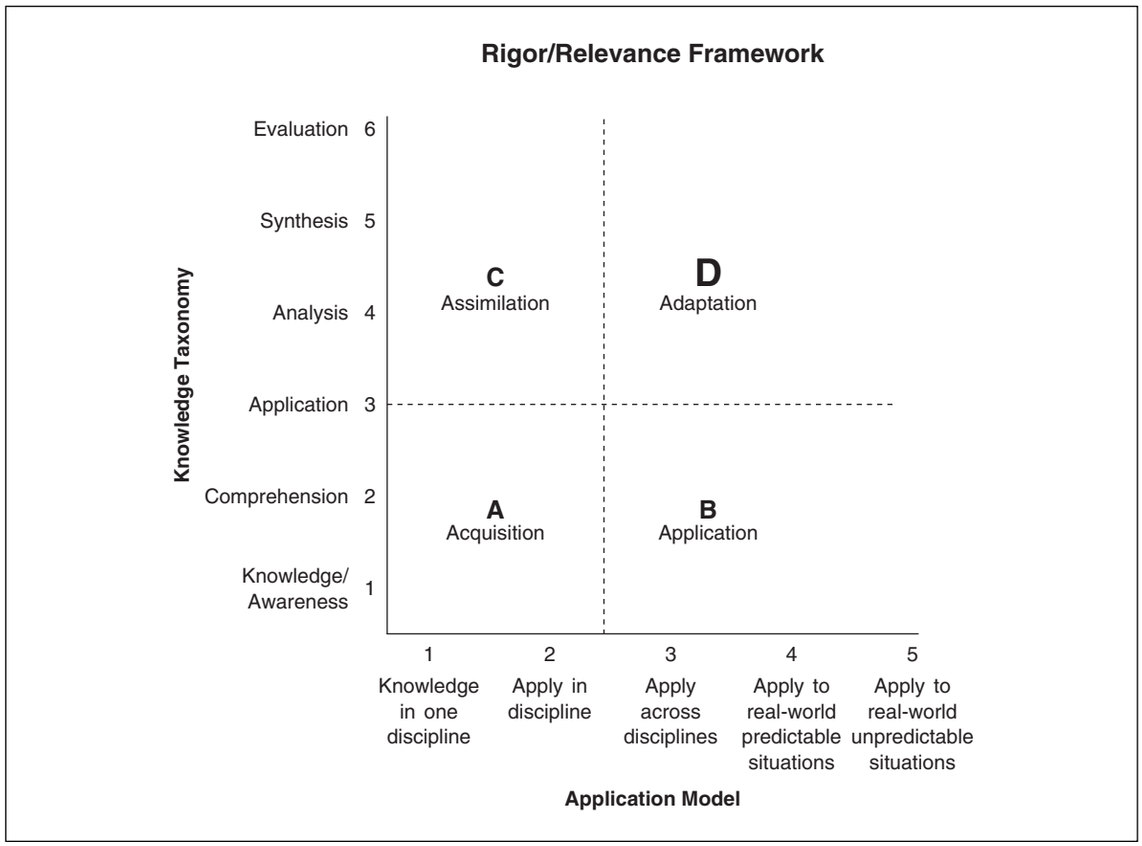
Tiring of the argument over whether to teach content and information or to teach students how to think and learn, I began the process of observing teachers as a part of my principal's responsibilities. Knowing enough to value hands-on activities as a necessary component of active learning, I found myself in very "seductive" classrooms where engaged students were busily building, manipulating, and creating big charts for presentations. It all looked very impressive, and I would walk away smiling. That is, until I reached my office and asked myself what exactly the students had learned. I began to get alarmed when, in postconferences, teachers were unable to articulate the targeted student learning themselves. They could tell me the topic: magnets, states of matter, adding two-digit numbers. But they were unable to tell me several critical things: what specifically the students had learned about magnets, how the activity actually taught any specific concept about magnets (other than magnets stick to metal, which is not always true), or how they were assessing student understanding. What I discovered was that the assessment of learning had stopped at the completion of the activity (which in itself was certainly a "neat" thing to do) and had never reached the reflective or metacognitive level of analyzing what they had done and what it meant. I called this the "neat activity syndrome" and began to see it everywhere.

Appreciation of the active component of learning is certainly a first step toward leaving behind the dry lectures and textbooks with factual questions at the end of the chapter, all of which passed for quality instruction years ago. But it is a faulty assumption that because students have followed directions and completed an activity, they have learned anything substantial that they will be able to draw on in the future. This is the foundation of the content criteria of DCO and why it is not sufficient to simply develop a set of implementation criteria. The Content section directs the observer to note the specific concepts contained in the learning tasks, the degree to which the teacher can articulate those, and the skill in which those concepts come alive and gain meaning in the course of the lesson's activities. One of the key indicators notes the level of abstraction required from a hands-on activity and the nesting of newly learned concepts in a theoretical framework. It also focuses on the assessments, which are designed to monitor and eventually to evaluate student understanding. It is this section of the instrument that distinguishes it from other observation protocols, which focus primarily on professional practice as craft.

The Research Supporting Assumption 2

A relevant example is cited in *How Students Learn: Mathematics in the Classroom* (National Research Council, 2004), involving a comparison between students from a top technical college and elementary students, both groups making mistakes involving the concept of momentum in a computerized task, even though the college students could clearly articulate the concepts and would have performed well on a written test. This example leaves you with two questions: Were the elementary students exposed only to the activity without having the underlying concepts connected to what they were experiencing, and were the college students exposed to explanations and proofs without having to experiment themselves with the concepts and finally own them by articulating them as conclusions?

Box 1.2



International Center for Leadership in Education, www.LeaderEd.com

The Rigor/Relevance Framework (Daggett, 1995) shown in Box 1.2 demonstrates the low level that many of our classes operate at in the name of "covering the content." When doing an in-depth analysis of American high school curricula compared with that of other countries (nine nations whose students were outperforming ours), it became clear that while our schools do well addressing the skills in Bloom's

Taxonomy, there is a huge gap between the level of application of those skills and two important measures:

1. the level of application required by the needs of the business world, and
2. the level of application being included in the curricula of European and Asian schools.

The U.S. curricula scored heavily in Quadrants A and C, yet when public expectations of the results of a publicly supported school system were graphed on the same matrix, the responses were almost exclusively found in Quadrants B and D (Daggett, 1995, pp. 52–53). These measures bode ill for the economic future of our students. This perspective on instruction is reinforced by the TIMSS studies. Called "a mile wide and an inch deep," our classes cover large amounts of material, giving the conceptual underpinnings of that content cursory attention. The literature on teacher knowledge (Ball, Lubienski, & Mewborn, 2001; Shulman, 1987) reinforces this notion. The implication is that one cause of this approach is superficial understanding on the part of some teachers. Another explanation is simply that our current teaching force was educated in a paradigm emphasizing teacher explanations, textbook chapters, and exercises focusing on definitions and procedures. Deep understanding and applications beyond the classroom uses were not part of the background of many of us who now find ourselves educating the generations of the twenty-first century.

If we continue to ignore the application skills and knowledge needed by our global economy, our businesses will easily find those who have them elsewhere. The importance of integrating the four quadrants of the Rigor/Relevance Framework into our instructional programs was powerfully expressed by Dr. Daggett who, addressing a group of school leaders in May 2000, noted that the idea of "going to work" is easily replaced by the new paradigm of "work coming to you." In our age of information technology, accessing workers overseas is as easy as hitting "send" on your e-mail. As long as our students lack the needed skills, outsourcing will by necessity continue to erode our students' opportunities. Examples of instruction that runs through the four quadrants are presented in Chapters 2, 3, and 4.

Assumption 3: Learning Is an Interactive Process Enriched by Dialogue and Social Interaction in a Safe, Respectful Environment

DCO values student discourse by including a dimension of student-to-student interactions in each of its criteria. In the Implementation section, it looks for the extent to which the lesson has been intentionally designed to use the benefits of learning through dialogue. The Content section focuses on the extent to which substantial learning is developing through student dialogue. In the Classroom Culture section, it asks observers to note the extent to which the students take it upon themselves to interact to maximize the learning of all. We also look for the sense of order and safety in the classroom: a culture in which expressing one's ideas is accepted, people challenge each other respectfully, and the debate of ideas freely takes place. We are social beings, and our learning, like most of our daily challenges, is enhanced by positive interpersonal relationships uninhibited by fear, anger, and distrust. Awareness of the diversity present in the classroom, whether it is gender, ethnic, socioeconomic, or related to learning styles, should be observable in teacher behavior. If it is observable in the students as well, there is a strong likelihood that the teacher has created those habits.

Cooperative learning took hold in our schools in the 1990s (D. W. Johnson, Johnson, & Holubec, 1994). Once again, the mere fact that students have been placed in groups to complete a task does not mean that any of the indicators for successful interaction are in place. We look for a purposeful environment, with tasks and group make-up designed to maximize the learning of each individual, and respectful listening and collaboration. We also look for teacher monitoring of group process, group tasks that are complex enough to warrant the "two heads are better than one" approach, lack of dominance of any particular students, and the encouragement of the more reticent ones. In short, we observe the structure, the content, and the style of the collaboration.

The Research Supporting Assumption 3

One of the first researchers to highlight the concept that social learning actually leads to cognitive development was Vygotsky (1978). He concluded that the level of potential problem-solving ability was enhanced both under adult guidance and in collaboration with more capable peers. Systems such as Cooperative Learning (D. W. Johnson et al., 1994) and Complex Instruction (Cohen & Lotan, 1997) demonstrate through their research that significant learning happens when students are asked to collaborate on a task, particularly one that causes them to "actively grapple" with concepts. Ball and Friel (1991) use the term *discourse* to describe the interpersonal process in which "knowledge is constructed and exchanged in classrooms" (p. 44).

But more than the constructivist power of dialogue in the classroom, its active inclusion as a pedagogical technique "disrupts the basic assumptions about how learning progresses and who gets to be a knower" (Tarule, 1996, p. 292). What has become an educational cliché, "The sage on the stage becomes the guide on the side," describes a new set of roles and relationships and places a degree of responsibility for learning onto the student.

What DCO makes clear, however, is that the teacher is *not* to abdicate ultimate responsibility for the learning in the classroom. It is still the teacher who must expose students to engaging material and help them make sense of it by attending carefully to their developing understanding.

> So what is the role of teaching if knowledge must be constructed by each individual . . . The first is to put the students into contact with phenomena related to the area to be studied . . . to engage them so they will continue to think and wonder about it. The second is to have the students try to explain the sense they are making and . . . to try to understand their sense. (Duckworth, 1987, p. 123)

Assumption 4: Technology Enhances Instruction

Technology has found its way into many of our nation's schools in the form of computer labs, banks of computers in classrooms, online capabilities, and a public who support maintaining a strong capacity for student access to information technology. What has moved more slowly than the provision of hardware and Internet capacity is the effective use of technology in the service of learning. Many schools approach technology as a separate entity, cloistering the computers in a library or lab

with limited access and hiring technology experts in charge of all student use of the equipment. This approach leaves the average classroom teacher and his or her lessons as quite separate. Just as we learn to read for information, we can use technology as a tool for learning. But like any other innovation in education, training and support are necessary. DCO does not have a separate section dedicated to technology and its use in the instructional program. Instead, it is woven through each section of the instrument. This was a purposeful decision to model in the tool itself the philosophy that it was meant to embody. That is, technology is not an instructional add-on; it is instead to be naturally integrated into the daily program in a number of ways. Students are expected to be given the skills to use the technology and then are encouraged to use it in the further service of their learning. This can come in the form of using a spreadsheet when appropriate, accessing information ethically from the Internet, or using its presentation capabilities. Technology appears in the text in shaded boxes and paints the picture of a classroom in which technology is used as a matter of course, is accessible to all students, and is used by all to maximize the learning of whatever content is at hand. It leaves room for new technologies that are now readily available that were not known at the time the instrument was developed.

The Research Supporting Assumption 4

The International Center for Leadership in Education has done much research in educational practices in countries around the world. Our country has lagged particularly in its application of technology in our regular curricula. We have all noticed the proliferation of "international outsourcing" of jobs that require technological expertise. The National Standards for Technology Standards (International Society for Technology in Education [ISTE], 2000), and the Indicators of Quality Information Technology Systems in K–12 Schools (National Study of School Evaluation, 2002) support the need for technology to find its way into our national curricula with access available to all students. The National Educational Technology Plan (ISTE, 2000) contains seven action steps:

1. Strengthen leadership
2. Consider innovative budgeting
3. Improve teacher training
4. Support e-learning and virtual schools
5. Encourage broadband access
6. Move toward digital content
7. Integrate data systems

The elements of this plan addressed by DCO are Action Steps 1 and 3. Our training in the protocol targets both classroom and technology teachers and the administrators who supervise their instruction. Technology will not become part of our educational lives until the adults who are responsible for its use are as comfortable and adept as are the students they are teaching.

INTENDED USES

Supervision of Instruction

The primary use of DCO is supervision of instruction. The intended audience, as stated in the Preface, is the building principal or other direct supervisors of instruction. DCO informs classroom observers as they try to make meaning out of the very complex act of teaching and learning and helps them diagnose any problem areas while also giving them a clear picture of what good practice looks like. Because the most effective supervision happens in a school culture where there is joint responsibility for student learning, it is expected that as supervisors in a school or district become comfortable with the DCO system, they will share it with all teachers. Knowing what we do about the change process in schools (Evans, 1996; Fullan, 2001a, 2001b), new methods of classroom observation can feel threatening. Growth does not occur easily, and it occurs less easily in a climate that does not feel safe. Therefore, DCO is *not* recommended for use as an evaluative tool unless and until teachers have a deep understanding of the process and have experience working with the criteria and indicators in other contexts, such as study groups or peer coaching. DCO is an excellent anchor for faculty discussions about professional practice, supervision, collaborative lesson study, and peer mentoring.

Program Evaluation

A secondary use of the protocol is program evaluation. A school may be looking at K–12 student achievement results to attempt to identify factors contributing to low or flat student scores, or the faculty may be interested in analyzing the results of teaching with a particular text or program. By using DCO in a schoolwide audit or action research project, *without* results being used to target specific teachers, a principal can make the best recommendations for professional development spending. For example, it may be discovered that after many workshops in constructivist mathematics, teachers are skilled in leading the activities but weak in understanding the mathematical concepts contained in those activities. This might lead you to target future professional development at the building of math content knowledge, or you might find that teachers are prepared with content, but are not always in control of the behavior and establishing a positive culture in the classroom. These sorts of findings could suggest areas for a school to pursue in its annual goals or yearly action plan.

Large-Scale and Action Research

DCO has also been used in national research conducted by Mathematica Policy Research, Inc., and the Northwest Regional Educational Laboratory. These studies were researching a range of teacher performance issues, including competence linked to teacher preparation programs, new teacher induction programs, and use of the literacy strategies in the CRISS Project (Santa, Havens, & Valdes, 2004). Identifying patterns of strength or weakness in large numbers of teachers, these studies attempt to distinguish between different programs of training and support to establish the most effective. To use DCO (or any other measurement instrument, for that matter) for research, precision in training and interrater reliability are essential. A rigorous process of establishing interrater reliability was used for these studies using the score sheets that are described in Chapter 7 and appear in Appendix F. A description of

these score sheets is cautiously provided. This book does not attempt to set standards for large-scale research.

DCO can have a role as part of action research in your setting. At the ends of Chapters 2 through 6, there are some ideas about how to incorporate DCO into your supervisory practice. Using the scoring sheets with the caveats provided, you can gauge professional growth or change in teaching practices as a result of any professional development training initiative.

Key Distinctions of DCO

DCO follows a number of well-researched observation and supervision protocols. Appendix E contains a "cross-walk" between DCO and three systems of classroom observation (Danielson, 1986; Horizon Research, Inc., 1997; Saphier et al., 2008) that demonstrates where they overlap and where they differ. There are some key distinctions between DCO and these systems that are worth noting:

The Process/Content Interaction

Equal emphasis is placed on *what* is taught and *how* it is taught, teachers' mastery of the content and the content-pedagogy, and students' ability to articulate and apply their learning.

Because learning is best served by transcending the argument over whether to stress facts or processes, each of those domains is given equal emphasis. Observers are directed to attend both to what concepts are being taught and how the teacher has arranged for the learning to unfold. Indicators of solid understanding of concepts and research-based pedagogy reside in the tool side by side. There is a strong emphasis on teacher content knowledge along with the ability to predict, diagnose, and untangle student misconceptions. Observers are directed to determine the extent to which the teacher can articulate the concepts contained in the activity, how the teacher has designed the lesson and assessments to capture the understanding of those concepts, and how flexible the teacher is in handling student misconceptions and unexpected occurrences. There is a similar focus on teacher skill in inquiry and constructivist teaching: the likelihood that the learning activities planned will lead to the understanding of the intended concepts, the balance between structured activities and open-ended ones, and the role of metacognition in helping students process the concepts at play in the lesson. The details describing how DCO paints the picture of quality instruction appear in Chapters 2 through 6.

Analysis of Assessments

How systematic and ongoing is the assessment; what sorts of assessments are being used? How does the teacher use information collected on student thinking for further instruction? How do assessments indicate to the teacher that the students have really "gotten it?"

Well-conceived and ongoing assessment is so critical to successful instruction that much attention is given to the specific assessment practices that contribute to success. Assessment as a whole-school or district activity has received much focus ever since the No Child Left Behind Act took effect. Classroom assessment as a concept has been written about and heralded as a major contributor to improvements in student performance (Ainsworth & Viegut, 2006; Black, Harrison, Lee, Marshall, & Wiliam, 2003; Reeves, 2006). What is missing are guidelines for classroom observers who may be

unsure how to recognize those effective assessment approaches that actually do result in improved learning. Rather than leaving potential users with a vague directive to ensure that teachers are monitoring student progress, DCO's bullets give specific guidance about what, in the course of a normal classroom lesson, effective assessment looks like, both formative and summative. The assessment indicator is part of the discussion of the content section in Chapters 2 and 3 with examples given. In addition, Chapter 5 is devoted to delving into assessment as a classroom responsibility and gives explicit description about what constitutes valid and useful assessment.

Emphasis on Teacher Knowledge of Content and Underlying Concepts

How deep is the teacher's knowledge, and how flexibly can the teacher work with the concepts to untangle nascent or entrenched student misconceptions?

We often assume that each certified teacher is well-versed in his or her subject matter, but frequently, their knowledge is as the American curriculum itself has been described (TIMSS, 1995)—a mile wide and an inch deep. This can leave the teacher teaching rules and techniques, leaving the conceptual bases to the imagination of their students. A teacher whose content knowledge is limited to the procedural will be unable to work productively with students struggling over the concepts. His or her repertoire for remediation may consist solely of further drill and more examples or explanations similar to the ones that produced confusion in the first place. This strategy is not unlike a native speaker of a language who repeats to a confused tourist the same instructions that he didn't understand the first time, only spoken m . . . o . . . r . . . e . . . s . . . 1 . . . o . . . w . . . 1 . . . y and *loudly!* How can you tell if a teacher is flexible enough in his or her subject area to intentionally provide multiple pathways to learning? Indicators and examples of what depth of teacher knowledge looks like in classrooms appear in Chapters 2 and 3. Guidelines for diagnosing through postconference questioning and supervising teacher shortfalls appear in Chapter 7.

Emphasis on Teacher Skill in Inquiry and Constructivist Teaching

How adeptly do teachers translate concepts into activities designed to make those concepts clear?

With many of our new instructional programs chock full of ideas, it is common to see a classroom alive with student activity that appears engaging and purposeful. A teacher can run students very successfully through these activities with very little understanding of the concepts underlying them, and be incapable of posing the probing questions along the way that turn the activity into a true investigation or pushing the students to construct and articulate their new knowledge. The Implementation sections of the Math/Science and Literacy Versions in Chapters 2 and 3 give clues to look for that will help distinguish between the teachers who are facilitating the construction of knowledge in their students and those who are leading them in the neat activity syndrome.

Classroom Culture

How do the students behave in terms of classroom rules and social interactions? To what extent do students benefit from each other as learners? Do all students have equal access to all the educational resources of the classroom?

The ability of a teacher to set the tone of a classroom is essential. The culture that DCO looks for is one of a learning community in which purposeful activities are conducted by teacher and students in a respectful environment. Although intelligent and well-trained in pedagogy, teachers are ineffective unless they can manage the complexities of diverse students and create a safe place to learn. This, in itself, is not a distinction from other teacher evaluation methods. However, DCO pays particular attention to equity of access to the full educational resources in the classroom. This includes classroom discussion, group work, materials, technology, and the caring attention of the teacher. Well-meaning teachers can inadvertently isolate certain students or engage in patterns of exclusion that affect who benefits from the learning in the classroom. DCO raises the consciousness of both teacher and supervisor to see through habits of unintended bias, whether by gender, ethnicity, or ability. These enter our practice without our permission or knowledge and can derail the most expertly constructed lesson. An extended discussion with examples of ways in which teachers unknowingly allow some students to get left behind appear in Chapter 4 in the discussion of the classroom culture criteria.

A Strong Protocol for Professional Development of Principals, Supervisors, and Teacher Leaders/Mentors

How do we make sure that DCO is used as intended to support quality instruction?

Any observation protocol is as effective as the observer in whose hands it sits. In its early use, the use of the tool was restricted to those who had attended a certified training session of a minimum of two days. Certified training is now offered in a number of settings, including graduate-level courses and research training. The formats and processes of training are described in Chapter 7. However, this book is being written for those who will not have access to the certified training. Chapters 2 through 5 offer guidelines for discussion and group study that will help supervisors process the concepts in the book and use their current settings as action research labs for the improvement of instruction using DCO as the framework.

Guidelines for Preconferences and Postconferences

How do you use a preconference to help improve the lesson before it happens? How can you prepare yourself for an observation by indicating key areas to look for? How do you use the postconference to increase the likelihood that the teacher will use it to actually reflect on and improve instruction?

The hope of teacher observation is that the information gained during a session will be effective in helping a teacher reflect on his or her practice to actually improve it. DCO helps supervisors and teachers diagnose the "health" of the lesson by identifying the presence or absence of the key elements. While principals are not experts in all subjects, they may be required to supervise the teaching of them. The DCO guides for preconferences and postconferences help them pose the best "wonderings" to engage the teacher in the same construction of knowledge that DCO outlines for students. Engaging in a collaborative inquiry about teacher practice using the DCO criteria, indicators, and examples of evidence is less threatening to teachers and more likely to result in professional growth. The use of DCO in professional development and improvement in teaching practice is discussed in Chapter 7. Specific tools are provided for each part of the supervisory process: the preconference, the observation, and the postconference. These tools appear in their entirety in

the appendices or are discussed in detail in Chapter 7 with examples of how to use these tools to maximize the benefit of instructional supervision.

FINAL THOUGHTS BEFORE PROCEEDING

Lessons can be learned from school systems that have consistently good results or have turned their results around. The TIMSS study (2004) points clearly to the most promising teaching practices that continue to produce superior results in countries like Singapore and Japan. The experience of the Lincolnshire Schools (DuFour & Eaker, 1998) teaches us the power of professional learning communities and the use of common assessments and analysis of student work to improve teaching practice and student achievement. While some educators lament the difficulties inherent in educating all students, the 90-90-90 Schools (Reeves, 2006) and the work of the Education Trust (2006) demonstrate that "the key variable is not poverty but teaching quality." In our honest attempts to find the silver bullets that make all teachers master teachers and ensure maximum learning for every student, we can bounce from good idea to good idea and end by having little to show for it. While there may be no silver bullets, we can choose to learn from success stories in our country and abroad, or we can choose to continue to dabble at the edges, engaging in the veneer of best practice but never really making the profound changes necessary for significant progress. DCO attempts to put together in one place what research tells us about the way students learn best. Its balanced approach to classroom observation addresses content and process, teacher practice, and student understanding. It challenges school leaders to demand a consistent level of professional practice from every teacher *and* from themselves. Until all adult professionals take responsibility for ensuring that their own skills and knowledge are commensurate with the level of achievement we now require from our students, we will continue to fall short of our goals.