

Chapter 1

Gathering Data on Student Mastery

Technique 1: Reject Self-Report. Replace functionally rhetorical questions with more objective forms of impromptu assessment.

Technique 2: Targeted Questioning. Ask a quick series of carefully chosen, open-ended questions directed at a strategic sample of the class and executed in a short time period.

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Technique 4: Tracking, Not Watching. Be intentional about how you scan your classroom. Decide specifically what you're looking for and remain disciplined about it in the face of distractions.

Technique 5: Show Me. Flip the classroom dynamic in which the teacher gleans data from a passive group of students. Have students actively show evidence of their understanding.

Technique 6: Affirmative Checking. Insert specific points into your lesson when students must get confirmation that their work is correct, productive, or sufficiently rigorous before moving on to the next stage.



Chapter 1

Gathering Data on Student Mastery

There are two primary ways teachers can gather data on student mastery: through *questioning* and through *observation*. You teach something, and then you ask students questions, listening for the stream of data within their answers, often engineering your questions so the data stream is a little richer. Alternately, you assign students a task to complete on their own, and watch intentionally as they work, attending to what you observe and how to ensure that information about mastery is reliably visible. In either case, a few straightforward techniques can help you find and use data that come from your interactions with students.

The first step in increasing the data your questioning reveals is to avoid a common pitfall: using a yes-or-no question to ask students whether or not they understand. I don't know many teachers (myself included) who haven't said something like the following:

Teacher: OK, those are the basics of cellular structure. Everyone clear on the differences between plant and animal cells?

Or

Teacher: So, that's cellular structure and the differences between plant and animal cells. Got it, guys?

REJECT SELF-REPORT

Replace functionally rhetorical questions with more objective forms of impromptu assessment.

Such questions are usually greeted with silent assent or perhaps a muttered, “Um, yeah.” Next, the teacher usually says something like this:

Teacher: Good. Let’s push on to the role of chloroplasts.

Whether they’re addressed to adults or kids, in a school, work, or athletic setting, questions like “Is everyone clear on . . .?” or “Everybody got it?” are functionally rhetorical—they’re asked over and over, the answer is almost always a passive “yes,” and it is almost never accurate.

Volumes of social science literature have established that self-report is highly unreliable. Questions that ask for binary (that is, yes-no) answers are particularly suspect. Throw in group dynamics in the classroom, and for the great majority of self-report questions, what we get back isn’t really even an answer so much as a formality. Whether people understand or not, they almost always say they do, particularly in groups. The result is that we get little if any data at a moment when our instincts are telling us we should be assessing.

Let’s go back to the earlier question, “So, that’s cellular structure and the differences between plant and animal cells. Got it, guys?” Even if people thought the question was in earnest, most would be reticent to stop a group of twenty-five people and say, “Uh, no. Actually, I don’t really understand what you mean by the rigid structure of plant cells.” Even if they could, in that moment, (1) identify that there was something they didn’t know, and (2) describe it quickly so that you could understand it, most people would be unlikely to do so in front of a group that size, out of embarrassment or fear that they would co-opt the better interests of the group. They’d assume they were the only one who didn’t get it and that it wasn’t fair to speak up.

Even more compelling than implicit social pressure is a deeper problem: often students don't know that they missed something because, well, they missed it. If they miss your description of the rigid structure of plant cells, they may not know they missed it. Similarly, students often think they understand when they don't, or they don't know how to reflect much on the question of whether they really understand something. When you ask, "Do you understand the differences between the structures of plant and animal cells?" what your students may be assenting to is, for all practical purposes, "Can you think of *something* you know about the difference between plant and animal cells?" The vague nature of most self-report questions exacerbates this. If our questions aren't directive, they have no reason to draw students' attention to the many things they should know; this encourages them not only to give us false positives but, possibly, to believe them themselves.

Finally, the *way* we often ask these questions—with a wait time of a fraction of a second; a willingness to accept silent assent without testing; a look of relief, even, when we get silent assent because we really just want the green light to move on—intimates very clearly that we're not expecting a response. Students know not to speak up. If they do, our response can also send the message that they weren't really supposed to answer. A teacher might offer a perfunctory recap in response to a student who says, "No, actually, I don't get it." "Well, David, do you remember their shape from when we looked at them under the microscope? They had a rectangular pattern. Did they pretty much all look the same? Got it now?" This isn't a message of "Thank you for that useful data; let's go back to that," so much as a message of "Here's what you missed, David." I'll discuss the cultural implications of the messaging around what it means to be in error to a greater extent in Chapter Two, but for now all David knows is that he was supposed to give his assent and didn't. He'll do better next time.

Champion teachers, then, strive to **Reject Self-Report** as often as they can. They strive to replace moments when they ask for it with a quick series of carefully chosen questions directed at a strategic sample of the class, intended to meaningfully demonstrate student understanding in a minute or less.

The Trouble with Asking, "Got It?"

You might be asking, "Does this mean I can never ask my students, 'Got it?' or 'Are you ready to go on?'" The answer is no; you will assuredly say it sometimes, and doing so is no sin. It's almost impossible to root out such familiar rhetorical habits from your interactions with people, and if you did, it

would probably feel unnatural. However, it's powerful and important to recognize *how often* we use self-report and how often it is functionally rhetorical. When we ask self-report questions, it's in part because *we are acknowledging that we have reached a natural transition point. We have come to a spot where we should check in with students and find out how they are doing.* Ironically, asking rhetorically squanders that moment and can actually be counterproductive. Over time, if I ask questions that my students come to realize are not really genuine—if I ask and don't really want answers—the effect may be for students to generalize and assume that many of my questions are perfunctory. It's critical that students feel comfortable sharing their knowledge (or the gaps in it) in the classroom. Making a habit of asking questions that you don't really want people to answer can result in their disengaging at exactly the moment you need them to think deeply or take the risk of sharing an incipient thought.

A Look at Self-Monitoring

I've also watched teachers use a method of check for understanding (CFU) that at first glance may seem similar to self-report: self-monitoring. Unlike self-report, however, self-monitoring is very useful, so it's worth reviewing the differences between self-report and self-monitoring and exploring how (and maybe when) to encourage the latter.

Developing Self-Awareness Through Self-Monitoring

In a recent review of spelling words, Amy Youngman, of Aspire ERES Academy in Oakland, California, said to her students, "At the end we're going to vote on a scale of one to four about how confident we feel about taking our test tomorrow, so be thinking about that as you practice the words." You might ask, "Isn't this just a fancy version of self-report? One where you ask students to evaluate their own level of understanding?" Not quite. Amy, at the moment she says this, is also gathering objective data, quickly scanning and assessing her students' answers. She asks for their self-reflections not to assess their level of mastery—it's too unreliable for that—but to develop their own self-awareness, their skill, and their desire to think about whether they are approaching mastery. She advises them, "If you gave yourself a three or four, there's a sheet for extra practice you can take home." It's self-monitoring when students reflect intentionally on their own level of mastery. It's a good thing generally, and there are lots of ways to

encourage it in the classroom—for example, asking them to reflect as you ask targeted questions, such as, “I’m going to ask you some questions now to get a sense of how ready you are to go on; if you’re not getting all of these questions, it’s a sign that you may need some extra practice. In that case, please come see me.”



See It in Action: Clip 1.

Want to see Amy Youngman in action? Watch Amy as she collects data on student mastery by quickly scanning each student’s answer.

Of course, deliberate self-monitoring can be worked into a lesson in other ways, building synergy with effective CFU. You could, for example, take self-report—a yes-or-no question asking students to subjectively evaluate their mastery—and replace it with a session in which you give students time to look back at work they’ve done and select areas where they have questions. In doing this, you’d probably want to use language that assumes there are questions (for example, “What questions do you have? I’ll give you some time to go back and look over the last five problems.” You might then even help them reflect by saying, “You should know what I mean by *anaerobic*, and if not, should be ready to ask about it.”) You’d probably want to do this activity consistently over time to allow students to build proficiency.

Assess by Asking Objective Questions

After a round of guided practice and just before she released her students at Newark, New Jersey’s North Star Academy to a period of independent practice, Katie McNickle asked students to identify problems they’d like to review. At first glance, this might not seem atypical in any way, and perhaps not much different from self-report, but how Katie approached the moment was critical. A sample of hands went into the air, and Katie called on several students. She did not rush. Her message: “I am making time for this, and I take it seriously. It is not perfunctory.” A student named Youssef asked her to explain what distributing was. “Great question,” Katie responded. She asked a student to define the term and then added her own clarification, giving an example. Youssef was still confused, however, so Katie chose an example from her packet for a classmate to “tell Youssef specifically how to do this problem.” After the explanation, she responded to the student, “Do the second one for Youssef, and then Youssef is going to do the third.”

In Katie’s hands, then, self-monitoring involved students (1) identifying specific content they struggled with (rather than evaluating whether they “got it”); (2) having sufficient time to engage in reflection with the expectation that there *would* be questions; and (3) reviewing, practicing, and being accountable for answering correctly. Youssef ultimately had to show mastery, not just say he felt better about distributing.

This sort of self-monitoring, which ends with objective assessment and requires a significant investment in time, is highly valuable, but “expensive” from a time perspective. For that reason, it’s important to make use of the next technique, *Targeted Questioning*, to replace self-report at a lower *transaction cost*—the amount of resources it takes to execute an exchange, be it economic, verbal, or otherwise. This allows you to save self-monitoring for times when it’s most important and valuable.

TARGETED QUESTIONING

Ask a quick series of carefully chosen, open-ended questions directed at a strategic sample of the class and executed in a short time period.

If technique 1 focuses on “rejecting” self-report, you might ask, “What do I embrace instead?” One of the simplest and most valuable answers to that is **Targeted Questioning**—a quick series of carefully chosen, open-ended questions directed at a strategic sample of the class and executed in a short time period, often a minute or less. Using *Targeted Questioning* might mean replacing something like this:

Teacher: OK, now that we’ve reviewed cellular structure, is everyone clear on the differences between plant and animal cells?

With something like this:

Teacher: OK, so let’s make sure we’re clear on the differences between plant and animal cells. Jason, what does the presence of a cell wall tell me about the cell I’m looking at? . . . Good, and what else might tell me I was looking at

a plant cell, Charlene? . . . And which cells have chloroplasts, Jose? . . . Yes, and why do they have them, Sasha? . . . Good; it sounds like we're ready to move on.

Ideally, you might choose a few key points of transition in your lesson — two or three maybe — and plan in advance to insert a round of questions at each one. Even though this might appear likely to add time to your lesson, it's usually faster in the long run — because getting it right before you move on is more efficient than circling back later.

It's important to note that the goal of your targeted questions isn't to be comprehensive. The goal is to take a small, brief data sample where previously no data existed, and ascertain something about the general level of knowledge in the room. There's a temptation for every teacher to take something that's "quick and dirty" and make it better. This is one case where you'll want to resist the temptation. It's better to be quick and bring data to multiple places in your lesson by making fast, frequent strategic guesses than to be comprehensive and exhaustive, but infrequent. The perfect is the enemy of the good. The following rules of thumb may be helpful.

Speed Counts

Delivering targeted questions should usually take less than a minute or two. The primary goal of *Targeted Questioning* is to gauge understanding accurately, of course, but speed is relevant because teachers who can gauge mastery quickly can frequently check for understanding *throughout* their lessons. Teachers who can ask targeted questions quickly and efficiently are able to incorporate them into lessons on a *consistent* basis, without breaking the flow of their instruction or dramatically changing their desired lesson plan. In other cases, you will of course use more thorough tools for checking for understanding, but in this case quick is what we want.

Plan Questions in Advance

For most teachers, asking questions with precision and efficiency requires thinking of them in advance. Planning questions not only makes them more precise measures of what you taught but also frees you from having to think of your next question on the spot. You can move through questions more quickly, listen more closely to student responses, and, in turn, track patterns or trends in student mastery, perhaps even tabulating them. Planning your questions in advance also allows for more precise word choice, which leads directly to better, more revealing questions. In addition, once the lesson is over, having these questions scripted into your plan makes it much easier to

reflect on and sharpen your questioning skills (Did they work the way I asked them?), an advantage that can steepen your learning curve over time.

Scripting your questions in advance makes it easier to also script the answers you'd like to hear from your students. This clarifies what you're looking for in a correct answer and helps you anticipate and plan for likely errors. For the majority of teachers, there are few steps more useful than considering two questions: What are the mistakes I'm likely to get? and What could I do about it if I got them? Planning how to respond to potential mistakes makes it more likely that you'll take action should they occur.

Sample Strategically

When you ask targeted questions, you can maximize how much you learn by being intentional about choosing to whom you direct questions. Ideally, in asking five or six questions, you'd call on your best guess of a statistical sample of the students in the room. Two students who are usually around the middle. Two perhaps who tend to take a little longer to master the content. Perhaps one high flyer. Calling on a group of students who more broadly reflect the spectrum of skill in the class gives you a sense not only of what the students you called on know but also of what the students you *didn't* call on likely know. No sample will ever be perfect, but six students who represent a plausible cross section are more predictive of the rest of the class than your six most energetic and eager students.

Cold Call

You'll want to use technique 33, *Cold Call* (Chapter Seven), to get the most out of *Targeted Questioning*. Students who volunteer to answer a question are more likely to know the answer than those who don't. If you take only volunteers when you check for understanding, then your data will always tell you that the news is better than it really is. And because, obviously, the ideal statistical sample won't have their hands in the air exactly when you want them, you'll need to normalize the idea of choosing and calling on less-forthcoming individuals—*Cold Calling*—in order to see what they know. Be aware, though, that it's important not to limit your *Cold Call only* to when you check for understanding. You want to *Cold Call* long before that—and frequently—so that you normalize it, and students aren't surprised when you use *Cold Call* as part of your targeted questions. To truly check for understanding, you need the ability to call on anyone in your class at any time. And to do that, you need to make *Cold Call* part of the class's normal operating systems.



Track the Data

Sampling also offers the opportunity to see responses to your questions as a data set, rather than as isolated, individual answers. For example, when I used to ask my students questions in class, I would sometimes get a few wrong answers before a student provided the right one. “What’s the protagonist afraid of here?” I might ask. The first answer wasn’t really on target, typically, so I might say something like “Mmmm, not quite.” The next answer might be closer, but still not really there. Then a student might repeat part of a previous answer without adding much. Then, finally, the fourth student I called on might give me a high-quality answer. “Right,” I’d say and think to myself, “They finally got it.” But, of course, *they* didn’t get it. One out of four got it. I had imagined a story of progress in a data set that should have told me the opposite. Wrong, wrong, wrong, right is *not* good news, generally speaking. So instead, I want to think of the answers I get as a data set. What percentage of the group gave a correct or sufficient answer? Was it possible that students used their peers’ answers to eliminate some possibilities and guess correctly?

Once you’ve replaced self-report with a sample set of targeted questions, you can make your CFU even stronger by ensuring that your questions (targeted and otherwise) possess two key characteristics: reliability and validity.

Reliability and Validity

When you use questioning to check for understanding, including *Targeted Questioning*, your questions must do a lot of important work in a short period of time. To get the most out of them, you’ll want to think about a few topics in question design.

Reliability. The biggest danger in assessment is a *false positive*. You ask a student a question, and he gets the right answer. It appears to suggest mastery, but could it be an illusion? Your student might have gotten lucky and guessed correctly. Or maybe he got one right, but isn’t likely to get most right. Still, you heard the right answer, concluded everything was fine, and checked him off your mental list. A false positive like this is dangerous because it’s likely to go unaddressed. For that reason, you want to be as sure as you can that correct answers are also *reliable*—that they’re repeatable and likely to reoccur. One of the best ways to do that is to ask “why” and “how” questions that give evidence of the quality of the thinking behind the answer. Another is to ask a question in multiple formats. You want to always



ask yourself when you assess: What are the chances they'll get the next one right on this topic?

Validity. An assessment is valid if it measures what it claims to measure. In the classroom, validity means ensuring that the difficulty of your questions meets or exceeds the end goal *and* that you've included enough question variety to ensure that your students will be able to express their mastery no matter the format in which the question is asked. If students answer only multiple-choice questions when you check for understanding, for example, your assessment is not likely to be valid. Students are ultimately almost always responsible for open-response formats—usually on the test, and certainly in life. More subtly, if students almost always answer questions in the one or two formats that are most natural to you, they might not be prepared when they face questions from other sources.

It's perhaps obvious to point out that validity implies planning. What's the final standard? Do you derive it from a state test? From the SAT? In terms of college readiness? What's a plausible range of formats students might face?

Consider the following three questions about the Stamp Act of 1765. A teacher might check students' understanding by asking any sequence of these questions:

1. What was the Stamp Act? Why was it important?
2. Here is a line from a history textbook: "If this new tax were allowed to pass without resistance, the colonists reasoned, the door would be open for far more troublesome taxation in the future." What "tax" is it referring to? Was the tax "allowed to pass without resistance"? Explain.
3. What did the Stamp Act propose to do? What governing body passed it? How did the House of Burgesses react? Who led the reaction among the Burgesses? How did the governor of the Virginia Colony react?

The first question asks for a basic identification of the Stamp Act and a summary of its importance. Pretty good, but the teacher would have no idea how her students would fare if they were asked about the Stamp Act using a different format. The question might allow students to narrate what they know and avoid what they don't know, as some other questions might not. If the SAT asked the question differently, a correct answer to question 1 might not indicate how students were likely to do. Question 2, which asks them to recall

the name of the historical event based on a description rather than vice versa, takes a different approach, and combining both in the course of an assessment would give you better validity. Question 3 looks at a broader scope of events and the connections among them. Balancing multiple formats helps you ensure that your students are prepared for uncertainty.

The demands of reliability and validity require asking a significant number and wide array of targeted questions to check for understanding—enough to establish that students aren't guessing, that they can tell you why, and that they can apply their knowledge in several formats. This need makes another strong argument for *Cold Call* (technique 33) and for asking small, quick batches of questions multiple times throughout a lesson. You can question students much more quickly when you don't have to wait for hands to go up. In many classes we've watched, teachers spend only a minority of their CFU time on actual questions and answers. Instead, they spend much more time than is necessary—and than they realize—waiting for students to raise their hands, and exhorting, cajoling, reassuring, and narrating it all back to them ("I'm seeing the same three hands," "I want to hear from more of you," or "This is going to be on the test tomorrow"). The result is a process that takes twice as long as it should.



Want More? Clip 12. Want to see more *Targeted Questioning*? Watch Shadell (Noel) in clip 12.

STANDARDIZE THE FORMAT

Streamline observations by designing materials and space so that you're looking in the same, consistent place every time for the data you need.

The second means of real-time data gathering in the classroom is through observation. One major benefit of observation is that it allows you to respond quickly to more complex ideas and formats of thinking than you can assess through questioning alone. Another benefit is that you can “parallel-process”—you can be checking for understanding while students are working, and this is highly efficient. You could, for example, quickly observe the quality of ideas and expression in your students’ thesis paragraphs as they are writing them. That would be both efficient and revealing, and doing so suggests the final benefit of observation—that it allows you to check in on almost everybody in the class if you do it well.

Gathering data in the midst of instruction is almost always subject to significant time constraints. Say you assign independent work to students for five minutes. By the time you’ve given everyone a chance to get started and have checked to make sure they’re under way, you might have two-and-a-half minutes to assess thirty students—five seconds per student. If you can gather information three times as fast with half as many distractions, you suddenly become able to gather data in situations where you weren’t previously able to. In other words, if you reduce the transaction cost of data gathering, you will be able to use it consistently and intentionally without redesigning your lessons. And it allows you to better manage part of your lesson—independent student work—that often goes unmonitored.

Standardize the Format is one of the most powerful tools for streamlining data gathering and making your observation more efficient. It means designing materials and space so that you’re looking in the same, consistent place every time for the data you need. You might ask for work to be shown in the margin of a specific page of your students’ books, for example, or for students to mark up a page in a specific way. Or, at the beginning of class, you might give students a “packet” (see technique 19, *Double Plan*) in which to do key aspects of their work that day, and include clearly visible, pre-set places to write or take notes. In Dave Javsisca’s packet from his study of *Lord of the Flies* with his seventh graders, for example, the first thing you’ll notice is that Dave’s students write a *ton* about really ambitious topics. But as they write, it’s easy for Dave to assess them, because every paper looks the same. At a glance, he can scan for the key point. Using a packet like Dave’s would mean that as you circulated around the room, you wouldn’t have to spend time flipping through students’ writing saying, “Hmmm, let’s see where your paragraph about chapter 3 is” to find what you wanted. In addition to enabling you to find answers more quickly, *Standardize the Format* allows you to disrupt students less, as you won’t be flipping through their work or asking them to help you find answers. Most important, though, is that instead of expending all that energy

just finding answers, you can use your cognitive capacity to concentrate on identifying trends among your students' work. In essence, your reflections on their work are no longer interrupted by a series of scavenger hunts.



See It in Action: Clip 2

In clip 2, Meaghan Reuler of Leadership Prep Bedford Stuyvesant in Brooklyn systematically collects data on student understanding as she circulates, then uses what she learns to help them succeed. She begins her vocabulary lesson by prompting students to infer the meaning and “charge” (positive, neutral, or negative) of the word *disposition*. As soon as students begin, Meaghan combs each aisle, reading what her students have written. Because she *Standardized the Format* of every packet (see Useful Tools at the end of this chapter), Meaghan knows exactly where to look. Soon, Meaghan notices a trend and narrates, “I’m seeing a lot that are talking about [it] having good characteristics. This is actually a *neutral* word.” To address the error, Meaghan instructs her students to mark the word as “neutral” and notes that “it’s not always positive.”

Soon after, Meaghan asks students to write a response to the question, “Why might someone who skips breakfast develop a cranky *disposition* by lunchtime?” Plenty of hands go up, but Meaghan gently waves them down and responds, “Guys, you can get started on your own.” This frees her up to continue gathering data as she makes her “rounds” and encourages students to try to do the work on their own before they ask for help.

After taking a hand, Meaghan assigns another writing task: “How could you write a caption about this woman’s *disposition*?” Again, she circulates, observes some good work, but then spots another misunderstanding: students are using the word incorrectly. She reteaches by scripting out an example to illustrate precisely *how* students should use the word, not just telling them it’s wrong but describing—and making students practice—how to get it right.

You could take Meaghan’s and Dave’s idea and adapt it to different situations, too—asking students to place evidence or definitions on either side of a T-chart, for example—so you would be able not only to look in the same place for information but also to quickly and easily differentiate and compare the two ideas they were tracking. You’d have a standardized place where they made their comparison.

I recently tried this myself at a workshop on CFU. The topic was *Reject Self-Report*, and the activity was a series of case studies: six transcripts from classroom situations where a teacher had initially relied on student self-report to assess mastery. Teachers in the workshop were asked to rewrite cases, scripting their questions to better gather data about student mastery in lieu of self-report. Workshop participants were asked to complete several of the scenarios over the course of a few minutes. At the bottom was an additional section where people were asked to identify and rewrite a case from their own experience. The page I provided looked like Figure 1.1.

Figure 1.1 Reject Self-Report Mini Case Studies

Self-Report Statements	Rewritten to Reject Self-Report
<p>Example 1:</p> <p>Teacher: A “regular polygon” is a two-dimensional shape with sides that are all equal and angles that are all equal. Got it?</p> <p>Student: Yes.</p>	
<p>Example 2:</p> <p>Teacher: To <i>glare</i> and to <i>gaze</i> are similar because they both mean that you are looking at someone or something—usually for a long time. They’re different because when you glare, you’re looking at someone angrily, and when you gaze, you’re looking with great interest or wonder. <i>Glare</i> has a negative charge, whereas <i>gaze</i> has a positive charge. Get it?</p> <p>Students: Yes.</p>	

As my team and I circulated, we were able to ascertain the following quickly and easily:

- How quickly people were working and how many scenarios they had completed. This allowed us to make a simple but fundamental decision: How much time should we allocate for the activity? Did people need more time?
- Which scenarios people chose to work on. It was clear at a glance which of the scenarios they'd chosen to rewrite. Each was in its own box of about a quarter page. I could glance over twenty shoulders and know which topics people had found interesting and would want to discuss during the postactivity discussion. It also helped us write scenarios for future workshops. If very few people chose example 5, say, we could replace it.
- What good ideas and common mistakes we could talk about during the debrief. It was easy for me to look for more evidence of something specific; for example, if I saw something intriguing in one participant's answer to example 3 and wanted to know if it was typical, it was ten times easier for me to track other people's responses to that example.

It was also easy to scan to the final question and differentiate those answers. That is, I wanted to look differently at the scenario of their own experience to get a quick sense of the sorts of settings they were finding applicable. This was easy to do because the answer I wanted to analyze more closely was located in the same place on every participant's paper. I could find it and tell it apart in an instant.

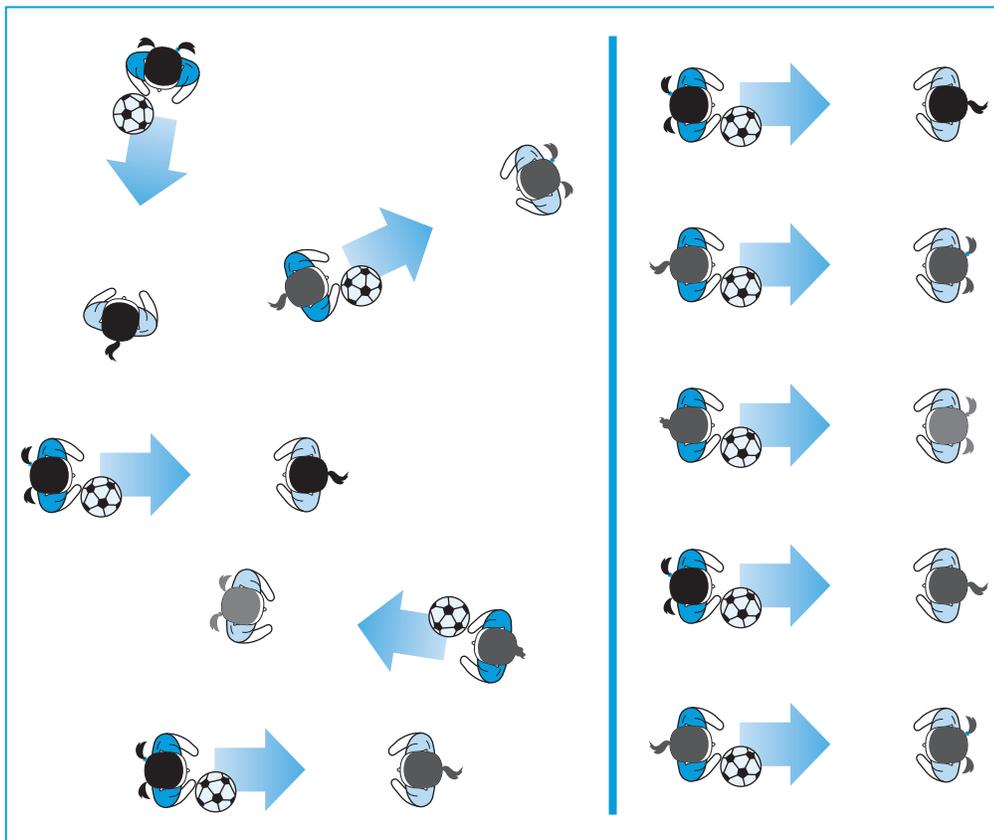
People worked for three or four minutes, and the room had about 120 people in it. But at the end of that time, I had a pretty good sense of what the strengths and gaps in understanding were, and it was mostly thanks to an apparently mundane design decision. Merely using *Standardize the Format* in a very simple way greatly leveraged my ability to understand what was happening in the room. But what if you're not using written material?

Standardize the (Visual) Field

Consider a video I sometimes use of an outstanding coach running a workshop for a group of fourteen-year-old soccer players on "preventing the turn." The coach explains how he wants players to line up defensively and how they should react to an opposing player with the ball. He models the drill to bring his explanation to life. Then he tells the girls to practice. In my estimation, most of the girls then proceed to do the exercise incorrectly. They practice getting it wrong and thus, you could argue, get better at getting it

wrong. To my surprise, the coach continues, seemingly aware that mastery is imperfect, but not noticing the high rate of error. One reason for this, I believe, is the setup of the drill. The girls are working in pairs, but they're facing and moving in many different directions. (See Figure 1.2.)

Figure 1.2 Standardizing the Field



Viewing the group as a whole, it's impossible to track an individual amid the swirling movement (at left). Would the coach have seen the errors if the girls had lined up in a more predictable pattern (at right)? Could he have then scanned a simple and predictable place to see the event he was looking to evaluate? I suspect so.

Let's apply his on-field experience to the classroom. Think of some of the ways complex visual fields present barriers to data gathering in the classroom. Then think about some of the ways you might remedy them. One approach is to standardize the visual field: to arrange the classroom so that groups are in a predictable visual pattern. This allows you to scan and understand it at a glance. Another might be to add something observable to indicate engagement, setting the expectation that during group discussion you should see knee-to-knee conversations, eye contact, nodding, or other visual signs of engagement.

TRACKING, NOT WATCHING

Be intentional about how you scan your classroom. Decide specifically what you're looking for and remain disciplined about it in the face of distractions.

4

Another important tool in making yourself more efficient and effective at gathering information through observation is to add a healthy dose of intentionality to your looking. In fact, when your purpose for observation is the gathering of data, *tracking* is a better word for what you are seeking to do than *watching*. **Tracking, Not Watching** means deciding specifically what you're looking for and remaining disciplined about it in the face of a thousand distractions. It sounds mundane, but it's far from simple. By definition, few people are aware of what they don't notice—or that you can in fact “decide” what to notice. Moreover, we're inclined to think that noticing more things is better than noticing fewer things, but that's often not the case in the classroom.

In my first teaching job, for example, I knew to circulate around the room and observe when my students were doing independent work. I believed I was very observant as I did so. On my best days, I would circulate as though looking at a blank canvas, waiting to be struck by observations about students. There's a pastiche of quirks and color to observe in student writing, and it was truly fascinating. But what I noticed

was often a random event. Therefore, what I gave students feedback on was also likely to be random. If on any given day there were ten really important things you could say about students' writing, I might notice something about number seven on the list. Or number nine. The cost was that I wasn't talking about topics one, two, and three consistently—and sometimes not at all. I wasn't giving students feedback on the most important things because I had not decided to look for them when I observed their work. I was looking rather than tracking, waiting to let chance decide what I saw rather than setting out to look for the most important things, even if it meant hunting them out through the thickets of my students' writing.

Great teachers are more likely to track—perhaps not every time they circulate the classroom, but more often, especially when they want to check for understanding. If those great teachers had been in my shoes, they'd have asked themselves what they wanted to see students doing. Whereas my internal narrative was often something like, “OK, Brandon is working hard. Good. And Sarah's working hard. Wes seems a little stuck, though.” A better teacher's internal narrative might sound something like this: “OK, Sarah found her evidence, but she dropped in a full quotation without the partial paraphrase needed to weave it in, whereas Travis found the subtle evidence, and he's woven the quotation into his paragraph smoothly by paraphrasing part of it. Morgan's truncated the quotation she's cited for efficiency. Smart. No quotation marks for Walter. Red flag.”

Whereas I was looking for signs that my students had completed the assignment, a better teacher would be looking for evidence that they were doing the things that would most help them master the skills they were working on.

Specific Errors and Success Points

Tracking, then, involves intentional observation: the active seeking of the most important indicators of learning. Those indicators fit into two categories: specific errors and success points. Tracking specific errors means asking *what* aren't they getting and *who* isn't getting it, and, ideally, quantifying those mistakes. Tracking success points, in contrast, means determining the most important things that distinguish *excellence* from *completion*, writing them down, and observing whether students do those things. Do you notice the significant similarity? Both specific errors and success points should be recorded or quantified, whether mentally or physically. Doing so provides a yardstick for reteaching. For example, you might put a hash mark by the name of every student in your class who, in citing evidence from the text, is still lifting that evidence in long

sentences or chunks rather than using partial paraphrasing. And you may notice this because before your lesson, you took a few minutes to think through your students' most likely mistakes and plan your responses. In that case, your internal narrative may be something like this: "Just as I feared, I need to get them to digest those quotes in smaller chunks and more purposefully steer the argument. We'll have to circle back. I'll use that idea I worked out yesterday." This is much better than trying to think of an approach for reteaching on the spur of the moment. (Don't worry: if the concepts of specific errors, success points, and how to plan for them seem a bit unclear, I provide greater detail on all three in Chapter Two.)

Consider how Taryn Pritchard of Leadership Prep Bedford Stuyvesant applies this idea in her classroom. Many teachers use *Do Now* (technique 20) to start their class. One of the challenges of *Do Now* is that due to a lack of time, you often can't review every problem students did. But as Taryn circulates, she solves this problem by keeping tallies of which problems students are getting wrong. Each time she observes a student who's gotten a problem wrong, she puts a hash mark next to that question. Sometimes she writes the student's initials in as well so that she can call on him or her to review. Sometimes she notes what they did wrong or right ("didn't reduce"), paying particular attention to repeated errors and noting them with a "2x" or "3x." When she is done circulating, Taryn knows a lot of incredibly valuable information: Which of the questions should she review? Whom could she call on if she wanted to review a common error? Whom could she call on if she wanted an exemplar? What did they need to circle back to tomorrow? Simple and brilliant.

SHOW ME

Flip the classroom dynamic in which the teacher gleans data from a passive group of students. Have students actively show evidence of their understanding.

TECHNIQUE

5

Another useful tool in making your observation of student work more effective and efficient involves flipping the common classroom dynamic, wherein the teacher actively seeks data from a passive group of students. In **Show Me**, students actively show the teacher evidence of their understanding, a reversal that also makes misunderstandings more evident. Students own the responsibility for facilitating the data gathering. There are two versions of *Show Me*: the first is *hand signals*, whereby students share data on their answers; the second is *slates*, whereby students show you their actual work.

Hand Signals

Although there are a variety of ways to employ hand signals, the key to the approach is that on a specific cue, students hold up digits in unison to represent their answer. Notice that it's their *actual answer*, not their perception of it. Asking for a thumbs up, down, or sideways to show "how well you understand this problem" is different, and has several problematic aspects: it's an example of a teacher using subjective and unreliable self-report when objective data would be far more accurate. (Asking for a thumbs-up for "agree" or thumbs-down for "disagree" serves a different purpose and is a technique called *Take a Stand*, which I highlighted in the first edition of this book. This technique involves pushing students to exercise their own judgment of their peers' answers. Doing so builds engagement, healthy skepticism, and confidence. For more information, please visit www.teachlikeachampion.com/yourlibrary/.)



See It in Action: Clip 3

In clip 3, Bryan Belanger, a math teacher at Troy Prep Middle School, uses hand signals to gauge student mastery of a multiple-choice question about percentage rates of change. Within seconds of the morning greeting, Bryan prompts students with the cue "rock, paper, scissors . . . one, two!" On "two," students pound their desks three times in unison before they raise their hands to reveal their response (one finger for answer choice A, two for B, and so forth). Evidently, Bryan has made the act of showing him their answers so habitual that this routine unwinds like clockwork.

Once students' hands are up, Bryan swivels his head from right to left, scanning the room and narrating what he's looking for ("making sure they're nice and high") as well as what he sees ("I see lots of twos, a couple of fours"). This draws students' attention to the fact that he's *Tracking, Not Watching* and that he cares about their answers. He then asks students to be ready to

defend their answer. In doing so, he acknowledges that there are multiple responses, while also withholding which one is correct.

Instead of revealing the answer directly, Bryan calls on Blaize (who correctly selected B) to explain her answer and reasoning. He then affirms it, but not before calling on Elizabeth (who incorrectly chose D) to reiterate it. Bryan then asks students to “check or change” their work for that problem, saying, “Give yourself a check if you picked answer choice B. If you did not, circle that, and fix it now.” By insisting that students *Own and Track* (technique 10), he ensures that they *all* internalize the answer and the reasoning behind it.

Slates

Slates is the second form of *Show Me*. With slates, students complete their work at their desk and then, at their teacher’s signal, hold it up to show him. Often teachers use small erasable whiteboards to do this. (This is an approach you may think is the exclusive provenance of elementary or middle school teachers, but as clip 4 of Jon Bogard shows, the method is equally effective with high school students. More on that later.) In other cases, you might have students hold up their work in other ways: a graph on graph paper, or notebooks and the student pointing to a given place—say, to their sentence defining *verisimilitude*. Although your ability to scan might not be as fast and simple in those cases, the approach can still be revealing (and effective in stressing accountability).



Want More? Clip 22 and Clip 56. Want more *Show Me*? Watch Amy Youngman in clip 56 and Erin Michels in clip 22.

There’s also a high-tech version of slates that, if you’re lucky enough to have, involves students using handheld devices—“clickers”—to enter their response to a multiple-choice question during class, with the teacher gaining instant access to a full data set in seconds. It can result in instant understanding, can inform useful action (by, for example, identifying which wrong answer was most problematic), and has a certain “cool factor” that students love. If you have access to it, great. I would merely offer the caveat that it can be so appealing and efficient to use that it can drive out other forms of CFU, especially forms that have a wider range of formats—most important, open-ended rather than multiple-choice responses.



Among the various forms of hand signals and slates, some consistent themes emerge. In all of its versions, *Show Me* features students *showing their teacher objective data on their work in unison* so that the teacher can quickly assess it. Take a moment to consider several key elements of that definition:

- Objective data: teachers might be tempted to think they're doing *Show Me* when they ask for subjective data from students: "Hold up your fingers, one to four. One means 'I get it'; four means 'I'm lost.'" That tool may have other uses, but it's not good for CFU. Only objective data reports are included as part of *Show Me*.
- Shown *to* the teacher: the data in *Show Me* are actively presented by students in visual form — held up so you can see them and scan them quickly from where you're standing. No circulation is necessary. You probably circulate and observe what your students are doing all the time in class. That's a great practice, but it's different from *Show Me*.
- In unison: the data sharing from students usually works only if it happens in unison, so there's no piggybacking and changing answers by students in response to their peers. Everyone presents his or her data point on cue, and that's that.



See It in Action: Clip 4

Jon Bogard, a ninth-grade math teacher at Sci Academy in New Orleans, uses *Show Me* to collect and respond to data about student understanding in real time. To do this, he asks students to copy and then solve the following math problem on erasable whiteboards (that is, slates): "Find the inverse of $f(x) = 3x - 9$." He then asks students to raise their slates once they're done. This procedure is a powerful way to collect data without having to fish for it; instead, the data *come to him*. And because this *Show Me* requires every student to show his or her work, the data Jon collects are more reliable.

Initially, Jon notices that several students are struggling with his question, so he reframes it in clearer terms: "I want you thinking 'reverse your x and y 's.'" As Jon continues scanning students' boards, he notices that some still need more help, so he continues breaking the problem down into smaller steps. First, he asks them to reverse their x 's and y 's in the equation $y = 3x - 9$. Next, he asks students to isolate y in the equation $x = 3y - 9$.

Once students begin raising their boards, Jon draws attention to the fact that he's closely examining their work. He occasionally points to boards,



cranes his neck to read what they wrote, and responds with affirmatives like “good.” In several cases, he notices that students are ready for more advanced problems and sends them off to independent practice with the phrase “Go to IP.” With *Show Me*, Jon can catch errors before they snowball into bigger misunderstandings.

AFFIRMATIVE CHECKING

Insert specific points into your lesson when students must get confirmation that their work is correct, productive, or sufficiently rigorous before moving on to the next stage.

The last tool to help you use observation to check for understanding also involves students taking a more active role. In **Affirmative Checking**, you insert specific points into your lesson when students must get confirmation that their work is correct, productive, or sufficiently rigorous before moving on to the next stage—a new paragraph, a second draft, a harder set of problems, a new step in a lab. Watch Bob Zimmerli demonstrate in clip 5.



See It in Action: Clip 5

Bob Zimmerli, a former seventh-grade math teacher and current dean of curriculum and instruction at Rochester Prep’s Brooks Campus, asks students to independently solve multistep equations. Because Bob knows that the content can be tricky, he instructs students to check in with him after every two problems. These checkpoints give him a way to collect data from every student, which in turn gives him a richer, more reliable snapshot of student understanding. This system of *Affirmative Checking* also holds students and teacher accountable to each other for achieving the same goal: mastery of the day’s objective. By design, the process of spotting and fixing errors becomes a shared endeavor.

Bob circulates and carefully tracks students' papers. Because Bob *Standardized the Format*, carefully engineering the place where students record their work and answers, he's able to spend less time looking all over packets and more time processing and responding to student trends. Practically speaking, saving a few seconds from countless scans every day would enable Bob to add back several days (possibly even weeks) of instructional time to each school year.

After checking in with a few students, Bob begins to notice a trend: students keep forgetting to combine like terms. Initially, he responds by pointing to a poster at the front of the room that outlines the steps students should take to solve each problem. Although the poster helps, Bob soon realizes that it would be far more efficient to reteach everyone the skill of combining like terms. To do this, Bob selects a problem that no one started and begins working through it. This helps him make sure that everyone (including high performers and early finishers) has something to learn from his mini-lesson.

There are many ways to include *Affirmative Checking* within an activity or lesson, but consider the following observations on implementation to help you ensure their effectiveness:

- The checkpoint(s) should ideally pass quickly. The rationale here is pretty clear—letting students wait around for you to check them off is a waste of instructional time and an opportunity to be off task. Arms folded, pencil down, or chatting with a neighbor, bolstered by “I’m waiting to get checked,” is not the desired outcome. So move fast—have a rubric or an answer sheet ready even if the work appears pretty straightforward.
- Asynchronous checkoff is implicit here—the process from a student’s perspective is that you get checked as soon as you’re ready and don’t wait for others to reach that point once you pass it. It’s just on to the next step. Ideally the work would be challenging enough that students would tend to finish at different times, spreading out the checking naturally. I suspect that’s why Bob Zimmerli gave students two problems to do before each check-off. The problems were similar in terms of the skills they required, so Bob could actually start affirming students as they complete the *first* of two problems. It bought him twice the time to check the room.

- It could be useful to make this approach more explicit by adding “bonus” work. In other words, you might, in Bob’s situation, give students three problems in each stage of a problem set, but make the third an optional or extra (or extra credit) bonus they could do if they had time, and with the checking starting after they’d completed one or two. In other words, those who were waiting could always go on to the third bonus problem while you checked others’ work. This might sound contradictory—the point here is to check before you go on. The difference is that the third problem is the same level of difficulty as the first two.
- If you incorporate the previous point, you want to make the signal for “I’m ready” the sort of cue that students can give while continuing to work. Keeping his or her hand in the air for three minutes makes it all but impossible for the student to go on to another problem.
- You could make your sign-off even faster by combining *Affirmative Checking* with *Show Me*, by having students hold up their work for you to sign off on. (Watch Jon Bogard in clip 4 do this with his ninth graders.)



See It in Action: Clip 6

Hilary Lewis, a first-grade teacher at Excellence Girls Charter School in Brooklyn, uses *Affirmative Checking* to gauge student mastery before independent work. At the outset, Hilary asks students to complete a math problem on a green sticky note or “ticket” and then to exchange that ticket for the opportunity to start independent practice (IP). She then continues to stoke interest and suspense by comparing this exchange to the experience of “going into a movie.” By requiring students to “earn” the privilege of participating in IP, she turns it into a kind of reward. And because students must show correct work in order to move on to IP, they have no incentive to speed through it at the expense of accuracy. This sends an implicit message that Hilary values quality work over speed.

One by one, students complete the problem and patiently await Hilary’s signal. She calls them up, and because all students were asked to show their work on a sticky note, Hilary knows immediately where to look. When students hand her work that’s correct, she responds with a warm, positive, yet understated tone that seems to suggest: “Good. You got it right, just as I expected.” When one student shows her work for the *wrong* problem, she

responds with the same warm, supportive tone and comments, “OK. You did your own problem, which is great. I need you to do *that* problem [as she points to the board].” Her reaction signals to the student that “getting it wrong” is as normal as “getting it right.”

Student-Driven Affirmative Checking

Affirmative Checking is a great tool: it enables you to be constantly aware of how your students are doing; it enables *them* to be constantly aware of how they are doing; and it ensures that their actions—going on or going back—inherently reflect the data on their success. That’s a lot of upside. Its challenge is one of labor intensiveness. Twenty-five or thirty students are a lot to check. Despite all the pointers and tricks to make things go better, there’s a risk that kids will be sitting around wasting time and becoming frustrated waiting for you.

Efficiency matters, and one way to increase it is to harness the labor of your students. The checking in *Affirmative Checking* doesn’t necessarily have to be done by you. Students could self-check on a key you leave at strategic points around the room. Or they could be responsible for checking off one another’s work. You could have partners working in pairs first confirm that they agree before either getting sign-off from you or checking the key, which would reduce the number of checks you needed to make. Or, on occasion, you could appoint a student to be a “checker.” (If you do this, be careful to rotate the checker. It’s important that what seems like a reward doesn’t result in the student in question losing out on the chance to do more work and push his or her own skills in order to help you!)

One important fact to consider if you have students participate in *Affirmative Checking* is that there are two key purposes to the technique. One is to make sure that students are ensuring mastery before going on to more complex work; the other is for you to gather data on how your students are doing. Distributing the checking accomplishes the first with more efficiency, but risks reducing your access to the data: If students self-check, will you know how they did? I’m sure you will find a way to balance these goals—either by using student-centered checking sometimes and checking yourself other times, or by engineering ways to track the data during student-centered checking (or both). For example, if students self-checked against a rubric, they could check a box to show how they did so that you could track it later. It’s just important to be aware of the challenge and the possible trade-off as you’re out there adapting and designing new and better solutions.

CONCLUSION

Whether you utilize techniques of observation or of questioning, different teachers and different situations call for different means of collection. But once you've gathered all the relevant data surrounding student mastery, what do you do with them? In the next chapter, we'll look at some of the ways champion teachers both anticipate and remediate common errors, as well as the ways in which building a *Culture of Error* can increase a classroom's rates of risk-taking and learning, all toward the end of common mastery.

Reflection and Practice

1. To more effectively *Reject Self-Report*, write four or five targeted questions you could use to check for understanding in a lesson you are currently teaching, then practice with a colleague and see if you can deliver them in a minute or less.
2. How might you *Standardize the Format* in your classroom in terms of handouts and homework material? In terms of the visual field? What other ways might you standardize your classroom, and in what ways might they improve the overall efficiency of your lessons and your ability to assess student mastery?
3. Select one question from an upcoming lesson. Working with that question,
 - a. Script a follow-up question for a correct response.
 - b. Plan one anticipated wrong answer.
 - c. Script the *first* question you'd ask to follow an incorrect response.
 - d. Plan your cue and student hand signals.

FIND THESE TOOLS AT WWW.TEACHLIKEACHAMPION.COM/YOURLIBRARY

USEFUL
TOOLS

Dave Javscas's packet from *Lord of the Flies*. See how seventh-grade reading teacher David Javscas designs packets that are both writing intensive and efficient for assessing student understanding.

Taryn Pritchard's *Do Now* markups. Check out the notes that sixth-grade math teacher Taryn Pritchard made for herself on a *Do Now* as she circulated to gather and respond to data on student understanding.

Meaghan Reuler's fifth-grade reading packet. Take a peek inside a fifth-grade vocabulary packet that reading teacher Meaghan Reuler carefully designed to make student errors easier to see and respond to.

