From state and Common Core tests to formative and summative assessments in the classroom, teachers are awash in data. Reviewing the data can be time-consuming, and the work of translating data into real change can seem overwhelming.

Tapping more than 30 years’ experience as an award-winning teacher and a trainer of PLC coaches, Daniel R. Venables, author of *The Practice of Authentic PLCs: A Guide to Effective Teacher Teams*, soothes the trepidation of even the biggest "dataphobes" in this essential resource. Field-tested and fine-tuned with professional learning communities around the United States, the Data Action Model is a teacher-friendly, systematic process for reviewing and responding to data in cycles of two to nine weeks. This powerful tool enables you and your teacher team to

- Identify critical gaps in learning and corresponding instructional gaps;
- Collaborate on solutions and develop a goal-driven action plan; and
- Evaluate the plan’s effectiveness after implementation and determine the next course of action.

With easy-to-use templates and protocols to focus and deepen data conversations, this indispensable guide delineates exactly what should be accomplished in each team meeting to translate data into practice. In the modern sea of data, this book is your life preserver!

$24.95 U.S.

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This book wouldn’t exist as much more than a flowchart and a few templates of my Data Action Model were it not for some key people and institutions. They all had a hand in seeing the model take manuscript form. To them, a sincere note of gratitude is in order.

I am grateful to the many schools that have not only field-tested this model but also embraced it with conviction and fidelity. Their results sustain my passion in sharing the model with other schools.

I offer thanks to the few pioneer schools that worked with me on early, admittedly clumsy versions of the Data Action Model: Roswell North Elementary School and Webb Bridge Middle School outside Atlanta. I may have been the one who ironed out early bugs, but these folks found them.

I express gratitude to Executive Director Lynette Guastaferro and her staff at Teaching Matters, Inc., in New York City for signing me on to be part of their pilot program implementing PLCs and the Data Action Model in six New York City schools. This opportunity has allowed me to continue to field-test, augment, and improve the model. I have appreciated and enjoyed the chance to work closely with some incredibly talented people: Dr. Naomi Cooperman, Laurie Baum, and Dr. Jennie Brotman, to mention a few. I’m surprised there is anything left of my brain after all the picking of it these people managed to do during and between my visits to New York. Teaching Matters is a top-notch organization, and it has been and continues to be a pleasure to work with.

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Her belief in it never waned for a moment, even when I myself had doubts
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you would rather have been riding, I say thank you. The extent of your self-
lessness is beyond description. I think we shall have one or two good long
rides before I share with you my great idea for a third book!
The old adage has it right: necessity really is the mother of invention. After January 2011, when my first book, *The Practice of Authentic PLCs: A Guide to Effective Teacher Teams*, was published, I found myself being asked to support teacher teams or professional learning communities (PLCs) around the United States and abroad. In that role, I have thoroughly enjoyed the challenge of helping schools at various states of readiness do the important work of authentic PLCs, and I believe that I have helped them all in some permanent, sustaining ways. But the chapter in *The Practice of Authentic PLCs* that gets the most questions (save for those pertaining to facilitating PLCs) and that has produced the most confusion for PLCs trying to implement the book’s ideas is Chapter 5: “Reviewing and Responding to Data.” Data are confusing. Data are messy. Data are scary. Data review is time-consuming. “We need a systematic process for looking at and responding to data” was the message I got. “And it had better be teacher-friendly. And efficient. And doable in the precious few meetings we can allocate to this and in the precious few minutes we have to do it. And it has to make a difference for our kids—and in our test scores.”

Whew. Tall order, I thought. But these teachers were right: anything less was purely theoretical—good for university courses in education, but relatively useless for teachers in the trenches, doing the work as best they knew how in the scarce and coveted time they had to work with their teacher teams.

This book is the result of those requests. It was born of need and refined, streamlined, and simplified based entirely on the feedback of the teachers and teacher teams who used the Data Action Model in the trenches. The
earliest versions of the model were, in retrospect, clunky and piecemeal steps of the process. Its current incarnation has the kinks worked out and provides a seamless, integrated process for going from initial views of data to real-life action in the classroom based on the data.

Most of the chapters in this book end with a section titled “From the Trenches,” which illustrates main concepts using realistic school vignettes. The demographics of the schools in these vignettes range from elementary to high school, small schools to large schools, urban schools to rural schools, and affluent schools to Title I schools. It is my hope that through these vignettes, readers from a wide range of educational experiences will appreciate the real-world applicability of the Data Action Model.

Daniel R. Venables
Driftwood Farm
Gilbert, South Carolina
June 2013
Why Is (Working with) Data So Hard?

In my 30-plus years as an educator, I have realized that many teachers and administrators find looking at and making sense of data an unpleasant task for many reasons. Some find it just too intimidating to plow through table upon table of numbers and try to make sense of them. Others have an unspoken but underlying belief that data do not *really* tell them anything important.

Others experience a painful flashback to the math and statistics courses with which they struggled in college. And for others—arguably, most—there isn’t enough time in their busy workday to submerge themselves in graphs, tables, and charts to produce what they think will be, in the end, facts about their students’ learning that they already knew or at least suspected. Add to this the fact that for other, more seasoned teachers, reviewing data was not done for many years in education, so their prevailing attitude is “We got by just fine without it.”

Of course, in our post–No Child Left Behind (NCLB) and present Common Core State Standards (CCSS) era, we know differently. We know that to *not* review state and CCSS data is to put our students at certain, even measurable, disadvantage. Data aren’t everything, to be sure, but they represent the best, most reliable way to see where students currently are in their learning and to identify instructional actions to get them to where we would like them to be. If we don’t use data to do so, we are left to rely on our *hunches* for making important instructional decisions. As we’ll see, hunches are sometimes wrong. Even if our hunches are wrong...
only 25 percent of the time, that’s still a lot of time to spend trying to fix problems that may only be symptoms of greater, more encompassing issues that may well go undetected. That’s time we don’t have. Educators are experiencing an increasing sense of urgency to fix problems related to student achievement and can’t afford to misdiagnose students’ learning gaps. Now more than ever, we need to be right in what we believe those gaps are and in what we believe their root causes are. A careful look at quality, relevant data can help us achieve this goal.

In helping schools review and respond to their data, I have seen a tendency for administrators to provide year-end data to teachers and let teachers decide what to do with it. This approach often results in teachers and teacher teams giving the data a cursory look, with no intent to use the data to make instructional changes. This pattern does not reflect teacher disinterest in improving student achievement as much as it does their general discomfort with turning numbers into action.

This feeling has partly to do with the size and kind of data teachers are often asked to review. For example, large *macrodata,* such as end-of-course test data, seldom produce specific, nuanced instructional changes. In the absence of more detailed *microdata,* teachers respond to large data with an equally broad brush: “We can see our students with disabilities are sorely lacking in proficiency,” or “Once again, our girls have outperformed our boys in reading comprehension.” Little useful information is gleaned by taking such a cursory look at the data; therefore, teachers will revert to the status quo, and no real instructional change is likely to result. It’s not that teachers *resist* changing instructional practice (although some do), but more that, in many cases, the data are revealing things the teachers already knew.

The problem lies in viewing only the macrodata and stopping there. It turns out that the kinds of information that can provide the impetus for real change lie in the details—the microdata. A good place to start, macrodata may tell us *what* is happening and perhaps even *to whom* it is happening, but to find out *why* it is happening and *how* to fix it, teachers and teacher teams need to turn to the more detailed and frequent microdata. To help review and implement this sort of data, I have developed the Data Action Model.
Data Action Model at a Glance

The Data Action Model is a systematic process for reviewing and responding to data. I have already noted that teachers are generally good at looking at data; the extent to which that review translates into changes in the classroom is quite a different matter. The Data Action Model helps. It begins with a structured look at the macrodata and then drills down into the smaller microdata, often bringing in additional relevant data to fully understand the root causes of any learning gaps that are uncovered. Then learning gaps are linked to corresponding instructional gaps, and the process culminates with a goal-driven action plan, complete with a metric for assessing the effectiveness of the plan once implemented.

The Data Action Model is composed of three main phases: Gathering and Reviewing Data, Identifying Gaps, and Planning for and Evaluating Action (see Figure 1). Each of these phases is incorporated into five data meetings. Each data meeting is broken down into manageable steps for teacher teams to follow. The process is cyclic in nature; once a team has met its data-driven goal at the end of one cycle, the team begins anew and explores new data (or returns to the original data set) to uncover other learning and instructional gaps needing remedy.

One cycle of the Data Action Model normally requires five separate hour-long meetings from start to finish. Depending on the nature of the data used in the first meeting, this meeting time might be shorter. The Data Action Model normally spans approximately nine weeks (one grading period) if the meetings are held weekly. This is because there is a four-week Implementation Period between Data Meeting 4 and Data Meeting 5 (see Figure 2).

It should be pointed out that the data meeting template in Figure 2 presupposes that the data initially reviewed by the PLC are broad data, as in end-of-course or Common Core assessment data. These data are most likely reviewed in August or September, at the start of the school year. However, teacher teams will revisit this template once the year has begun (but before new macrodata such as Common Core assessment data are in); in this case, most PLCs are reviewing district benchmark data, teacher-designed
Data Action Model

Schedule of Data Meetings Using Data on Taught Topics

Identifying Gaps

Planning for and Evaluating Action

Evaluating Success and Planning for Next Steps

DM5

DM4

DM3

DM2

DM1

Gathering and Reviewing Data

Triangulating the Data

Reviewing and Asking Questions

1. Review existing data.
2. Ask exploratory questions.
3. Decide who will bring what.

1. Triangulate additional data.

1. Identify learning gaps.
2. Identify instructional gaps.
3. Set a target learning goal.
4. Decide on an evaluation metric.

1. Conduct a Strategies Search
2. Develop a Data Action Plan

1. Evaluate effectiveness of implementation.
2. Determine the next course of action.

Planning for Action

— Figure 1 —
— Figure 2 —

<table>
<thead>
<tr>
<th>Meeting</th>
<th>Focus</th>
<th>What to Do (and in what order)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Meeting 1</td>
<td>Reviewing existing data and asking questions</td>
<td>1. Review existing data. 2. Ask Exploratory Questions. 3. Decide who will bring what.</td>
</tr>
<tr>
<td>Data Meeting 2</td>
<td>Triangulating the data</td>
<td>1. Triangulate additional data.</td>
</tr>
<tr>
<td>Data Meeting 3</td>
<td>Determining gaps and goals</td>
<td>1. Identify learning gaps. 2. Identify instructional gaps. 3. Set a Target Learning Goal. 4. Decide on an evaluation metric.</td>
</tr>
<tr>
<td>Data Meeting 4</td>
<td>Planning for action</td>
<td>Conduct a Strategies Search; then 1. Review strategies and activities. 2. Develop a Data Action Plan.</td>
</tr>
<tr>
<td>PLC Meetings 1–4</td>
<td>Implementation period (four weeks)</td>
<td>Look at student and teacher work; troubleshoot obstacles; look at texts, research.</td>
</tr>
<tr>
<td>Data Meeting 5</td>
<td>Evaluating success and determining next steps</td>
<td>1. Evaluate effectiveness of implementation. 2. Determine the next course of action.</td>
</tr>
</tbody>
</table>

assessment data, or pre-test data on an upcoming unit they are planning. With pre-test data or data derived from diagnostic assessments of untaught material, the cycle of meetings varies, as shown in Figure 3 (also see “Using backward-looking data” and “Using forward-looking data” in Data Meeting 5, and Figure 12 on page 111).

Note that when teams begin with pre-test data on a unit they are preparing to teach, the cycle is shortened considerably. Most units are approximately two weeks from pre-test to post-test. That means the full data cycle is at most four weeks, often shorter. It also means that teams should allow ample time between gathering pre-test data and teaching the unit so that they have time to decide on instructional strategies before actually teaching the unit. Otherwise, teams tend to rush straight from identifying gaps to teaching standards the way they have always taught them, without regard...
for what might actually be the best way to teach those standards. The result, too often, is that no actual instructional change occurs.

The Necessity and Pitfalls of Cycles

More than once, I have referred to the notion of cycles. Although the length of the cycles varies considerably—as in the case of the cycles depicted in Figures 2 and 3—the Data Action Model is necessarily cyclic in nature. Data are reviewed, gaps are identified, goals are set, and action plans are implemented, and that cycle is repeated as new data are reviewed, new gaps are identified, and so on. This is to be expected.

That said, it is also somewhat restrictive to think only in terms of cycles. The danger is that teacher teams will try to pigeonhole cycles into fixed time frames that, in reality, may or may not be applicable to the content targeted in any one cycle. Cycles vary in length and must remain flexible if they are to be useful. Teams should be aware of this point as they map out their cycles.
A Note About This Book

Initially, I organized this book by chapters that each described a step in the Data Action Model. However, teacher teams who actually used the model were more interested in what should be happening at each meeting—not at each step. They were spot-on. If the Data Action Model is to be truly useful to teams trying in earnest to follow it, it should not be organized by steps but, rather, by meetings.

Based on this important feedback, I completely reorganized the contents of this book to be set up primarily by meetings as opposed to steps. The result is more PLC-friendly, as it delineates what should be accomplished at each PLC meeting. Data Meeting 1, then, is the first chapter; Data Meeting 2, the second; and so forth.

Throughout this book, I use the terms PLC and teacher team to refer to the same thing. While I acknowledge that the term PLC encompasses some characteristics that may or may not be present in all teacher teams, for our purpose here, I use the two terms interchangeably. The same is true for my use of the terms PLC coach and PLC facilitator, both of which I use to refer to the teacher who leads the teacher team. Finally, I often refer to the Common Core State Standards (CCSS) simply as the Common Core, as they tend to be called in most education circles these days.

In the chapters that follow, we will explore these phases in detail and illustrate implementation of each one with vignettes of schools that are using the model. (All vignettes are fictional, describing schools that are composites of actual schools, and all names used are fictional.) Before we turn to what should happen during Data Meeting 1, it is important to be clear about what we mean by data, where we find them, what types exist, and how those can be used to improve teacher and student performance.
Data Meeting 1
Reviewing Existing Data and Asking Questions

NOTICE
WONDER
ASK
BRING
TRACK
IDENTIFY
SET
SEARCH
DEVELOP
IMPLEMENT
EVALUATE

Advance Uncorrected Copy -- Not for Distribution
A Word About Protocols

Protocols are tools. Tools make the job at hand easier to do. Protocols help teachers keep their discussions focused, their time used efficiently, and their actions purposeful and impactful. They keep us on track so that we talk about the stuff that matters and do so in a structured, safe way that promotes depth and honesty of discourse. They are useful in a wide range of educational settings, from looking at student work, to setting group norms, to troubleshooting obstacles. To learn more about using protocols in these and other settings, see *The Practice of Authentic PLCs: A Guide to Effective Teacher Teams* (Venables, 2011); *The Power of Protocols: An Educator’s Guide to Better Practice* (McDonald, Mohr, Dichter, & McDonald, 2007); and *Protocols for Professional Learning* (Easton, 2009).

For our purposes here, protocols are useful for looking at data and discussing how best to respond to the data. In addition to providing structure and keeping us focused, they also take the stinger out of the oft-threatening task of looking at data—particularly for the scores of teachers who, by their own admission, would prefer to have nothing to do with data. I affectionately refer to these folks as “dataphobes,” and I spend a fair amount of time with teacher teams helping them get past the initial dread of reviewing charts, tables, and graphs. The fact that teachers most often view data publicly, as a team, doesn’t help dataphobes’ feelings of numerical inadequacy. Protocols can come to the rescue.
One protocol we use in the Data Action Model, the Notice and Wonder Protocol, helps take the angst out of the prospect of facing data. It also helps teachers and teacher teams who are examining data in three ways:

1. It makes it easier for teachers to internalize and make sense of the data;
2. It forces teachers to have a conversation about what the data actually say; and
3. It assuages the temptation on the parts of teachers to rush to conclusions prematurely.

Let’s take a closer look, beginning with a cautionary comment on the dangers of jumping to (often erroneous) conclusions.

**Do First: Review Existing Data**

After teacher teams have inventoried their existing data as described in the “Before Meeting” chapter, it’s time for the teams to choose one or two data reports from the usual mass of reports and to begin the cycle of data inquiry. In most cases, this will be macrodata and, most often, state or CCSS assessment data or district-administered quarterly assessment data. Regardless of the data’s specific source and composition, the information chosen in this first step typically paints in broad brushstrokes where students are in their mastery, and here is where we rightfully begin. As we’ll see as we continue through each step of the Data Action Model, there will be sufficient time later to paint in very fine brush lines.

**The Problem That Isn’t**

The Data Action Model is designed so that teachers and teacher teams engage thoroughly with their data before deciding what the problems of learning and practice are. Indeed, the first phase, Gathering and Reviewing Data, makes up a full third of the model, yet it includes nary a mention of teams attempting to elucidate problems of student learning that are present in the data. This, of course, is an eventual goal of the model, but it will not be addressed in significant detail until Data Meeting 3: Determining Gaps and Goals.
There is a good reason for this delay in identifying problem areas. In my consulting practice, prior to developing the Data Action Model, I kept seeing a consistent and problematic phenomenon crop up with even the most well-intentioned data teams and PLCs: in their zeal to improve student achievement, these teams rushed to find “the problem” from the data. They would come to the meeting room with a hunch as to what the problems were in their students’ learning and thus reviewed the data only cursorily—if at all—and used it chiefly to corroborate what they already believed to be true about their students’ weaknesses. By viewing the data only through the lens of a preconceived problem, they saw only the numbers that supported their preconceived expectations and often overlooked other areas in need of attention—even dire attention. Sometimes, their hunches were dead-on, and the data did indeed support their hunches about their students’ learning gaps. Other times, however—very often, in fact—teams focused on an area that was relatively small in comparison to what I started calling their other “bleeding arteries.” In other words, their area of focus was not the central problem but instead symptomatic of a different, often broader problem. At best, this misaligned focus led to a Band-Aid approach to solving their real problem; at worst, it left them spending untold energy and time solving “the problem that isn’t.” If the problem is misdiagnosed, after all, the solution cannot be effective.

A few years back, I was assisting a 9th grade Algebra I PLC whose members, after briefly reviewing the results of a district-administered quarterly assessment, decided that their students couldn’t successfully solve word problems that required them to apply their knowledge of two-step equations. These teachers’ knee-jerk assessment of the problem was that they weren’t giving the students enough practice in solving word problems with two-step equations and that the solution was, therefore, to provide the students with more opportunities to practice such problems. Only after delving into the data in more detail and with additional sources did the team realize that the students’ deficiencies did not result from practicing too few word problems involving two-step equations; rather, the word problems they did practice were all essentially clones of only three different word problems. The students had become proficient at solving those three problems, but...
they never understood the underlying concepts behind the application of
two-step equations. Their lack of understanding showed up on the district
assessment when they had to solve problems that didn’t resemble any of the
three problems they had “learned.”

Time and again, I witnessed this same phenomenon as I worked with
various teams in a host of different schools. What was needed, I decided,
was a protocol that forced both a thorough look at the data and a delay in
concluding where the problems were, why they existed, and how they could
be solved. The result was the creation of the Notice and Wonder Protocol.

**Notice and Wonder Protocol**

This protocol is remarkably popular wherever I share it. Teachers
appreciate that the Notice and Wonder Protocol is a simple and effective
tool that offers a nonthreatening way for them to view data and share obser-
vations about what they see. Anyone can *notice* and anyone can *wonder*,
right? The details of the protocol appear in the Appendix (pp. 114–115).

Here’s an overview of how the protocol works. Teachers are given a
data report (or two) of some kind and quietly and individually review it.
In Round 1, on an index card or in their notebooks, they record several
factual things they notice in the data. These observations are free of infer-
ence and shared without discussion; teams often post their statements in a
shared Google document. In Round 2, on the back of the index card, they
note “wonders”: *wonder whys*, *wonder ifs*, *wonder whethers*, and *wonder
hows*. These observations may not be outright inferences but usually con-
tain a speculative implication. Teachers share these within the group while
a volunteer scribes them on chart paper. No discussion occurs at this time,
except for follow-up questions the team facilitator may ask of the teacher
or the team. These, too, are posted for the team to see.

To look at the Notice and Wonder Protocol in action, consider the table
in Figure 4. This report reflects how each subgroup of 7th grade English
language arts (ELA) students performed across five strands on a midyear
standardized assessment. The subgroups are based on gender, race, eco-
nomic status, students with disabilities, and English language learners.
The percentages listed in the table represent the mean percentage of test items the student subgroup answered correctly in each particular strand. For example, the first subgroup, representing the 65 female students tested, had a mean scaled score of 760 and, on average, correctly answered 73 percent (11 of 15) of the questions in the Gathering Information Skills strand, 71 percent (5 of 7) of the questions in the Organizing Information Skills strand, 78 percent (7 of 9) of the questions in the Analyzing Information Skills strand, and 80 percent (4 of 5) of the questions in the Linking Information strand. (Note that the percentages are based on the average number
of questions answered correctly and have been rounded up if their actual value is a decimal greater than or equal to 0.5. For example, a mean percentage listed as 100 percent may actually have been a mean of 4.5 questions answered correctly and then rounded to 5 of 5.)

The teacher team reviewing these data, the ELA 7 PLC, includes five ELA classroom teachers and one special education teacher who works with each of the classroom teachers on a rotating basis, assisting the 22 students with disabilities who are in general education classes. The ELA 7 PLC meets twice weekly during their hour-long common planning period, and one of those meetings is strictly dedicated to looking at and responding to data. Their PLC coach (facilitator) begins the meeting by projecting on the interactive whiteboard the data table in Figure 4.

For this data set, teachers in the ELA 7 PLC might offer the following Notice Statements in Round 1:

- I notice that more female students were tested than male students.
- I notice that, overall, students answered at least 70 percent of the test items correctly in three of the four strands.
- I notice that students, on average, scored least well in the Organizing/Interpretive strand.
- I notice that Hispanic students did least well in comparison with other subgroups in the Gathering/Literal strand.

The Notice Statements that are shared may be superficial in nature, as with the first one listed here, or they may pivot on some real and significant facts about the performance of a student subgroup, such as the third and fourth statements listed. All of the statements made are factual, as the protocol instructs, and it does not matter at this point that some of the Notice Statements are meatier than others. What’s more important at this juncture is that all members of the team—even the dataphobes—have offered Notice Statements.

By having to make only factual observations, according to the protocol, the team is freed up from the common, self-imposed responsibility to draw conclusions and rush to try to fix problems. Instead, the team can look at
Data Meeting 1: Reviewing Existing Data and Asking Questions

simply what the data are saying. Their focus is entirely on the what and not on the why or how to fix it. This step is liberating for teachers who are uncomfortable with the notion of looking at data in the first place and who are used to dealing with the tacit expectation that they must quickly determine solutions. Because the protocol does not allow proposed solutions or even mention of underlying problems and asks teachers only to discuss what is revealed by the data in a factual, objective way, teachers who usually prefer to hang back during data conversations tend to feel more comfortable contributing.

Afterward, in Round 2, teacher teams are given the green light to make speculations and deeper observations in the context of Wonder Statements. For the ELA data in Figure 4, the ELA 7 PLC might offer the following Wonder Statements:

• I wonder why students did better in higher-order strands (Analytical and Critical Levels) than on the Literal and Interpretive Levels.
• I wonder why our female students are doing so much better on the Organizing/Interpretive level than their male counterparts.
• I wonder what percentage of our students of color (black, Asian, Hispanic, multiracial) are eligible for free or reduced lunch.
• I wonder if our expectations of our students in the Interpretive Level are too high or too low during instruction.

Without making a conscious effort to push the conversation to a deeper level, the transition from Round 1 (notice) to Round 2 (wonder) naturally does just that. There is good reason for this transition. Notice Statements focus on what happened, whereas Wonder Statements congregate around why it happened, how it happened, and what might be possible.

A couple of points are in order on Notice and Wonder Statements. First, the Notice Statements shared in Round 1 often resurface in Round 2 as Wonder Statements. For example, referring back to our ELA 7 data, a teacher might offer the Notice Statement I notice that African American students had greatest difficulty with the Analytical items, while Hispanic students had greatest difficulty at the Literal Level. In Round 2, a different
teacher (or possibly the same teacher) might share the Wonder Statement
*I wonder how we’re teaching analyzing skills that our black students do so poorly on this strand.* Although Wonder Statements might reflect earlier Notice Statements, it is important for teams to realize that this isn’t necessary; all Wonder Statements are fair game whether or not they are connected to previous Notice Statements.

Second, by the end of Round 2, the team has probably listed 15 or 20 Wonder Statements. As the team keeps its focus on its eventual goal of improving instruction, members inevitably realize that not all Wonder Statements are of equal value in terms of advancing that goal. Some of the Wonder Statements may even seem relatively insignificant compared with others. For example, *I wonder how much higher these kids would score if they read more at home* is less valuable to the team than *I wonder if we’re spending too much time with the vocabulary quizzes.* In other cases, some Wonder Statements on the list can be answered with just a bit of checking, such as *I wonder how many days we spent on improper fractions* or *I wonder if the students with special needs are permitted to use a calculator on the decimals module.* Although these are all legitimate Wonder Statements, they do not stand out to the team as areas that warrant further pursuit using the Data Action Model. During this step in the model, team members simply discuss the Wonder Statements posted in the list. Are there areas that are mentioned several times? Do several statements fall under one umbrella topic? Can the list be collapsed into a handful of categories? Are there any “bleeding arteries”? Which statements stand to lead to the most impactful action?

At the conclusion of the Notice and Wonder Protocol, teacher teams will have explored the data and internalized what the data have revealed, and they are well on their way to thinking about what is going on in their students’ learning and where the problems may lie. Again, they are not solving any of the problems just yet—indeed, they have only begun to identify them—they are simply making sense of what is present in the data. The team’s conversation is informal but essential to what happens next: asking Exploratory Questions.
Do Second: Ask Exploratory Questions

Exploratory Questions are questions whose answers the teacher team believes will reveal useful information and point it in the direction of identifying learning gaps. They are questions that require additional information to answer and that the team would like to investigate further. They are born from the Wonder Statements in the Notice and Wonder Protocol. In a large way, the Wonder Statements exist for the sole purpose of generating a meaningful Exploratory Question that will drive the remainder of the work in the Data Action Model. Needless to say, the team’s choice of an Exploratory Question is critical to yielding strong results for students. If the team generates several significant Exploratory Questions at the same time, it can address them in turn, looping back to address each one individually in a new cycle.

Keep in mind that just because Exploratory Questions come from the Wonder Statements doesn’t imply that they are reworded variations of the Wonder Statements. Sometimes this does happen, but more often than not, either the Exploratory Question is a composite of several Wonder Statements, or it was inspired by and derived from one or more of the Wonder Statements. Most important, the Exploratory Question should be significant: Will answering this question provide the kind of information that will lead to identifying gaps in learning?

Typically, Exploratory Questions reflect the past, as the following examples show:

- Are we assessing our students’ mastery of making inferences from text in a manner consistent with the depth of mastery expected by the PARCC assessments?
- How are we presently teaching quadratic inequalities, and why do our students do so poorly on them?
- Are we spending too much time on drill, and how can we move from teaching primarily procedures to also teaching the concepts behind them, in a manner consistent with the Common Core State Standards for Mathematical Practice?
• How are we presently differentiating instruction on topic X, and how might we do it better?
  • What, precisely, are the students having difficulty on regarding standard Y?

Most of these examples contain the kernel of an implied problem and a curiosity about how to do better or how to fix the problem—which is to be expected. The particular aspects of “the problem” are yet to be determined in any useful way and will be identified in further steps of the Data Action Model, but the “macroproblem” is making itself known through the team’s queries. It’s not enough to know that the students are performing poorly on test items related to Literal and Interpretive levels (see Figure 4). If we are to “fix the problem,” we need to know more specifically which areas in that domain are most problematic and examine with greater scrutiny our current instruction with regard to this strand.

Exploratory Questions require more information to answer. They point to where we will start looking for additional information. They provide a screen for our search, filtering out irrelevant information as we sift through masses of related and unrelated data and extract only those data that address, at least in part, our Exploratory Question. This pursuit of additional data happens between Data Meetings 1 and 2 of the Data Action Model.

Do Third: Decide Who Will Bring What

Now that the teacher team has chosen an Exploratory Question, it’s time to gather more information to help the team members answer that question. At the end of Data Meeting 1, the teacher team brainstorm a list of all possible sources of additional data and artifacts that, when analyzed together, will help the team members answer their Exploratory Question.

Calling All Relevant Data

Data sources tapped to answer the team’s Exploratory Question are not limited to numerical data in the way of tables and charts, but must include
artifacts of teacher and student work. Consider the types of additional data and artifacts listed here:

**Additional Data Reports**
- Item analysis of a test
- Teacher summary report
- School summary report
- Department summary report
- Student summary report by teacher
- Student summary report by subgroup (gender, race, grade level, English language learners, economically disadvantaged, special needs)
- District versus school summary report

**Teacher Work Artifacts**
- Curriculum maps
- State/CCSS standards
- Lesson plans
- Unit plans
- Tests and quizzes
- Warm-ups
- Teacher calendar/time line
- Rubrics
- Portfolio requirements
- Writing assignments
- Labs
- Activities and games
- Homework assignments
- Reading assignments
- Teacher grade books

**Student Work Artifacts**
- Writing samples
- Corrected tests and quizzes
- Student portfolios
• Lab reports
• Student self-evaluations
• Homework
• Classwork
• Electronic work (Prezis, PowerPoints, videos, etc.)
• Student projects
• Student journals/daybooks
• Ticket-out-the-door responses
• Warm-up responses

By viewing these lists through the lens of the Exploratory Question, the teacher team decides which artifacts should be gathered, and by whom, by the time of Data Meeting 2. Of course, not everything listed here will be brought to the next meeting. The team gathers only those items that it deems relevant to answering the Exploratory Question.

The facilitator of the team leads a discussion about who will bring which items to the next team meeting, soliciting volunteers (versus making assignments) to bring the items. Having individual team members commit to bringing their artifacts compels all team members to take ownership in the process and demonstrate commitment to the task of digging deeper into the data toward the eventual goal of improved instruction. This heightened ownership in the process is not a trivial advantage of the team sharing and gathering relevant artifacts. A common concern expressed to me by PLC coaches is that they seem to always be doing all the work themselves. Each teacher on the team should share the responsibility for any task not directly related to facilitating the team.

The team follows up this “homework” by reviewing these items—or triangulating additional data. This topic is the work of Data Meeting 2.
Dawn is the coach of the 3rd grade teacher team, and this is the first year she and her team are attempting to use the Data Action Model. They started by looking at PARCC assessment data from the previous year’s students and conducted a Notice and Wonder Protocol with it. Many of the team’s Wonder Statements focused on the students’ performance on items related to asking and answering questions to demonstrate understanding of a text (CCSS. ELA–Literacy.RL.3.1).

The students overall did reasonably well answering the questions, but the teachers wondered just how text-driven their answers really were. Did students know answers because of prior experiences such as classroom discussions on similar text, or were they depending on the text as an informational resource? From their Wonder Statements, the teachers formed a preliminary Exploratory Question: How proficient are our students at using the text to answer questions about the text? The question seemed like a reasonable one, but it didn’t really lend itself to getting at a constructive result. Simply knowing how proficient students are in their skill is a relatively straightforward bit of information and provides no window of opportunity for student improvement.

Dawn encouraged the PLC members to refine their question to include a connection to their instruction. After a brief but well-focused discussion, the teachers decided on a revised two-part Exploratory Question: How are we presently instructing students to refer to the text in asking and answering questions, and where can we be more effective in helping them improve their proficiency?

To answer its question, the team needed more information. Team members needed to fully explore what they were presently doing instructionally to teach this reading skill, and they had to decide at what points during the instruction they could be more effective.

In the last 8 to 10 minutes of Data Meeting 1, the team generated a list of what it needed to have for Data Meeting 2, and Dawn solicited volunteers to bring that material. Items on the teachers’ artifacts list included...
From the Trenches (continued)

• Detailed lesson plans from an eight-day unit centered on using text to answer questions;
• Their first-semester curriculum and pacing guides;
• Copies of the district quarterly assessment covering the topic (among others);
• Student work from an assignment on asking questions of an author based on a fictional story;
• Released test items from previous years’ PARCC assessment; and
• Short video clips from student performances from an Ask the Experts project on hurricanes and tornadoes.

With all these artifacts available for Data Meeting 2, Dawn and her team felt well positioned to tackle their Exploratory Question.
Bibliography


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During his career of more than 30 years in education, Daniel has been a classroom teacher in both public and independent schools in South Carolina, North Carolina, and Connecticut for 24 years, serving as a math department chair for 18 of those years. He was Professional Development Coordinator with the nation’s 18th-largest district, Charlotte-Mecklenburg Schools.

Daniel holds a master’s degree in mathematics from Wesleyan University. In 1994, he was trained as a Math/Science Fellow with the Coalition of Essential Schools (CES), where he began his working experience with PL Cs. In 2002, he was named South Carolina Independent School Teacher of the Year.

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