FAST AND EFFECTIVE ASSESSMENT

How to reduce your workload and improve student learning

GLEN PEARSALL

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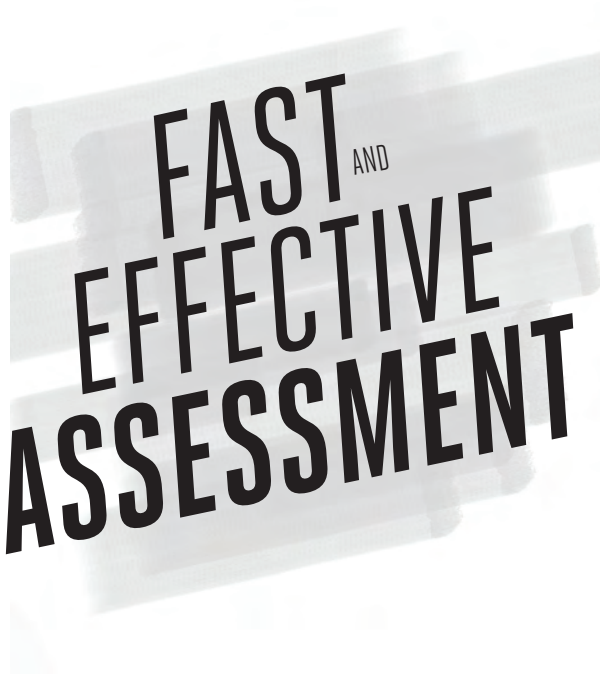
To Noah and Jem for trying to
be patient while I was
"upstairs still writing that book,"
to Mum and Dad, and to
Tash, my favorite reader . . .



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Introduction

The first time I ever assigned work to students as a new teacher, I was ready for them to not have completed their work—and to have all manner of excuses (though the breadth and creativity of these excuses were impressive). What surprised me was how impatient students were to get the work back. Almost from the moment they handed the work to me, students were asking, "What did I get?" and "Have you marked the assignments?" This included the students who handed the work in late and—remarkably—one student who hadn't handed in the work at all.

When I returned the work a couple of days later ("Finally!" observed one student, who'd given me his work that very morning, two days late), I was eager to see how they would respond to all my feedback, particularly because I'd set aside some personal obligations to get the work back quicker than I originally planned and had meticulously annotated each piece with detailed advice.

The students were largely indifferent to my efforts. They quickly checked their grades, and only some gave the comments a cursory glance before putting the work back in their folders. A little perturbed, I debriefed with my colleagues in the staff room: Did it always take so long to mark the work? Was it always so hard to get students to take your advice? ("Welcome to teaching!" one dryly observed.) Their advice in response was both helpful and honest: I would get better and quicker at it with practice, but the workload related to correcting student work and providing feedback was always demanding.

When you start out as a teacher, the demands of assessment can be utterly overwhelming—it felt to me like trying to drink from a fire hose. However, it is not just those in their first few years of teaching who struggle with the demands associated with feedback and correction. Teachers at all levels of experience wrestle with this issue. "It's hard to focus on your students' needs," one teacher confided to me, "when your view is obscured by piles of marking."

Providing helpful feedback and creating meaningful assessment tasks while keeping up with reviewing and correcting student work (let alone balancing your work life and your personal life) is one of the biggest challenges of teaching. *Fast and Effective Assessment* offers teachers a systematic way to approach this problem. Each of the six chapters lays out key strategies for improving the quality of feedback your students receive while reducing the time and effort you spend on generating this feedback.

In Chapter 1 we explore how to refine your questioning technique. Teachers question students at every stage of assessment, from quizzing them for prior knowledge before starting a topic to asking them to reflect on their final results, so refining your questioning can have a profound effect on every aspect of learning. Using questioning to quickly check on your students' progress and offer them some in-the-moment feedback saves you from having to do this via more laborious and time-intensive written assessment. These refinements require only small adjustments of technique and a little additional planning and preparation. They are an excellent introduction to how you can improve your assessment and feedback practices without adding to your workload.

Feedback works best when your students have a precise sense of what they are trying to learn. If they know where they are going, then their feedback to you about their progress is more accurate and your advice to them about what they need to do to reach their goals is more relevant. In Chapter 2 we discuss how, more than just telling students where they are headed, we need them to *internalize* these goals. When students

understand what is required of them, they are much more active in giving and responding to feedback and you can target your efforts on what will help them most. This chapter gives you a range of practical strategies for encouraging your students to take ownership of their learning goals.

Once you and your students have established what they are learning, you need strategies for checking on their progress toward this goal. Most of the traditional ways we check on our students' learning involve collecting and correcting large amounts of student work, but I'm interested in ways to avoid unnecessary work for teachers. In Chapter 3 we look at quick techniques for finding out what your students know and what they are struggling with. We want a tighter feedback cycle so students aren't waiting to get a piece of written work back to know what they need to work on next. This chapter details a series of fast formative assessment strategies that you can use to check and correct during class time instead of having to add more to your correction pile.

Summative testing is one of the most common ways that teachers assess student progress. However, waiting until the end of a unit to assess your students' progress is often counterproductive—you don't want to give students feedback only after their learning on the topic is finished. Chapter 4 explores how you can modify traditional testing strategies to provide quick and reliable methods for monitoring your students' ongoing progress. These tests are fast and accurate, and they give you a way to provide formative feedback to your students without requiring extensive or time-consuming marking.

All these strategies improve the quality of your feedback while reducing the *amount* of work you have to correct. However, you also need strategies for reducing the *time* it takes to correct the work that remains. In Chapter 5 we explore ways to mark faster. We investigate techniques for encouraging students to proof their work more closely so you waste less time correcting low-level errors. We discuss methods for automating correction, studying representative samples of student work, and other ways to speed up your marking. This chapter also offers tips on how to couch

your advice so students understand and act on it more readily and you can spend less time repeating yourself.

Students, of course, have a role to play in all this. It is a waste of your valuable time if you are carefully assessing and annotating work but your students are not responding to your advice. How do you get students to act on your feedback? Chapter 6 explores practical strategies for encouraging students to be more actively involved in their own assessment. We investigate minimal-marking strategies and alternative grading schemes and look at how you can use self- and peer marking to reduce your workload while helping students reach a deeper understanding of what you are teaching.

When I coach teachers on reducing the workload associated with assessment, I find that concentrating on one or two of these steps can have a substantial impact. Just having quicker ways to mark work or getting students to play a more active role in the feedback cycle, for example, can make a real difference in the everyday demands of teaching. Employing all of these steps can be transformative.

Teachers need assessment strategies that work not just in theory but in the busy environment of the everyday classroom. This book offers ways to assess when you are swamped by marking student work, dealing with the pressing needs of multiple students, and trying to complete a long list of school and system-level obligations. It explores assessment strategies that are not just effective but sustainable. The success of this approach can be attributed to this focus on finding techniques that work as part of an everyday teaching routine—or as one teacher I coached neatly put it: "I think this worked for me because it didn't change my mind about assessment—it changed my habits."

I hope it works for you, too.

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More Effective Questioning

Teachers who want to reduce the amount of time they spend correcting and grading student work often ask me, "Where do I start?" Intuitively, most teachers want to begin by looking at their marking practices. But a lot of the work associated with correction is actually generated long before students put pen to paper. The way you set up and run a learning activity can have a profound effect on how much correction you have to do at the end of it.

Instead of turning to grading practices, I usually start with questioning technique. Questioning is the basic building block of assessment. Teachers ask, on average, 200 to 300 questions a day (Brualdi, 1998). They use questioning to gauge prior learning, to check for understanding, to elicit evidence, to monitor individual performance, and to encourage whole-class groups to share their insights and learn from one another. Refining your questioning technique, then, can help you improve all levels of your practice.

What does this look like in a classroom? Compare the following exchanges:

Exchange 1

Teacher: Li, is 19 a prime number?
Li: Yes.
Teacher: Tom, what about 119?
Tom: No.

Exchange 2

Teacher: Li, 19 is a prime number. Why?
Li: Because it is only divisible by itself and 1.
Teacher: Can someone rephrase that? Tom?
Tom: It has no other factors—other than 1 and itself.

Essentially, these exchanges explore exactly the same thing. However, in the second exchange the teacher elicits a more sophisticated response simply by asking the student to justify his answer ("Why?"). Similarly, "bouncing" the question to a second student ("Tom?") is another way to elicit a more thoughtful answer.

When I coach teachers, I like to show them how being more *deliberate* about their questioning can generate better student responses. Questioning is a subtle and, for many, intuitive practice. Many teachers I work with have never been trained in specific questioning techniques. They are unaware of what really effective questioning sounds like. Others I encounter use these techniques so frequently that questioning is an innate part of their practice. These teachers often find it difficult to articulate precisely what these techniques are and how they are using them. Being *deliberate* about questioning means you can name each specific technique. It means that you can use them in a targeted way. And it means that you have the vocabulary to discuss with your colleagues how to best use these strategies.

The key advantage of this approach is that it doesn't require teachers to use up more of their limited class time or undertake further preparation. Making a few subtle adjustments in how you query your students takes little additional planning time but can substantially change how

your students respond, revealing to you more about what they know and ultimately saving you time over the long term.

Questioning for Fuller Participation

A teacher once told me that she felt like a ventriloquist when she ran class discussions: "I answer so many of my own questions I feel like I'm having a conversation with myself!" Another characterized his class discussions as "sort of a play," which he and "a handful of students put on while the rest of the class watch like an audience." As teachers, we are familiar with what has generated these responses: the challenge of running an inclusive class discussion. The aim is simple: we want to create a classroom where *all* students take an active part in the learning and we don't have to do all the talking ourselves.

This is not as easy as it sounds. Indeed, a small number of students volunteer the majority of answers teachers get to hear (Wiliam & Leahy, 2015). In fact, some studies have found that only around 25 percent of students regularly answer questions in class (Black & Wiliam, 2014). Students who don't take part in this aspect of your lessons are missing out; question-and-answer sessions are an opportunity for them to demonstrate the extent of their knowledge, try their ideas out loud, and learn from classmates.

Obviously, we don't want our students to become spectators in their own learning. What strategies can you use to include more students in class discussion? "Cold calling" and "thinking time" are among the most effective.

Cold Calling

Teachers cold-call students when they ask them a question without first checking whether they know the answer. For example, instead of asking the whole class, "Who can tell me what a zone defense is?" you might cold-call a specific student: "What is a zone defense? Piers?"

Many teachers I have coached are uneasy about cold calling in class discussions. They worry that it puts students "on the spot" and can embarrass them or make them feel anxious. (This concern is heightened if they are working with students who have learning disabilities or are not confident using the target language.) Teachers are also concerned about students "switching off" if they are targeting their attention to an individual student.

These are legitimate concerns but not reasons to avoid this technique. With a few subtle adjustments, you can avoid these outcomes. Take, for instance, the example just provided. If you place the student's name at the start of the question, then other students do tend to fall into the role of spectator, watching to see how that student answers *his* question. By contrast, pausing and then adding the name at the end of the question ("Piers?") gets a very different response. Asking the question this way means that the whole class is more likely to do the mental work of thinking of an answer—the question, after all, might be coming to them. Here are some other techniques and approaches that help you get the most out of cold calling.

Telling students. Cold calling is most effective when students are aware that you are going to use this style of questioning and understand why you are using it. Make it clear that you ask questions not to find out who can get it right but to discover what each of them is thinking. Explain that cold calling encourages everyone to be involved in class discussion. Make sure that they know that you are well aware of their abilities and that you won't unfairly put them on the spot. Such an explanation could sound something like this:

> OK, guys. We're going to have a class discussion to explore what you think the answers might be. I'm going to include everybody by cold calling. I just want to hear what you are thinking, so don't worry if you don't know the answer. Guessing and making mistakes is how we develop our understanding. Remember our motto: Being wrong is not the opposite of right; it is the *pathway* to being right.

Speculative framing. I have found that students are more likely to respond to cold-call questions if they feel they can speculate about *possible* responses rather than come up with the correct answer. Using cue words such as *might* and *could* signals to students that it is OK to speculate:

> *Traditional question:* Carlos, what is the answer?
> *Reframed question:* What *might* be the answer? Carlos?

This is a minor adjustment, but for a student concerned about making mistakes in public, the reframed question involves much less social risk. Consider the following exchange:

> *Teacher:* What is the answer?
> *Student:* I don't know.
> *Teacher:* If you did know, what might be the answer?
> *Student:* Twenty-three.
> *Teacher:* That's right.

In this exchange, the student didn't think of the answer between the first and second question, but it became safer to speculate. This kind of framing, popularized by Dylan Wiliam, legitimizes conjecture and encourages your students to voice their tentative first thoughts as their understanding develops. This type of questioning is a powerful tool in mixed-ability classes and one of the first things I show teachers who want ways to differentiate their questioning for students who are struggling.

Answer scaffolds. Using answer scaffolds is another way to make it easier for your students to respond to cold-call questions. An answer scaffold is a list of phrases that maps out the typical sentence structure of an answer. I usually give it to students as a worksheet or write it on the board so it can be used as a reference during the discussion. This approach reduces the "language demands of the task," allowing students to focus on the content of the answer (Fisher & Frey, 2014, p. 23). If, for example, you wanted your class to answer the question "How have you revised your understanding of this novel?" you could give students a worksheet with these sentence stems (Olson, 2011) to help them formulate a response:

I used to think _____, but now I think _____.
One way I've changed my mind is _____.
My latest thought on that is _____.

Students are more likely to respond to all types of questions if the form of the answer is familiar to them (Fisher & Frey, 2014), but I have found this approach works particularly well with cold-call questions. If you have a high number of English language learners (ELLs) in your class, then this approach is one that should be part of your repertoire.

Think-Pair-Share. There are many thinking routines that you can use to give your students a structured way to gather their thoughts before initiating a classroom discussion with cold calling. Think-Pair-Share (Barkly, Major, & Cross, 2014) is the best known of these routines. The process has three simple stages:

Think:	Give your students some time to silently consider a question or stimulus material.
Pair:	Ask them to share their thoughts with a partner, identifying the most compelling of their initial responses.
Share:	Finally, get the students to share their insights with the whole class group.

In the Think-Pair-*Square*-Share variation (Millis & Cottell, 1997), you add one more step: ask each pair to match up with another pair (making a "square" group of four) before sharing. Whichever variation you use, thinking routines like this one ensure your students have been given an extended time to formulate an answer before they might be called on.

Question relay. Teachers who are trying out cold calling often ask me what to do when a student responds with an automatic "I don't know." There is nothing wrong with a student (or a teacher, for that matter) saying "I don't know," but if it is a student's unthinking first reaction or a strategy used to avoid reflection, then the teacher must deal with it.

I usually recommend trying a question relay: respond to the student by telling her that you will ask two other students for their thoughts and then come back to her to see which of those answers could have been

hers. What does this sound like in an actual classroom exchange? Here's an example:

Teacher:	What are some of the health problems associated with smoking, Taylor?
Taylor:	I don't know.
Teacher:	OK, I'm going to ask a couple of other people. Please listen to their responses because then I'm going to ask you which of those answers you might have used.
Teacher:	Carlos, what are some of the health problems associated with smoking?
Carlos:	Respiratory problems like emphysema and cancer. Heart problems.
Teacher:	Lucinda?
Lucinda:	Cardiovascular disease, stroke.
Teacher:	Which of those answers might you have used, Taylor?
Taylor:	Probably lung cancer or even just heart attacks.

Of course, question relays do not work every time. I have had, more than once, the other two students I asked also respond with "I don't know." This told me that the question might have been too hard in the first place and I needed to change it. This did not detract, though, from the key message that I was sending with this technique: saying "I don't know" is not the end of thinking but the start of it.

Selecting students at random. Many experts in instructional practice suggest that one of the best ways to cold call is to select students at random (Lemov, 2015; Wiliam & Leahy, 2015). A large body of research (Poundstone, 2014) shows that humans are bad at making "random" selections, so this technique is best done through some external process. Using this approach helps students see that they are not being targeted by the teacher, but genuinely selected by chance.

Dylan Wiliam popularized this approach using a container of Popsicle sticks, each labeled with a student's name. You pose a question to the class and then pick a stick at random; whoever is named on the stick has to answer the question. This approach, which was featured in Wiliam's documentary *The Classroom Experiment* (2010), is widespread.

I prefer relying on technology to do this, using any of a number of programs and apps that generate names randomly, such as Stick Pick or Randomly. In my experience, students see these apps as even more removed from the teacher, and I have never had a student claim, as occasionally occurs with the Popsicle sticks, "You picked mine on purpose." Moreover, some apps allow you to "protect" students from having to answer certain questions. If you want to ask a higher-order question that you know a struggling student will find intimidating, you can set the app so that this can't happen. I tell these students that I have done this so they feel at ease about being potentially called on the rest of the time.

Inclusive questioning. Questioning, like every other classroom practice, is inextricably linked with a student's abilities and experiences in the world. As a teacher, you need to be acutely aware of all of the factors shaping a student's learning. This can be tricky.

I have seen teachers getting cross with a student who wouldn't look at them directly when being questioned, forgetting that in that student's community, lowering your gaze is a mark of respect. I have observed a class in which a teacher conducted a rapid-fire question-and-answer session, forgetting about the boy in one corner of the room with the hearing impairment and the boy in the other corner with an auditory-processing problem. I have seen teachers surprised that their students can't answer questions that are based on culturally specific knowledge and others running classroom conversations in which students are allowed to "joke" about gender or socioeconomic status in ways that might make some students uncomfortable.

We need to be alert to these potential pitfalls when we question students. In my experience, schools seem to be increasingly alert to these challenges, and many I have worked with put a real emphasis on developing Individual Learning Plans for specific students, addressing particular areas of need. This approach is sometimes referred to as a Tier 2 intervention (Boyle, 2010).

However, we must also be aware that differentiation should be an everyday part of whole-class instruction. Throughout this chapter we explore questioning techniques that help teachers be more inclusive in their general instruction. I have noted where specific techniques are particularly useful for meeting this aim. These so-called Tier 1 interventions give teachers a way to quickly recognize and address student need, reducing the amount of time and effort that must be devoted to more time-intensive interventions. Inclusive questioning is not about one-off support of individual students but rather is a philosophy that should permeate every aspect of your day-to-day practice.

Thinking Time

Offering students sufficient thinking time is another way to encourage them to take an active part in class discussion and reflection. Thinking time is typically divided into two phases: wait time and pause time. *Wait time* is simply the time a teacher waits while a question goes unanswered. It ends when a student responds or when the teacher steps in to clarify the query, answer it, or bounce it to another student. It is sometimes known as "wait time 1." *Pause time* is the time a teacher waits after a student answers before evaluating the answer as correct or incorrect. It is often referred to as "wait time 2."

Cold calling doesn't work well if your students feel rushed. Students are much more likely to take an active part in question-and-answer activities when they are given enough thinking time to process the question (Wiliam, 2011). Moreover, giving students proper reflection time encourages them to answer questions in greater detail, revealing the true extent of their abilities. It also seems to make it less likely that they will pass the responsibility of answering back to you, their already-busy teacher. Extending thinking time is a particularly effective way to improve your teaching because it takes no extra work and yields good results.

Despite these advantages, both the wait time and the pause time in real classrooms are often very short. One study on questioning found that

teacher wait time averaged as little as one second. It also found that many teachers don't wait at all to evaluate a student answer; they affirm or correct the response straight away (Cazden, 2001).

The solution to this problem is straightforward: simply waiting a little longer after posing a question or receiving an answer will substantially improve the number and quality of student responses (Wiliam, 2011). For instance, I have found that when I extend wait time to just three to five seconds, the average number of responses my students offer more than doubles. However, this is easier said than done. Teachers don't *decide* to offer students less thinking time; doing so is a by-product of the pressure teachers are under to get through lots of content in a crowded curriculum. If you want to offer students more thinking time—or even just be more conscious of how long you are waiting—then the following strategies might be useful.

Pre-cueing. A few years ago, I worked with a teacher who wanted to use cold calling but was reluctant to try it because she had a number of English language learners in her class who needed a lot of thinking time. This is a common issue. We need to differentiate our teaching in all sorts of ways—including how long we allow students to think before responding.

How, then, do you differentiate wait time? You can let a student know you are planning to ask him a question and tell him ahead of time what it is. This approach, which is sometimes known as pre-cueing, is easy to implement. If a student, for example, processes information at a much slower speed than his peers, you can take him aside before a question-and-answer session and let him know what you are going to ask him. This might give him five extra minutes to work out an answer.

Sometimes the notice you give with this technique is very short. I taught a student I'll call Amy, who needed just a minute or so longer than her peers to think things through. If I called on her in class, I would normally use a "rolling cue" to give her a little extra think time, as in this example: "Why might the character do this? I'm going to ask Caleb, then

Austin, and finally Amy." At other times the notification period is much longer. I had a student on the autism spectrum, for instance, who was very anxious about answering questions if he hadn't had time to work out an answer on paper. Sometimes I would give him 24 hours' notice to plan out his responses, as in this example:

> Tomorrow I'm going to ask you, "Why do we have national parks?" I'm going to write out that question for you, and then I'll get you to put it into your own words. Then we can have a chat about where we might find an answer to that question. Is that OK?

You can tailor your questioning in this way to different degrees of student need by simply varying how much notice you give students.

"Many hands up." Some schools have a "no hands up" policy to encourage teachers to cold call and students to volunteer more answers (Lemov, 2015). A number of the teachers I have coached prefer a "many hands up" policy. This simple convention makes sure you hear from a range of students and not just those who think quickly and are confident enough to answer first. A "many hands up" policy doesn't require much preparation: you just tell your class that when you ask a question, you won't immediately call on the first students who put their hand up but will wait until there are multiple students signaling they have something to say. This approach shows students that they can take their time to think through their ideas and that the best answers are not necessarily the quickest ones. It works well, for example, if you are teaching a class with a large number of English language learners who require extra processing time to respond. It also gives you a better sense of how well your questions are tailored to your class: if only a couple of students have their hands up after a period of protracted thinking time, you may have pitched your question beyond the ability of a majority of the students.

Using an app. I have found that even just clocking how much wait time I employ encourages me to use this approach more effectively. I used to use a stopwatch for doing this but now employ an app I designed with

a colleague to record wait-time data (see https://itunes.apple.com/us/developer/teacher-learning-network/id422819543). You simply hit a button when you ask a question and hit again when the question is answered, the students give up, or the discussion moves on to another query. The app graphs wait times under and over three seconds and calculates your average wait time for a session. The app functions a little like an activity tracker, creating a fast feedback loop that keeps you aware of what you are trying to make a habit. Whether you use an app to make these calculations or just a watch, recording data gives you immediate feedback. I use this approach extensively in my coaching and find that it helps teachers give students more time to think before they answer.

The three strategies just described work well for helping us extend wait time before a student answers. But a lot of teachers I coach find it hard to pause and remain silent *after* a student answers. I have found that giving teachers something to preface this pause with both helps them avoid interrupting and encourages students to elaborate. Here are some practical examples of pause-time techniques that are easy to remember.

Placeholder statements. When I first started teaching, I had a habit of immediately evaluating my students' answers:

Teacher: Is Pluto a planet, Noah?
Noah: No.
Teacher: Correct.

The problem with this approach is that it subtly signals to students that they don't need to justify their answers. After watching some mentors, I realized that it is much better to use a placeholder statement—some sort of neutral response that encourages students to elaborate. Responding to students with a noncommittal "Mmm" or "Oh" usually prompted my students to clarify their answer. Words and phrases such as "Go on," "OK," "So," and "Sure" also work well (Smith, 2009). These responses indicate to students that you are listening but that you don't consider their answer complete:

Teacher: Is Pluto a planet, Noah?
Noah: No.
Teacher: (Pause) Go on . . .
Noah: It used to be called a full planet, but now it is classified as a dwarf planet.

Your delivery is important here. For example, stretching out your response ("o-k-a-y…") helps convey to students that their answer requires more detail, as does responding to incorrect answers with a hesitant tone ("y-e-a-h?"). Placeholders are a quick and effective way to encourage your students to include more detail in their answers or, if required, to self-correct them.

Reflective statements. Alternatively, you might paraphrase students' responses back to them to encourage them to further qualify or add detail. Here are some sentence-starters for reflective statements:

So what you are saying is . . .
It seems that you feel . . .
What I'm hearing is . . .
So you are arguing that . . .
Your view is . . .

Reflective statements help "you *and the speaker* [emphasis added] . . . understand what he or she is trying to say" (Katz & McNulty, 1994, p. 1).

Blank prompts. Another good technique for encouraging students to elaborate is pretending you don't fully understand their initial response. You mainly convey this through tone of voice and body language. I watched a teacher recently respond to a student answer with an unconvinced-sounding "I see" and a quizzical expression on her face that immediately elicited a more detailed answer from the student. However, some teachers go so far as to overly simplify or incorrectly summarize the response back to the student, as in this example:

Teacher: How does Les Murray use form in his poem? Eden?
Eden: He mainly just uses rhyming couplets.
Teacher: So the poet's only use of form is rhyme? Right?

Eden: Well, no. He also uses a lot of alliteration in the first stanza. Oh, and enjambment too!

This strategy works well because students are often eager to correct their teacher's mistakes and quick to clarify their statement for the teacher who "doesn't get it."

These kinds of approaches to questioning encourage *all* students to take part in class discussion, creating a classroom where all students feel safe learning and no answer is unhelpful. This is an important *starting point* for developing active student involvement in the assessment cycle and for reducing teacher workload.

Eliciting Evidentiary Reasoning

One of the most influential moments of my early teaching career was when I watched an experienced teacher take my students for a class discussion. I didn't immediately pick up all the nuances of her technique, but what was immediately obvious was how differently my students responded. I was used to having only a handful of students answering most of my questions—and with short, perfunctory answers. This was particularly true if I asked one of the students who didn't regularly answer. By contrast, when the experienced teacher questioned the class, the majority of students took an active part in a lively discussion. Students went so far as to explain the thinking behind their answers and to challenge the reasoning of their peers.

I vividly recall one moment when, as if to underline how involved students were in the discussion, the teacher stopped asking questions altogether and the students kept on offering answers. One student even asked his classmates to take turns: "Come on, guys—one at a time." This was a surprise to me: he had never been one to wait his turn before, let alone remind others to stick to class conventions. "How," I remember thinking as the lesson ended, "did she do *that*?"

Effective teachers don't just ask students for the answer; they also ask them to voice the thinking behind that answer. Not every student, after

all, knows the correct response for every question, but all students should be thinking about every question—even about those that might be too difficult for them. The trick is developing the subtle techniques to elicit this reasoning. The following are some examples that work well and can be used in many situations. As with the other questioning techniques we have discussed, they will help you identify and meet student needs without adding to your correction load.

The Golden Question: "What Makes You Say That?"

We want students to explain the thinking that has gone into their answers and develop the habit of justifying their responses. Asking students "What makes you say that?" is a quick way to establish this routine. It is a so-called golden question because it is so versatile and effective. It promotes evidence-based reasoning and encourages students to consider the reasoning of others. Moreover, it can be "used in almost any subject" (Visible Thinking, 2015) or teaching situation. Here are two examples:

Student: We should make prison sentences shorter, not longer!
Teacher: What makes you say that?
Student: Locking people up for ages isn't reducing crime—it just means people spend a long time in prison learning how to do worse crimes. You're more likely to change your ways if you are not in for a long time.

Student: I think the answer is 3.3.
Teacher: What makes you say that?
Student: $3 \times .1 = 0.3$ and $3 \times 1 = 3$, so 3×1.1 is 3.3.

Teachers often find it useful to have some simple variations of the golden question so that once it is established with their class, they can avoid sounding repetitive. Here are some that I use in my coaching work:

What's your reasoning behind that?
Why do you think that is the answer?
Why did you make that choice?
Why did you choose to approach it that way?

Inverted Questions

Inverted questions are another versatile type of questioning for exploring a student's reasoning. An inverted question presents students with an answer and asks them to comment on why it is correct. How does it work? Look at this example of a traditional question:

Teacher: What part of speech is the word *bagus* in Indonesian?
Student: An adjective.

To convert this into an inverted question, you take the answer to the question and put it into the question stem itself, inviting students to explain why the answer is correct:

Teacher: *Bagus* is an adjective in Indonesian. Why do we call it that?
Student: Because it means "good," so you use it to describe things. We had a "good" time in Jakarta.

This approach is sometimes called a type of "contextual solicitation" (Kelly, 2017), which is described in the next section; but I have always preferred the term "inverted question" because it describes how you flip the answer to the question into a statement to create a more sophisticated query, as in this example:

Teacher: Did Hitler plan to invade Eastern Europe? No, that's too easy for you guys. Let me rephrase that: Hitler planned to invade Eastern Europe. Why?

Moreover, inverting questions helps us avoid the trap of a questioning session turning into "guess what I am thinking," as in this example:

Teacher: If we look at the notes on the board we can see a key word that sums up how medieval societies were organized. What is it?
Students: (Calling out) *Peasant. Society. Noble class.*
Teacher: No, guys. In the second paragraph. Ellie?
Ellie: The *king*? Or is it *vassals*?
Teacher: No. It's in this line. John?
John: Umm . . .
Teacher: It starts with *F*.

John: *Fiefdom*?
Teacher: No, the other *F*.

Contrast the guessing-game approach with the more direct inverted question:

Teacher: The key word in the notes is *feudal*. How were medieval societies organized in the feudal system?

For this reason alone—avoiding the guessing game—inverted questions are a good tool to have in your repertoire.

Contextual Solicitation

Inverted questions employ a question form known as a *contextual solicitation*. As we have discussed, the teacher makes a contextualizing statement before asking the question. The statement might remind students of a key piece of knowledge or cue them to use a particular technique. Here's an example:

An *anomaly* is something that can't be solved by the current scientific paradigm. This being the case, how do anomalies lead to a change of paradigm?

Adding a contextualizing statement to a question doesn't take much time or effort, but this simple step can add a good deal of clarity. Take, for example, the following question:

What are two or three reasons for the new research findings that students are now far more likely to look to YouTube for an answer to a question than to look it up on Wikipedia?

The phrasing of the question is slightly awkward and might confuse some students. Converting this into a contextual solicitation makes it much easier for students to understand:

New research suggests that students are now far more likely to look to YouTube for an answer to a question than to look it up on Wikipedia. What are two or three reasons for this?

Questions are hard to compose in the middle of the lesson. This approach gives teachers a template for formulating clear impromptu questions that students will find easy to process. "I like this technique," one teacher told me, "because it stops me asking convoluted questions that even I don't know the answers to."

Another reason you should adopt this technique is that students respond to it. I have always found that students are more likely to volunteer answers to contextual solicitations than to other questions. Indeed, many teachers find that using this form of question is a reliable way to prompt an answer when an individual student is struggling to offer one at all (Fisher & Frey, 2014).

This outcome probably occurs because framing the question with a statement acts as a form of scaffolding: the statement cues students on how to approach the question itself (Fisher & Frey, 2014). You can encourage students to make the connection between the statement and the question by linking the two with some "conditional language." Phrases such as "given that this is a fact" and "this being the case" help students see the link between these two parts of a contextual solicitation (Kelly, 2017).

As with inverted questions, the contextual solicitation is easy to master with a little practice and is worth trying out in your classroom. For further discussion of how to word these statements, see "Prompts" (pp. 32–33).

Checking with Others

Golden questions, inverted questions, and contextual solicitation are all aimed at encouraging students to add detail to their own answers. We can also emphasize the importance of students providing justification for their own answers by getting them to do this for others. Two strategies for this are exampling and second drafting.

Exampling is a common teaching strategy: a student answers a question correctly, and you check with the rest of the class to see if they can provide other examples to support the response. Here's an example:

Teacher: Is an armed coup the only way revolutions happen?

Student: It can happen when protests like marches and strikes lead to the government falling. That sort of happened in the Philippines, when my parents lived in Manila.

Teacher: Can anyone think of another example to back up Althea's suggestion?

Student: The Velvet Revolution?

I often advise teachers to use this strategy when one student is dominating class discussion. In these cases, it may be evident that the student who answered the question understands what you are teaching, but what about the rest of the class? Asking for further examples gives you this feedback. You can also use exampling when a student gives you an answer that is correct but lacks detail or supporting evidence.

Second drafting is another time-saving strategy for testing student understanding. Typically you use this technique when you want to improve the quality of student responses. After receiving an initial student response, you ask other class members to refine that answer. You might ask them to use more formal language or more precise terms, or get them to phrase the answer in a more fluent or concise fashion. The important point here is that they are evaluating the quality of class responses and trying to improve them, as shown in these examples:

Teacher: How would you best describe this group of elements?

James: Xenon and neon are part of that group of special gases that don't react to stuff.

Teacher: Can someone come up with a second draft of that response? Aaron?

Aaron: Xenon and neon are part of the family of inert gases that are nonreactive.

Teacher: If you don't know what the word is, what is one of the strategies that you can use?

Ava: When you put your hand over some of the letters to try to figure out the sounds.

Teacher: Can someone come up with a second draft of that answer?

Ruby: When you chunk, you put your fingers over groups of letters to find smaller words or sounds that you already know.

If you have a gifted student, you may want to pay particular attention to these two strategies. Most of the questions I get from teachers in regard to differentiation are about students who are struggling. However, differentiation requires us to modify our courses to meet all students at their point of need—even those who are well advanced in their studies (Tomlinson, 2014). In my experience, this differentiation is often done by designing alternative tasks for gifted students, but this is a labor- and time-intensive process.

Sometimes the best (and quickest) way to differentiate is to subtly alter your whole-class delivery. In questioning, this might mean referring an answer to a more able student for clarification or qualification. This approach benefits both students. Not only does the student who initially answered get to hear his answer elaborated on or redrafted, but the gifted student also gets practice at working at a level of challenge that suits her ability.

Sequencing Questions

I have worked with more than 150 schools on refining questioning techniques and have seen scores of teachers whose practice has improved by working on the little details of how they run class discussions and orally interact with students. Moreover, I've seen how this focus helps teachers assess "in the moment," and how giving more oral feedback in class means they can reduce the amount of written correction they have to do afterward.

An enormous part of that process involves exploring the types of questions you use. Determining what type of question to ask each student is a key classroom skill. However, we need to be wary of presuming that *just* asking the right question *inevitably* leads to better learning. Questions do

not inevitably result in good answers any more than telephones ensure quality conversations. It is not just how questions are asked that matters but also when they are asked and in what order.

Teachers in a lot of schools I have worked with tend to miss this point. They appear to base their understanding of questioning on the older body of research that argued that teachers should concentrate their efforts on higher-order questions—specific strategies designed to elicit more sophisticated responses (Wilen & Clegg, 1986). In my experience, this approach does not always reflect the complexities of classroom discussion.

Classroom questions are context-dependent. Whether a question is a foundational question or a higher-order one depends on a host of factors: the point in a lesson at which it is asked, the age or ability of the students to which it is directed, and the material to which it refers. For example, a higher-order question for most of your class might be a lower-order, remedial query for a gifted student. Similarly, a foundational question that asks your students to recall a prior lesson might require higher-order deductive reasoning if one of your students struggles to retain information. Nothing in a classroom happens in isolation.

Your questioning strategies need to address this dynamic environment. In my experience, the easiest way to do this is to have some simple scaffolds for sequencing your questions. You don't have to follow these slavishly. For example, there is no need to write out elaborate lesson plans for a class discussion—this would add to your workload, not lighten it!—but these scaffolds should be something to keep in mind as you shape how the lesson develops.

What might a questioning scaffold look like? Two examples that I have found easy to use are See, Think, and Wonder and Marzano's four phases of questioning. (A third scaffold known as Newman's error analysis, or Newman's prompts [State of New South Wales, Department of Education, n.d.], is another that I have used frequently with math teachers and is well worth checking out.)

See, Think, and Wonder

This well-known thinking routine (Visual Thinking, 2015) is built around three questions:

> What do you *see*?
> What do you *think* about that?
> What does it make you *wonder*?

Originally designed for exploring visual material, it is an excellent strategy for investigating stimulus material of all kinds. I have seen it used successfully to explore everything from data charts and documents to websites and assessment criteria sheets.

The strategy's effectiveness rests on the simple fact that it carefully sequences student investigation from the lower-order details to higher-order reflection. I have always found that using it helps teachers be mindful of this sequencing. For instance, consider how the teacher in the following example conducts a class discussion about a photograph. He begins the exercise by asking students to establish the basic details of their visual analysis:

Teacher: What can you *see*?
Students: Six children.
Fences.
A dirt road.

The teacher is careful to ensure that his students don't jump to inference before the class has established these basic details:

Student: Happy kids.
Teacher: Remember we are listing what we see, not what we think.
Student: Oh. Three kids smiling.

Then the teacher asks students to build inferences out of these details:

Teacher: What do you think when you see this image?
Student: It's a group of friends.
Teacher: What makes you say that?
Student: They're sitting so close together, smiling and laughing.

Once students have grouped the details in this way, the teacher asks them to consider what questions they still have about this image:

Teacher: OK, what does this picture make you wonder?
Students: Who took this picture?
Where was it taken?
Why are there no girls in the photo?

See, Think, and Wonder uses simple questions that are carefully sequenced to deepen student inquiry. This approach reflects the basic structure of most question-sequence schemes: starting with a focus on foundational details that are then organized into bigger categories, with students finishing the investigation by elaborating on their insights and testing them by exploring evidence. This type of approach offers you a quick, intuitive way to plan a lesson.

Four Phases of Questioning

Marzano's four phases of questioning (Marzano & Simms, 2014) is a similarly effective scaffold for classroom discussions, with questions organized as follows:

- *Detail questions:* Asking questions about important details
- *Category questions:* Asking students about the categories into which these details can be grouped
- *Elaboration questions:* Asking students to elaborate on the characteristics of these categories
- *Evidence questions:* Asking students to identify sources, examine reasoning, and provide supporting evidence

The questions describe a "specific linear sequence" for questioning students. I usually just keep them in mind when I'm running a class discussion, making sure I ask questions from each phase as the lesson develops. My experience suggests that getting teachers to sequence questions is an effective way to plan rigorous lessons on the fly.

When I'm first introducing this approach to other teachers, though, I ask them to prepare one or two questions for each phase before they start teaching. In the example below, I have asked the teacher to list the learning goal and criteria of his legal studies lesson:

Learning intention:
We are learning the procedural features of the adversarial system.
Success criteria:
I can explain the judge's and the jury's roles in trial proceedings.
I can determine whether each case study is a criminal or a civil case.

I then asked the teacher to come up with a couple of questions for each phase of the lesson:

Detail questions:
Who oversees criminal trials?
Who decides the verdict in a criminal trial?
Category questions:
What are some general characteristics of a criminal trial?
How is a criminal trial like this different from a civil trial?
Elaboration questions:
Why is the jury so important for making trials fair?
What if we got rid of juries? How would that change our system of trial?
Evidence questions:
How do we know that the source in our textbook is reliable?
In what ways might the jury system lead to trials being less fair?

The teacher took only six minutes to come up with this information. Of course, in the actual lesson the teacher asked many other questions. However, what is important here is that in a very short time the teacher was able to develop a logical, ordered sequence of questions that shaped his lesson.

As with See, Think, and Wonder, this simple scaffold helps teachers quickly map the *arc* of their lesson. It reminds us that effective questioning is not just a matter of employing isolated techniques but rather of shaping the sequence of questions you use to scaffold student learning

(Good & Brophy, 2008). Dantonio and Beisenherz (2001) have neatly summarized the effectiveness of this approach: "Consistently, the literature on effective questioning practices has insisted that questioning sequences are far more effective in promoting student understanding than any one type of question" (quoted in Marzano & Simms, 2014, p. 12). Or, as I often put it to new teachers: isolated questions are like isolated facts—hard to learn from.

If you want to explore this strategy further, see Appendix A, a questioning sequence scaffold that includes additional detailed templates for creating questions for each of these phases.

Response Strategies

How we ask questions, and the order we ask them in, shapes class discussion, but so does how we respond to answers. Do you have a wide range of techniques for unpacking incorrect or incomplete answers and for exploring and building on correct ones?

In my experience, teachers don't have a lot of formal training in questioning. As a result, they tend to use the so-called IRE model of classroom interaction (Pope, 2013). In this approach the teacher initiates a question, the student responds, and then the teacher evaluates the answer, as in this example:

***I**nitiate:* Marco, what is the capital of Mongolia?
***R**espond:* Ulan Bator?
***E**valuate:* Correct.

This pattern of questioning places you, the teacher, at the center of class discussion. It focuses attention on what you already know and frames questioning as a process of guessing "what's in the teacher's head" (Fisher & Frey, 2014). Of course, teachers must facilitate class interaction, but you should avoid being the mediator of all student thinking. A teacher-centric approach can "crowd out" students' insights and minimize their role in

class discussions (Burns & Myhill, 2004). Moreover, it is a workload trap. Analyzing the research on the prevalence of teacher-focused class discussions, John Hattie has dryly observed that students should not "come to school to watch teachers working" (2012, p. 73). If you wish to build a sustainable and effective assessment practice, one in which your students play an active role in class discussion, then moving away from an IRE model of response is crucial.

What do you replace it with? Here are some strategies for subtly altering how you respond to answers, putting the onus on students to be more active in class discussions.

Lateral Questioning/Pivots

Changing an Initiate-Respond-*Evaluate* (IRE) questioning pattern into an Initiate-Respond-*Follow-up* (IRF) pattern is one of my favorite ways to keep students thinking in class discussions. Instead of evaluating the student's response, as in the above example, in an IRF pattern you pass this task to another student:

***I**nitiate:* Marco, what is the capital of Mongolia?
***R**espond:* Ulan Bator?
***F**ollow-up:* Is that right, Helena?

This approach is sometimes referred to as lateral questioning. It encourages your students to track each other's observations and to focus not just on the final answer but the thinking behind it. When students listen, evaluate, and respond to their peers' ideas, they see answers not as something they *have* but something they *develop*.

A range of popular routines can remind you not to dominate classroom discussion. Ask, Pause, Pick, Pivot (APPP) is an easy-to-remember strategy that works well:

Ask: Pose a question to the entire group.
Pause: Provide appropriate thinking time for students to formulate an answer.

Pick:	Identify an individual student to offer an answer.
Pivot:	Seek out another student to offer an assessment of that response.

Here is a classroom transcript of how APPP works in an everyday lesson, taken from a senior English class:

Teacher:	Why does the character do this, do you think? . . . Michael?
Michael:	I don't know. Maybe he really cares about his cousin?
Teacher:	Who agrees with that? . . . Oki?
Oki:	Not really. I mean, I think he does it for the same reason he does everything—he wants to impress Lady Catherine in some way.
Teacher:	We have two very different views there. Kane, which do you think is right? Or do you have another view?
Kane:	Mmm . . . Probably Mick's. I don't think he does it just for Lady Catherine. You can tell he really expects Elizabeth to be happy he is helping the girls with his proposal to her. He even tells her that!

Here, the teacher's questioning technique elicits and extends student thinking rather than simply adjudicating whether the answers are right or wrong.

The benefits of this approach are maximized when teachers also employ revoicing, prompts, and cues to encourage student involvement in the correction cycle.

Revoicing

It is not always easy to understand students' tentative attempts to articulate their own thinking. Revoicing is a widely taught active-listening strategy that works when you don't fully understand what a student is trying to say. You "revoice" by rephrasing a student's answer back to him, asking him to verify that you have properly understood what he is saying. Not only does this approach help the students who answered to hone their thinking, but it also makes this thinking clearer for their classmates (Chapin, O'Connor, & Anderson, 2009). I want to be clear that this does

not necessarily mean that the student's thinking is correct. Revoicing just makes it easier to discern and respond to this thinking, whether it is right or wrong, as illustrated in this example:

Teacher:	Is 2 a prime number? Ari?
Ari:	No . . . because it is an even number that isn't an odd one.
Teacher:	You're saying 2 is not prime because it is an even—not an odd—number? Tell me more about your thinking.
Ari:	Primes are odd numbers, and 2 is an even number; so that's why it can't be a prime.

It is unrealistic to expect that your students' initial answers will be fluent and accurate. It is, after all, answering the question that helps them clarify their ideas. You should anticipate incomplete, incorrect, or awkwardly phrased responses and prepare strategies to address them in the moment. I have always found that the more diverse the range of abilities in a class, the more frequently I use this technique. Not only does it help you clarify what a struggling student is thinking, but it also encourages those who know the answer to better articulate their responses so that they can be used as a model answer by others in the class.

Revoicing is just one effective kind of response that helps clarify student thinking. Prompts and cues are other useful options.

Prompts

Question prompts are carefully worded statements that preface a question with a hint about how that question might be approached. (See also "Contextual Solicitation," pp. 21–22.) You use them to respond to inaccurate or confusing answers, or when a student has no response at all. They remind your students of knowledge and procedures they're not accessing, help them identify the next step in an approach, or reiterate the value of a "rule of thumb" problem-solving strategy. Fisher and Frey (2014) offer four main types of prompts:

- *Background Knowledge Prompts:* Reminders about facts students have been taught but might have momentarily forgotten.

> Knowing that primary sources are more immediate but not necessarily more accurate, how would you rank the reliability of these sources?
>
> Remember, adding two negative numbers makes a positive. What might the answer be?

- *Process Prompts:* Reminders about procedures that students should employ to address errors or misunderstandings.

> I'm thinking about how you can use TEEL (*T* = topic sentence; *E* = explanation; *E* = example/evidence; *L* = link) to structure a paragraph. What should you do next?
>
> The last step is to reduce the answer to its simplest form. Have you done this yet?

- *Reflective Prompts:* Cues that encourage students to review their own thinking.

> Look again at the problem. Does your response address the question that was asked?
>
> What was the premise of your response? Explain to me why you presumed that.

- *Heuristic Prompts:* Queries that ask students to try "rule of thumb" problem-solving strategies that might suit their individual needs.

> I often put the author's name at the start of the sentence. Would your argument be clearer with an active sentence like that?
>
> I can see you are having trouble. Would the problem be easier if you used the blocks to count out the answer?

Cues

Cues resemble prompts and can serve a similar function in your questioning repertoire. A cue is a signal used to shift attention to something the student might have missed. Cues can take many forms, from verbal and nonverbal cues delivered by the teacher to visual reminders in work materials or changing something within a student's work space (Fisher & Frey, 2014). Teachers use cues to encourage students to reconsider their

approach rather than to rely on the teacher to do all the work of correcting their mistakes. Here are some tips and examples of teacher cues:

- **Employ verbal cues.** For example, read a student's work aloud to highlight what is confusing about a written response, or slow down as you read a particularly important passage from a text you want the student to notice.
- **Provide visual reminders in work materials.** For example, underline the formula in a page of problem-solving questions to remind students of the approach for answering these queries.
- **Change a student's workspace.** For example, place a dictionary on a student's desk to cue the student to proof an answer.
- **Use teacher movement.** For example, point out the orientation on a map to help students identify compass points or gesture to where on the board you have provided a sample answer that they can use as a model.

If you have students who are struggling because of a learning disability or find schooling particularly difficult, you should pay particular attention to the last two types of cues. One of the main ways we differentiate is by making changes to a student's learning environment (Tomlinson, 2014). This is easy to forget; sometimes we can be so focused on helping students that we overlook how the surrounding environment might be adding to their issues. I tell first- and second-year teachers, by way of analogy, that sometimes it is better to remove a stuck lid on a jar by twisting the jar, not the lid. Investing a little time in redesigning the learning space so you can cue students more readily (having the right books close at hand, changing the seating order in class so your cues are more visible, etc.) can help your students overcome obstacles more quickly.

Indeed, I have found that cues and prompts are both quicker and more effective than other techniques for addressing wrong answers. Prompting your students to revise their answers in the moment is more efficient than

trying to address their misconceptions once those ideas are well established. Cues and prompts are the kind of "minute by minute, lesson by lesson" response strategies that teachers can add to their practice without adding to their workload (Wiliam, 2011).

Addressing Interruptions

Whenever I explore response strategies with classroom teachers, they raise the issue of student behavior. This is inevitable—responding to students also means responding to interruptions and off-task behavior. Obviously this is not a classroom management book, but it is worth quickly sketching some key principles of positive learning environments that foster questioning.

Endorse Good Practice

In classroom management, it is not what you say no to but what you say yes to that counts (Pearsall, 2010). Don't just block interruptions and challenge off-task behavior; celebrate those behaviors you want to see more often. Praise good listening, attentiveness, and self-regulation.

Establish the Rules of Classroom Conversation

If you have not clearly established students' rights and responsibilities, then it is very difficult to conduct question-and-answer sessions effectively (Lewis, 2008). Inappropriate behavior saps instructional time—particularly if you have to explain each time why a specific behavior is inappropriate. You must establish clear conventions about appropriate conduct during class discussion—and the consequences if these are breached—so that you can quickly deal with the inevitable interruptions.

Make It Safe to Answer

Offering answers and making public mistakes takes confidence. Your students need to know they can answer questions and discuss their

thinking without worrying that they will be judged or bullied. Your role is to protect students in class discussion. You should pay particular attention to put-downs and other forms of social censure that will limit students' propensity to take academic risks in front of their classmates.

Address Domineering Students

Addressing interruptions doesn't just mean addressing off-task behavior. It also means addressing students whose ability or enthusiasm leads them to crowd out their classmates. In virtually every workshop I run on questioning, I am asked about students who dominate classroom discussion. "My problem," one teacher told me, "is not the students who muck around or even the students who won't answer—it's the student who answers *every single question*."

Cold calling, thinking time, and lateral questions can all be undermined by able students dominating class conversation. Not only is it crucial that you resist the urge to do most of the talking in class; you also must guide more confident students away from this tendency. You can do this in a number of simple ways.

Nonverbal signaling. You can use nonverbal signals as a first-order response to a capable student who is a dominating classroom conversation. Here are some examples:

- Tactically ignoring a student who calls out or repeatedly raises a hand by seeking answers elsewhere in the class
- Making eye contact with a student who calls out, raising your own hand to cue the student on how to wait appropriately, and then turning away to indicate the student needs to wait
- Using a raised palm to block interruptions, then pivoting the conversation to another student while leaving your palm open to emphasize this cue

Response tallies. If these simple approaches are ineffective, you might employ response tallies to encourage students to ask their most

pressing questions or offer only their most important points of view. Theses tallies are known by many labels—Talking Tokens, Raffle Ticket Discussions—but the routine generally has the same form:

- Students are given two or three tokens that they have to hand to the teacher each time they offer an answer or ask a question.
- When they have used all their tokens, they limit their contributions to listening and careful note taking.

This approach leads to able students "rationing" their responses, selecting their most sophisticated responses to use during their limited opportunities.

Referred questions pact. If neither of these approaches works, you can have a one-on-one conversation with the student to discuss a more demanding role for them during class discussion. This conversation usually involves these steps:

- Acknowledge the student's high-level performance in class discussions.
- Challenge the student to concentrate on more demanding questions.
- Ask the student to do this by refraining from answering low-level foundational questions. Instead, the student should wait for you to direct a more challenging, higher-order question to him or her.
- Establish a signal with the student that tells when you are about to do this. For example, you might use a nonverbal cue or employ a prearranged phrase such as "follow up."

The following classroom extract provides a good example of a pact like this in action:

Ahmed: Mass is how much stuff is in an object, but weight is how much gravity grabs on that stuff.

Teacher: That's right, but I want to ask a *follow-up* question. Can I get someone to draft a more formal way of putting that? Manar?

Manar: Mass is a measure of how much matter is in an object, whereas weight is a measure of how strongly gravity is pulling on that matter.

Using this approach means you can differentiate your questions to meet individual students at their point of need. Some of your students can be called on to confirm or explore foundational knowledge, while others can hone these answers into more sophisticated responses. Doing this simultaneously in a single classroom discussion is a useful strategy for a busy classroom teacher.

Summing Up

Questioning technique is the perfect starting point for teachers wanting to develop a sustainable set of assessment practices because questioning makes up such a large percentage of their everyday interactions with students. Changing your questioning technique requires little or no further planning and can be done in the midst of a hectic day. Usually I counsel teachers to pick just one of these techniques and try it for a week or two. There are apps for measuring your progress as you refine your questioning technique (http://www.tln.org.au/apps or https://itunes.apple.com/us/developer/teacher-learning-network/id422819543), but the anecdotal feedback alone is often persuasive. If a subtle adjustment of practice makes for better learning with less work, then teachers are quick to take up these techniques. (See Figure 1.1 for a summary of the techniques described in this chapter.)

I have seen the effectiveness of this approach again and again in my role as a teacher coach. By ensuring your questioning is inclusive and elicits evidentiary reasoning, and by carefully sequencing questions and anticipating student responses, you can transform your everyday assessment practice. One powerful example of this comes from Cambodia, where the organization Teachers Without Borders has used a translation of one of my works on questioning (Pearsall, 2014) in its teacher-training

programs. Teachers in these programs work in poor rural schools with little to no resources or equipment. However, armed with subtle shifts in practice like the ones discussed in this chapter, these teachers can still make a real difference for young people.

The best teacher practices are often like this—they have a profound effect on students but can be quickly adopted by teachers. Refining your questioning technique is a powerful first step in creating assessment routines that are both less demanding on you and transformative for your students.

Figure 1.1
MORE EFFECTIVE QUESTIONING

How can I modify my questioning to gather more feedback in less time?	
Questioning for Fuller Participation You need a tool kit of questioning techniques to encourage *all* students to take an active part in learning discussions—avoiding the traps of letting a handful of students dominate class discussion or doing most of the talking yourself.	**Cold Calling**—Asking a student a question without first checking whether the student knows the answer generates fuller participation. There are lots of ways to make this an effective and routine practice: • Telling students • Speculative framing • Answer scaffolds • Think-Pair-Share • Question relay • Selecting students at random • Inclusive questioning
	Thinking Time—Offering students sufficient thinking time is another way to encourage them to take an active part in class discussion and reflection. This includes strategies that foster longer wait and pause times: • Pre-cueing • "Many hands up" • Using an app • Placeholder statements • Reflective statements • Blank prompts

continued

Figure 1.1
MORE EFFECTIVE QUESTIONING

(continued)

Eliciting Evidentiary Reasoning Effective teachers don't just ask students for the answer; they also ask them to voice the thinking behind that answer—even if the thinking is that the question is too difficult.	**The Golden Question**—Asking students "What makes you say that?" is a quick way to prompt them to explain the thinking that has gone into their answers.
	Inverted Questions—An inverted question presents students with an answer and asks them to comment on why it is correct.
	Contextual Solicitation—Making a contextualizing statement before asking students a question reminds them of a key piece of knowledge or cues them to use a particular technique.
	Checking with Others—This strategy emphasizes the importance of students providing justification for their own answers by getting them to do this for others, using techniques such as these: • Exampling • Second drafting
Sequencing Questions We need to be wary of presuming that *just* asking the right question *inevitably* leads to better learning. It is not just how questions are asked that matters but also when they are asked and in what order.	**See, Think, and Wonder**—This well-known thinking routine helps students develop their thinking in a scaffolded way, moving from observation through inference to speculation.
	Four Phases of Questioning—Marzano's questioning scaffold provides a graduated way to develop depth and complexity over the course of a lesson: • Detail questions: Asking questions about important details • Category questions: Asking students to identify examples • Elaboration questions: Requiring students to make inferences • Evidence questions: Asking students to identify sources and examine reasoning

Response Strategies How we respond to answers can shape class discussion. You need a wide range of techniques for unpacking incorrect or incomplete answers, and for exploring and building on correct ones.	**Lateral Questioning/Pivots**—Changing an Initiate-Response-*Evaluate* (IRE) questioning pattern into an Initiate-Response-*Follow-up* (IRF) pattern keeps students thinking in class discussions. "Ask, Pause, Pick, Pivot" (APPP) is an easy-to-remember routine for prompting lateral questioning.
	Revoicing—"Revoicing" is simply rephrasing a student's answer, asking for verification that you have properly understood what the student is saying.
	Prompts—Question prompts are carefully worded statements that preface a question with a hint about how that question might be approached.
	Cues—A cue is a signal used to shift a student's attention to something that might have been missed.
Addressing Interruptions When you are conducting classroom discussions, you need practical techniques for dealing with distractions, off-task behavior, and individuals who might monopolize the conversation.	**Endorse Good Practice**—Don't just block interruptions and challenge off-task behavior; celebrate those behaviors you want to see more often.
	Establish the Rules of Classroom Conversation—If you have not clearly established students' rights and responsibilities, then it is very difficult to conduct question-and-answer sessions effectively.
	Make It Safe to Answer—Offering answers and making public mistakes requires confidence. Your students need to know they can answer questions and discuss their thinking without worrying that they will be judged or bullied.
	Address Domineering Students—Addressing interruptions doesn't just mean addressing off-task behavior. It also means addressing students whose ability or enthusiasm "crowds out" their classmates. Techniques to consider include these: • Nonverbal signaling • Response tallies • Referred questions pact

2

Clear Learning Goals

In my experience, teachers spend an inordinate amount of time and effort clarifying for students what it is they are meant to be learning. As a classroom teacher, I often encountered students who worked really hard to finish a piece of work, only to be told that they had misinterpreted what was required of them: "You have written a good *summary* of what happens in this scene, but you were asked to *analyze* what happened."

This confusion is an issue for many teachers. When I am coaching a colleague, I usually finish classroom observations by asking the students, "What did you learn today?" Many students don't really answer the question. Instead of explaining what they *learned*, they tell me what they *did*. Once a student, for example, told me earnestly, "I learned questions 8, 9, and 9B!"

It is not that they have misunderstood the question but that they don't have a clear understanding of the *purpose* of the lesson. This bewilderment makes the whole process of feedback and assessment problematic: How can your students measure their progress toward a learning goal if they don't know exactly what it is?

Of course, the simplest way to address this problem is to make sure your students know at the start of the activity *precisely* what skills or knowledge they are aiming to gain. I discovered early in my teaching career that this is harder than it sounds. You can't simply *tell* students what they are learning—they need to *understand* this learning goal.

Many schools, for instance, make it compulsory for teachers to start each lesson with a clearly displayed learning intention or explanation of a learning objective. The test, though, is whether or not students *internalize* these goals. A teacher might explain a lesson objective, but doing so doesn't mean that all students have listened carefully or comprehended what was said. A school might put a premium on displaying learning intentions, but that doesn't mean that in the busy classroom the teacher is able to refer to this intention throughout the rest of the lesson.

I don't want to just give my students learning goals; I want them to take up these goals as a reference point. This is a significant challenge in the hectic environment of the everyday classroom. This chapter explores practical ways to help students take some ownership of these goals. The strategies have been selected because they do not add to a teacher's workload. In fact, once they are established, they reduce it.

Models and Exemplars

It is easier to be successful when you know what success looks like. Providing your students with model answers helps them develop a clear picture of what they are trying to learn and offers a reference point against which to check their progress.

I know a lot of teachers feel that rubrics and criteria sheets already give students this information, but model answers and exemplars have some advantages over both of those approaches. It is worth some time to consider these advantages.

First, models give your students an intuitive sense of what high-quality work might consist of—even before they can articulate what

makes it high quality. I often use photographs of pool-filter plumbing to make this point with teachers. These educators have no training in this trade, but when asked to identify the best layout of pipes from a series of examples, they readily pick the most professional example. They don't know the technical terms for the principles of an effective pool-filter setup, but the orderly and logical design of the highest-quality model is nonetheless evident to them. Developing this "nose for quality" (Claxton, 1995) is especially useful if you teach younger students or those who struggle with wordy criteria.

Second, studying work other than their own gives students greater perspective. They tend to find it easier to evaluate other people's work and are better at recognizing flaws in this work than in their own. ("It is hard to hear your own accent," one of my colleagues used to say to students when explaining the value of peer marking.) Moreover, when "students notice mistakes in the work of others, they are less likely to make mistakes in their own work" (Wiliam, 2015).

Finally, models exclusively offer advice about what to *do*, whereas rubrics tend to be used for advice *and* appraisal. Because rubrics often feature grades and are structured around levels of achievement, students often associate them with evaluation. When I told one of my students that rubrics were a "road map for improvement," he responded by asking, "Then why did teachers at my old school only say stuff about them at the start and the end of projects and not all the way through?"

Of course, it is not enough to just give students these sample answers. I often see teachers spend their limited preparation time working up a model response or selecting past student work as exemplars only to find their students give these responses cursory attention. One teacher I coached sought my help because she would labor for hours on models that a quarter of her students left on their desks when they headed off to their next class.

Students must explore and evaluate models for them to be effective. They need to discover what the elements of great work are ("they used

quotes to support their argument," "they showed how they got their answer") and note the things to avoid that they see in weaker work. The following techniques are effective ways to achieve this goal.

Ranking Work Samples

One of the simplest ways to encourage your students to investigate sample answers is to ask students to rank them. Even just comparing two samples and identifying the stronger is a quick way to get them thinking about what makes an answer successful.

This kind of comparative judgment works well for teachers (Pollitt, 2012), but you can use this approach even with very young children because it requires students to make a *relative* comparison. Your students are not being asked to recognize excellence in isolation, but to investigate a sample answer with their reference point right beside it. I worked with a team of teachers who found that giving their 7-year-olds model answers to compare produced a better understanding of the assigned task than giving them a detailed rubric sheet—and that it took half the time to prepare.

The older or more able students are, the greater the number of sample answers you can get them to rank (Wiliam & Leahy, 2015). Three to five models seems to work best with middle and high school students. This number is manageable in terms of teacher preparation time devoted to sourcing past work samples and class time required for students to get value from the task.

The most important variable, though, is how close the samples are in terms of quality. If you teach a group of young students, you can give them a very strong response and ask them to compare it with a very weak one. However, if you are working with senior students or those with experience doing this sort of task, you can provide them with several high-level responses and get them to identify the features that subtly distinguish a great answer from very good ones. Even if your students end up ranking the model answers in the wrong order, speculating about an answer means they are invested in hearing which model is stronger and why. They are

therefore more alert to your explanation of each sample answer's relative strengths or weaknesses.

Sometimes this exercise involves lots of handouts—particularly in essay-based subjects where each model might be pages long—so I often use technology to rank models. Many teachers do this by giving students soft copies of models and asking them to rank the models by assigning them a number. However, this approach misses out on a key advantage of using paper copies: students representing their ideas physically. This is especially the case when students do ranking exercises in pairs and you see students making their case by moving the models around: "No, I think this one goes on top because it is much clearer." You might want to try ranking programs such as Trello, which allow you to move models around in a virtual space; it is a paperless approach that retains the advantages of ranking with hard-copy models.

Matching Comments and Work

An engaging variation of this kind of ranking exercise is asking your students to match model answers with your comments about those pieces of work. You can begin by giving your students two model answers and two sets of teacher feedback (make sure your feedback comments don't include any inadvertent indication of the pieces they are referring to, such as a student's name). Your students then have to study both the models and the comments and provide examples of why they think a particular set of comments matches a particular model answer.

Students who are older or have more experience at this style of task can be given more model-and-comment combinations to match. As with "rank ordering," these models can also be closer together in terms of quality. In my own senior-level classes, I have seen how students quickly get better at this exercise. Over the course of a semester they develop a real ability to discern subtle differences between the qualities of sample answers and to recognize how a teacher comment might address a specific element of a piece of work. These are important skills and ones that can

be readily applied to assessing their own work. In fact, one of my students once told me that "we've done this so much that I'm probably better at correcting my work than you!"

This type of exercise tends to work best when students work in pairs or small groups because they have to tease out their thinking aloud and justify their judgments by providing evidence to their partner. I saw a good example of this approach at a large suburban school where a teacher would ask students in groups of four to match her comments about their essays to her comments on each response. The students carefully studied their own returned work and each teacher comment and then discussed at length how they "matched up." The teacher explained to me that she started using the exercise as an attempt to "get students to actually read her comments, not just look at the grade," but found it had become a routine way to encourage students to reflect on completed work. This version might not work in every setting—students need a high degree of trust to share their work in this way—but it is a good example of how group work can make ranking exercises like this one even more effective.

Inverted Models

Although model answers are usually selected to give your students a clear picture of where they are headed, providing them with examples of *precisely what to avoid* can also be a powerful learning activity.

I started using these "inverted models" out of frustration. I had a group of middle-grades students who had to use PowerPoint for an oral report. Despite *telling* them to avoid the common traps associated with this kind of presentation (having too many slides with too much information on them, spending lots of time on designing elaborate transitions but little on synthesizing the source material, etc.), most of the students made these common errors. I needed a way to *show* students how to avoid these mistakes.

My response was to pause the presentations and set up a mini-exercise in which students had to design "the worst PowerPoint presentation in the world." I knew immediately that this approach was engaging—my

students worked with great enthusiasm on their presentations—but I didn't know how *effective* the approach was until the first pair presented their finished product. Both students had struggled with the original task but now seemed to have a very clear picture of what to avoid when using PowerPoint. Their "worst" presentation opened with their first slide corkscrewing into place and flashing in a distracting way. It then featured not one but two different songs playing at the same time, a garish color scheme, and a huge slab of text on each slide written in a six-point copperplate font that was very difficult to read.

The exercise was so effective that all students who presented their work after creating an inverted model did better than those who had presented before. Indeed, so stark was the difference, I had to let this latter group resubmit their work.

Why, I wondered, did students enjoy this activity so much? Why was it so effective?

Creating an inverted model is a low-stakes exercise in which doing things the wrong way or making mistakes is actually expected. It sends your students a powerful signal that getting things wrong is actually how we learn. Moreover, in asking them to explore what not to do, they have to first establish the opposite: *What is it that I should be doing here?* This is a subtle way to get them to reflect on what a great answer might look like.

Inverted models are not for everyone. You don't want to confuse your students about what is expected of them. You don't want to send them signals that anything less than their highest standard of work is acceptable. However, when done as a discrete activity for a targeted purpose, inverted models can be a very useful teaching technique. I usually employ inverted models as a back-up strategy when other strategies aren't working. If I have repeatedly shown my class what to avoid but they are still making the same errors, getting them to deliberately make these mistakes often makes them more aware of pitfalls to avoid.

What, then, might an inverted model look like in practice? Two possibilities are annotated models and WTA sheets.

Annotated models. You can ask your students to produce a brief example of poor work and then to highlight its flaws. In subjects that involve essay writing, for instance, instruct your students to write a "bad introduction" and then to explain, via annotation, why this example doesn't meet the criteria for the task. This is a powerful way to get your class thinking about an aspect of student writing that is often done poorly. A team of English teachers I worked with jokingly characterized this approach as a "break glass in case of emergency" task because it was so effective when other approaches for teaching students how to write introductions had failed.

WTA sheets. A What to Avoid (WTA) sheet features a list of errors common to a particular task and a sample answer that features a large number of these mistakes. You present this sheet to your students and ask them to find examples of each of type of error in the sample answer. This helps students recognize what these specific types of mistakes look like. Figure 2.1 is a WTA sheet for word problems in math; it shows that mistakes might be, for instance, failing to write in full sentences ("she had half") or not presenting the answer in written form ("½"). A WTA sheet gives you a way to share your knowledge about the mistakes your students are likely to make and to steer them away from these common traps. This is the advantage of all inverted-modeling tasks and can save you a good deal of correction time. The activity known as My Favorite Mistake is another version and is particularly popular as a math activity (see Chapter 3, pp. 91–92).

Assessment Advice

Students receive a good deal of information about learning and assessment in the form of assignment materials, rubrics, and criteria sheets. I always found making these materials to be a labor-intensive process, and most of my colleagues agreed. As a teacher coach, I often see teachers go

Figure 2.1
EXAMPLE OF A WTA SHEET

The table lists all the common errors we would like you to avoid when writing your answers to word problems. Read the sample student answers and identify at least one example of each type of error. Place these examples in the space provided.

Sample answers to the following question: You give 1/3 of a cake to Susan and 1/6 of the same cake to Patrick. How much of the cake did you give away?	
A) 1/2 B) Susan will have three-sixths of the cake left. C) She had half. D) Susan and Patrick now have half a cake between them.	
Common Error	**Example**
Didn't provide an answer in words.	
Forgot units [in the case of this question, the unit is the cake].	
Didn't write in full sentences.	
Didn't put answer in its simplest form.	
Misread what question is asking you to do.	

to great lengths preparing rubrics and criteria sheets and then spend even more time unpacking this information with students.

However, all this teacher work does not mean the students take the advice. It is not uncommon to see students paying only cursory attention to these materials. I have, more than once, seen students dutifully highlighting what their teacher has told them to highlight—or writing a few sketchy notes—before putting the worksheet in their folder, never to look at it again (at least not until the piece of work is due the next day). This, of course, does not occur in every class or with every student, but you do need

strategies to make sure your students are getting the most they can out of your assessment advice. The following sections discuss some options.

Highlighting for Clarification

Many teachers use the standard method of asking their students to underline or highlight the most important passages on a rubric, a criteria sheet, or another piece of assessment advice and discussing their significance with the class. Highlighting for clarification takes a different approach: instead of asking your students to highlight what is *important,* you ask them to highlight what is *unclear*. You then explore with the group what might be confusing or hard to understand. This is a quick and practical way to help your students understand your assessment advice.

I adapted this approach from a highlighting strategy used to unpack challenging fictional texts (Blau, 2003), but it works equally well with learning directives. When students see it as their responsibility to inform you of what is confusing or ambiguous about assessment advice, it changes how they deal with this information. For instance, they tend to examine it more closely and report back what they don't understand more readily and confidently. (I regularly use this approach for students with literacy issues for this reason.) This is particularly true if students are asked not what they personally find confusing but what *other students* might find confusing. A close teaching colleague of mine, for example, asks his classes to look at all assignment rubrics they are given and "highlight what *someone else* might find unclear or difficult to understand about this rubric." He finds that this approach provides him with feedback about the clarity of his assessment advice and encourages his students to review more closely what this advice is asking them to do.

Teachers who regularly ask their classes to "highlight for clarification" find that students start to see this as a natural first step that they can use whenever they encounter a rubric, a criteria sheet, or a learning intention. It is a great way to help students minimize errors, and it saves teachers a lot of work by enabling them to spot potential mistakes early on

rather than having to spend time and effort addressing misconceptions once they are more established.

Rewriting Criteria

Another way to help students understand what is required of them is to ask them to rewrite assessment criteria in their own words. This activity works best with students in small groups or pairs, as they have to discuss with their classmates what each criterion means, noting key terms, discussing terminology that might be unclear, and translating the criteria into language that they are comfortable using as a reference point for their own work.

Asking students to rewrite assessment criteria involves little additional preparation for the teacher. When I'm preparing a sheet of assessment advice, I just leave a little extra space under each criterion statement or rubric descriptor where the students can reword it. Usually I ask my students to do this rewriting in the form of a question, as in this example:

> *Original criterion:* Demonstrated an ability to use the target language in oral presentation.
>
> *Rewritten criterion:* Did I remember to use French vocab in my presentation to the class?

I like this approach because students can use their rewritten criteria as a checklist when preparing their work.

I initially used this approach mainly for criteria sheets but quickly learned that it is equally applicable for rubrics, learning intentions, and success criteria. Some teachers even make rewriting criteria a compulsory first step whenever students receive assessment advice. I work with a team leader who uses this as her default "do now" activity. When her students arrive at class, they have to rewrite the learning intention she has placed on the board or the descriptors from the rubric she has placed on their desks. While the students complete this routine, she moves around the room monitoring their progress. This feedback helps her then target her lesson introduction so she can immediately address any

misunderstandings students may have about what is required of them. Tellingly, she says this three- to four-minute routine saves her a good deal of time. "Sometimes my colleagues worry that this might take too long, but given how much time I gain by not having to correct kids later on [in the correction cycle], I feel like I have to use it!"

Practicing Applying Criteria

Giving your students work samples and asking them to mark them against the criteria is another way to encourage students to engage with assessment advice. Although it takes more time than either the ranking or highlighting techniques just discussed, this approach is particularly effective for helping students recognize what makes up a successful answer.

For instance, you can "unpack" major assessments by having students—again in pairs—mark past sample answers against the assessment rubric. I have seen in my own classes how doing this leads students to discuss not just what each criterion means but what meeting these criteria actually looks like in a finished piece of work. The understanding they develop is then reflected in the quality of their answers.

Because this activity can be daunting for younger or less able students or those who require a more structured approach, it is important that you have ways to scaffold it. The following examples are designed for rubrics but can be easily adapted for criteria sheets and other assessment advice.

Focusing on a single criterion. Deconstructing a rubric to focus on a single criterion is an engaging way to make the trial-run strategy more manageable. Assessing one element at a time makes it easier for your students to concentrate their efforts when correcting a sample answer. It enables them to gradually build their understanding of what makes for a good answer, one component at a time (Arter & Chappuis, 2006).

Match highlighting. In this activity, you ask students to color-code work samples against a rubric with one color for each criterion. They then identify which particular aspects of the sample answer meet which elements of the criteria. This activity produces a vivid illustration of how a

successful answer addresses all of the criteria; students can see that the highest-level answers contain all of the colors. Less successful responses have colors missing or used rarely. Once your students are familiar with the match-highlighting activity, they can create colored self-assessments of their own work.

Clear and Cloudy. In this activity, students review a rubric using a piece of sample work as a reference point. Their task is to assess what is "clear" and what is "cloudy" about the rubric's descriptors. If it is easy to identify whether or not a piece of work meets a description, then it is clear. If it hard to do so, then that descriptor is cloudy. I know one elementary school teacher who goes so far as to ask her students to draw a cloud around confusing criteria. This task helps students show you how they are reading the rubric and can give you a sense of how well you have constructed it (Brookhart, 2013).

These are all somewhat time-intensive strategies. However, you should see them as an investment. Spending time doing this now means you will spend much less time in the future clarifying what a successful answer looks like.

Co-creating Assessment Materials

Probably the most effective strategy for helping students engage with assessment advice is getting them involved in creating it. Obviously, much criteria material is produced at the system and school levels, but there is also a great deal of room for students to be involved in formulating rubrics and criteria sheets at the class level.

Some years ago I watched students in a high school art class create a rubric for their major portfolio assignment. It was an exhaustive, multistep process:

- Students were divided into groups of four.
- The teacher gave them stacks of past portfolios, which they sorted into low-, medium-, and high-quality answers.

- Students then justified in writing why they ranked the portfolios as they did.
- As a class group, they then shared these answers, comparing the criteria they used to formulate their ranking of each portfolio.
- The teacher then synthesized these suggestions into a list of key criteria and asked students to come up with descriptions of four levels of quality for each criterion.
- Students presented their descriptions by individually writing up these levels of performance in a rubric format and then revising them with the whole class.

The resulting rubrics were excellent, and, when I quizzed the students, they had a very clear idea of what made up an outstanding art portfolio. This understanding would inform not only their work on what was the major assessment task for that semester but also their use of portfolios in art over the next 18 months of their schooling.

However, this approach took a great deal of class and teacher preparation time, which is broadly the case with student preparation of assessment advice. If you do not have the time to conduct this type of elaborate exercise, then *co-creating* assessment materials is an effective compromise.

A well-designed co-creation activity requires a careful balancing of teacher direction and student input. This can range from a "top-down" approach in which students are offered some minor opportunities to modify assessment materials that the teacher has prepared, to a "bottom-up" approach in which students largely formulate their own inquiry project or rubric design, with minor teacher guidance.

Patchwork Rubric. Most "bottom-up" approaches still require a good deal of teacher input, but co-creating assessment advice gives you the benefits of a student-led approach in significantly less time. The Patchwork Rubric (see Figure 2.2) shows this compromise in action. Named for its distinctive patchwork design, with every other square left blank, the

Figure 2.2
EXAMPLE OF A PATCHWORK RUBRIC

	Beginning	Developing	Proficient	Highly Proficient
Structure	Ideas are listed in no organized way, with limited use of paragraphing. There is no contention in the opening paragraph or a summarizing conclusion.		Ideas are organized into logically sequenced paragraphs with topic sentences introducing key ideas. Introduction and conclusion present and summarize contention.	
Evidence		Ideas are supported with textual evidence, including specific references to the text and some quotations. Quotes are not routinely "unpacked" or analyzed for their significance.		Ideas are presented with multiple sources of "grouped evidence." "Woven quotes" are used to "unpack" and analyze the significance of this evidence in detail.
Conventions	Grammar and spelling errors are common, repeatedly distracting the reader. Extensive proofing and editing is required before the piece will be ready for publication.		Grammar and spelling demonstrate mastery of basic conventions. There is evidence of proofing, with mistakes changed from the draft. The piece is readable and ready for publication with only minor changes.	
Fluency		Ideas are clearly expressed in sentences that use simple and compound structures, varied beginnings, and connectives. Some sentences are awkwardly phrased, but the piece can be read aloud quite easily.		Ideas are expressed in sophisticated sentences that employ complex forms that carefully connect insights and present them in a varied and highly readable fashion. The piece is expressive when read aloud.

rubric lists each criterion statement but leaves out the alternating performance descriptions for each level of achievement. The object of the exercise is for students to fill in the empty spaces, using the other performance descriptions (the filled-in boxes) as a reference point. I have seen teachers use many variations of this activity. Some use it as the basis for a whole-class discussion, with the teacher then writing up the final product as the rubric that all students use for that assessment. Other teachers use it as a prediction exercise, asking each individual student to fill in the blank spaces and then pairing students to compare their answers against the actual rubric.

The last time I saw this approach in use, one pair of upper-elementary students were high-fiving each other each time their predictions matched the actual performance descriptions. Their gleeful response to the exercise really struck me because the teacher had taken a dryly written, system-level assessment tool that she was required to use and turned it into a dynamic class activity. Of course, not all students will react as enthusiastically, but co-creation activities such as this one do tend to encourage students to engage more closely with assessment advice.

Establishing Learning Intentions and Success Criteria

Establishing learning intentions and developing success criteria at the start of a lesson or unit are probably the most frequently used strategies for establishing the learning objectives of your class. *Learning intentions* describe what you want your students to learn. *Success criteria* are the specific evidence by which you judge whether they have met these goals.

The use of learning intentions and success criteria has grown in recent years, partly because many teachers are mandated—at either the school or the system level—to use them. In fact, one of my most common calls from principals recently has been to ask advice on how to make them an everyday habit of their teachers. More fundamentally, though, they are so popular because they are a simple way to get students to focus on the core of what they have to learn.

Obviously, just writing a learning intention on the board or putting success criteria in a checklist is not a guarantee that students will actually use them. How do we encourage students to actively use these reference points for monitoring their own learning?

Primarily, we must ensure that we create learning intentions and success criteria that actually do what they are supposed to do. This means being aware of avoiding the design flaws that so often undermine this practice. Here are six principles that will help you avoid the more common pitfalls:

1. A learning intention provides students with a learning goal, not a description of what they have to *do*. You should avoid writing intentions that are focused solely on the task—*"Complete the 'Introduction to Fractions' section (pp. 12–15) of your textbook"*—and focus instead on the specific learning that students will develop from this activity: *"We are learning to define a fraction, a numerator, and a denominator."* This approach helps your students see the *purpose* of what they are doing (Wiliam & Leahy, 2015).

2. Learning intentions should focus on skills or knowledge students can *take away* from the lesson. You need to avoid intentions that describe only what students are learning in class that day—*"We are learning how to write on our own for this whole literacy block"*—and concentrate on the underlying learning that can be applied in other contexts: *"We are learning to be independent writers."* This approach helps students transfer the skills and knowledge gained in one class to other subjects and situations (Clarke, 2014).

3. Learning intentions should be paired with success criteria. It is not enough to put into words precisely what we want students to learn; we should also articulate the criteria by which we are going to assess their progress, as in this example:

> *Learning intention:*
> We are learning to write independently.

Success criteria:
I put a space between my words.
I can write the first sound of the word.
I remember to use full stops.

Students need to know where they are headed *and* how to judge whether they have gotten there. Success criteria give a clear sense of "what counts as quality work" (Wiliam, 2011).

4. Learning intentions should be referred to throughout the lesson. Learning intentions, and their success criteria, are a reference point for plotting students' progress toward their goals. They are not set-and-forget objectives that are only mentioned or referred to once. Nor are they compulsory lesson openers that must be employed at the start of *every single class* regardless of whether that is the most effective way to introduce the lesson or engage the students.

You need to employ learning intentions in a flexible way, introducing them at the moment when students most need a point of reference for where they are headed and guiding students to refer continually to this "compass point" as the lesson develops. I often use an app I designed to help me be mindful of using intentions in this way (https://itunes.apple.com/US/app/id1064192615?mt=8). It graphs use of learning intentions across three phases of the lesson, reminding me to mention intentions not only in the introductory and reflection phases of the lesson but also during the lesson as students develop their thinking.

5. Success criteria—not learning intentions—should be modified for students of different abilities. Differentiation is not about making learning less challenging; it is about making it more accessible. Students should share the same learning goals but have success criteria carefully targeted to their capacity and current level of performance. Here is an example:

Learning intention:
We are learning to understand how historians define primary evidence.

Success criteria:

Students who understand this concept—

- Can produce *written definitions* of both primary and secondary evidence.
- Can *cite* examples of primary evidence in a written analysis of a historical document.

Modified success criteria:

- Can *explain* the difference between primary and secondary evidence.
- Can *identify* examples of primary evidence from images on a website of primary and secondary evidence.

Carefully calibrating success criteria helps teachers challenge students of all abilities to meet the learning intention.

6. Students should be encouraged to actively engage with learning intentions and success criteria. Throughout this chapter we have seen the importance of not just telling students what their learning goals are, but helping them reflect on, clarify, and understand these goals. Having an array of quick strategies for ensuring students internalize learning intentions and success criteria maximizes their impact. These strategies might include the following:

- Offering students three success criteria but letting them offer suggestions for a fourth
- Asking students to highlight words in the learning intention that they aren't familiar with or don't understand
- Getting students to rank success criteria from what they think will be the easiest to achieve through the hardest
- Requiring students to rewrite the learning intention in their own words
- Showing students the task and asking them to predict what the success criteria will be and then comparing predictions with actual criteria

It takes practice to successfully implement these strategies. I know I struggled at composing effective learning intentions when I first started

using them in my classes, and I have seen similar struggles from other teachers in my role as a teacher coach. However, the benefits of students knowing *precisely what they are doing* and *whether they are doing it well* make it worth the effort.

Summing Up

It takes time to help students clarify what they are learning. It takes even more time to make sure that they understand the criteria by which they will be assessed. Ultimately, though, this is a highly *efficient* approach to teaching and learning.

Some educators find this idea counterintuitive. I often work with teachers who are reluctant to spend extra time modeling answers or reviewing assessment advice because they feel they are under such tight deadlines. As one teacher put it to me: "My kids don't have time for looking at success criteria—they just have to do the work." This perception is understandable. Clearly the approaches featured in this chapter (and summarized in Figure 2.3) do mean that students will start the activity phase of a lesson later than would otherwise be the case.

The language of the teacher just mentioned is telling; obviously he didn't think clarifying learning goals was "the work." However, when I encouraged him to try using success criteria, he found that his students worked much more efficiently. They were more self-directed, asked fewer low-level questions about the task, and sought him out more frequently to discuss the underlying learning.

The lesson here is that in the classroom context, "efficiency does not necessarily mean speed but rather more cognitive efficiency" (Hattie, 2012, p. 145). That is, teachers are able to increase student learning without expending more time and effort. Although it might seem counterintuitive to some teachers, devoting extra time to clarifying learning objectives improves student performance without adding to your workload. Or as the teacher cited above neatly put it: "Slowing down my teaching really sped up their learning!"

Figure 2.3
CLEAR LEARNING GOALS

How do I ensure students know precisely what they are learning and check their progress toward that goal?	
Models and Exemplars It is easier to be successful when you know what success looks like. Providing your students with model answers helps them develop a clear picture of what they are trying to learn and offers a reference point against which to check their progress.	**Ranking Work Samples**—Encourage your students to investigate sample answers by ranking them. This a quick way to get them thinking about what makes an answer successful.
	Matching Comments and Work—Ask your students to match model answers with your comments about those pieces of work.
	Inverted Models—Model answers tell students where they are headed, but providing them with examples of *precisely what to avoid* can also be a powerful learning activity. • Annotated models • WTA sheets
Assessment Advice Students receive a good deal of information about learning and assessment in the form of learning intentions and success criteria. You need practical strategies to ensure students understand and internalize this advice.	**Highlighting for Clarification**—Instead of asking your students to highlight what is important about the assessment advice, ask them to highlight what is unclear.
	Rewriting Criteria—Ask students to rewrite assessment criteria in their own words. This helps students understand what is required of them.
	Giving Assessment Advice a Trial Run—Giving your students work samples and asking them to mark these samples against the criteria is another way to encourage them to engage with assessment advice. • Focusing on a single criterion • Match highlighting • Clear and Cloudy
	Co-creating Assessment Materials—Probably the most effective strategy for helping students engage with assessment advice is getting them involved in the creation of that advice. • Patchwork Rubric

Assessment Advice (*continued*)	**Establishing Learning Intentions and Success Criteria**—Establishing learning intentions and success criteria at the start of a lesson or unit is a well-established way to ensure students are focused not on the task they are doing but on the underlying learning. Remember to follow these principles when creating learning intentions and success criteria: • A learning intention provides students with a learning goal, not a description of what they have to *do*. • Learning intentions should focus on skills or knowledge students can *take away* from the lesson. • Learning intentions should be paired with success criteria. • Learning intentions should be referred to throughout the lesson. • Success criteria—not learning intentions—should be modified for students of different abilities. • Students should be encouraged to actively engage with learning intentions and success criteria.

3

Checking for Understanding

The workload associated with correcting student work can be utterly overwhelming. Many teachers stay at school long after their allotted hours or find themselves devoting personal or family time at home to get correction done. One of the key ways we can reduce this assessment burden is by improving the way we use feedback in the classroom. Developing a suite of strategies for quickly eliciting feedback helps teachers swiftly assess student need in the classroom without always defaulting to laborious and time-intensive correction.

The purpose of these strategies is not just workload reduction. Getting feedback from your students about their progress is one of the most powerful ways to lift student performance (Hattie, 2012). When teachers regularly seek feedback, they can both be more responsive to student need and assess the impact of their teaching. They are, in Hattie's evocative phrase, creating "visible learning" (Hattie, 2009).

I first saw how this might work as a student teacher. I was assigned to work with a highly experienced expert teacher who never took work home with him. Even as a new teacher I could see that being able to produce timely feedback without being swamped by correction was something

worth emulating. At the end of the round, I asked the teacher to explain how he maintained his remarkably efficient correction regime. When he dutifully did this, I remember being impressed by his carefully targeted and "minimalist" corrections. However, as a more experienced teacher, I came to think I had asked the wrong question. Instead of asking about correction, I should have asked about feedback: How did he give feedback in class so when it came to correcting work, all that his students required were the small, precise pieces of advice he gave them?

This chapter helps teachers set up a classroom routine where feedback is *fast, formative, and frequent.* It features practical strategies to quickly assess a student's knowledge before starting a task and easy ways to monitor student performance throughout a lesson. Each of the strategies has been road-tested in real classrooms and offers teachers a way to provide meaningful feedback in a sustainable fashion.

Snapshot Assessments

When I introduce formative assessment to trainee teachers, I use a cooking analogy: formative assessment is tasting a dish as you are making it—not waiting until it is served to see if it tastes any good. This is hardly an original analogy, but it captures a core idea about assessment: feedback works best when it is *immediate*. The best feedback happens, as Dylan Wiliam notes, "minute by minute, day by day, not at the end of a sequence of learning" (Education Scotland, 2016).

A snapshot assessment strategy gives you an almost instantaneous way to assess your students' current level of understanding, comprehension, and confidence. Here are some examples of "in-the-moment" assessment strategies that you can use to set up this fast feedback loop in your classes.

Replay Signals

The replay-signal strategy has students use a pre-arranged gesture to signal you to repeat or clarify what you have just said. This strategy gives

you real-time feedback about how well your students understand what they are being taught.

Replay signals tend to work best when they are unobtrusive—students seem more likely to use a replay signal if they have the social protection offered by anonymity. In my own classes, for example, I ask students to just place a hand on their heart if they need an "instant replay." Teachers can use lots of different signals, including the following:

- **Punctuation triangles**—In elementary schools, I sometimes use a triangular shape that sits up on a student's desk, with an exclamation mark on one side and a question mark on the other. Students then use the punctuation points to indicate that they understand what the teacher said (exclamation mark) or need some clarification (question mark).

- **Paper cups**—I know a middle school computer science teacher who gives each student a paper cup to use. An upside-down cup means the student can proceed without assistance; an "open" cup sitting upright indicates the student needs help.

- **Colored disks**—Some schools give students disks that are green on one side (able to continue with the work) and orange on the other (unsure how to proceed).

- **"Faces" cards**—With very young students, one of the most popular versions of a replay signal is a laminated "faces" card with a smiley face on one side and a confused face on the other.

- **Individualized signals**—You can also design replay signals for individual students. Whole-class replay signals are a terrific way to check on the progress of mixed-ability classes. However, if you have a student who is particularly vulnerable or who wrestles with substantial learning difficulties, that student may want a private signal that allows repeated requests for assistance without anyone else knowing. Touching an ear lobe, raising eyebrows, or feigning stretching all work well as signals intended for the teacher's eyes only.

It does not matter which, if any, of these specific approaches you use; what matters is whether your class has a well-established replay signal to give you instant feedback.

Traffic Lights

A traffic-light system adds an extra option for students so they can indicate *how well* they understood your instructions. After explaining a task or introducing some key learning, ask your class to rate their understanding with the following indicators:

Green	I understand what is required and can proceed.
Amber	I understand but would like to hear it one last time to make sure I'm clear.
Red	I don't understand, and I am unsure how to proceed.

Traffic lights are a particularly valuable tool for teachers of students who find it hard to process oral instruction. If you are teaching English language learners, for example, using a traffic light is a great way to check whether they have understood what you asked them to do or whether they need extra support.

This approach generally works well, but students can be uneasy about indicating they don't understand. At my own school, students were happy to use the amber signal but reluctant to give themselves a red. Clearly they had reservations about indicating in front of the group that they were unsure how to proceed. You can address this concern by turning it back on yourself: ask your students to rate how well *you gave* the instruction:

Green	The teacher explained it well, and I understand what is required and can proceed.
Amber	The teacher explained it OK and I understood, but I would like to hear it one last time to make sure I'm clear.
Red	The teacher did not explain it very well, and I am unsure how to proceed.

This modified version gives students a layer of protection because the locus of attention is on your performance rather than their comprehension, and they are much more likely to tell you when they don't know what to do. (I found my own students were almost too eager to give me feedback about my performance!)

Fist to Five

The Fist-to-Five technique takes these snapshot assessments a step further by requiring students to place their understanding on a continuum. This approach is powerful because it signals to your students that what is important in learning is not whether they understand, but *how well*. Learning, after all, is not flipping a coin—we do not instantly proceed from "not understanding" something to "completely understanding" it. Rather, learning can be mapped on an incremental ladder that proceeds haltingly from being introduced to an idea through a series of stages of increased understanding and confidence to independent mastery.

As a new teacher, I think I missed this point. I would, for example, ask my students questions such as these:

> Do you understand what I just said?
>
> Have you read that chapter?
>
> Did you do your homework?

The answer was often a hesitant "y-e-s . . . ," which suggests my students had achieved an "approximated competence" that fell somewhere between the binary options I was offering. Instead, I should have been asking them to reflect on the *extent* of what they had learned:

> How *well* did you understand what I just said?
>
> How *well* did you read that chapter?
>
> How *well* did you do your homework?

With the Fist-to-Five technique, students raise their hand and indicate their understanding by showing fingers (or a closed fist):

- A closed fist means they are still very unfamiliar with the concept or skill.
- A single finger or two fingers indicates that they still need substantial further practice or explanation to come to an understanding or mastery.
- Three fingers means they have a good understanding of the current example and should be able to apply it in some other context.
- Four fingers means they understand it really well and feel confident they could apply it in other contexts.
- Five fingers means they have mastered the concept or skill and would feel confident teaching it to a peer.

Fist to Five works best, especially for younger students, if you are specific about what each level represents, as in these examples:

> A fist means you didn't learn about coping saws last semester or can't remember which type of saw it is.
>
> One finger means you know what a coping saw is but have never used one.
>
> Two fingers means you have used a saw but only briefly, and you aren't confident you could use one without breaking a blade.
>
> Three fingers means you could use a coping saw with supervision.
>
> Four fingers means you could use one unsupervised.
>
> Five means you are confident that you could show someone else how to use one.

Typically I give myself a ranking, too. I usually tell my students that I will indicate my level of skill when I was their age. I always give myself a score of one or two and make a point of making sure that other students who have ranked themselves low see this. I feel that this is a powerful way of showing them that their ranking is an indicator of their current progress, not of their eventual performance. (I developed this approach

teaching a Reading Recovery class group. I thought it telling how often students made note of my self-ranking. They often did this, endearingly, in the form of reassurance: "Don't worry, Mr. Pearsall. You're good at that now.")

Fist to Five is a highly versatile exercise that can be used at all stages of learning. I have used it to assess prior knowledge at the start of an activity but find it equally effective as a tool for evaluating how well students meet the success criteria at the end of a lesson.

Perhaps the most powerful aspect of Fist to Five is that it tends to generate discussion. Once students have put their hand up, they often start explaining their ranking to a neighbor. I have a colleague who believes it should be called "Fist to Five and Mutter" for this reason. These unsolicited conversations are rich because students invariably justify their response, fleshing out their answer. (If you are not getting this response, just try giving your students a few extra seconds of pause time after they answer.) Fist to Five gives you a quick way to assess the extent of students' knowledge and to generate discussion about how well they mastered what they were learning.

Short Written Feedback

Another way to speed up the feedback process is to assign short written tasks. What you need are strategies for getting students to give you brief written feedback that is still representative of their level of understanding. This approach saves you time and means you can target your attention on the issues that matter. There are many quick ways to assess how well students have understood what they're learning, eliminating the need to take long answers home to correct. Here are four examples.

Exit Passes

An exit pass or ticket is a slip of paper that students write a brief piece of feedback on and submit to you as they are leaving the class. Alternatively,

they might send you this feedback via an automated feedback system such as Kahoot! or Socrative. Exit passes are a highly effective form of formative assessment (Marzano, 2012). They are versatile, take little time to implement, can be used at a variety of times (end of the day; when students are moving to another lesson or taking a break), and take many forms.

Summary. The most basic approach is simply asking your students to summarize what they have just learned. This is a good way to reveal any misconceptions they might have and to help make the underlying learning of a lesson explicit to students.

Word-limit précis. You can go a step further and ask students to summarize the learning from a lesson in a *precise number of words*. This variation is sometimes called an "exacto." It is both an engaging challenge that students find fun and a disarming way of getting them to reveal gaps in their learning.

Conceptual question. Alternatively, you might use an exit pass in which students are given a prompt that tests their understanding of your lesson. It is important that this type of question not ask students just to recall information but to apply it. Here are some examples:

- What is the difference between causation and correlation?
- Why can't a whole number ending in zero be a prime?
- Why does the design process ask us to initially generate multiple ideas?

Teacher feedback. Exit passes are a good way to find out what students thought of your lesson. Were they engaged? How clear was your instruction? What could you do differently next time to make the lesson easier to understand? Teacher-feedback exit passes are probably the "least popular type of [exit] prompt" among teachers (Marzano, 2012, p. 81). I have worked with many schools, for instance, that do student surveys as an *annual* activity, but not as a part of teachers' everyday practice. When I quiz teachers about this, they usually cite lack of time for

not seeking out student opinion more regularly. However, exit passes are a quick way to elicit student opinions without substantially adding to a teacher's workload.

Reflection. Exit passes are also an effective way to get students to reflect about their own approach to the lesson: Were they able to work independently, or did they need teacher guidance? How hard did they work? Were they happy with their own progress? Did the learning strategies used in the lesson suit them? Carefully targeting prompts like these is a straightforward way to encourage student self-analysis.

Queries. In this version, your students write out questions that they still have about the work at the end of the lesson and hand them to you as they are leaving the classroom. A common way to do this is sometimes called a "sticky note survey" or "door jamb survey," in which students write their question on a sticky note and affix it to the teacher's desk or by the door before they exit the class. Every individual must submit something, so students who have no questions write "pass" or "N/A." (I've always found, though, that if you give students a longer pass phrase, such as "I have no questions to ask you; thank you very much," very few students select this option.) You then read these notes and physically group them into clusters of similar questions or concerns. The great advantage of this approach is that it helps you see *patterns of concern* while training students to be specific about what they don't understand within a broad topic.

Whichever version you employ, the strength of the exit-pass strategy is that you can get helpful feedback without having to deal with a pile of work that needs correcting. In fact, most teachers start flipping through the passes as they stand at the classroom door taking them from students. Within two or three minutes, you have useful information for planning your next lesson.

CEC Thinking Routine

This simple thinking routine, developed by Harvard's Project Zero (Visible Thinking, 2015), helps your students place what they are learning

in a lesson in the wider context of their studies. At the end of a lesson or the completion of an exercise, students simply answer the following questions:

***C**onnect:*	How are the ideas and information presented *connected* to what you already knew?
***E**xtend:*	What new ideas did you get that *extended* or pushed your thinking in new directions?
***C**hallenge:*	What is still *challenging* or confusing for you to get your mind around? What questions, wonderings, or puzzles do you now have?

The CEC thinking routine encourages students to become more aware of what they are learning and how this links with their prior knowledge and skills. It also requires them to communicate to you what is still unclear about what they are learning.

As with all thinking routines, students take some time to master this routine, but once they are familiar with it, they get very good at quickly sketching out answers to these questions. The information this provides for you to shape future lessons and target their attention is invaluable.

Feedback Technology

Technology offers an increasing number of ways to elicit short written feedback. Some teachers, for instance, use a tablet computer as a high-tech mini whiteboard (see the next section for more on mini whiteboards), and others ask students to text their exit passes or post them on an instant chat room such as TodaysMeet (https://todaysmeet.com) or Tinychat (https://tinychat.com). There are also a number of dedicated sites and programs designed to act as classroom feedback systems. Kahoot! and Quizlet Live are popular. Formative, which allows you to draw as well as write feedback, is particularly effective in elementary schools, ELL classrooms, and math classes, where you might want students to use visual information as feedback to you. I personally have used Socrative and Nearpod for eliciting quick written feedback. I have also found the Plickers system (see "Automated Correction," pp. 144–147 in Chapter 5) to be very effective in settings without access to much technology.

These are just some of the tools that you might employ in your class, and new feedback programs and products are being created all the time. Whichever tool you choose, what is important is that you pick one that is intuitive and easy to use. Remember that the goal is eliciting short written feedback. Students need to be able to do this quickly, without having to wrestle with the technology.

Mini Whiteboard

As noted, mini whiteboards—small personal "slates"—are a good way to elicit fast, formative feedback from students. Mini whiteboards have a number of distinct advantages as a feedback tool.

First, mini whiteboards allow you to check student progress with a quick scan. You can just ask your students to write a short response and then raise their whiteboards for you to read. This is one of the fastest ways to identify misconceptions or discover a student is well ahead of her classmates and needs further challenging. Mini whiteboards are also a powerful tool for getting an overall sense of how well students have understood what you have asked them to do and whether you need to further clarify your instructions or modify the task they are doing.

Second, this strategy is particularly effective when students are reluctant to publicly make mistakes. Using a whiteboard involves neither having to display their actual work nor speaking in front of the whole class. Instead, a whiteboard acts as a kind of rough-draft pad for student speculations. That the students' responses are not their final answers is emphasized to them by the fact that they immediately erase what they have written.

Third, mini whiteboards work across a range of subject areas and age levels. They can be used equally well with very young students or those in their final year of schooling. You could use them to review letter formation with young students or ask students to draft a topic sentence in a senior English class. Moreover, they can be used in subjects that don't require written response. Students can draw a draft response in art/design subjects or present their answer as a complex equation in math or science classes.

Last, mini whiteboards are cost-effective tools. A class set of mini whiteboards can be much cheaper than a set of tablet computers. Indeed, many schools don't buy mini whiteboards—they make them. Placing a piece of unlined or graph paper in a plastic pocket is a cheap alternative to purchasing a board, as is laminating a piece of blank, letter-size paper. (I used the latter in my early years of teaching, and it was such a successful alternative that I was surprised when I discovered it was not how everyone did it. I didn't know some schools actually *bought* boards for each student.)

Perhaps the most powerful element of using mini whiteboards is that teachers get the feedback they need but not a pile of papers to correct. Mini whiteboards are the embodiment of the maxim that drives this chapter: *More feedback, less correction*.

Preplanned Feedback Questions

The feedback activities described thus far are all impromptu assessment strategies: you can use them whenever you feel they might be helpful, as they require no preparation. However, sometimes planning your feedback questions ahead of time is the best way to ensure that your assessment is fast and formative. "Hinge questions" are an example of this; they require some preparation but are excellent tools for quickly getting real-time feedback about how your students are learning.

Hinge Questions

A hinge question is a single, multiple-choice question that you can use as a mid-lesson check: How well does the class understand what they have just been taught? Typically, you pose these questions at a juncture where you are either about to move on to a new idea or about to ask students to apply a concept you have just introduced. They are the quickest way I know to assess how well the entire class has grasped a concept.

Although the emphasis here is on getting a speedy response, composing these questions actually takes some time. As with any good

multiple-choice question, the key is coming up with *good wrong answers*. The incorrect-response options in multiple-choice are called "distractors." Good distractors are not just incorrect—they are revealing about what students don't understand. (See also the discussion of multiple-choice questions in Chapter 4.) The best way to write a hinge question is to identify common mistakes or misconceptions students make and turn these into distractors. Consider the following example:

> *Which words in the following sentence are adverbs?*
>
> "He quickly realized his inept running style meant it was unlikely he would ever become a professional athlete."
>
> A) Quickly, professional
>
> B) Unlikely
>
> C) Quickly
>
> D) Quickly, inept

Selecting the correct response to this question (option *C*) tells you the student can recognize an adverb. However, it is the *wrong* answer options that are the most revealing:

- Option *A* contains both an adverb (*quickly*) and an adjective (*professional*) and is designed to identify which of your students are having difficulty telling the difference between these parts of speech.

- Option *B* also features an adjective (*unlikely*) but is specifically included here to pick up another common misconception of students—that all adverbs end in "*ly*."

- Option *D* is carefully couched to identify students who have a developing sense of what an adverb is but still might not grasp all the nuances of usage. The student who picks this example has missed that a word (*running*) is being used not as a verb but as part of a noun phrase (*running style*).

It should take the class no more than a couple of minutes to answer a hinge question and about 30 seconds for you to process this information.

In the past, teachers have used hand signals from students (e.g., having them raise one, two, three, or four fingers to represent, respectively, option *A*, *B*, *C*, or *D*) and mini-whiteboard answers as a way of collecting these data. Recently a number of computer programs for quickly processing this feedback have become popular (see "Automated Correction" in Chapter 5). Whichever approach you use, the key is to have a quick turnaround so you can decide whether or not to move on to the next part of the lesson.

Composing hinge questions helps you anticipate your students' mistakes. In designing the distractors for these questions, you need to think hard about what the common mistakes for this particular activity tend to be and how you might respond to them. It can be really frustrating when you see students make the same mistakes year after year, but hinge questions give you a way to turn this frustration into information. Moreover, these questions help you recognize patterns of error. They make the teacher's task "easier because the student's responses are pre-processed into a small number of alternatives" (Wiliam & Leahy, 2015, pp. 91–92). Rather than getting a wide array of incorrect answers that you have spent a lot of class time assessing for common mistakes, you can design a multiple-choice question that does this work for you.

Hinge questions might take some time to compose, but in my experience this investment quickly pays off. They are a lightning-fast way to test how well each student understands what you are teaching and a terrific replacement for take-home correction.

Cue Sheets

Cue sheets are another formative assessment strategy that require some preparation time but can have substantial benefits for you and your students. A cue sheet is a list of sentence starters that students complete as a way of responding to a piece of information. English teachers, for instance, often use a cue sheet to help their students formulate a response to a novel or poem. Figure 3.1 is a cue sheet designed for guided reading.

Figure 3.1
CUE SHEET FOR GUIDED READING

Planning
The learning intention is . . .
The purpose of this activity is . . .
My goal here is to . . .

Tapping Prior Knowledge
This connects with . . .
This reminds me of . . .
I already know that . . .
This is kind of like . . .

Asking Questions
I wonder why . . .
Do you think . . .
What if . . .
How does . . .

Predicting
I think . . .
Probably what might happen is . . .
If . . . , then . . .

Visualizing
If this were a movie . . .
I can see . . .
In my mind I can picture . . .

Making Connections
This makes me think of . . .
This is similar to my own life in that . . .
I can understand this because . . .

Summarizing
The key idea here is . . .
Basically, what's happening is . . .
A quick way of saying this is . . .

Adopting an Alignment
I connect with this character because . . .
I really got into this story when . . .
I identify with this author because . . .

Forming Interpretations
What I think is going on is . . .
I think this means . . .
I'm getting the idea that . . .

Monitoring
What I should concentrate on next is . . .
This confused me because . . .
I need to reread the part where . . .
I think I'm on the right track because . . .

Clarifying
The part that still confuses me is . . .
I think this is right but I need to . . .
Perhaps I should go back over . . .
I need to research . . .

Revising Meaning
I used to think . . . , but now I think . . .
I've changed my mind on that because . . .
My latest thought on this is . . .

Analyzing the Author's Craft
The line that catches my attention is . . .
I like how the author . . . to show . . .
A phrase/word that stands out is . . .

Reflecting and Relating
One key idea, then, is . . .
So a conclusion for me is . . .
This is important to me because . . .

Evaluating
I like this because . . .
It would work better if . . .
I don't like this because . . .
What the author values is . . .
I think the most important idea is . . .

Source: Olson, Carol Booth, ***Re****ading/Writing Connection: Strategies for Teaching and Learning in the Secondary Classroom*, 3rd Ed., ©2011. Reprinted by permission of Pearson Education, Inc., New York, New York.

Contrast the sentence starters in the cue sheet with traditional comprehension questions—they elicit very different responses. Consider, for example, these comprehension questions for the play *Medea*:

> How does the nurse describe Medea's reaction to Jason's decision?
>
> According to the preface, why does the playwright have Medea offstage at the start of the play?

These questions are narrowly focused on specific aspects of the text. They have a single correct answer in mind. Students who don't know this answer can search online or get it from a classmate. This tendency for students to seek *the* answer elsewhere is one of the reasons that, ironically enough, comprehension questions are not always a good way to judge your students' level of comprehension.

If instead you use sentence starters like those in the cue sheet, you get a much better sense of the student's personal response to the text:

> This connects with . . .
>
> I wonder why . . .
>
> What still confuses me is . . .

The student simply cannot find the responses to these starters in a text study guide or by scanning their neighbor's work. Cue sheets elicit more personal, reflective, and unique student responses (Olson, 2011).

Moreover, your students get better at using a cue sheet because the same set of sentence starters can be used again and again. I once observed a senior art teacher using a cue sheet to help students do a visual analysis of a painting by Mark Rothko. Instead of using the textbook questions, the teacher asked:

> Why did the painter use simple, bold colors in this painting?
>
> How would you define color field theory?

And students were asked to complete sentences like these:

> This reminds me of . . .
>
> What I notice first about this piece is . . .

I returned to observe the class the next semester, and the students were using exactly the same cue sheet to analyze a work by Pablo Picasso. The only difference in how the students approached the task was the speed and fluency with which they completed the prompts. It was telling that students often didn't even need to check their cue sheet because they were so familiar with using these sentence starters in their analysis.

Perhaps the most striking thing about this, though, was that the teacher didn't have to invest class time explaining or clarifying comprehension questions—or valuable preparation time composing them—but could instead focus on helping students produce high-quality responses. I have had similar success using cue sheets in my own classroom.

Creating a cue sheet is a two-step process:

1. Formulate a long list of sentence "openers" that would appear in a successful response. A good way to do this is to bounce ideas off a partner, but I have also found that searching through sample answers for good model sentence starters works well, too.

2. Group these statements under headings for the type of response they elicit: Summarizing, Clarifying, Evaluating, and so on. Students are introduced to cue-sheet starters two or three categories at a time until they feel at ease using all of the prompts in their work.

Cue sheets are easy to use and produce quality feedback from students. They are a great type of formative assessment.

Ordering and Ranking

Ordering and ranking exercises are two other ways to quickly assess your students' level of understanding. In ordering activities, you ask your students to represent what they have learned as a list of steps in a process or as events in a series. In ranking activities, you ask your students to evaluate what they have learned by placing it on a continuum and then to justify this ranking. Let's look at a few examples of each.

In an ordering activity, a math teacher might ask students learning long division to list the steps required to divide multidigit numbers. This would replace the more traditional activity asking students to solve 20 problems featuring multidigit division. An English teacher might get students to list the 12 key events in a novel rather than write a full synopsis of the plot. This type of activity is much quicker for students to complete (and for the teacher to correct) than the exercises that they replace, yet they are equally effective at demonstrating the extent of students' learning.

Many teachers use ranking activities as a follow-up or extension activity for ordering tasks. You might, for example, ask your students to list 10 Civil War events in chronological order and then place these events in order of historical importance, briefly explaining their choices. Ranking tasks give you a way to elicit complex feedback about a student's thinking in a short time.

A wide range of ordering and ranking tasks can be used as quick formative assessment activities. Some examples are sequence strips, instant picture books, and ranking questions.

Sequence Strips

Sequence strips are terrific for establishing key facts or quickly rehearsing a procedure. This activity has only a few simple steps:

- Students map out the steps involved in performing a skill or list key facts that they are learning. Alternatively, they might be presented with this material.
- They write down the facts or steps on strips of paper, on virtual cards, or into a worksheet table that they have been given.
- Students scramble this information until it is out of order and then swap the scrambled version with a partner, who puts the items back in sequence.

- The pair reviews its efforts: Did you get the sequence correct? Could you add more information or another step to your partner's sequence? Was any key information or procedural step left out?

- Alternatively, students might then have to rank their sequence strips in order of importance, justifying their ranking to their partner, and submit these reflections to the teacher.

I wrote about sequence strips in an earlier book (Pearsall, 2012) and have had feedback from teachers across the curriculum as to their effectiveness—from language teachers using them to check correct word order for sentences in the target language, to science teachers using them to assess how students apply a formula, to ceramics teachers seeing if students know how to prepare a pinch pot. Many teachers have told me that getting the students to scramble and reorder the strips *multiple times* in a single lesson—"Find another partner and do that exercise again"—is particularly effective for making a learning procedure more automatic.

Instant Picture Books

In this exercise, your students summarize a skill they have learned into a sequence of simple steps. They then illustrate these steps with quick sketches or a series of "borrowed images" they find online. (This can be done using illustration apps or websites but is equally effective using folded booklets of blank paper.) This activity is not a test of students' drawing ability—as the name suggests, this should be done quickly—but rather a chance for them to indicate whether they have understood the procedural order of a task. It is this focus on "chunking" the procedural steps of a skill that makes instant picture books popular with teachers of practical and applied learning subjects.

Teachers I have worked with are often surprised at how competent students are at representing complicated ideas in a series of simple steps. I have experienced this myself. My text *Literature for Life* (Pearsall & Cahill, 2006) features exercises in which student have to summarize

the complex process of grief in the form of an instant picture book. The resulting picture books deftly summarize this process and are often very moving. Instant picture books are quick and easy for you to read and very revealing of student misconceptions.

Ranking Questions

Sometimes a brief ranking activity is a quick and effective replacement for a longer assessment task. For example, giving students a series of quotations from a text and asking them to rank them in order of usefulness for replying to an essay prompt is a terrific alternative to writing an entire essay—especially if you ask students to do this repeatedly with the same quotes but different prompts (Pearsall, 2014). Similarly, asking students to rank a series of math problems in order of difficulty is an effective way to establish what students are finding difficult without having to correct every student answer to every problem.

It is telling that students often see ranking tasks as "easier" than other types of tasks. I once observed a pair of middle schoolers doing a ranking task in class and spending a good half hour unpacking a series of math problems, debating in great detail which was harder and why. I was surprised when they declared to me as they left the class, "We didn't do much that lesson." However, ranking exercises elicit as much data for teachers as less engaging and more laborious tasks.

Demonstration

Sometimes what you assess needn't be written down at all. There are lots of demonstration activities that you can use for eliciting feedback from your students. Obviously, practical and applied subjects use this sort of quick assessment all the time. A basketball coach doesn't ask his players to write a description of a "layup"—he gets them to do one.

Asking a student to perform a skill is an effective way to assess student progress across the curriculum. A student who answers a math problem

on the whiteboard in front of the whole class is giving you feedback that you can evaluate and respond to—all without adding to your workload related to correcting student work. Looking for opportunities in which students can demonstrate their learning is a good way to keep assessment fast and formative.

Demonstrations are particularly useful for students who may not have the language skills to express, in writing, their insights—and for you to respond with timely feedback. Some demonstrations are subject-specific, but there are many engaging classroom activities to quickly check student understanding that can be used across content areas. What follow are some examples.

Up and Down Game

In this instant quiz activity, students are asked to indicate their responses by either standing up or sitting down. It is a useful tool for quickly teasing out binary concepts (verb/noun, odd/even, primary/secondary, gas/solid, and so on) or rapidly assessing whether students are grasping a concept (true/false, unsure/confident). The Up and Down game is widely used in elementary school settings but can be just as effective with older students if the categories provided are sophisticated enough. For example, I have observed senior biology classes play "cause versus correlation" to great effect. Asking your students to explain their choice ("Why did you choose *false*?") is a simple way to extend this activity.

Continuums

Getting students to map their thinking on a continuum is another way to have them physically demonstrate their thinking. Typically, a teacher will set up a continuum across the classroom and ask students to move to the point on the continuum that best represents their position. Popular continuum exercises include mapping student confidence about an aspect of a topic ("If you're confident you could answer a question on the separation of powers, line up at that end of the line; less confident, head down to

this end") and responding to an issue prompt ("OK, guys. If you strongly agree, stand here; agree, stand there; are not sure, stand in the middle; disagree, stand over there; and strongly disagree, stand by the door").

Line Debate

Line debating is an engaging way for students to demonstrate their thinking on issues and essay topics. The procedure for a line debate is straightforward:

- Divide the class into teams that line up on either side of the classroom. Then tell students the debating topic, assigning one side to argue for and one against the proposition.
- The sides take turns volunteering arguments to support their position. If they are able to come up with an argument, they get to pick one of their opponents to join their team. If a student changes sides three times, that student is "locked" and can no longer change sides (this prevents the same students being "ping-ponged" back and forth across the classroom).
- If no one on a team can come up with an argument, they "pass" and you nominate one of them to join the other team.
- Either you or a pair of scribes records each of these arguments as students pass back and forth between each line. Eventually one team will have a substantial majority of the class members, and it will be declared the winner.
- Most teachers finish the debate with a continuum survey asking the class to demonstrate their actual position on the issue: "Now line up according to where you stand on the issue, from 'strongly agree' to 'strongly disagree.'"

This deceptively simple activity offers several advantages. It demands complex thinking because students are asked to consider issues from both sides as they hear each other's arguments and often have to argue both for

and against an issue as they switch teams. It is also very popular with students, who often beg to play it. (I even once had a student who was given a due date for a project suggest that we "line-debate whether that is when we should hand the work in.") Line debating is a compelling and effective way to survey your students' thinking about a contested question without having to correct a pile of written responses.

Race the Bell

Race the Bell is a quick way to poll students to see how well they have understood what they have been studying. As with line debating, the procedure for conducting this exercise is simple but leads to compelling game play:

- Ask your students to formulate questions about something they have just learned or a topic they are returning to after a break. The questions need to be factual—this is a game for surveying foundational knowledge, not subjective opinion—and students should formulate at least two questions in case someone else has the same one.

- The game starts with the whole class standing. A student who asks or answers a question can sit down, with the goal of the game being for the whole class to be seated by the end of the lesson. If you are playing at the start of the lesson, the game ends when a pre-set alarm rings. Most classes play the game for three to six minutes.

- A student who gets the question wrong does not sit down. If a question is asked and no one answers, students also remain standing. You must avoid elaborating upon students' answers with additional information or accepting incorrect responses (embarrassingly, as a novice teacher I once told a student, "You're right—just in the opposite way"). Instead, put the unanswered question on the board for the class to explore later.

- With about a third of the class remaining, count heads to ensure you have an even number of students and ask a question yourself to even out the number if necessary. (Having an odd number means the

game will end with a single student standing; this should be avoided, as that student may feel like he or she "lost" the game.) Often the bell rings before the game is finished, but this is OK, as students frequently groan with disappointment and then ask one another their questions as they are leaving the class.

The great advantage of this activity is that, unlike other questioning games, it rewards both students who *answer* questions and those who *ask* them, too. Indeed, students playing this game quickly realize that even if they suspect they won't be able to answer any questions at all, they will still be able to play an active role.

Race the Bell is a real student favorite, and I have often had to tell classes that "we won't play it if you ask for it" to stop students endlessly requesting it. (One enterprising student used to try to get around this rule with queries like "Mr. Pearsall, are there any quick questioning revision games we can play?") It is also very popular with teachers because it's such a great way to survey the whole class's understanding.

Supervised Discussions

Many teachers use oral presentations as a way of reviewing student progress. These tend to be formal affairs that involve a lot of student preparation and teacher organization. Staging a quick informal discussion is an effective alternative. For example, this might be in the form of a "fishbowl" discussion. You select some students who are confident enough to conduct a discussion in front of their peers and place them in the center of the room—the "fishbowl." The rest of the students gather around this group. The students in the fishbowl are asked to respond to a stimulus question ("Should fast-food advertising be banned from children's television?") while the others take notes. If the observers have clarifying questions or want to add to the discussion, they can do so; but if they want to just listen and record, that is fine, too. I use this activity often because it presents students with high-quality peer discussion but is quick to organize.

Another form of oral presentations is a "hot seat" discussion. As with a fishbowl exercise, you start by selecting a group of confident students. They form a panel that sits at the front of the room, and the rest of the class forms the audience facing them. With you acting as moderator, the audience asks the panel questions about the topic being studied and takes notes on their answers. Many teachers give the panelists a role: they can play stakeholders in a case study, characters in a novel, or experts in particular aspects of a topic (Pearsall, 2014). I have found that this approach is particularly effective when focused on metacognition. Asking students to discuss what the easiest or most challenging things to learn about a topic were or getting them to describe and evaluate the strategies they used to develop a skill can be highly informative—for the participants, the observers, and the teacher.

"Chunked" Video Demonstrations

Many teachers use video to record student demonstrations of a skill. "Chunked" demonstrations extend this approach: rather than simply asking students to demonstrate a new skill, ask them to make a video that highlights *the individual components* that make up this skill. For example, instead of just recording themselves shooting a free throw in basketball, your students might add a commentary that discusses the individual elements—stance, elbow position, shooting action, and follow-through—of a free throw.

Experts in skill acquisition call this process of breaking skills into their constituent parts "chunking" (Coyle, 2010). By labeling the different parts of each "chunk," or highlighting a key aspect of a skill, your students are demonstrating not only the extent of their skill but also their awareness of its features. This approach demystifies the process of learning that skill and gives students a clear scaffold of miniskills they can practice as they hone their technique. It also gives you very clear feedback about their progress.

I use chunked demonstration frequently to teach instructional classroom practice to teachers, and it is telling that several teachers I have coached in this way have gone on to use it in their classrooms with their own students. These teachers have seen that using video to discuss the constituent parts of a skill is a powerful way to demonstrate and reflect on your own learning.

Assessing Prior Learning

You need to find out what your students already know or can do before you start teaching them something new. In my experience, a lot of teacher time is wasted going over information students have already mastered or presenting work that is pitched too far beyond their current level of ability. As teachers, we need quick strategies for assessing prior learning.

Most of the strategies featured in this chapter are suitable for learning at all points of a lesson. They can be used to quickly test your students' prior knowledge before introducing them to new skills or concepts. You might, for example, use a mini whiteboard to establish whether students know how to add negative numbers, or conduct a line debate to explore what the students believe about the complex ethical issues around genetic testing.

The following strategies particularly lend themselves to assessing prior learning. They give you a quick way to establish a benchmark at the start of the lesson or a unit against which to measure student progress. It is worth investigating whether any of these would suit your teaching style.

KWL Chart/KWHL Chart

A KWL chart (Ogle, 1986) is a three-column sheet that your students fill in to indicate what they already *know* about a topic, what they *want* to know about it, and then, eventually, what they have *learned* about it. It usually looks like the chart shown in Figure 3.2.

Figure 3.2
KWL CHART

What I Know	What I Want to Know	What I Have Learned

How do you use a KWL chart? First, your students fill out the left-hand column at the start of the lesson, listing any facts they already know about the topic. Their answers do not need to be exact, as brainstorming the words, ideas, or topics they associate with the subject will give you a better sense of what they already understand. Indeed, I have often retitled this column "What I *Think* I Know." This "conditional language" encourages students to share more of these revealing "tentative ideas" (Ritchhart & Perkins, 2008).

You then ask your students to list things they want to know about the topic. I usually encourage them to do this in the form of a question. In some settings I have had to retitle this column "What Might I Need to Know?" to avoid getting an abrupt "nothing" in response to "What Do I *Want* to Know?" You facilitate this process by writing the students' suggested facts and questions on the board.

When the lesson is complete, ask your students to go back to their charts and list what they have learned. That this information appears next to the "What Do I *Want* to Know?" column gives students a concrete sense of their progress. It also tells them what they still haven't learned. A colleague of mine devised a useful extension of this activity: he asked students to tear off this column and hand it to him as they left the class—an instant exit pass.

Some people add an extra column to KWL charts, as shown in Figure 3.3. Adding "*How* Will I Find This Out?" (Kruse, 2009) prompts students

Figure 3.3
KWHL CHART

What I Know	What I Want to Know	How I Will Find This Out	What I Have Learned

to think about what strategies they can use to answer the questions in Column 2 and encourages a sense of student agency: What actions will you take to help your learning?

Entry Passes/My Favorite Mistake

An entry pass works almost exactly like an exit pass: your students have to answer a question, complete a précis (summarizing) task, or in some other way quickly demonstrate the extent of their previous learning on a small piece of paper. The difference is that this is done at the start of the lesson and you then use it to target their points of need.

The challenge for teachers is designing the entry-pass task so that it elicits the kind of information that is useful for shaping their subsequent lesson. The "My Favorite Mistake" exercise is an excellent example of how this might be done. Sometimes called "My Favorite No," this exercise requires your students to answer a question or complete a problem when they first enter the classroom. They do this on a card or small piece of paper that they then hand back to you. While students talk with a partner about what they thought the answer was and why, you flick through the cards looking for your "favorite" mistake: an answer that may have some correct elements but overall is incorrect in an interesting way.

You write the mistake on the board. The usual approach is for the mistake maker to remain anonymous, but I have found that once students are comfortable with the exercise, they often proudly proclaim that it is

their example. (They do this even when it is not—the mistake that I have chosen just represents issues common to many students in my class.) You and the students then "unpack" the answer in a whole-group discussion. Usually this begins by asking students to identify what worked or was correct about the response before exploring what was incorrect and how it might be fixed.

I often use this approach when coaching math teachers on quick ways to establish what their students already know. A teacher, for example, might pose a question to see if students can add improper fractions before moving on to a lesson on adding mixed numbers. (If your students demonstrate gaps in their ability to add improper fractions, then they will struggle to add mixed numbers, because one of the key steps in solving this problem involves representing a mixed number as an improper fraction.) This has become a default strategy for testing prior knowledge in many of the math departments I work with.

My Favorite Mistake gives you an opportunity to quickly survey student understanding, address common misconceptions, and provide students with a scaffold for turning a wrong answer into a right one. Moving seamlessly from reviewing mistakes to responding to them, it is a good example of how entry passes can be used to assess and then respond to student need.

Speed Surveys

There are lots of fast ways to get a broad sense of how knowledgeable a class is about a particular topic. Such methods can produce only general snapshots, but sometimes a speedy assessment of the group's background knowledge is all that a teacher requires to shape a lesson. Here are some engaging versions of this sort of instant survey.

Round Robins. Move around the room asking students to list one fact they know about a new topic. (Asking students to list what they want to know about the topic is also revealing.) Students who can't think of anything can pass and cross their arms. Many teachers find that using a

subject-specific term as a pass phrase—for example, *cephalopods* if they are studying squids in a marine biology unit—is a good way to introduce new terminology to students. The activity ends when everyone has run out of facts.

Novel Answers Only. Students brainstorm everything they know about a topic and then take turns reading aloud the answers on their lists. Once a fact is read, the other students cross it off their list, raising their hand so you can see who shared this response. The activity continues until everyone's novel responses have been heard. This activity is surprisingly quick to complete as the total number of novel responses is often quite low, but it gives you a clear sense of what is common knowledge in the class.

Whiteboard Relay. Divide the class into four or five teams and ask them to compete to see who can brainstorm the most facts about a topic. Draw a grid on the board that lists a goal number as well as interim goals on the way to that total. For example, the goal might be 30 facts and the interim goals 7, 13, 17, and 23 facts. When a group reaches an interim goal, a group member comes to the front and checks off that number on the board. Keeping score in this way produces lots of responses very quickly, as students compete to see who can get to the goal first.

Capacity Matrix/RPL Sheet

A capacity matrix is another useful tool for finding out each student's level of prior knowledge or skill. These matrices usually take the form of a grid that lists competency statements ("I understand this . . .") for each of the learning outcomes in a topic. Figure 3.4 shows an example of a capacity matrix for close passage analysis, with the desired learning outcomes shown in the left-hand column and the competency statements across the top.

Some teachers worry about the validity of these matrices; they are concerned that their students will say they can do something when they clearly can't. I have found that asking students to provide evidence of

Figure 3.4
EXAMPLE OF A CAPACITY MATRIX

	I don't understand what this is yet.	I'm starting to understand this.	I understand this.	I understand this enough to teach a classmate.	What evidence can I show my teacher of this?
Grouped Evidence					
Developed Reading					
"Woven" Quote					
Linking Form and Meaning					

their skills or knowledge allays this concern. You can use this evidence to judge the extent of students' understanding, highlight potential misconceptions, and provide a reference point for further discussion about their performance (Parsons & Reilly, 2012). It is an excellent tool for helping you design lesson plans that meet students' needs.

A Registration of Prior Learning (RPL) sheet is another effective tool for assessing prior knowledge. The principle behind this tool is similar to that of proficiency exams in the United States or RPL in higher education or training in Australia: students get a clear outline of what they are going to learn, and if they can demonstrate that they have already learned this skill or attained this knowledge, they do not have to complete that aspect of the topic again.

RPL sheets take many forms. One science department I worked with developed an RPL for responsible lab practices. Instead of having to do the annual double lesson on safety in the laboratory, students could move directly into their "prac work" if they could demonstrate they were already aware of all the safety procedures. At another school, I collaborated with an English teacher to develop an RPL for a Shakespeare play.

If students could demonstrate they had closely read the play, then they could skip the foundational work around character, narrative, and setting and start the higher-order essay tasks. In both cases, students readily took up the opportunity to show when some aspect of the learning was redundant for them.

This is the real appeal of RPL sheets for students. As one succinctly put it to me: "I like them because you can use them to skip having to do the boring work." When I am introducing RPL sheets to teachers, I ask them to view this from the position of a learner: "Would you appreciate an RPL for staff meetings that let you skip meetings if you could prove you had mastered their content?" (I have yet to meet a teacher who wouldn't want to take me up on this hypothetical offer.) It is this explicit opportunity to opt out of learning that is not relevant to you that makes an RPL sheet such a popular and effective pre-assessment strategy.

Summing Up

If you want to reduce the amount of correcting of student work you have to do outside class, the rule of thumb is *more feedback, less correction*. That is, by helping students make small ongoing adjustments to their work in class, you are less likely to have to do as many major corrections later on.

Not only does this approach reduce the amount of feedback you have to give; it also improves its quality. Formative assessment strategies help you tailor your feedback to your students' precise point of need. Targeted teaching like this has a profound effect on student performance. When teachers routinely and consistently use formative feedback, the effect can be calculated as the equivalent of students being given "five to nine months of additional learning over a year" (Goss & Hunter, 2015, p. 17).

The challenge for us as teachers is finding the feedback strategies that can become an everyday part of our assessment routines. This chapter has explored a wide range of practical strategies that you might use to

meet this goal (see Figure 3.5 for a summary). These include snapshot and short written feedback strategies that students can use to signal how their work is progressing, preplanned questioning strategies to help identify misconceptions in students' thinking, and ranking activities and practical demonstrations that can be used to make quick assessments of student work. Finally, we have discussed how, although all these strategies can be used to check on students' prior learning, there are strategies that are specifically designed to do this that might be useful.

When I coach teachers, I don't suggest that they try all of these, or even that all these strategies will work every time. Instead, I recommend that they try one or two of these activities and see if they have an effect on their everyday teaching. Starting small and building on what works will quickly get you on the path toward quicker and more effective assessment!

Figure 3.5
CHECKING FOR UNDERSTANDING

How can I give my students fast, formative, and frequent feedback?	
Snapshot Assessments These strategies give you an almost instantaneous way to assess your students' current level of understanding, comprehension, and confidence—without requiring any marking or correcting.	**Replay Signals**—Students use a pre-arranged gesture to signal for you to repeat or clarify what you have just said.
	Traffic Lights—Students use green, amber, and red signals to indicate how well they have understood your instruction or how well you have explained something.
	Fist to Five—Students use their own hand to map on a continuum how well they understand something or can demonstrate a particular skill.
Short Written Feedback These strategies elicit brief written feedback from students that is still representative of their level of understanding. Getting such feedback saves you time and means you can target your attention on the issues that matter.	**Exit Passes**—Students write a brief piece of feedback on a slip of paper and submit it to you as they are leaving the class. Exit passes come in various forms, including these: • Summary • Word-limit précis • Conceptual question • Teacher feedback • Reflection • Queries

Short Written Feedback *(continued)*	**CEC Thinking Routine**—Students *connect* what they are learning to the wider context of their studies and identify what *extends* their thinking and what about it is still *challenging*.
	Feedback Technology—With your guidance, students use a variety of programs, websites, and devices to quickly provide you with short written feedback.
	Mini Whiteboard—Students use a mini whiteboard as a small, personal "slate" for displaying their feedback.
Preplanned Feedback Questions Hinge questions and cue sheets allow you to plan questions ahead of time. They are an effective way to create a feedback culture that is fast and formative.	**Hinge Questions**—Students respond to quick multiple-choice questions to indicate their progress before moving on to the next stage of learning.
	Cue Sheets—Students complete a list of sentence starters as a way of responding to a piece of information. Cue sheets can replace traditional comprehension questions.
Ordering and Ranking Students represent what they have learned as a list of steps in a process or as events in a series. Ranking these steps/events is an effective way to extend this activity.	**Sequence Strips**—Students order and rank their learning on strips of paper.
	Instant Picture Books—Students summarize a skill they have learned in the form of a sequence of simple steps that they then illustrate with quick sketches or "borrowed images."
	Ranking Questions—Students evaluate ideas by ranking them in this simple way to prompt analysis and reflection.
Demonstration Students are asked to perform a skill or otherwise demonstrate their learning, providing you with an effective way to immediately assess their progress. Traditionally this approach has been employed in practical and applied subjects, but it can be used across the curriculum.	**Up and Down Game**—In this instant quiz activity, students indicate their responses by either standing up or sitting down.
	Continuums—Students map their thinking on a continuum as another way to physically demonstrate their thinking.
	Line Debate—Students form two lines on either side of the classroom to engage in a debate to demonstrate their thinking on contested issues and essay topics.
	Race the Bell—Students formulate, ask, and respond to questions in this quick quiz game that serves as a poll to see how well they have understood what they have been studying.

continued

Figure 3.5
CHECKING FOR UNDERSTANDING (continued)

Demonstration *(continued)*	**Supervised Discussions**—Students who have demonstrated confidence lead "fishbowl" and "hot seat" discussions, providing all students with an opportunity to hear others' reflections.
	"Chunked" Video Demonstrations—Rather than simply demonstrating a new skill to you, students make a video that highlights *the individual components* that make up this skill.
Assessing Prior Learning All the strategies described here can be used to assess prior learning, but these are particularly effective. They give you a quick way to establish a benchmark at the start of the lesson or a unit against which to measure student progress.	**KWL Chart/KWHL Chart**—Students complete this simple graphic organizer to establish what they know, want to know, and have learned. Adding an *H* to the prompt gets them to think about how they plan to find out what they want to know.
	Entry Passes/My Favorite Mistake—Students have to answer a question, complete a précis task, or in some other way quickly demonstrate the extent of their previous learning on a small piece of paper.
	Speed Surveys—Students take part in various survey activities that provide a broad sense of how knowledgeable the class is about a particular topic: • Round Robins • Novel Answers Only • Whiteboard Relay
	Capacity Matrix/RPL Sheet—Students complete matrices, usually in the form of a grid that lists competency statements ("I understand this . . .") for each of the learning outcomes in a topic.

4

Formal Formative Testing

Designing an effective testing program is a demanding and time-intensive process (Griffin & Care, 2014). This is especially true if you are relying on a narrow range of traditional testing strategies as your only tools. But teachers can balk at the alternatives: I once suggested to a teacher I was coaching that one of the ways to address workload issues was by using more formative testing. "More testing? Preparing kids for tests and then having to mark them is what is creating all my marking in the first place!" Clearly this colleague heard me say "test" but not "formative."

This confusion is common. Tests are strongly associated with summative assessment—that is, a test that occurs *at the end* of a learning unit when you evaluate students against a benchmark. Formative assessment monitors and provides feedback *as they are learning*.

It is possible to design a formative testing program that you can use to provide students with ongoing assessment and feedback. The key here is having an array of testing strategies that draw on the formal advantages of testing while nonetheless being quick to give and correct. A traditional review test (or revision test, as it's commonly referred to outside the United States) can take most of a lesson to complete and hours to correct.

By contrast, a "confidence test"—in which students give each test question a mark of 1 to 10 to indicate how confident they are that they can answer it correctly—can be completed in minutes, quickly flagging for both students and teachers where to concentrate their review (or revision) efforts.

How do you construct assessments like a confidence test? There are three key methods for modifying traditional test forms so they provide formative feedback without swamping you in correction:

- **Peer and self-correction**—You can design tests to make it easier for students to self- and peer-mark. Having students do the marking reduces your correction load and speeds up their learning.
- **Deliberative practice**—You can devise tests to serve as deliberative-practice exercises for helping students develop specific skills or knowledge. Tests that target a single skill are quicker to correct and provide students with a fast feedback loop.
- **Student-composed tests**—You can teach your students to compose their own tests, reducing your preparation time while developing their understanding of their subject and assessments.

This chapter explores practical examples of each of these types of test modification.

Peer and Self-Correction

It is crucial that your students play an active role in their own learning—especially in the assessment cycle. Too often when we discuss feedback, we end up talking about yet another responsibility to add to your workload. However, your students have a very significant role to play in this process, too. Feedback, after all, is a two-way activity—or it isn't feedback.

I have always found that a practical way to get students more involved in feedback is to get them to complete more peer- and self-correction exercises. These activities encourage your students to support their classmates while gaining greater insight into their own work. This approach

"produces tangible and substantial increases in students' learning" (Wiliam, 2011, p. 144). Moreover, it saves time and gives you the opportunity to concentrate your correction efforts where they can have the most impact.

Peer- and self-correction processes do come with some obvious challenges, though. For a start, they are not always accurate. Students already give their peers extensive feedback. One study, for example, noted that 80 percent of the verbal feedback students receive is from their peers—but this feedback is often incorrect (Nuthall, 2007). Obviously, we don't want our students giving one another the wrong advice. Another issue is that for all its benefits, this type of marking can place students under additional pressure. Peer feedback can reduce students' uncertainty about what is required of them and help them gain status as successful learners, but it can also lead to anxiety, underperformance, and overreliance on peer approval (Hattie, 2012). Obviously, we don't want our students feeling put down by their peers' assessment of their work.

Peer and self-correction must be accurate, fair, and delivered with sensitivity if it is to be taken constructively. I think the best way to introduce these skills is with peer- and self-correction tests. These tests offer students a chance to practice formulating quality feedback and conducting self-evaluation, but they do so in a structured and carefully scaffolded way.

Instant Tests

One of the difficulties with peer and self-correction is that students struggle to understand the criteria with which they are expected to assess their own work. This is not necessarily the students' fault. If you're new to self-correction, it can be very difficult to apply assessment criteria to your own work. I recently saw an elementary school teacher asking her students to "check whether your work is well organized and coherently structured." The students, of course, struggled to do this: the language of the criteria was simply too general for them to use as a basis for judging their own work.

How do we avoid this trap? I like to use instant tests. Instant tests are an indicative assessment. That is, they ask students to assess not whether their answer is successful but rather whether it has features *indicative* of that success. It might be hard, for instance, for students to assess whether a response is coherently structured, but they can more readily answer these indicative questions:

> Is your answer organized into paragraphs?
> Does your answer have an introduction?
> Does it have a conclusion?

Of course, these questions—which are usually given a point value—give you only a rough estimate of performance. Consider, for example, the following:

> *(Middle school math)* Give yourself two points if you have shown your work for every problem.
>
> *(High school science)* Give yourself three points if, in Question B, you referred to the graph.

Just because students have shown their work in solving a problem doesn't mean that these answers will all be right. Similarly, referring to the graph doesn't mean that students have calculated the answer correctly. However, these qualities are *indicative* of a successful answer (a high-level response in middle school math will typically feature answers that carefully detail the steps to each solution, or in senior-level science will include specific references to the evidence). Your students could easily use them to self-assess their work.

One of the strengths of instant testing is how easy it is for students to carry out. Indicative criteria involve low levels of interpretation and are quick to assess. For example, instead of having to assess whether their response "demonstrates analysis and avoids paraphrase," your students can check whether it meets these concrete criteria:

> *(High school English)* Give yourself two points if your topic sentence refers to an idea, not just an event.

> *(Middle school English)* Give yourself three points if you mention the author's name in your introduction more often than the name of the lead character.

Indicative questions are also ideal for peer marking because the criteria are concrete and objective. This objectivity makes it easier for both the marker and the student being marked: if the person correcting a student's work is just checking whether the student did something or not, then there is little room for dispute or unfair judgment.

How do you formulate questions to do this? Let's explore a common example. Many criteria sheets for written work contain criterion statements about the mechanics of writing. A recent example I saw mentioned "clarity of expression and absence of grammatical errors." Converted into a question form, this is hard for a student to quickly assess:

> Is your expression clear?
>
> Is your work free from spelling and grammar errors?

These questions lack the kind of precise details that students could quickly search for in an instant test. Instead, you might look at the process by which this goal is achieved:

> Have you proofed your work?

Again, the criteria might be too amorphous for students to know what to look for when peer or self-marking. Instead, a successful indicative question would focus on the *evidence* of proofing:

> Give yourself three points if you have revised at least two things from your draft that your teacher asked you to change.
>
> Give your partner two points if he or she has corrected a spelling mistake or added words to his or her draft.

It is this focus on the *evidence* of success that is crucial here. When you are formulating your own instant test questions, you need to make sure your statements have this sort of specificity. Here are some other indicative test statements you might use as a model when creating your own:

> Give your partner one point if he or she has used footnotes.
>
> Give yourself one checkmark if your first sentence has finger-spacing between each word.
>
> Give your partner two points if he or she has attempted each question.
>
> Give yourself two points if your sentence is ordered *subject, verb, object*.
>
> Give yourself two points if you have listed the apparatus.

Once you have formulated questions, you need to assign points to each of them (usually for a total of 10 or 20). This affords you another opportunity to shape how students will respond to your instant test. One of my favorite strategies, for example, is to deliberately inflate the point value given to an aspect of the criteria that students often forget to address.

I saw an example of this a couple of years ago in a business studies subject. The teacher was concerned that his students continually failed to refer to case studies in their answers—a common problem in that subject. So he conducted a pre-submission exercise with the following first statement:

> Give yourself 17 points out of 20 if you mentioned the case study in your answer.

The students were surprised—even outraged—that this was worth so much. ("Seventeen points—are you sure?" "It's too much." "That's not fair!") However, the next time he asked students to submit a similar response, every single one of them referred to the case study. Giving some overlooked element of the task a high point value is an effective way to signal its value to your class. This simple "nudge" is a quick, no-preparation way to help your students avoid common errors.

Instant tests are probably my favorite formative assessment activity. They are a great tool for getting students to proof and revise their work before handing it in or to quickly review their progress without your input. Instant tests often prompt students to change some aspect of their work or even request time for further revision the minute the exercise is

finished. Sometimes students even "cheat"—that is, revise their answer in the middle of the activity. Rather than being disappointed by this, I always take it as a powerful sign that instant tests create a very fast feedback loop for students.

Confidence Quizzes

Confidence quizzes are another tool that uses self-correction to create a fast feedback loop. I like confidence quizzes because they give me a way to encourage students to think about the *extent* of their learning. It is easy for students—or indeed, any learner—to operate in a state of *approximated competence*—that is, a state in which they are familiar with a skill or topic but have not yet developed an independent mastery of it. It is too easy to confuse familiarity ("We talked about that in class") with mastery ("I could show someone else how to do that").

Approximated competence is a natural stage of learning, but you want students to recognize when they are in this state. Students need to able to see where the gaps are in their learning, and confidence quizzes are a great way to this.

How do you conduct a confidence quiz? Three common approaches are pre-tests, post-tests, and prediction graphs.

Pre-tests. The pre-test is the simplest form of confidence quiz. You give your students a review test, and, instead of completing the test, they simply indicate how confident they are that they could answer each question. Older students typically do this by marking each question on a scale of 1 (least confident) to 10 (most confident). If you have younger students, they can use traffic lights to rate their confidence:

Green:	I know the answer.
Amber:	I think I know the answer, but I'm not definite.
Red:	I don't know the answer.

Some schools add a fourth "traffic light":

Blue:	I don't understand the question.

It is the speed of this approach that makes it such a great teaching tool: completing a standard review test can take an entire class period, whereas a confidence quiz can be completed in five to eight minutes. It is a great way to quickly assess where students should concentrate their studies on a topic.

Post-tests. You can also use a more complex version of this task in which your students both answer questions on a test *and* give a confidence rating for each answer. That is, how confident are they that each of these answers is correct? Using a confidence quiz in this way gives you a window into the complex interplay between confidence and knowledge that shapes your students' learning.

Why is this important? Confidence and knowledge are critical determinants for evaluating the future performance of your students (Adams & Ewen, 2009). Your students' confidence about how well they have learned something is a useful predictor of how well they will retain that information. For example, one study found that students who were "not sure at all" about the correctness of what they learned retained only 25 percent of the information, whereas those who were "extremely sure" retained 91 percent (Hunt, 2003). Your students' confidence about a response is thus a valuable piece of feedback.

Very few forms of traditional formative assessment address confidence. This shortcoming is especially true of those commonly used for quick formal assessment, like multiple-choice and true/false tests. These tests don't tell us when a student has a *confidently held* misconception or reveal the students who "guessed their way through a multiple-choice test or learned just enough to answer questions but not enough to apply it confidently, quickly and reliably" (Adams & Ewen, 2009, p. 2). Confidence quizzes can provide this information.

What might a post-test confidence quiz look like? Post-testing can take the form of traffic lights, a ranking from 1 to 10, or even the inclusion of confidence rankings in the answers. For example, if your students are doing multiple-choice tests, they can indicate their degree of confidence

by assigning a decimal-point value to each answer that they think could be correct. They might think *B* is probably right and assign it 0.7, but have a sneaking suspicion that *D* could be correct and give it a 0.3. This method offers teachers more detailed feedback on the *degree* of student understanding, giving them a way to identify partial understandings and "confident misconceptions" (Nickerson, Butler, & Carlin, 2015). Alternatively, Bruno (1993) proposed a "two-dimensional" multiple-choice test whose options explicitly link knowledge and confidence, as shown in Figure 4.1.

Figure 4.1
MULTIPLE-CHOICE TEST LINKING KNOWLEDGE AND CONFIDENCE

I am sure	I am partially sure	I am not sure
○ A ○ B ○ C	○ A ○ B ○ C	○ A ○ B ○ C

Source: From "Using Testing to Provide Feedback to Support Instruction: A Reexamination of the Role of Assessment in Educational Organizations," by J. E. Bruno, 1993, *Item Banking: Interactive Testing and Self-Assessment* (D. A. Leclercq &J. E. Bruno, Eds.), pp. 190–209, New York: Springer-Verlag.

Confidence test activities like these are quick ways to evaluate how sure students are that they have retained and can apply what they have learned in class.

Prediction Graphs

Many teachers use prediction graphs in tandem with confidence tests. This is a simple reflection exercise in which students graph their predicted performance on a test versus their actual performance. Prediction graphs work best when students regularly complete quick class quizzes and can see over time whether they get better at predicting their own level of performance.

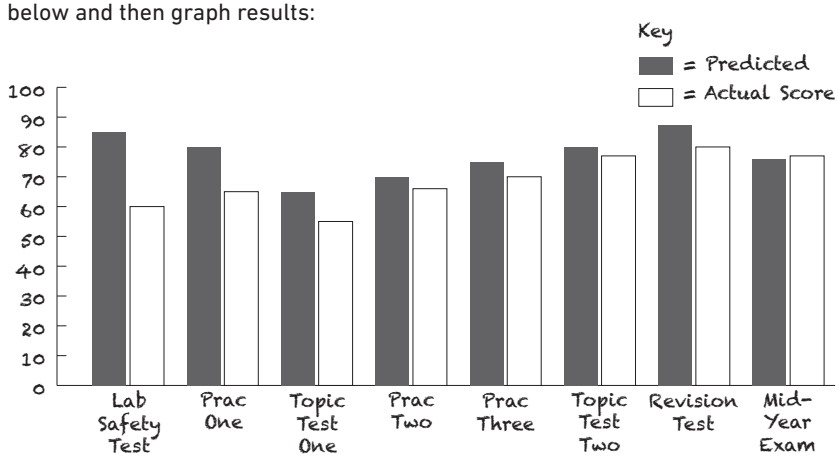
Brookhart (2010), for instance, explores a prediction graph tool called Minute Math, in which students plot their predicted score in the weekly math quiz against their actual performance. In most prediction graphs,

the data are represented in bar-graph form so students can see at a glance both their performance over time and the ongoing accuracy of their predictions. What you hope to see is that, over time, your students' *predictions* of their performance and their *actual* performance come closer together as they can more confidently self-assess. The completed prediction graph in Figure 4.2 depicts this gradual closure of the predicted-versus-actual performance gap.

Figure 4.2
PREDICTION GRAPH

Prediction Graph
Semester 1: Forensic Science Year 10

One of the self-reflection tasks you will be asked to complete during this class is to make a prediction about what mark you will receive for each of the assessment tasks. Record your predicted mark and actual score in the table below and then graph results:



Task:	Lab Safety Test	Prac One	Topic Test One	Prac Two	Prac Three	Topic Test Two	Revision Test	Mid-Year Exam
Date:	5 Feb	12 Feb	4 Mar	18 Mar	22 Apr	6 May	3 Jun	17 Jun
Prediction:	85%	80%	65%	70%	75%	80%	88%	76%
Score	60%	65%	55%	66%	70%	77%	80%	77%

70/30 Tests

70/30 tests are another way for students to practice peer and self-correction. This type of formative assessment is easy to create: teachers write a test of knowledge and understanding and then take the test themselves, deliberately getting 30 percent of the answers wrong. Students are then given a copy of this completed test to correct.

This simple test has a number of important features. First, the ratio of correct to incorrect responses means that for every wrong answer, students see two models of how to do something the right way. The 70/30 ratio means that the majority of students' correcting is about affirming proper practice while still being on the lookout for errors.

Second, this form of test offers students a chance to explore *common* errors. Teachers correct a large volume of student work and are keenly aware of the mistakes that trap students most frequently. This form of testing gives teachers a way to help students anticipate these errors, foregrounding strategies for identifying and avoiding these traps.

You can be quite targeted about this activity, giving students sections of the test to correct that match their level of ability or areas of the topic where they are prone to mistakes and need some practice identifying errors. (In my experience, students are much more attentive to my mistakes than their own.) For instance, I often divide up the test across the whole class so that students are looking at questions and correcting answers that match their needs. This might mean some struggling students are working on the easier foundational questions at the start of the test, while a more able student might be correcting the challenging essay question at the end of the test.

Last, and perhaps most important, 70/30 tests give students a way to practice peer correction without any danger of upsetting a classmate. Peer correction requires students to develop skills for judging without being judgmental. A 70/30 approach offers students a low-stakes forum for practicing these skills that is still meaningful; indeed, they often demonstrate real glee at finding their teacher's errors.

A 70/30 test is a great way to develop peer-marking skills. The simplest versions ask students to merely "tick and tally" test answers—that is, put a checkmark by each correct answer and add up the total number of checkmarks—but you could extend this activity by asking students to write feedback comments on their classmates' responses. This can be challenging: giving written feedback is a higher-order skill that teachers take time to master, and students will need even more guidance than you did to learn this skill.

I often give my students a list of language scaffolds that they might use in their comments—sentence stems and sample questions, for instance—to make this process a bit easier. These "correction prompts" help students develop their comment-writing skills. Here are some examples:

> What makes you say this?
>
> Remember the rule is _____. What, then, might be the answer here?
>
> Does your response address the question that was asked?
>
> What is an example of this?
>
> This process has _____ steps. Have you completed them all?

Students can practice using these prompts on 70/30 tests with the idea that they will eventually use them regularly with their peers. Of course, if teachers themselves routinely use these prompts, then their students are much more likely to use them in their peer correction. In my experience, students are more likely to write helpful comments to their peers if you model this in your own correction.

Deliberative Practice

Sometimes you need to focus your teaching on a single aspect of the curriculum. This might involve helping your students "get" a concept that has eluded them, intensely reviewing new knowledge, or rehearsing a specific skill through sustained practice. You can easily modify traditional tests into the kind of *deliberative practice* activities that help them do this. What is deliberative practice?

Deliberative, or "deep," practice is carefully targeted practice that uses focused feedback and repetition to improve a specific skill. Typically, it is used in a field where best practice is well established and a teacher guides learners to the improvement goal. In this style of practice, a particular technique is isolated and rehearsed in a structured fashion that offers students lots of opportunities to make mistakes and receive fast feedback on their performance (Ericsson & Pool, 2016).

For example, in a test on problem-solving steps, you present your students with a series of math problems *and* their corresponding answers. You then ask them to supply the problem-solving steps they took to link the question and answer. This activity gives your students an opportunity to practice providing evidence of their reasoning without the distraction or pressure of having to get the "right" answer.

A targeted approach like this is usually more engaging than traditional "massed practice" (completing a large volume of repetitive review tasks or practice questions). I often see this engagement during review sessions in which the class's "aha" moments tend to come from targeted exercises rather than just completing lots of practice activities. Research confirms this observation, demonstrating that deliberative practice builds more enduring mastery than other forms of practice (Brown, Roediger, & McDaniel, 2014).

This approach is even more effective when you use a wide variety of activities. Interleaving activities (alternating between different styles of activity) and spacing practice strategies (leaving time between activities) help your students avoid mindless repetition and give them time to reflect and process their understanding (Brown et al., 2014).

The following four exercises will help you get the most out of deliberative practice.

Solutions Tests

Solutions tests are designed to help students select the correct approach from a variety of possible strategies. The ability to discriminate

among a number of options is an important skill whose development is often overlooked (Rohrer, Dedrick, & Stershic, 2014). We don't just want our students to know a variety of problem-solving strategies; we want them to be able to pick the right one at the right time.

Take, for example, a standard mathematics class. Many math lessons require students to practice the same approach to a specific type of problem again and again, but this doesn't necessarily prepare students for formal testing that asks them to identify correct solutions from a wide variety of possible approaches (Rohrer & Taylor, 2007). Solutions tests give your students a forum for practicing these choices.

To make a solutions test, follow these steps:

1. Formulate a long list of problems or questions. Make sure that in responding to these prompts, students will have to use a range of approaches or solutions.

2. Create a test sheet with these approaches and solutions across the top of the page and the questions down the left-hand column.

3. Leave space on the right side of the page for students to list which approaches they could use to answer these queries.

The finished sheet might look something like the example shown in Figure 4.3, designed by math teacher Nicole Trethowan.

The main appeal of this approach is its speed: your students can complete the task very quickly because they don't need to actually answer the question, just identify the best strategy to take. You can correct their responses with similar speed, seeing at a glance whether your students can select the right approach to a problem.

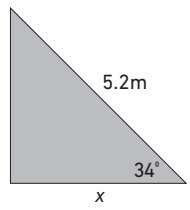
I often recommend this approach to teachers because "test performance can be dramatically boosted by a mere shuffling of practice problems" (Rohrer & Taylor, 2007). This deliberative-practice exercise gives students who have weak mathematics skills greater confidence when facing assessment tasks. It also lets you as a teacher identify patterns of error

Figure 4.3
EXAMPLE OF A SOLUTIONS TEST

Solution A	**Solution B**	**Solution C**
$\sin\theta$ = _____	$\cos\theta$ = _____	$\tan\theta$ = _____

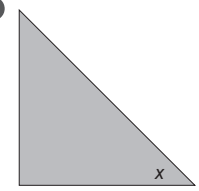
Which of the solution strategies above could be applied to find the unknown in the following triangles?

1.



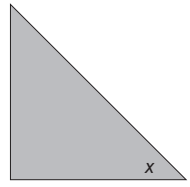
Strategy: _____

4.



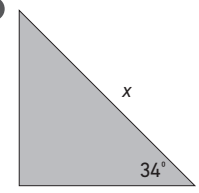
Strategy: _____

2.



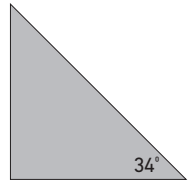
Strategy: _____

5.



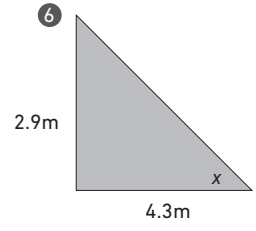
Strategy: _____

3.



Strategy: _____

6.



Strategy: _____

Source: Nicole Trethowan. Used with permission.

that can then be explored with strategies such as Newman's error analysis (see p. 25).

One-Point/Two-Point Tests

It is sometimes hard for students to discern the difference between a good answer and a great one, or to identify the little changes that might transform an unsatisfactory response into one that meets basic expectations. A one-point/two-point test can help students recognize these subtle differences.

How does it work? Here are the steps involved, along with an example:

1. Ask your students to prepare two answers to a stimulus question, such as the following:

> *Stimulus question:* What is a dovetail join?

The first answer is a two-point response in which students answer the question in the most accurate, detailed, and coherent manner possible, as in this example:

> *Two-point answer:* A dovetail join is a joint formed by interlocking one or more pins (tenons) on one piece of timber with the tails (mortises) on another piece. The pins and tails are usually trapezoidal in shape to help secure the join.

The second is a one-point answer, which will be less precise and coherent. This response will usually be expressed in more general terms and use less formal language, as in this example:

> *One-point answer:* A dovetail join is made by connecting pieces of wood using pins and tails. Each joining bit is usually wider at the end to make it stick.

2. Students then swap with a partner and, under test conditions, determine which is the one-point and which is the two-point answer. They have to justify this choice in writing.

3. In the final part of the activity, students rewrite the one-point response so that it is a two-point answer. (Creating these responses is a higher-order task, so if you have a student with language difficulties, you will want to differentiate this activity by providing the two responses and just asking the student to select which is the one-point and which is the two-point answer.)

One-point/two-point tests are an excellent deliberative-practice exercise for improving the depth and detail of short written responses. (I often recommend them to teachers who want to improve the quality of their students' short-answer exam responses.) They are also a terrific exercise for getting students to hone their understanding of a key concept or more precisely define a particular skill.

Missing-Points Exam

A missing-points exam (or missing-marks exam in Australia) is another deliberative-practice exercise that gives students practice at refining their answers. In this exercise, you give students a flawed exam answer and ask them to revise it, seeing if they can fix some of its problems and find the "missing" points.

How do you prepare this exercise? Here are the steps involved:

1. Identify common ways that your students "miss out" on points during tests and other summative assessment activities. Usually, these are simple oversights such as a lack of attention to detail or a failure to properly follow instructions, as in the following examples:

    - An answer that addresses only one part of a two-part question
    - Failure to select any of the response options in a multiple-choice question

2. Create a model exam answer that has these kinds of errors. The aim is for the model answer to meet the basic requirements of the task but lack the depth, detail, and consistency of the highest-level responses. Creating model exam answers takes some time and effort, but I find

doing it with a partner or a small team speeds up the process—and produces a better survey of common student mistakes as teachers swap anecdotes about the errors they routinely encounter.

3. Ask your class to correct this piece. Instruct them to look out for "missing points," telling them to rework the response so that the student would have received maximum points for his effort.

If you are trying out this activity for the first time, it is helpful to have a list of the kinds of flaws that teachers usually put in their missing-point exam answers. Here is a list of examples that, in addition to the ones above, you might find useful:

- A question that asks students to refer to an external piece of information, such as a table or a graph, and is answered correctly but with no explicit reference to this material
- A model essay response that cohesively answers the prompt without citing supporting evidence from the text
- A cohesive, well-written response that answers only two parts of a three-part question
- Single-word or bullet-point responses to questions that actually require answers in full sentences
- Responses that provide the correct answer but none of the "work" required to get the answer
- Brief responses to questions whose marking scheme indicates a more extensive response is necessary for full points
- Correct responses that are awkwardly phrased or employ informal language

Although time-consuming to prepare, missing-points exams can actually save you time over the long term, as teaching students to be aware of common test errors takes less time than correcting each occurrence of each error for each student.

Closed/Open Tests

You use deliberative-practice exercises to target the gap between what students can do independently and what—with a bit of guidance and help—they should be able to do. This gap is often referred to as the "zone of proximal development," or ZPD (Wass & Golding, 2014). The closed/open test is designed to help students recognize, in a specific area of learning, their own ZPD.

A closed/open test is a two-part exercise. In the first part, your students complete a review test under standard test conditions. In the second part, you give your students extra time under open-book conditions (they can use notes or reference materials) to review and modify their answers. Students use different-colored pens or fonts for each part so you can tell the original from the revised responses. Most teachers use blue for the closed-book test and red for the subsequent annotations. Closed/open tests are often called red/blue tests in elementary schools for this reason.

This two-part structure gives students two opportunities to demonstrate their knowledge rather than just a single, narrow examination of recall. The result is two revealing pieces of data.

First, you learn what students can do with and without assistance. You and your students can then put your efforts into closing this gap. Doing so is a highly efficient use of time: the "zone of proximal development" is where teachers should "target their interventions" if they want to "have the greatest impact" (Griffin, 2014). Second, you also learn what students "don't know that they don't know." This revelation is important. Misconceptions are, by definition, difficult to self-identify. Recognizing and correcting misconceptions is a key assessment activity for teachers, and recent research has emphasized that "disconfirmation"—correcting misconceptions and false assumptions—has more impact than feedback that *confirms* a student's understandings (Kang, McDermott, & Roediger, 2007). A closed/open test is an elegant mechanism for identifying these blind spots.

A middle school student I taught told me he liked closed/open tests better than other tests because they "let you do a little bit of cheating." In his estimation, they were "the only test you do about finding out stuff." Of course, all tests give students information about their performance, but I think it was telling that it was this one testing exercise that allowed him to clearly see that the test was about information, not evaluation.

Student-Composed Tests

One of the simplest ways to help your students understand the purpose of assessment is by asking them to compose their own tests. Having students create tests is a natural progression from deliberative practice and co-correction activities. Researching and writing a review test is a powerful, student-led activity that you can use to improve student performance. (The logistics of this activity have been made easier in recent years with online quiz programs, shared-document platforms, and instant chat rooms, making sharing these self-composed tests a more straightforward process.)

This is a challenging, higher-order task for students. Teachers know only too well that creating a test requires a good deal of labor. Reviewing the content, identifying key knowledge and skills, and formulating questions that check for common errors and misconceptions while confirming growth all take time and effort to do well. Constructing a test is far harder than taking one.

As a learning exercise, we can shift this work—and the attendant learning benefits—to the student. Students who create their own tests have performed better in trials than students who have been given practice exams, other students' study guides, or free rein to formulate their own approach to studying for tests (Foos, Mora, & Tkacz, 1994). This outcome is the result of the "generation effect"—that is, we learn more when we create information in some way rather than passively consume it (Brown et al., 2014).

However, you must offer your students clear guidance about how to create review tests. They need to be informed about the conventions of test genres and be provided with models and scaffolding if they are to produce something both meaningful and instructive. The discussion that follows explores how you might do this in an effective and time-sensitive way.

Understanding Test Genres

Even if you do not intend to ask your students to create their own tests, they should be taught the features and common traps of various test types. Students need to understand how tests work. It is simply a matter of fairness: testing procedures have to be predictable and transparent.

However, this effort must be more than a "teaching to the test" approach, which seems helpful but is actually a practice of low-performing schools (Langer, 2001). You need to help students understand the *purpose* of testing. They need to see that the purpose of tests is not to rank but to inform. Reaching this understanding is challenging because tests *are* used for accountability purposes, and there are lots of cultural signals—from how pop quizzes are depicted on TV shows to school ranking tables published in the newspaper—that indicate this is their sole purpose. Students need to know that they also take tests so we can assess their needs, refine our instruction, and evaluate and modify our programs accordingly.

I think exploring test genres with your class helps explain this purpose to them in a concrete way. Reviewing test genres also reminds us how to construct the most effective assessment task possible.

Features of multiple-choice tests. One of the best ways to help your students recognize that tests are designed to give them feedback is to have them create their own multiple-choice test. Your starting point is to check whether your students have been explicitly taught the features of a multiple-choice test. You may be tempted to skip this step—multiple-choice tests are very familiar to most students and teachers, but using them and understanding how and why they work are different things. Many of the teachers I coach have not had training in this area, nor have many students.

What is the minimum that students need to know about this type of test? To begin with, they should know that multiple-choice tests have four key components:

- The question *stem* presents a problem statement.
- The *alternatives* are the potential responses to that statement.
- The correct alternative is simply called the *answer*.
- The incorrect alternatives are known as *distractors*.

The *distractors* are the key: they must be plausible alternatives. Distractors are not designed to confuse or trick your students but to help you identify misconceptions. Jokey or ridiculous options are a wasted learning opportunity. The best distractors are not simply incorrect but rather identify common errors, "misconceptions, oversimplifications, and overgeneralizations that students may possess about a topic" (Fisher & Frey, 2014, p. 111).

Student-created distractors. Creating good distractors takes practice. Two engaging ways for your students to hone this skill are (1) adding one distractor to each set of responses for questions and (2) constructing all the distractors for the questions.

Adding one distractor. Asking your students to write an entire multiple-choice test is a valuable but time-consuming activity. If you are pressed for time, a quick version of this activity gets students to write one additional distractor for each question of the quiz. Consider the following example:

> Which of the following artists is a surrealist?
>
> A) Caravaggio
>
> B) Dali
>
> C) Rembrandt

The student might add this distractor:

> D) Monet

This simple activity helps students spot common traps and clarify their understanding—especially if they are asked to justify why they wrote that particular distractor, as illustrated here:

> I picked Monet because he is definitely not a surrealist, but you could pick it if you were confused between impressionism and surrealism. I used to do that because we studied both of them in Term Three.

This activity works best if you give students multiple-choice questions with just three alternative responses, allowing for plenty of other misconceptions and common errors that haven't already been addressed by your distractors.

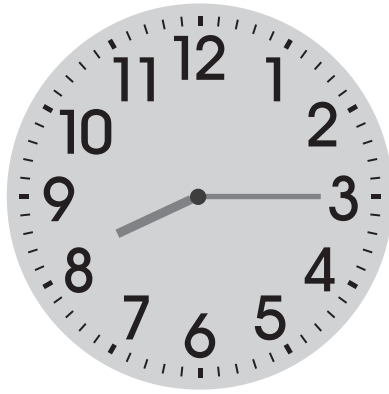
Constructing all distractors. Once your class masters constructing a single distractor, you can ask them to construct all of them. It is important to make this a carefully scaffolded activity: you should give students both a question stem and its correct answer. (You might ask older or more accomplished students to identify the correct answer themselves.) Students then have to construct three or four alternative answers using this answer as a reference point.

This is often done by offering your students a list of common types of distractors and asking them to come up with one example of each of these per question. Types of distractors that your students might find useful include misconceptions, oversimplifications, overgeneralizations, and misreadings.

A *misconception* is a wrong option that indicates a student fundamentally misunderstands some aspect of knowledge or a skill you are teaching. In Figure 4.4, for example, students who choose option *A* or *C* are demonstrating that they misunderstand what the minute hand indicates on a clock face.

An *oversimplification* is a wrong option that suggests that although students have a general sense of a concept, they lack a deep and detailed understanding of what is required of them. In the following test item, for example, students who select *B* demonstrate only a cursory understanding of topic sentences:

Figure 4.4
EXAMPLE OF A MISCONCEPTION DISTRACTOR



Look at the clock.
What time is it showing?

A) 3 minutes past 8
B) Quarter past 8
C) 8:30
D) Quarter to 8

A topic sentence is—
A) An introductory sentence outlining your paragraph's main idea
B) The very first line of a paragraph in an analytical essay
C) The sentence in the essay that provides evidence of your topic

An *overgeneralization* is a wrong option that indicates students have a basic understanding of a concept but not enough to discriminate in those specific situations when this knowledge cannot be used. Consider the following question:

Which of the following words are adverbs?
A) Rally
B) Dally
C) Sadly
D) All of the above

Students selecting *D* are probably presuming that all adverbs end in *ly*.

Here is another question that might elicit an overgeneralization:

Which of the following is not *a prime number?*
A) 7
B) 11
C) 2
D) 21

Students selecting *C* are probably presuming that all prime numbers are odd. Their overgeneralization is based on their experience that most numbers that have only 1 and the number itself as factors are odd, but their answer suggests that they are not applying this rule to *C*.

A *misreading* is a wrong option that suggests the student either has literacy issues or is not reading the questions closely enough. In the following test item, for example, students who select *C* have probably misread *habit* for *habitat*:

A habitat is—
A) An enclosure for animals at the zoo
B) The environment where an animal lives
C) A routine or automatic way of doing things

Quick Formal Test Creation

Various types of tests can serve as the basis for quick test-composition activities. Typically, these are tests that have simple forms and elicit short responses. They include true/false tests, cloze exercises, and completion tests. Shorter extended-answer tests might also be included here. With some minor adaptations, these types of assessment can be modified into engaging and instructive write-your-own-test activities.

True/false tests. If you are planning to teach students how to write a true/false question, then you should begin by exploring why false answers are so important. As with multiple-choice questions, it is incorrect answers—not correct ones—that tell us most about how students are learning.

This reality tends to be overlooked. Teachers and students are prone to putting more true options in a true/false test because they are easier to formulate. It is easier, after all, to remember an answer than it is to create

one (Poundstone, 2014). Students are aware of this tendency: they are more likely to guess "true" when they don't know the answer to a question in a true/false test. Therefore, "false items tend to discriminate better between students who understand the information and those who do not" (Fisher & Frey, 2014, p. 116).

How can you get your students to understand the importance of false answers in this style of question? Two options are justification and instant feedback.

Justification. Give your students a true/false test but ask them to include in their answer an explanation of why each false answer is incorrect. This simple modification lets you see your students' justifications for designating answers as false. Moreover, it encourages students to recognize how these incorrect answers reveal their own misunderstandings and misconceptions. Ask students to continue this practice when writing their own tests. This ensures that their false answers were consciously created to identify test-taker errors.

Instant feedback. Ask students to try out their true/false questions on the whole class. Here are some options:

- Have your students write five true statements and five false statements about something you have just taught them.
- Ask them to select one true statement and one false statement and write these on either side of a strip of paper.
- Collect the statements and read some to the class. Your students have to indicate whether each statement is true or false by standing or sitting or by some other simple mode of signaling.

Creating true/false questions in this way helps your students both anticipate common errors and understand why you use this type of assessment in the first place.

Completion tests. Completion tests such as cloze exercises and blank-line questions are a good way to check and improve your students'

recall. Asking them to write their own tests heightens this learning. Why is this?

Effective revision requires students to retrieve new learning from memory. It is not enough to reread and highlight study materials; your students should quiz themselves about key ideas and concepts (Brown et al., 2014). The reason is the previously mentioned generation effect: information is better remembered if it is generated in your own mind rather than just read (Bertsch, Pesta, Wiscott, & McDaniel, 2007).

The blank-line test form (in which students complete a series of unfinished statements) lends itself to this type of self-generated question. Here is how to guide students in creating blank-line items:

- Ask your students to review the study materials and to highlight facts and concepts they see as important, confusing, or hard to remember.
- Get them to write these out as unfinished statements that ask the test taker to identify facts or concepts, as in these examples:

> Linear B was finally decoded in _____.
>
> The term "petite bourgeoisie" refers to _____.

The process is almost identical for a cloze exercise, in which students are asked to provide words that have been removed from a passage of text. Here is how to guide them in this exercise:

- Again, ask students to identify key terms, ideas, or challenging concepts in a piece of information.
- Have them rewrite this information, removing the highlighted words from the text, as in this example:

> Every map should have a(n) _____ to demonstrate where north is, as well as a(n) _____ so users can understand the distances represented in the map.

Creating completion tests can become part of a student's everyday study habits. I used to ask students to keep an ongoing list of confusing or challenging terms for test building. Not only did this help them construct

better completion tests; it also meant that they ended up talking with their classmates about what went on their lists ("Did you get 'juxtaposition'? That idea really confused me."). It seemed to me that this made my students far less likely to feign understanding if they came across something that confused them. Other teachers have had the same impression. When your students seek out and share what they don't understand in a piece of information, it helps them monitor and clarify their own thinking (Blau, 2003).

Extended-response tests. Teaching students to write their own extended-response tests is another way to use test composition as a reflection strategy. You can do this by training students to write a short-answer test or formulate exam prompts. My favorite way is to run a *Jeopardy!*-style activity, which presents students with a series of extended-response-style answers and asks them to formulate a matching question.

What would this look like? The answers typically range from a few sentences to several paragraphs. Here's an example:

> It was a form of experimental painting that was nonrepresentational. Artists used a wide range of individual styles, but what linked them together was an interest in using abstraction to convey intense emotion. Typical features of this art movement include large canvases, unconventional materials, and techniques that encouraged spontaneous expression as a representation of the unconscious.

Students might respond with questions like these:

> How would you describe the abstract expressionist movement that emerged in America in the 1940s?
>
> What was abstract expressionism?
>
> Describe abstract expressionism and some of its key features.

This approach works well with limited class time—it is often quicker to compose a question than to research and write a response. I also like that this approach helps students be more alert to the form of the extended question. Students are more aware of the differences among different

action verbs (for example, *list*, *discuss*, *compare*) when they have to select the right one to match a sample answer.

Test-Reflection Tasks

Test-reflection tasks are a step up from the more straightforward strategies covered in this chapter so far. They have some added complexity and thus require some additional preparation time, but they provide deep, nuanced feedback that many teachers—usually seasoned educators who have been in the classroom for many years—find helpful. Because this approach is a bit more involved, it might save time only for those more experienced educators who are interested in taking their feedback to the next level. Relatively inexperienced teachers might want to save test-reflection tasks for when they've mastered some of the other strategies in this book—or for when they are looking for their next challenge!

Classes should not only be taught test-composition skills; they should also learn to analyze tests. Your students need to know *how* tests work, but also be given the tools to ask *how well* they are working.

This is an ambitious aim. Students need close supervision and careful scaffolding if you want them to develop the evaluative skills to perform this complex task. Here are two classroom activities that you can use to help students develop an analytical approach to creating tests.

Data-driven test creation. Asking student to use their judgment to formulate test questions is an effective starting point for teaching test design. However, you can deepen this inquiry by getting your students to analyze error data before they compose their tests. There are different methods for doing this, including the frequency method and the discrimination method.

Frequency method. You might ask students to determine what are the most common errors in the data. For example, you might give the class a quick completion test or true/false quiz and then provide students with a summary of the results. You then ask students to analyze the data: *What facts did students get wrong? What were the most common incorrect answers?*

Students then write their own tests based on this analysis. To introduce this approach when I'm coaching, I ask teachers to try out an activity in which students have to turn the data into a multiple-choice test. This approach often produces surprisingly sophisticated results—the distractors students create are plausible because students already make the mistakes represented by those distractors.

Discrimination method. Alternatively, you might ask students to consider which are the most discriminating test questions. This request requires some preparation. Discriminating questions are the ones that those who performed well on the test tended to get right. To prepare this task, you need to choose some test results (some teachers give the class a diagnostic quiz, but I prefer to use a past test on the same topic) and give each question a discrimination rating. You do this by completing what is called an "item analysis" (see Appendix B). Students then analyze the data by asking questions such as these:

> Which questions did the best-performing test-takers get right?
>
> How were these questions constructed?
>
> How were they different from the test questions with a low discrimination rating?
>
> Why do you think these questions were more likely to be done well by the highest-achieving test-takers?

Although these specific activities tend to be used with older or more able students, the general approach is one that can be used across year levels. Whether you give elementary students a list of commonly misspelled words to use as the basis for a spelling test they write or ask senior math students to do a statistical analysis of their classmates' test performance, the basic idea here is that the best test construction is informed by data. Asking your students to do more of this analysis improves their responses and reduces teacher workload.

Paneling. Asking students to review the test they have created within a group is another way to take a more analytical approach to student test

creation. Writing a test without assistance is challenging. Students—and teachers, for that matter—are better off with a colleague they can use as a sounding board. Research suggests that this collaborative approach is "a more effective and ultimately more efficient way" to construct tests (Griffin, 2014, p. 169). Note here that Griffin said it was "*ultimately*" a more efficient approach: it takes time and effort to collaborate on test construction.

To streamline the process, I have employed an approach called paneling. In this structured approach to collaboration, students complete the following steps:

1. Construct a short test.

2. Join a "panel" with three or four other students.

3. Each student takes a turn presenting a question from his or her test to the group. Once the student has presented a question, that student takes notes but doesn't speak. (This ensures the student doesn't color the discussion of what the question is with what *it is meant to be*.)

4. The other students on the panel discuss some stimulus questions:

   - Are there any words that are unclear? Symbols that are unfamiliar?
   - What do you think the question is asking you to do?
   - How would someone find out the answer? What steps might they take on their way to a correct response?
   - Is the question fair? Could a student who has been paying close attention to this part of the course answer the question?
   - Is the question too hard? Or too easy?
   - What about this question makes it effective? What changes could be made to this question to make it clearer and more effective?

5. When a representative sample of questions has been reviewed, your students use their notes to make changes to their test before submitting it to the teacher.

If you don't have time to conduct this detailed process, you might want to try using a screencasting tool to create a quick version of this activity. The steps are much simpler:

1. Students construct a short test and swap it with a partner.

2. Using a screencasting tool, they record their first impressions as they read through the test. As discussed in Chapter 5, a screencasting tool allows you to record oral feedback and written annotations of a document you bring up on a computer screen. Students use it here to note what the question is asking them to do and to speculate about what the answer might be.

Although this activity does not offer teachers as much detailed feedback as the small-group version of the task, it still gives your students real-time feedback about the clarity and effectiveness of their tests.

Several teachers I know who have taught their students to analyze tests in this way ended up using these strategies to inform their own test creation. It is probably fair to say that in many schools, test analysis is an underutilized aspect of assessment and one that could benefit teacher and student alike.

Summing Up

Many teachers I have coached use testing only as a summative assessment tool. This is understandable—the formal obligations and tight timelines of system-level accountability can make it hard for teachers to see testing in anything other than the narrowest sense.

This is why *formative* testing works. By raising the role of peer marking and encouraging students to make their own testing tools and hone their performance through deliberative practice, you can recast testing as an ongoing, collaborative activity—an activity that students *seek out*, instead of have *done to* them.

Testing in schools is an area that is heavily proscribed by accountability and shaped by tradition. When teachers adopt more flexible and responsive assessment strategies in testing (such as those presented in this chapter and summarized in Figure 4.5), then they are, in my experience, much more likely to implement those strategies throughout their teaching.

This outcome has profound implications for both teacher effectiveness and workload management. It builds your students' capacity to self-assess, ensuring that you are not wasting effort on activities that would be better completed by students. Moreover, it generates extra class and preparation time. You can use this time to reflect on your practice and better target student need. Formative testing meets the two most important criteria in teaching: it is quick *and* effective.

Figure 4.5
FORMAL FORMATIVE TESTING

How can I use testing to quickly assess students' ongoing performance?	
Peer and Self-Correction You need strategies for prompting students to play an active role in the assessment cycle. Peer- and self-correction exercises encourage your students to support their classmates while gaining greater insight into their own work. Moreover, these strategies save time and give you the opportunity to concentrate your correction efforts where they can have the most impact.	**Instant Tests**—Instead of asking students to assess whether their answer is successful—which is time-consuming—ask them whether it has features *indicative* of that success.
	Confidence Quizzes—Instead of asking students to complete an entire review or revision test, ask them to just indicate their degree of confidence in their ability to answer each question correctly.
	Prediction Graphs—Ask students to graph their predicted performance in a test versus their actual performance.
	70/30 Tests—Create a test, then answer it yourself, deliberately getting only 70% of the answers right. Ask students to correct the test and explain why the wrong answers are incorrect.

continued

Figure 4.5
FORMAL FORMATIVE TESTING

(continued)

Deliberative Practice You need to develop a range of deliberative or "deep" practice exercises that use focused feedback and repetition to improve a specific skill. You can use these techniques to help students "get" a concept that has eluded them, intensely review new knowledge, or rehearse a particular skill through sustained practice. Deliberative practice saves you from wasting time teaching something over and over again.	**Solution Tests**—Create a long list of problems/questions, and then ask students not to answer them but to indicate which approach they might use to formulate an answer.
	One-Point/Two-Point Tests—Ask students to formulate two responses to a question (one comprehensive, the other cursory) and then swap with another student who has to work out which is which, revising the weaker response.
	Missing-Points Exams—Prepare a deliberately flawed exam answer, and then ask students to revise it, seeing if they can fix some of its problems and find the "missing" points.
	Closed/Open Tests—Have students complete a closed-book test activity, but then give them a chance to revise their answers using a different-colored pen under open-book test conditions.
Student-Composed Tests One of the simplest ways to help your students understand the purpose of assessment is by asking them to compose their own tests. Students creating tests is a natural progression from deliberative practice and co-correction activities. Researching and writing a review or revision test is a powerful, student-led activity that you can use to improve student performance.	**Understanding Test Genres**—Students should understand the underlying *purpose* of testing as well as the features and common traps of various test types. Asking them to create their own "distractors" is an effective way to do this.
	Quick Formal Test Creation—Have students compose their own short tests. This activity can take many forms: • True/false tests • Completion tests • Extended-response tests
	Test-Reflection Tasks—Students should not only be taught test-composition skills but also learn to analyze tests. Your students need to know *how* tests work, but also be given the tools to ask *how well* the tests are working. • Data-driven test creation (*frequency* and *discrimination* methods) • Paneling

5

Sustainable Marking

As teachers, we are under pressure to be more and more efficient. This expectation can be a real trap. In some of the schools where I have worked, this focus on efficiency really just means that teachers are expected to take on yet more work without real attention being paid to whether this improves the quality of their everyday teaching. One area where this is a major issue is in the marking of student work. School leaders, parents, and even teachers themselves can confuse the volume and frequency with which they correct work with the efficiency and effectiveness of their correction. This chapter explores fast ways to produce quality correction.

So far, we have largely explored ways to *reduce the total amount* of correction you do. But teachers also need ways to mark *more quickly*. When I coach teachers on workload reduction, we often start with these quick-correction strategies because they find it hard to even consider the other approaches when they have so much marking to do *right now*. "I'll try all that questioning stuff," one teacher told me, "if you can show me a quick way to get these assignments corrected by Monday."

So how do we do this? Here is the three-step process for marking work more quickly that we will explore in this chapter:

1. **Establish quality control.** You need to set up routines for raising the initial quality of student work submissions. Too much teacher time is wasted correcting mistakes that students already know are errors. You must establish proofing and sampling routines that help ensure your students take responsibility for avoidable mistakes, allowing you to concentrate your efforts on responding to misconceptions and other substantial errors.

2. **Identify rapid-correction strategies.** You need strategies for completing correction quickly. You can't allow correction to crowd out other aspects of your work (and private) lives. You need ways of grading work that are accurate *and* fast.

3. **Offer effective feedback.** You need to make sure that the feedback you give is clear, precise, and easy for your students to act on. Your comments must be carefully targeted and offer students a clear and accessible path to response. Doing so makes it less likely that you will have to spend lots of time and effort giving the same advice over and over again.

Although not every strategy will work in every situation, taking a systematic approach to the workload associated with marking can have a profound effect on the demands of your everyday teaching.

Quality Control

You have only a finite amount of time you can devote to marking, and correcting things that your students already know are mistakes is not an efficient use of that limited time. Teachers need quality-control routines that ensure that students submit work that is representative of their best efforts: student work needs to be *worth* marking.

Distinguishing between the different types of errors that your students are making is the first step. A minor mistake that is the result of a lack of attention to detail or rushing to complete a task is very different

from a conceptual error that is the result of a misconception or lack of knowledge. It is your core responsibility to address conceptual errors or gaps in your students' knowledge; low-level errors are ultimately best addressed by students working more carefully and reviewing their work more closely (Elliott, Baird, Hopfenbeck, Ingram, Thompson, et al., 2016).

How do we encourage students to be more responsible for proofing their responses? The following routines nudge students toward reviewing and revising their work for minor errors before they submit it for assessment.

Formal Formative Assessment

Many of the formal formative assessment strategies featured in Chapter 4 can be used to encourage students to take more responsibility for self-correcting their work. Indicative tests, for example, are a quick way to help your students identify obvious errors. They are also effective for encouraging students to recognize when they have misunderstood what the task requires of them. Similarly, closed/open book tests remind your students of information or an approach that they may be aware of but have forgotten to include or apply to their response. Confidence tests are an effective way to get students to recheck answers they are not sure are totally correct. Using this type of activity before your students hand in their work is a good way to raise the quality of what they submit to you. (See Chapter 4 for details.)

Proofing Guarantees

A proofing guarantee is a checklist that students can use to help them review their own work. These guarantees are normally employed as part of a presubmission routine that requires students to check their own and their partner's work before handing it in for marking.

Typically you compose proofing guarantees to target the kinds of mistakes that are routinely associated with a particular piece of work or style of activity. Here, for example, is a checklist from a middle school math sheet:

I have—

- Shown all my work.
- Checked for simple calculation errors.
- Answered the question asked.
- Presented my answer clearly.
- Put the answer into its simplest form.
- Included units in my answer.

Each item on the list is a flaw common to the mathematics work of students at that level. Even reducing a percentage of these mistakes throughout the class would save you a substantial amount of correction time.

It is not enough, however, to simply make a list like this and expect that students will automatically search for errors. Students often struggle to proof their own work (the same is true of adults), so incorporating some peer-proofing is a good way to nudge students to review their work more thoroughly. Instead of a single checklist, a proofing guarantee consists of four checklists, like those shown in Figure 5.1 for map features. Students complete the first checklist and then find a peer to check their work with the second list. They then find another peer—ideally someone they don't routinely work with—to repeat the process. Finally, they go over their own work one final time before submitting it. (Sometimes teachers differentiate this task by reducing the number of checklists involved. This approach works, but I have found that many struggling students benefit from the scaffolding and repetition involved in the longer form of this exercise.)

Proofing guarantees ensure that your students pick up a greater number of avoidable mistakes in their work and develop the idea that proofing is their responsibility, not yours. Proofing guarantees are an effective way to both address patterns of error in student work and reduce correction time.

Interim Submissions

One of the most common causes of substandard student work is a lack of sustained application. This not only undermines the quality of what

Figure 5.1

EXAMPLE OF A PEER-PROOFING GUARANTEE SHEET

My map features include all of the following:

- ☐ A border
- ☐ Clearly marked orientation
- ☐ A legend
- ☐ A title that describes the map and what it is showing
- ☐ Clearly indicated scale
- ☐ Citation for the source of information

Proofer 1:
I have proofed _____'s map for the following features:

- ☐ Does the map have a border?
- ☐ Is the orientation on the map clearly marked?
- ☐ Does the map have a legend?
- ☐ Does the map have a title that describes it and what it is showing?
- ☐ Is the scale of the map clearly indicated?
- ☐ Is the source of the information on the map cited?

Proofer 2:
I have proofed _____'s map for the following features:

- ☐ Does the map have a border?
- ☐ Is the orientation on the map clearly marked?
- ☐ Does the map have a legend?
- ☐ Does the map have a title that describes it and what it is showing?
- ☐ Is the scale of the map clearly indicated?
- ☐ Is the source of the information on the map cited?

My map features include all of the following:

- ☐ Does your map have a border?
- ☐ Is the orientation of your map clearly marked?
- ☐ Does your map have a legend?
- ☐ Does your map have a title that describes it and what it is showing?
- ☐ Is the scale of the map clearly indicated?
- ☐ Is the source of the information on the map cited?

students produce but also creates extra work for you. It is a waste of effort, after all, to spend lots of time correcting errors as though they represent significant misconceptions when, in fact, they are actually just mistakes that were caused by students rushing to finish their work.

This problem is widespread. A relatively inexperienced teacher once explained to me in a workshop that she "hadn't yet worked out a way to stop students only doing homework the night before it is due." Another teacher from the back of the room interjected: "Me either—and I've been teaching for 28 years." Leaving class and homework tasks to the last minute and then producing inferior and unrepresentative work is a habit that is not easy to break. Using an interim submission routine is a good way to start addressing this issue.

An interim submission requires students to submit *finished* portions of their work *before* the final due date. Of course, you may already ask your students to prepare rough-copy responses, but in that case the students are working up a *draft answer*, whereas with this approach they actually have to commit to completing part of the task to final-submission standard. A homework assignment might be due on a Friday, for example, but you could set an interim submission date that requires students to hand in half of the completed work on the preceding Wednesday. When your students have to finish all of their work by a given deadline, they can choose to complete it all the night before it is due, whereas interim submission requires them to show their ongoing progress.

Interim-submission routines help students break larger projects into small, manageable tasks, encouraging them to use all of the time available to them to complete their work to their best standard. These routines also help you target your correction time where it really it matters: on issues with which your students are really struggling.

Gallery Sessions

A gallery session is a review activity in which your students share their work with their classmates. Students can display their work on their

desks, on the board, at a center table, or in a shared virtual space. Your students then investigate their classmates' responses, looking for ideas or strategies that they might use to refine their own response.

The students highlight examples of others' work that they think might be a useful model for improving their own. Giving students tokens to identify the most helpful exemplar (these tokens can just be small pieces of colored paper marked with phrases such as "this helps me" or "great model answer") is one effective way to do this. You then discuss with your class what was helpful about the model answer or answers they selected. I often prompt the student whose answer we are discussing to explain his or her approach:

> What strategies did you use to create the work?
>
> How does your piece meet the criteria set out for the task?
>
> What challenges did you have to overcome to produce your response?
>
> How might you still improve what you have done?

To conclude a gallery session, ask your students to note which refinements they might now make to their work, and reproduce the most popular model answers to distribute as exemplars for the whole class.

It is important to remember that public displays of unfinished work can be intimidating for some students, so you need strategies to give students a layer of protection for an activity like this. One way is to conduct a gallery session in table groups, so students aren't facing the whole class. With younger children, I ask them to study one another's sheets "and if there is something you were going to put on yours but forgot, just put it on yours in another color." (This way you can work out which of the ideas on their sheet are borrowed.) Another way is to take up for "correction" the work of those students who might feel exposed by this exercise before starting. Such students can get the benefits of a session without having their own work scrutinized.

Gallery sessions can be used in tandem with interim submissions, giving students a way to see whether their work is meeting expectations

before they submit it for final assessment. By giving your students an opportunity to explore and discuss what a good answer looks like, this activity helps ensure students' final answers are of a standard that is worthy of correction.

Traffic Light Inventories

Another reason students can produce substandard work is that they don't apportion their time and effort appropriately. You may be familiar with the student who moves so slowly through the first exercises of a task that he doesn't complete it, or the student who devotes lots of attention to the aspects of an assignment that she enjoys but pays scant attention to other components of the task, which she ends up completing in a cursory way to a low standard. I have marked many tests where the student has clearly labored over a particular question—the paper is covered with lots of corrections—but not even attempted a question worth far more points.

Correcting this type of response is not a good use of your time, as the work is unrepresentative of the student's progress. This student doesn't lack understanding but needs help planning, applying, and using the available time. Setting up project-management routines helps ensure that your students use their time properly and that you target a student's real point of need.

A Traffic Light Inventory is a good example of one such routine. It is effective for projects and extended responses and is easy to organize, following these steps:

1. Ask your students to list all of the tasks they need to complete to finish their assignment. You can give students this list, but in my experience, Traffic Light Inventories work best when students have to do the work of identifying each task themselves.

2. Students then map their progress on each of these tasks by color-coding them:

- *Green:* Completed
- *Amber:* Started but not completed
- *Red:* Not yet started

3. Students prioritize how they will divide up their remaining time to complete the assignment. I have had students who complete this exercise and then realize that although they have labored over one section of a project, they have ignored or missed whole other sections. Other students recognize that they typically start lots of things but have trouble completing their work. You can help here by designating color codes for some of the remaining work time. For example, you might have an "amber lesson" in which students are expected to finish something they have started, or assign a "red homework night" that requires students to begin a task they haven't yet started (this encourages students who are procrastinating by avoiding challenging or laborious tasks).

Quick-Correction Strategies

Quality-control routines limit the amount of correction teachers have to do, but, as I said earlier, you also need ways to quickly correct what is left. Marking student work is an important but time-consuming aspect of teaching. The danger is that you will devote so much time to one area of marking that it will undermine the quality of marking you can bring to other pieces of work—or, indeed, to other aspects of your teaching. Sometimes the struggle to meticulously mark work gets in the way of really reaching your students.

For example, a school once hired me to help a teacher who was "poor at giving feedback." When I met with the teacher and she showed me her marking, it was excellent, with thoughtful, precise comments that reflected a deep knowledge of her subject. The real issue was that her correction was so detailed and took so long to complete that she was finding it hard just to keep up. You need ways to avoid this trap.

In this section, we will discuss a suite of strategies for rapidly correcting student work. No one strategy will instantly reduce your correction load, but judiciously employing a range of these strategies among your existing practices will reduce the overall time it takes to mark and get your feedback to students.

Correction Sampling

You do not have to correct every piece of student work and give it a mark to be an effective marker. One of the aims of marking is to identify patterns of student error and provide students with feedback that will improve their work, and sometimes you can achieve this by simply sampling student responses.

Sampling is a well-established statistical method for gathering data without having to survey every single member of a target group. A political poll does not ask every voter in the country who they will vote for, but selects a representative sample of voters to get a sense of public opinion. In the same way, you can target a small number of student responses and extrapolate from this sample feedback about the wider class's progress.

How does correction sampling work? Here are the steps involved:

1. Assign a task with a whole-class interim submission date. (In my experience, this approach suits rough-draft responses of all kinds.)

2. Select a small number of the submitted pieces of work to mark. The number will vary depending on your class size, but I usually pick six pieces for a class size of 25. Make sure that you randomly select the students. This method of selection—in which students have an equal chance of being chosen—is called *probability sampling*. It ensures that the sample will be relatively representative of the whole class, as opposed to, say, asking for volunteers or selecting the first six responses that were submitted. My preferred way of selecting students at random is to use a version of probability sampling called stratified sampling:

- Based on their *past* performances on similar or related work, I group the students into lower, middle, and upper bands (or strata).
- I then randomly select two examples of work from each of these three bands. I usually do this by quickly sorting the work into three piles and then grabbing two pieces of work from each pile. I do not read the responses first, as this is time-consuming and would undermine the purpose of using correction sampling in the first place. This approach tends to produce an evenly distributed range of responses from different levels of student performance.

3. Correct each of the selected pieces of work. Whenever you come across a type of mistake you have already corrected or a comment you have made to another student, note it in a list of common errors and feedback.

4. Collate these insights and present them to your students as feedback. (Note that this is not grading; this is a formative activity.) I usually tell my students that "I have looked at a number of the responses" and noticed some "patterns of error" or "common ways to improve your work." The language here is important: there should be no sense that you are pretending you have corrected every piece; rather, you are giving them an opportunity to capitalize on your first impressions about *some* of the work.

5. Unpack this advice with your class. Doing so might involve reviewing key concepts or helping your students identify mistakes they have overlooked. The goal is that students will make immediate changes to their work in light of this feedback. (You can give students a list of common errors and advice that they can use to proof their work or that of their peers.)

Correction sampling takes around a third of the time that marking a whole class's work does. When used judiciously, it is an excellent way to minimize your correction workload while maintaining a high standard of effective feedback.

Automated Correction

Technology enables us to automate some aspects of our marking. A wide variety of devices and software is available to record and automatically correct student work.

How does automated correction work? Typically teachers pose a question to students, offering a range of potential answers. Students select what they believe is the correct response and submit it electronically. The software then corrects the student answers, summarizing patterns of response and presenting these data to the teacher. This feedback happens almost instantaneously.

The first time I saw a feedback system being used was in a music lesson. The teacher had just finished a class on bass and treble clefs. Instead of taking up her students' workbooks to check their progress, she asked them to take out their Plickers cards. (Plickers cards are small paper cards with a unique two-dimensional barcode. Changing which edge of a Plickers card is held up indicates whether your answer is *A*, *B*, *C*, or *D*.) She then put a multiple-choice question on the board and asked students to silently indicate which response they thought was correct. The students held up their cards and the teacher scanned them with her phone. This took about 10 seconds.

She looked at the results: "Twenty-three out of 26 got that the first time. I can target the three who all made the same mistake, but I think the rest of them can move on to time signatures for the next lesson." She saw my stunned response and enthused, "I know—not a bad way to do a night's correction, is it?"

This episode neatly captures the potential of automated correction for reducing teacher workload, but many schools have been slow to take up this approach. This hesitation is understandable, as an automated approach may be very different from their current practice. Keeping the following things in mind can make adopting this automated approach easier.

Pick the right task. Clearly, these response systems are not applicable to all types of correction. Much of the marking teachers do, for example,

is far too complex to be automated, which is why automated feedback systems are best reserved for assessing questions that have clear, objective answers. Such systems are widely used to mark multiple-choice questions and true/false quizzes, and are also ideal for exit passes and other instant assessments of student progress. I have found, for example, that they are a quick and highly efficient way to correct hinge questions (see Chapter 3). It is not hard to correct any of these types of questions, but it is time-consuming. You can use automated correction to do this job quickly and free up more of your teaching time.

Pick the right tool. Shoe-horning technology into the classroom when it doesn't suit you or the students is a waste of time. The automated correction tool you select should be an intuitive fit with your existing assessment routines. A large number of potential feedback systems are available—Socrative, Kahoot!, and Plickers are among the most popular, but new ones are being invented all the time—so you should be able to find one that suits your needs. Socrative, for example, is a web-based space in which students log their answers. It is an easy-to-use platform that works well if you have good access to the Internet. Plickers, by contrast, needs only a single phone or tablet to scan responses and so is perfect for schools without fast Internet access or one-on-one devices.

Plan your questions. You need to make sure your questions are worthy of being asked. Asking a single question that reveals student misconceptions is much better than asking 20 questions that don't (see "Hinge Questions" in Chapter 3). Carefully composing your questions when you are planning your lesson is the simplest way to ensure that they are of high quality and that you will get the most out of this technology.

Apply the insights. Automated correction systems offer you a way to judge student performance in real time. You can very quickly see patterns in the data, identifying who understands what you've just taught and who doesn't. Act quickly on these insights.

Many of the misconceptions you identify through automated correction are common errors, so you can anticipate these issues and prepare a

response ahead of time. I often prepare, for example, Five-Minute Feedback Cards to do this. These small cards give students quick "concrete and actionable advice" on how to overcome common errors (Pearsall, 2012, p. 32). They are designed so that students can respond to this advice with a quick revised answer that demonstrates their understanding.

When I first started using this approach, I saw how effective it was—particularly for struggling students. Real-time actionable advice is ideal for getting around blocks—or what habit-acquisition experts call "inflection points"—in learning (Duhigg, 2014). However, I worried that this would be a lot of work: Would I have to prepare specific feedback cards for every student? In fact, the opposite was the case. I found that a few cards accounted for most of the issues that arose, making this approach a great time saver. Some automated correction systems even allow you to link your advice to certain responses so you can send it out automatically—a terrific example of how we can apply the insights of automated correction to provide quick help to students.

Look for patterns. Feedback systems not only let you check each student's level of understanding in real time; they also give an overview of the whole class: What is the most common wrong answer? How many students understand a concept the first time I explain it? How much wait time do students require for this topic? This technology shouldn't just give you information about student performance but also provide feedback about how to design and modify your lesson to maximize the impact of your teaching.

Many of the teachers I coach appreciate automated correction for the clear feedback it gives them about what they taught well and what confused their students. For example, one history teacher found that in his favorite lesson to teach—which his students loved—the actual absorption of the underlying learning was very low. He had tested students' overall performance on the topic before, but because the lesson was so time-intensive, he had never gotten around to getting feedback on this

particular activity. It was automated correction that allowed him to realize that it was an engaging lesson but not an effective one.

Another found that English language learners in his physics class routinely struggled when he completed demonstrations but thrived when they were able to take a hands-on approach to experiments. The research says this is true generally of students in physics (Crouch, Fagen, Callan, & Mazur, 2004), but the underperformance of nonnative speakers was not a pattern that was evident to him until he was able to repeatedly seek out quick end-of-lesson feedback.

Screencasting

Screencasting tools are another technological innovation that helps teachers improve the efficiency of their marking. A screencast is a recording of the action taking place on your computer screen, to which you can add an audio commentary. Teachers can use this function to quickly correct student submissions by bringing up a soft copy or photo of student work on their device and annotating the piece while they narrate feedback. Screencasting tools offer many benefits over traditional marking, including speed, a high level of student engagement, the ability to mix oral and written feedback, and flexibility.

Speed. Teachers appreciate screencasting because it is a fast way to give meaningful feedback once they master the approach. Marking an assignment or essay, for example, usually takes me around 15 minutes, whereas correcting the same piece via a screencast takes no more than 10. When multiplied by a class of 25, that is a substantial saving of time.

Student engagement. Many schools that have introduced this approach to feedback have been struck by the level of student enthusiasm for screencast corrections. One school I worked with stored the videos teachers made on a central server so staff were able to see hard data about this enthusiasm—finding that, *on average*, students watched these videos two or three times.

Students already do a lot of learning and social interaction on video platforms—YouTube is easily the most popular social media platform among teens (Mander, 2015)—so using a screencasting tool for feedback is a natural extension of this interest.

Mixing oral and written feedback. Screencasting allows you to employ written and oral feedback in a way that draws on the strengths of both of these types of correction. Consider the following features:

- Students get to hear the context of what you were thinking as you made written corrections to their work.
- You can augment your oral feedback with concrete written advice that synthesizes what you have just said.
- Students can replay oral advice much as they have the opportunity to reread written feedback. Indeed, in my experience they are more likely to do this when the feedback is on video, and this is particularly true for those students who might struggle with understanding advice the first time they hear it. This approach is ideal for students who are working in a second language or those who have processing problems.

Flexibility. You can use screencasts to annotate and respond to everything from videos of physical demonstrations and photos of practical products to written assignments and essays. Moreover, teachers can offer students different kinds of feedback. They can, for instance, provide students with a completed example, modeling in real time, of how they might approach a math problem or unpack an essay topic. Or they might make a brief how-to video that demonstrates a skill and that students can review whenever they need additional instruction. From detailed line-by-line correction of written work to simply recording a student-teacher conference so students can refer back to it later, screencasts help teachers be nimble about how they mark work.

Screencasting is not a strategy that will appeal to everyone. Many teachers feel more comfortable with pen-and-paper correction, and others find the technical challenges a barrier: their school has neither the

right device nor systems for sharing these videos. However, those teachers who have mastered screencasting tend to find it cuts down correction time while producing advice for students in an engaging and accessible form. It is worth considering whether it could be one of the strategies you use to mark student work.

It is important to keep in mind that, although this approach can reduce marking time dramatically, some teachers who are new to screencasting find that it actually *adds* to their workload at first. This is mainly because screencasting saves time only if you target your feedback and manage the logistics. "If you get it right," advised Martin Jorgensen, a colleague whose team uses this approach extensively, "it can cut your correction by about a third" (personal communication, 2016). A 30 percent reduction in all the marking a teacher does is a substantial time-saver and certainly worthy of consideration. As you take your first steps with this technology, keep the following points in mind.

Select the right screencasting tool. Pick a program that is simple and easy to use. With technology, the rule of thumb is usually *the fewer features the better*. So-called feature-creep (the addition of unnecessary features by a designer, making a tool less intuitive to use) is often a problem with screencasting tools, so select one that does the basic things well. (Currently, I prefer Jing, Educreations, and Screencastomatic, but new, well-designed applications are coming out all the time.)

Set a time limit. Screencasts should be brief. Setting a time limit of five to seven minutes is a common convention in schools where making feedback videos is widespread practice. This time limit acts as a creative restraint, encouraging you to make your advice focused and pithy. This does not mean that you limit what you note during correction but that you select the most pressing or significant feedback, focusing on the two or three things that you feel will make the most immediate difference. (See the section in Chapter 6 on "Minimal Marking.")

A time limit also means that students can concentrate on your key pieces of advice and are less likely to feel overwhelmed by too much

feedback. (Screencasting, for example, is a terrific way to give feedback to students with language or literacy issues, but not if it takes too long to listen to.) Moreover, the anecdotal evidence from teachers with whom I've worked is that students are more likely to watch shorter videos and even *rewatch* them.

Keep it professional yet casual—be yourself! The best screencasts don't sound contrived. They aren't scripted or rehearsed but are as close as possible, in tone, to the classroom conversations you already have with your students. Obviously, narrating comments about the work to a computer screen can feel unnatural at first, so be mindful of the following:

- Don't significantly rehearse or edit what you have to say. Minor mistakes such as correcting yourself, coughing, or stumbling over a few words all add to the authenticity of the exchange. Students appreciate the intimacy of this and will often remark about a mistake or a noise in the background. This lets you know they are really listening and helps model how you respond to mistakes. (We have to be comfortable with our errors if our students are to become comfortable with theirs.)

- Speak naturally. ("The first time I did one," one teacher admitted to me, "I was so worried about what the child's parent might think that I ended up sounding like a radio announcer.") You have an audience of one, so target your message accordingly. Speak in a way the kids will understand. Repetition is particularly important; a great way to help students take up an idea is through two or three messages that are repeated a few times and that students can replay.

- A feature of many screencasting programs is that you can include an inset box where the student can see you on video as you respond to the work. If you are going to use this feature, do so at the start of the screencast but switch it off during the session so the student can concentrate on your comments. This approach helps personalize the video and make a connection with the student without distracting from your core message.

Dive in with hands-on practice, and don't be afraid to get help from colleagues. The best way to explore screencasting is by trying it yourself. Technology is surrounded by what is sometimes labeled "imagined complexity"—the perception that a new tool is complex when it is actually just unfamiliar. If you are unsure about whether screencasting is right for you, a little bit of hands-on practice playing around with the tool should give you a sense of whether you are comfortable with it.

If it feels too unnatural on your own, try it with a partner. Ask a colleague to join you and discuss the piece of work with that person. A coaching colleague of mine who trains people in a distance-education setting uses this approach when introducing his staff to screencasting. He suggests this works equally well with colleagues who are subject experts (and who might offer their own insights) or with someone unfamiliar with the work who can be a proxy for the student. Speaking to a colleague tends to produce a more relaxed and natural tone and makes it a bit easier to develop your "voice."

Share your screencasts one-on-one. There are lots of ways to output your screencasts, from e-mailing them to storing them on a shared public drive. Screencasting works best if you don't have to store these files on your own equipment, where storage space is limited. Nor do we want our students' feedback in the public domain—we must protect their privacy. Ideally our approach should be "private but shared" (M. Jorgensen, personal communication, 2016). Dropbox and Google Docs are popular public platforms, but any file-sharing platform that employs MP4 format (the current worldwide standard) will suffice.

Mastery Grid

A mastery grid is an alternative way of correcting and collating information about student performance. These grids were developed as a way of recording fine-scale data that students would find meaningful and teachers would find easy to collect (Clymer & Wiliam, 2006/2007). To make a mastery grid, you create a spreadsheet that identifies a series of

skills that students must learn to attain mastery. You then keep an ongoing record of student skill acquisition using a simple scoring system:

2 = Strong evidence of mastery
1 = Some evidence of mastery
0 = No evidence of mastery

For an example, see the mastery grid for essay writing in an English subject in Figure 5.2. You can see the teacher's approach:

- The teacher has identified three areas of compentency (shown at the bottom of the grid) that students must achieve to master essay writing: present their arguments in a coherent structure, provide evidence to support their views, and express them in a fluent and error-free manner.
- The teacher has then "chunked" these areas into 10 subskills (shown at the top of the grid) for which students can receive a score of 0, 1, or 2, depending on their level of compentency.
- The teacher has also included a class average (shown at the bottom of Column 1), which gives a snapshot of how the entire class is progressing across the skill set, flagging those areas that need more attention and those that are well established across the group.

Mastery grids offer several advantages. Let's look at each of these in turn.

Mastery grids help shift students from a *task* focus to a *skills* focus. Clymer and Wiliam (2006) found that this skills focus helped generate a more responsive, longer-term approach to learning. When your students use a mastery grid, "they tend to be more alive to small incremental improvements in their work and the eventual goal to which they are headed" (Pearsall, 2014).

I recently watched a physical education class where the teacher was using a mastery grid for ball sports. The list of skills she was looking at included "running to position," "passing to teammates," and "using your nonpreferred hand." The class was playing basketball, but the grid had been used throughout the entire subject and students were very familiar with it. Tellingly, they crowded around the teacher at the start of the

Figure 5.2
EXAMPLE OF A MASTERY GRID

	Analyze Passages	Compare/ Contrast Passages	Discuss Text Using Passages	Analyze Quotes	Employ Woven Quotes	Use Grouped Evidence	Demonstrate Effective Sentence Structure	Deftly Link Ideas	Employ Developed Reading	Proof for Errors
Amir										
Jack										
Liam										
Abbey										
Ella										
David										
Shea										
Liam K.										
Sophie										
Tao										
Tayah										
Devin										
Oki										
Aisha										
Sunny										
Cal										
Jack P.										
Evie										
Mehmet										
Zane										
Aizah										
Mia										
Class Average										
	Coherent Structure			**Evidence**			**Fluency and Accuracy**			

lesson to ask what they still needed to work on, with a couple of students wanting to know explicitly how could they "move from a 1 to a 2" for a particular skill. One student even called out during the game to make sure the teacher picked up that he was now routinely dribbling with his other hand.

You can heighten this awareness of incremental improvement by giving students their own modified grid that they can use to note each change of score, tracking their own growing mastery. Figure 5.3 shows an example of such a grid.

Mastery grids are a time-saving, ongoing assessment tool. You are not being asked here to make precise judgments against a scored rubric. Rather, you are recording the holistic impressions of your students' progress as you conduct the lesson. You do this with a simple three-point scale that is easy to use in a busy classroom. While helping a student clarify a question, for example, you might recognize that the student has started to master a particular skill and note this in the mastery grid you have in your grade book. This is real-time marking: you record this development when you first notice it instead of waiting until you see it in a piece of formal assessment. Mastery grids help you avoid "double marking," substantially reducing your correction load.

Mastery grids help teachers correct multiple tasks. Instead of having to give a mark for every worksheet, activity, and assessment, a mastery grid allows you to address multiple exercises all at once.

One science department I worked with created a single assessment grid that replaced nine separate practical assessments. From week to week, teachers would concentrate on one or two underlying skills that were at the heart of each science experiment and grade these 0, 1, or 2. This was not only much quicker than correcting a detailed laboratory report from each student, but it also allowed them to closely investigate the underlying competencies that make up effective laboratory work.

This fine-scale formative data can then be easily summarized for summative purposes. To get an overall percentage score, for instance, you

Figure 5.3
EXAMPLE OF A SKILLS MASTERY GRID

Skills	Dates of Skill Review/Current Score						
Formulate a Contention							
Organize Ideas in Paragraphs							
Write a Conclusion							
Employ Quotes							
Analyze Quotes							
Employ Grouped Evidence							
Use One Idea per Sentence							
Link Ideas							
Employ Developed Reading							
Proof for Errors							

simply divide the score points by the highest possible number of points. For example, in a 10-skill grid, a score of 17 out of 20 becomes 85 percent. In an 8-skill grid, the highest possible number of points is 16, so a score of 12 would amount to 75 percent.

Moreover, mastery grids allow you to track your students' performance whether it is improving *or declining*. If a student's effort has dropped off and she has stopped demonstrating mastery (of, say, proofreading), then unlike other marking schemes, her mark can go down from 2 to 1. The grid is kept as a running record of skill development rather than just a record of what students receive for each task.

All these features of mastery grids make them an excellent tool to use during periods of revision. Instead of correcting each individual piece of work, you can keep a running total of skill development as students revise. Doing so provides your students with fast, formative feedback on each specific task while reminding them of the overall scope of what they are trying to achieve.

Effective Feedback

Making sure you have strategies to guarantee work is of a representative standard and that it can be corrected quickly are two key components of an efficient marking regime. However, you must also ensure that the advice you give is accessible and targeted enough that students are likely to act on it. There is nothing more inefficient than giving the same type of feedback over and over again to little or no effect.

How do we make written feedback effective? It is not easy. The only real measure of effective feedback is whether or not students act on it (Wiliam & Leahy, 2015). If you spend 15 minutes correcting a piece of work and your student ignores that advice, then the time spent correcting the work has not been used constructively by either you or your student.

Moreover, students may not accept a piece of advice for many reasons that are not necessarily related to the quality of the feedback (Stone

& Heen, 2014). If they don't believe their grammar errors distract the reader, for instance, then they may not change their use of punctuation as you suggested. Alternatively, students may not accept advice if it challenges their sense of self. I worked with a gifted young man who thought of himself as an *A* student and rejected the advice I offered him because it was attached to a lower grade: "That's just wrong—I don't get *B*s." And sometimes students reject feedback because *you* are giving it. Many students respond to feedback not by what it says but who is saying it (Stone & Heen, 2014). As is often the case in teaching, it is the student-teacher relationship that shapes the outcome here.

Given the challenges associated with effective feedback, it is crucial for you to concentrate on the nature and quality of your advice. Carefully composed feedback won't always be followed, but it is the part of the process over which you have control, and making the most of this opportunity to give feedback improves the chance that students will respond to it. Quality feedback has certain characteristics: it is (1) selective; (2) focused on learning, not tasks; (3) clear, consistent, and specific; and (4) timely.

Feedback Should Be *Selective*

Focusing on one or two areas of potential improvement at a time ensures that your students are more likely to accept your advice (Elliott et al., 2016). The purpose of feedback is to help students internalize their learning, and we must have realistic expectations about how much information students can process. This rule of thumb also makes it easier for you to target your efforts: writing on two of the most pressing things students need rather than everything is an economical way to mark.

Selective marking strategies cover a wide range of possibilities. Each of them relies on students playing an active part in the process to be effective. For this reason, they are explored in detail in the next chapter, which focuses on the student role in the feedback process. However, even a short

list of these techniques demonstrates how feedback can be carefully targeted to make it quicker to complete and more effective:

- Instead of correcting every mistake in a piece of student work, simply highlight the mistake in some way and require students to explain why it is a mistake.
- Ask students to highlight one key area of their work that requires the most pressing feedback and target your feedback solely on that area.
- Instead of annotating an essay and then providing a general comment, provide only the comment and ask students to annotate the work based on that advice.
- Alternatively, annotate the work and ask the student to summarize this advice in a general comment.
- Underline particularly successful aspects of students' work with the expectation that they will write a comment explaining this success.

Feedback Should *Focus on Learning, Not Tasks*

The best feedback is portable. Your students need to be able to transfer their learning to other work and other contexts: if feedback is task-specific, students find it difficult to apply in other learning situations. Of course, students usually need specific examples from the task to clarify your advice, but correction should ultimately focus on the learning, not on the task.

Here is a task-focused comment that I found in the workbook of an 8th grade geography student:

> You did not check off the orientation item on your proofing sheet. Your map needs an orientation to show how the compass point aligns with the map. I can't tell which way your map is facing!

This feedback might be more effective if it focused on the underlying learning intention:

> The orientation on a map helps the reader understand what up and down and left and right represent. Your map has no orientation.

> Remember, every map should have an orientation so the reader can tell which way is north.

Often we do this by focusing on the purpose of the task. Referencing the goal of the task in your feedback is an effective technique for doing this (Wiggins, 2012):

> The purpose of the experiment is to test your hypothesis about water contamination. Make specific reference to this in your lab report.

This approach also helps your students track their progress toward their goals.

Feedback Should Be *Clear, Consistent, and Specific*

Effective feedback is written in accessible language. It employs concrete examples to offer students a consistent message about what actions they should take next to improve their work:

> Your bibliography had a wide range of both online and printed resources. You used these references throughout your project to back up what you were saying. All of the references, though, were secondary sources. For your reflection exercise, find at least two primary sources that you could have also used as evidence.

Feedback Should Be *Timely*

The quicker your students receive feedback, the more likely they are to act on it. Often the traditional feedback process consists of collecting finished pieces of work, painstakingly correcting them, and handing them back a week later. Students are then expected to read your comments and apply that advice to a similar task at some later date. By contrast, tightening the feedback loop so students receive advice as they are doing the work—or as soon as possible afterward—means they can make changes to their work when it is still fresh in their mind or even still under way.

Teachers usually find that incorporating these principles into their corrections takes some practice. At first, you might find that it actually takes a little longer to write feedback with these principles in mind. In my

experience, though, this quickly becomes second-nature. Giving students immediate feedback that is focused on a specific aspect of learning and written in a clear manner makes it much more likely they will act on your advice—and that you will have to spend less time repeating it.

Summing Up

I had a colleague who used to joke about suffering from "assessment amnesia," a condition in which she would be so swamped with correction and marking that she would faithfully vow that she would never organize her assessment that way again—only to find herself weeks later in the exact same situation. I always thought this observation was perceptive because she wasn't looking to shift the blame elsewhere; she knew that a big part of the problem stemmed from her own habits, as they do for all of us who have suffered assessment amnesia.

Recognizing and acting on this insight are, of course, two different things. If we want to change the habits for which we are responsible, we need more than good intentions. We also need strategies and, most important, the resolve to keep at it. The strategies throughout this book provide a path toward more effective and efficient assessment, but they require practice at the outset. In my experience with colleagues and the teachers I coach, it isn't long before the practice becomes second-nature. From there, student outcomes improve, and workloads shrink dramatically.

In this chapter we've explored a systematic approach for reducing the workload associated with correction. We covered concrete strategies for reducing unnecessary marking, speeding up the total time spent on correcting, and helping ensure teacher comments are effective. (See Figure 5.4 for a summary of these strategies.)

Students, of course, have a role to play in this process, too. How do you get students to act on your correction? The next chapter answers this question by exploring practical strategies for encouraging students to take more ownership of their learning and be more involved in their own assessment.

Figure 5.4
SUSTAINABLE MARKING

How can I reduce the amount of correction I do and mark what's left more quickly?	
Approach	**Strategies and Techniques**
Quality Control You need to set up proofing routines for raising the initial quality of student work submissions. Too much teacher time is wasted correcting mistakes that students already know are errors.	**Formal Formative Assessments**—Use formative assessment strategies (Chapter 4) to prompt students to take more responsibility for self-correcting their work.
	Proofing Guarantees—Use this type of checklist as a pre-submission routine to prompt students to look for common errors.
	Interim Submissions—Ask students to submit *finished* portions of their work *before* the final due date. This helps students break larger projects into small manageable tasks. This can be used in conjunction with Gallery Sessions and Traffic Light Inventories.
	Gallery Sessions—Have students display their work for peer feedback and to get a better sense of what quality work looks like.
	Traffic Light Inventories—Have students color-code how much of each task in a project they have done. This will help them get a better sense of how to use their remaining time and effort.
Quick-Correction Strategies You need strategies for completing correction quickly. We can't allow correction to crowd out other aspects of our work (and private) lives. We need ways of grading work that are accurate *and* fast.	**Correction Sampling**—Mark a representative sample of student work, noting common errors. Ask the whole class to review their work for these common mistakes.
	Automated Correction—Use software to record and automatically correct student work.
	Screencasting—Record an audio/video commentary of your corrections. This gives students accessible and engaging feedback that they can watch multiple times.
	Mastery Grid—Create a spreadsheet that identifies the underlying skills students need to learn for a group of tasks. Keep an ongoing record of student skill acquisition using a simple scoring system: 2 = Strong evidence of mastery 1 = Some evidence of mastery 0 = No evidence of mastery

continued

Figure 5.4
SUSTAINABLE MARKING

(continued)

Effective Feedback You need to make sure that the feedback you give is clear, precise, and easy for your students to act on. This makes it less likely that you will have to spend lots of time and effort giving the same advice over and over again.	**Feedback Should Be *Selective.*** Focusing on one or two areas of potential improvement at a time ensures that your students are more likely to take up your advice.
	Feedback Should *Focus on Learning, Not Tasks.* The best feedback is portable. Your students need to be able to transfer their learning to other work and other contexts.
	Feedback Should Be *Clear, Consistent, and Specific.* Effective feedback uses accessible language and concrete examples to give students a consistent message about how to improve their work.
	Feedback Should Be *Timely.* The quicker your students receive feedback, the more likely they are to act on it.

6

Reflection and Third-Stage Correction

School shouldn't be the place your students go to watch you work (Hattie, 2012). Your students need to be actively involved in their own assessment. The word *correction* implies that students respond to your marking by making changes to their work to make it better. Do they always do this? As I noted earlier, if you take the time to correct a piece of work and a student doesn't respond to your advice, then it is a waste of time for both of you.

I have seen this happen again and again in classrooms: the teacher meticulously marks a piece of work, but the student fails to properly act on it. The temptation is to respond to this by doing more—to give more extensive advice, annotate additional work, and have extra one-on-one conferences with students.

However, assessment simply involves too much work for us to take up even more responsibility. Our students must do their fair share. We need them to understand their key role in the assessment process.

I have interviewed young people about how they view correction, and most of them characterized it as a two-step process. "I do the work and then my teacher corrects it" was their most common response. This characterization is telling. In my experience, it is not that students actively

resist responding to your advice so much as that they don't see it as a core part of assessment. ("Really, I just look at the mark.")

We need strategies to get our students to take responsibility for this last—and important—phase of assessment: student response. This chapter explores "third-stage" correction tools that persuade students to review and respond to your correction advice. Adopting one or two of these techniques will help reduce the time it takes to correct individual pieces of work. Using a range of them will foster a culture of student reflection that will substantially reduce your workload.

More important, these strategies will encourage your students to take more ownership of their own learning. Our goal here is to change the question that students ask when they get their work back. Rather than "What did I get?" we want them thinking, "What should I work on next?"

Minimal Marking

As I have stated throughout this book, marking work is one of the biggest components of any teacher's workload (Gibson, Oliver, & Dennison, 2015); annotating your students' responses and giving them written feedback is a time-consuming process. The key question about the time spent on the effort is simply this: Is it worth it? Is it an effective and efficient use of your and your students' time? Does the time you spend marking work lead to students devoting a similar amount of energy to reading and responding to this information?

The answer, as we have already discussed, is often no. Students regularly treat written feedback as secondary to their grade or indeed ignore it altogether (Butler, 1988).

Our challenge, then, is to come up with an approach that actually encourages students to take action. I have selected the minimal-marking strategies described in the next sections because they give you practical ways to ensure students respond to your advice. They are "minimal" in that they take less of your time than traditional marking strategies. However,

they all require students to do more. Each of them prescribes a specific responsibility for your students to fulfill when you give them feedback.

Not every one of them will work for every teacher, but using one or two of them regularly will reduce your marking load while giving students a clear path of action for responding to your feedback. I like these strategies because they assume that students have a key part to play in correction. You can use these strategies to help your students share this presumption.

Partial Correction

One of the best ways to encourage your students to pay closer attention to written feedback is to do only part of the correction and have them complete the rest of it themselves. Asking your students to identify the precise location or significance of an error means that they will focus on the details of this mistake. Similarly, getting students to explain why you have identified a part of their work as particularly successful encourages them to closely examine that success. We'll look at three ways to partially mark student work: error flagging, error counting, and double-ticking.

Error flagging. In this approach, you first read through a piece of written work to identify any foundational errors. The main things to keep an eye out for are factual inaccuracies, spelling mistakes, or calculation errors. Rather than correcting these, you simply put a dash or a dot at the end of the line that the mistake appears in. (If there is more than one mistake in a sentence or a sum, you just mark more dots or dashes.) It is then your student's responsibility to find the mistake in the line and correct it. Obviously this approach relies on a degree of competency from the students, and some students will struggle to identify errors. There are ways, though, to differentiate for students with learning disabilities or language issues. Circling an incorrect word but not correcting the spelling works well, as does getting students to review their work in mixed-ability pairs once it has been corrected.

Richard Haswell, who first popularized minimal marking, found that this simple adjustment not only saved time but ultimately improved

student accuracy in subsequent exercises. Error flagging is one of the first strategies I show teachers who are swamped with marking because the benefits are so quickly apparent (Haswell, 1983, 2006).

Error counting. Instead of marking each individual question on a test as correct or incorrect, error counting involves dividing a student's answer into subsections and listing the number of errors the student made for each subsection, as in this example:

Section A: 2/3
Section B: 1/3
Section C: 2/4

It is then the student's responsibility to establish which of the answers are right and wrong in each section: "What was the mistake I made in Section A?" This approach is used most frequently in science and mathematics (particularly for test papers and homework sheets) but is applicable whenever teachers have to assess a range of questions.

Double-ticking. In this process, you indicate highly successful elements of a student's work with a double-tick (two checkmarks) or some other form of highlighting and ask the student to describe why this element is particularly noteworthy. Most teachers already use annotation of this kind, but the key here is asking students to explain why this specific aspect of work is so successful. I like this subtle variation because it helps students "scale their successes." Double-ticking helps students recognize what they are doing well and why it is successful so that they can do this more often.

Partial marking is a versatile approach. Some teachers use it as an interim-submission strategy: after they partially mark a piece, it goes back to their students to address any mistakes but then comes back to the teacher for further review. You could also put the accent on the student role, giving students a style guide for reference and producing a worksheet that maps out their duties in the process. I have occasionally stipulated that students won't be able to receive their final comments and grades

until they have fixed all the surface errors found during partial marking. At other times I've asked students to focus on my comments about major issues in the work as a priority, and assign finding and fixing the minor errors as a homework task.

Whichever approach you employ, in my experience it is important to make sure both students and their parents have a clear understanding of what this marking entails and why you are using it. You don't want anyone to think you are avoiding work or being less than conscientious about giving feedback. Many people are unfamiliar with this mode of correction, so it is worth unpacking in detail the distinct advantages of this approach for yourself and others:

- **It saves time.** Students make lots of low-level errors, and correcting every surface mistake is a time-consuming activity. These approaches are much quicker: when I first introduced partial marking in my class, I saved around three minutes per essay (not an inconsiderable amount when multiplied by a class size of 26).

- **It helps you concentrate on the core issues of a student's work.** I have always found that partial marking helps me notice what students have really done well and what they are struggling with and not be distracted by the surface features of the work.

- **It helps students focus on what is important.** Your comments are aimed at the issues that matter most, and there is less information for the student to take in. "I like when you do it this way," a student once told me, "because I get distracted when there is too much red pen on the page."

- **It reminds teachers that students are good at finding their own errors when prompted.** Researchers have demonstrated that many students actually possess skills that they choose not to use (Corno, 2001). Partial marking encourages students to check their work to their fullest ability. Haswell (2006) found that students were able to identify mistakes around 70 percent of the time.

- **It requires students to do the correcting.** The fact that students, not the teacher, are doing the correcting is perhaps the biggest strength of this approach. From the students' perspective, there is a significant difference between noting a corrected mistake on the page and having to fix it themselves. The first approach sets them up as passive receivers of feedback, whereas the second requires that they do the cognitive work of identifying and addressing the error.

Partial marking can be a powerful assessment strategy that both reduces workload and builds student capacity. Haswell (1983) deftly summarized the appeal of this approach: it "shortens, gladdens, and improves" marking. Indeed. Moreover, it helps teachers move beyond surface corrections to the deeper comments that produce deeper reflection and revisions (Wingard & Geosits, 2014).

Shared Correction

Another way to minimize correction while heightening its impact is to do it *with* your students. You add two components to papers you have graded: your annotations and a summary comment. Completing one of these and making the other your students' responsibility is a simple way to lessen your marking workload. An important point is that this approach is collaborative: many students would find writing an entire commentary on their own work far too difficult or have no idea what to target in their annotations. Sharing these tasks is much more manageable, and you can do it in two ways: student-generated general comments and student-generated annotations.

Student-generated general comments. In this approach, you annotate the student's work as you normally would and leave space for the student to write a general comment that synthesizes these observations. This simple strategy has some obvious benefits.

First, it encourages students to closely read all your annotations. If they have to summarize your feedback, they can't just skip over

line-by-line marking and look to a grade or a general comment to gauge how they performed. They need to digest all of your observations to write a general comment.

Second, it encourages students to look for patterns of error, identifying which mistakes you have had to repeatedly correct. This point is important because the volume of teacher corrections can overwhelm many students. It is empowering for students to realize that although their paper has many corrections, it may be just the same handful of mistakes made over and over again. (See "Error Clusters," pp. 185–188.)

When students write general comments, they are forced to really engage with your feedback. They must think carefully about the ways they can improve.

Student-generated annotations. This approach is the opposite of student-generated general comments. This time you provide the general comments and ask the student to annotate the piece in support of your comments. Your comments will highlight successes and suggest areas for improvement, and your students have to carefully examine their work for evidence of your comments and annotate accordingly. Like student-generated general comments, this approach offers two advantages.

First, students have to immediately put your feedback into action. Traditionally, a general comment asks students to remember advice for the future on how to improve or approach similar tasks, which is not always effective (Clarke, 2014). In contrast, asking students to generate annotations requires them to demonstrate that they understand your feedback by putting it into action *immediately*.

Second, this approach gives you feedback on how well students respond to your general advice. You get to see right away which of your corrections elicit the right response. You also get to see which of your comments students find unclear or confusing. As one teacher neatly summarized: "I like this—it cuts correction time and you don't have to wait for the student's next piece of work to see if they 'got it.'"

Using student-generated annotations encourages students to review their own work. In addition, they must respond, as soon as possible, to teacher feedback.

Targeted Correction

Focusing on *part* of a piece of work makes both correcting and responding to that correction easier. Students get a brief representative model of how to approach their work, and teachers get more time to concentrate on helping students meet this standard (Elliott et al., 2016).

Model correction. Rather than correct every surface-level error in an entire piece of work, you select a representative portion of the work to mark. For instance, you might select a handful of math problems or a paragraph of an essay and correct all of the calculation or grammar and spelling errors within them before handing the work back to the student. Your student can then use these corrections as an example for proofing the rest of the work.

Student-selected feedback. In this approach, you ask your students to select a section of work that they'd most like to get feedback on. You then provide detailed feedback on this part of the work. Many schools include a box on their submission sheets for students to identify which area of their work they most want feedback on. (Schools that do this often find that, unprompted, students will also use the box to highlight an area they are proud of or have worked hard to improve.) I found that targeting my feedback on what students found most pressing was a great way to establish a culture of open reflection in the classroom. It was particularly helpful for students who were reluctant to ask questions in class.

Single-criterion feedback. Here you focus your attention on one aspect of the criteria and give your students detailed feedback for this narrow area. This might involve, for instance, marking a single row of a rubric or targeting one feature of an essay. Probably my favorite version of this task is asking students to complete a deliberative-practice exercise

(see Chapter 4) aimed at acquiring just one skill and then providing them with instant feedback on their performance.

Single-criterion feedback makes feedback more manageable for both you and your students. This approach reduces "task saturation"—a situation in which your students are overwhelmed by the *volume* of feedback that they are expected to respond to—and ensures your students can digest and act on your advice. It also reduces the amount of feedback you need to generate so you can respond to students much more quickly. Tightening the feedback loop means that the advice students are given is more likely to meet their immediate point of need. Focusing on your students' most immediate needs by giving single-criterion feedback is a great way to reduce the volume of your correction work without reducing the effectiveness of your feedback.

Collaborative Review

The feedback strategies explored in the previous sections are good ways to reduce the *amount* of correction associated with marking *submitted* work. In this section, we'll look at ways to reduce the amount of work that needs to be corrected in the first place by getting students to peer-review their own work before submission.

The idea here is to offer your students feedback that they can act on immediately. Too often, marking rests on the premise that students will remember feedback that is aimed at work to be completed at some unspecified future date. Collaborative reviews offer students formative feedback that is more immediate—feedback they can use while they are still learning something.

Mid-lesson Student Exemplars

In this form of collaborative review, you pause the lesson in the middle of an activity to review a piece of student work. Students note how you

review and revise this piece of work and then do the same to their own work in progress. This simple procedure is easy to implement:

1. **The teacher selects the work.** Teachers do this in a variety of ways. Some pick a piece at random so that when students start a task, they all feel their work might be chosen (Clarke, 2014.) Alternatively, I often select a piece that is representative of common errors I am seeing as I move around the class. On other occasions, I might select the kind of successful response I want students to use as a model.

2. **Once the work is selected, the teacher displays it to the whole class.** Sharing a soft copy via e-mail, taking a photo of the work, or using a document camera are all effective ways to do this. For shorter responses—a math problem, for example, or a two-sentence response to a comprehension question—ask your students to rewrite their responses on the board.

3. **Students discuss the example's strengths.** Ask your students what is successful about the answer. In my experience, this works best in pairs. Once your students have identified these strengths, they can share them with the class.

4. **The teacher asks the students to identify areas of the piece that require further work or need to be corrected or revised in some other way**. Your role is to make sure that students aren't just identifying problems in the work but also speculating about how they might be fixed. Again, once students are finished doing this, they can share them with the class.

Even if you don't have time for any whole-class discussion, just having students discuss the exemplar in pairs can be effective: your students get to explore a model from one of their peers and to collaborate on how to refine that example. Finally, you need to finish the mid-lesson collaborative review with students reviewing their own work in light of what they have learned:

> Now that you have seen Luiz's answers, is there anything you would change about yours?
>
> Would the improvement the class suggested for Michaela's response be helpful for yours, too?

This approach helps students refine their responses and is a real time-saver for teachers. One French-language teacher I know found that just getting students to self-correct their answers from a photo of a student exemplar radically reduced her correction load. Taking it a step further and offering students a chance to revise their work rather than just correct it saves teachers even more time. Instead of the time-consuming process of collecting work and writing detailed comments, this feedback can be generated by whole-class collaboration when students most need to hear it—while they are learning.

Mid-lesson Cooperative Feedback

Another way to stage mid-lesson reviews is as a peer-feedback activity. Many teachers ask students to swap and correct each other's work as a routine exercise, but a more effective form of peer reflection is cooperative feedback (Clarke, 2014). Rather than swapping work, in this form of feedback students *take turns* looking at each other's work *together*. The process is very similar to the approach just described, where students look at a student exemplar. Here are the steps involved:

1. **The students place the work between them.** This triangular shape to the discussion (students side-by-side, both looking toward the work) is important because it cues your students that this is a shared task. Moreover, it reminds them that feedback is not about the person ("you are good/bad at this") but is focused on the work ("this is good/that could be improved"). Body-language experts sometimes refer to this triangular set up as "three-point" communication (Grinder, 2011). Three-point discussions are good for potentially challenging conversations and help your students feel comfortable with this collaborative approach.

2. **Students then study the piece, looking for strengths.** You can shape this conversation by offering guiding questions or some other form of scaffolding, as in these examples:

   What is the best part of this response?

   What meets all the criteria in this answer?

   What approach could I "borrow" for my work?

3. **Students identify elements of the work that could be improved.** Establishing some conventions on how to give and receive feedback is important here. Make sure that it is only the student whose response is being corrected who marks the work in any way ("Remember, if it is your work, then *only* your pen can mark it"), and ask students who are commenting on a peer's work to frame their feedback in the form of a question. ("Could you revise this?" is much less confrontational than "This does not work.")

4. **The student makes changes to the work based on the collaborative feedback.** The most important thing to emphasize is that this advice isn't for later but for *now*: if there is something the partners think could be done to make the work better, the student whose work is being reviewed should make that change immediately (Clarke, 2014). It is worth thinking about what you can do to make these real-time revisions easier for your students, such as having them print their work with extra-wide margins or writing on every second line to create more space for their revisions.

The benefits of this approach are similar to those of exploring student exemplars. It reduces the total amount of work you have to correct and offers students feedback that they can immediately act on.

Swap and Choose

Swap and Choose is an engaging variation on collaborative review. In *Embedded Formative Assessment* (2011), Dylan Wiliam describes a similar technique called Choose, Swap, Choose. The basic exercise is very simple:

instead of asking students to review a single piece of work, you ask them to create multiple pieces of work and then swap the work with a partner, who helps identify the most successful example.

This exercise works well in situations where students can produce multiple iterations of a single answer. A physical education teacher, for example, might ask students to video-record themselves shooting 10 free throws and organize the students in pairs to review their efforts: which free throw showed the best form? What might you do in the future to consistently shoot the ball like this? At my children's school, they often do this for letter formation, asking students to create a page of *Q*s or *R*s and then organizing the students into pairs to identify and copy their "best letter."

Swap and Choose emphasizes the value of persistent effort. It reminds students that it is not how good you are at something, but how hard you work that dictates how much you improve. ("Remember, in this class we concentrate on effort, not ability.") By repeating, critiquing, and refining a skill, students can quickly get better at it, and working with another student speeds up this process.

Alternative Grading

We grade students to help them reflect on their learning. There are many forces that make it hard for students to see this clearly, not least the system-level obligations to report on student performance to parents and institutional bodies. There is so much pressure to perform well on systemwide benchmark tests or college entrance exams that sometimes the idea of feedback as a learning tool gets lost.

Traditional grades are an example of this tendency. Grades are meant to summarize your feedback about the extent of your students' learning, but too often students see grades as the goal of the learning itself. Students can end up seeing their studies through the prism of formal assessment ("Is this going to be on the test?") instead of as a way to develop their skills and deepen their understanding. Moreover, this way of thinking makes

them more likely to take shortcuts in their learning—or even cheat—and less likely to take intellectual risks (Kohn, 1999). The great irony, of course, is that this focus on grades can often undermine their performance and lower their grade.

Abandoning grading in our classes altogether is not a realistic response to this issue. Students and parents often clamor for this type of feedback, and institutional obligations make grading compulsory even if it wasn't so popular. There are, however, a number of alternative grading schemes that you can employ to address the limitations of traditional grading. These alternatives encourage your students to do more to reflect on and respond to the marks you give them.

Growth Scores

If concentrating on final grades undermines learning growth, one approach you can take is to replace these absolute scores with a score that reflects improvement. That is, you use a grading scheme that rewards not the level of performance, but the change in this level over time.

How does this work in practice? Let's look at a hypothetical example. Imagine that you have just corrected a topic test and you are comparing your students' final marks with those of the pre-test done at the start of the unit. If a student gets 6 out of 50 correct on the pre-test but 16 out of 50 correct on the final test, then that student's growth score is 10. If another student in the same class gets 39 correct on the pre-test and 49 correct on the final, then the second student's growth score is also 10. This to me seems a fair reflection of how much each student has learned over the course of the topic.

Growth scores can be controversial. When I introduce this approach in whole-school workshops, teachers often express strong resistance to even trying it. This is not usually resistance in principle to the idea itself, but rather a feeling that such an approach is unrealistic: "It's a good idea," goes the standard response, "but it wouldn't work in the real world." In

reply, I usually cite a high school in Melbourne, Australia, that has had startling success using growth scores. The school is in an economically disadvantaged part of the city and has many students starting school with very low levels of literacy and numeracy.

Despite these challenges, the school has achieved some of the highest relative growth scores in the country and has seen students' attitude to learning change dramatically (Jensen, 2014). One of the ways it has done this is through a mathematics program strongly focused on improvement grades rather than absolute scores. In this subject, students start off each unit with a pre-test, and the teacher then designs "just right" individualized tasks catering to the students' precise point of need (Parsons & Reilly, 2012, pp. 4–5). Each student works through these programs, and at the end of the topic, the students are tested and receive an individual growth score indicating their level of improvement.

Obviously, this school has a whole-program focus on improvement scores. If this approach intrigues you but you are looking for something on a smaller scale, there are lots of other ways to use growth scores to engage and motivate student learning.

</=/>. Probably the quickest of these techniques to implement is a grading scheme identified by the marks <, =, and >. These marks replace a letter grade or score and denote the following:

< A lower standard than your last work on the topic

= The same standard as your previous work on the topic

> A better standard than your last work on the topic

I like this approach because it encourages your students to concentrate on their own improvement. Some students find this difficult to do; many have a fixed sense of their own ability or are always comparing their performance to that of others. Students who routinely receive very good marks can reach a plateau of development and effort. If you always receive an *A* and always do better than your peers, you can become complacent

about improving your performance. Similarly, students who never receive high-level marks may become disheartened by comparing their performance to that of others and become resigned to underperformance.

The </=/> grading scheme is an elegant way to address this issue because students who receive this type of grade are immediately reminded that the key measure of performance is whether their work is improving. This attribute makes this grading scheme ideal for high-volume correction during the review or revision period and other periods of intense study. I always found it a great way, for example, to give students "quick-scan" feedback about whether their work was heading in the right direction when they were preparing for exams.

Group marks. Giving the entire class a grade is another way to encourage students to reflect on how much their work has improved. Whole-class grades are easy to implement: instead of giving each student an individual grade, you simply total the student results and calculate an average class grade. Usually this is done across a couple of tests to gauge improvement. Teachers often compare, for example, group performance on a review or revision test with performance on the final test. Initially, you tell your students the class grade—not their individual results—and discuss its significance. I use prompt questions to guide this discussion:

> Our class average is 78 percent. That is a lot higher than our average mark of 62 percent on the review test. What do you think helped us improve our score so much?
>
> Is there something we could have done to get an even higher improvement score than 16?

Obviously this approach should be used sparingly. Generally, students just want (*and need*) feedback about their own work, but using group marks to break up the assessment cycle can be effective. Why is this?

- Students find the novelty of this approach highly engaging.
- It fosters a strong sense of collective responsibility, with students encouraging each other to be accountable and do the best they can.

- It focuses attention on an often overlooked aspect of classroom practice—that students are working as a team. Getting feedback about how much their group is improving helps the class develop a belief in their own shared capacity. This "group efficacy" is a trademark of many high-performing teams (Goddard, Hoy, & Hoy, 2000).
- This approach is a low-stakes way to focus on improvement. Students who are intimidated by the whole feedback process can concentrate their efforts on a group goal, while being reminded that *everyone* has things they can improve.

Whether you employ a quick technique like group marks or a more elaborate whole-school approach, using growth scores is an effective way to give students feedback on their improvement.

Rewarding Revised Responses

Throughout this book I have talked about the fact that students don't always respond to teacher feedback. Certainly, as a classroom teacher I am very familiar with the student who submits a second draft of an essay that is identical to the previous draft. Rather than lament this phenomenon, we need to target this behavior. A number of grading schemes can be used to do this by explicitly rewarding students for acting on your feedback.

50/50 grades. In this scheme, your students receive only 50 percent of their marks from their first submission of work. The remaining 50 percent can be earned only if they actively follow up on your correction advice in their second submission. For example, a student in your science class might complete a draft lab report and receive a mark of 8 out of 10, with a series of suggestions on how to improve this already high-level response. If the student acts on all of these suggestions, she receives a further 10 marks out of 10, giving her a total combined score of 18 out of 20. If she does not attempt any of these suggestions, she receives 0 out of 10, for a final combined mark of 8 out of 20.

I worked with a teacher who believed that this scheme was unfair because it was weighted toward students who responded to teacher advice. This, I think, is precisely the point. Students who treat feedback as advice to follow do better under this scheme than those who don't. It is also useful for giving students who are struggling a way to redeem their work. A student in this situation, for instance, who received only a 2 out of 10 for the first draft of his report but followed up on all of the teacher's extensive feedback would receive a final mark of 12. This is a fair reflection of his efforts and ability.

Second-chance marking table. Sometimes teachers worry that students will "game"' improvement grades like growth scores and the 50/50 marking scheme by deliberately underperforming so that they can demonstrate higher relative growth. This has not been my personal experience. If there is a chance that this might be an issue in your school (or if you just want to better reward students who put effort into their first attempts at a task), then you might try a marking table like the one shown in Figure 6.1. On a scale of 1 to 10, the score on the initial submission is compared with the score on the final submission, and the overall score is represented on the grid by the square where the two submissions intersect. For example, a student whose initial submission was Satisfactory/Acceptable and whose final submission was Excellent would receive 7 points, or Good.

This table, inspired by the work of Deanna Holden (Wiliam, 2011), gives students an opportunity to improve their work on a second attempt but carefully weights the points allotted so that the student's performance in the first attempt is also taken into consideration. It usually takes students some time to get a sense of how every combination of marks works, but they generally get the principle of this marking scheme quite quickly—their first attempt counts most, but there is room for improving their final mark on second submission.

Focus questions. If these approaches seem too complicated, you might try a much simpler technique: replacing grades with focus questions. How do you set this up? Here's a three-step approach:

Figure 6.1
SECOND-CHANCE MARKING TABLE

		Initial Submission				
		Outstanding	**Excellent**	**Good**	**Satisfactory/ Acceptable**	**Not Satisfactory**
Final Submission	**Outstanding**	Outstanding 10	Outstanding 9.5	Excellent 9	Good 7–8	Good 7
	Excellent	Excellent 9.5	Excellent 9	Good 7–8	Good 7	Satisfactory 6.5
	Good	Good 7–8	Good 7–8	Good 7–8	Satisfactory 6.5	Satisfactory 6
	Satisfactory/ Acceptable	Satisfactory 6	Satisfactory 6	Satisfactory 6	Satisfactory/ Acceptable 5.5	Acceptable 5
	Not Satisfactory	Not Satisfactory >5	Not Satisfactory >5	Not Satisfactory >5	Not Satisfactory >5	Not Satisfactory >5

1. Identify two key issues in the student's work that need feedback.

2. Formulate a question for students to answer about each issue, label them *1* and *2*, and write these questions at the bottom of the student response. Then isolate examples of these issues in your student's work, and label them with a *1* or a *2*.

3. Dedicate 10 minutes of class time for students to answer these questions.

For example, an art teacher might note that several students' analysis of a painting contains no evidence to back up their assertions and that it doesn't use the meta-language the class has been learning. The teacher then composes some questions to help students address these issues:

1. What terms from our art terminology list could you add to your critique?

2. Could you give two examples of how Rothko uses juxtapositions of color?

The students are then given class time to write a response to these questions by making some changes to their work before resubmitting it. This approach works well because every student—regardless of ability—receives a concrete task as feedback, and time to immediately complete this task.

Each of these marking schemes puts the onus on the student to work hard to address your comments. They help make the teaching time devoted to correction more meaningful, and student responses to it more effective.

Annotating Feedback

Using alternative grading schemes can sometime lead to consternation from students, parents, and even colleagues. If people are unfamiliar with the rigorous research and reflection put into honing these strategies or have no personal experience with them, their uneasiness is

understandable. A student might ask, "How will I know if I have to revise my work if I don't get a mark out of 10?" A parent might ask, "If my child doesn't get a letter grade, how will I judge how she is doing?"

The most effective way to reassure people about these concerns is to demonstrate the quality and volume of feedback students are receiving. Asking your students to annotate the types of feedback they receive is a way to make this advice more explicit.

How is this different from the marking you already do? These annotations are not the abbreviations ("SP" for spelling, for example) that many teachers often use to signify common errors in student work. Instead, this kind of annotation requires *students* to take action to make the feedback they have received more visible. Here are some practical examples of these annotation strategies.

Oral Feedback Stamp

When I talk to students about how to improve their work in class, I often mark the relevant section of their work with a stamp that says *"Student response to teacher's oral feedback:"*—with the expectation that they will then summarize the advice offered. Their doing so confirms that they have understood this advice and creates a record of my feedback.

Color Highlighting

Students use a different-colored pen or font (or markup tools in digital documents) to highlight what they have learned from feedback. For example, you might ask students to rule a line in a distinctive color across their workbook after a student conference. All the work below that line should be informed by your advice at the conference discussion. Did the student act on your advice? Was your help useful? Alternatively, you might ask students to highlight the revisions they make after receiving feedback. I often ask students to write in red pen any changes they make to their work after peer-conferencing. That way I can see at a glance whether this process has helped them and also get a sense of what their partner advised

them to do. In my experience, highlighting the revisions students make to their work is particularly helpful to struggling students; it reminds them that it is their effort, not their ability, that is important (Dweck, 2016).

Feedback Codes

Students annotate their work with two-letter codes to indicate what types of feedback they received while they were completing the work. Here are some typical codes:

PP—Feedback received from a peer partner
SA—I self-assessed this work
MA—Changes identified from reviewing a model answer
TF—Teacher provided oral feedback
WC—My work was discussed in a whole-class review

Shirley Clarke, who popularized this form of feedback, summarized it as making "invisible feedback visible" (Clarke, 2014). Much of the best feedback your students receive consists of subtle, minute-by-minute adjustments to what they are doing, of which there is no permanent record. Parents rarely see the oral feedback you give while conferencing with students. This situation can lead to a kind of "double-marking," in which you spend time and energy providing feedback to students and then spend more time marking work to demonstrate that you are giving feedback—even though the student has already received this advice and acted on it. (I see teachers "double-correcting" their students' workbooks in this way all the time.)

Encouraging your students to annotate feedback is a more effective way to demonstrate both the extent of the advice you give them and the importance of acting on this advice. Perhaps most important, annotation can also be used as part of a wider plan to implement grading strategies that lead to deeper student reflection—strategies that remind students (and sometimes teachers) that grades are not the goal of learning but a measure of their progress toward it.

Identifying Patterns of Error

If you want to be an effective marker, you don't just mark each individual error in a student's work—you look for patterns. Traditionally, identifying patterns of error or success in a piece of student work has been the sole responsibility of the teacher. This is understandable, as spotting an underlying misconception that is generating errors is harder to do than just noting the errors themselves. Even for teachers this requires some practice. However, there is no reason that, with training, your students can't do some of this work.

How do you train students to do this? It seems the intuitive response to this question is to just point out these errors to students and hope that students will start to recognize the patterns in their future work. For example, I often see teachers reminding students to watch out for common mistakes when they introduce a task ("Lots of people list the events here instead of summarizing them") or mentioning patterns of error in their correction comments ("You made a lot of *calculation errors*"). However, a more effective way to do this is to use an error-cluster activity.

Error Cluster

In this activity, you present your students with a piece of corrected work and a table of common types of error. They then review each mistake you have highlighted and classify what type of error it is. For example, an upper-elementary-school teacher might correct a math test and give students an error-cluster table that looks like the one shown in Figure 6.2. The students would then go through each incorrect answer and say whether they made the mistake because they didn't really understand how to answer or because they knew how to do the problem but made a mistake applying that knowledge.

With high school math students, an error cluster might take a more complex form, looking not just at calculation and conceptual errors but

Figure 6.2
ERROR CLUSTER FOR MATH

Question Number List the number of the question you got wrong.	**Calculation Error** Did you make a simple counting error when calculating your answer?	**Conceptual Error** Did you make a mistake because you didn't understand how to approach this type of problem?

other kinds of common test-taking errors (Nolting, 1997). Figure 6.3 shows an example.

Error clusters are versatile. They are often used for tests and exams but are just as effective with project work, essays, and performances. Indeed, I have found them useful whenever I want my students to reflect on the nature of the mistakes they make, prompted by questions such as these:

> What type of error did you make?
>
> What area of the topic did you struggle with the most?
>
> Was there a link between the mistakes you made and the type of question you were asked?

Error clusters are also easy to adapt. Many teachers add an extra column to the table that gives students advice on how they might address each particular type of error. Figure 6.4 shows how one row of the table in Figure 6.3 might look if the teacher added a "Suggestions" column.

However, it is not just the versatility of error clusters that makes them such an effective teaching tool. When I introduced them in my class, what I appreciated most was that they helped students feel less overwhelmed when they had made lots of mistakes. The gap between the standard of students' current work and the standard they want to achieve can be intimidating—especially if the teacher suggests many things that need to

Figure 6.3
ERROR CLUSTER: PRACTICE EXAM REFLECTION

Directions: List the question number for each question in which you made this type of error.

Error Type	Question Number
Misread Directions Misunderstood or misread test directions	
Test Procedure Error Made scribing errors, missed questions, or misused time	
Calculation Error Careless error that could be easily picked up by proofing	
Conceptual Error Did not understand how to approach this type of problem	
Application Error Understood the problem but didn't know how it applied to the question	
Study Error Did not focus on the key material during review	

Figure 6.4
STUDY ERRORS

Error Type	Question Number	Suggestions
Study Errors Did not focus on the key material during review		• Complete a confidence test review. • Make a word cloud of your study notes and compare it with a word cloud you have made of the syllabus. • Make a Traffic Light Inventory of your review "to-do" list. • Seek out teacher feedback about gaps in your knowledge.

be fixed. Error clusters encourage your students to view these errors not as a large number of *unrelated* individual errors but as a small number of *types* of errors. They can then target their energies at these key issues and not feel beset by all the individual problems they have to fix in their work.

This outcome is as true for adults as it is for children. As a teacher coach, I often use error clusters in exactly the same way with teachers as I would with my students. If, for instance, a teacher has a long list of management issues, I offer a table of common classroom issues and get the teacher to categorize the problems. For instance, a teacher might offer the following list of issues:

- The class is too loud and I have to shout to be heard.
- When I want to get a student's attention for a safety issue, I find it hard to do it effectively.
- The teacher in the room next door has complained about the noise in my class at the end of the lesson.
- Students often ask me to repeat instructions.
- I find it hard to respond to personal questions students ask.

The list consists of five items; however, it does not require five separate responses but, rather, a single focus on using a rallying call to establish instructional clarity. As with students, teachers feel a good deal of relief at seeing the issues they are facing through this more manageable frame and are usually quick to target their efforts on this more focused goal.

This is the real appeal of using strategies that help identify patterns of error. They nudge learners to take an active role in addressing their own points of need.

Summing Up

As a teacher, you have to complete a large amount of correction work in a small amount of time. If you are also taking responsibility for parts of the

feedback cycle that students should be responsible for, then you are making an intense workload even more onerous. Of course, this is not how it should work; a key principle of feedback is that it "should be more work for the recipient than the donor" (Wiliam, 2011). One school I work with summarizes this aim in their teaching motto: "We don't do for students what, with effort, they could do for themselves."

Most teachers I have worked with accept this idea but find it hard to properly establish in their everyday practice. One teacher I worked with used to joke that remembering to get her students to take a bigger role in their own assessment was like eating salad: "You can do it on Mondays and Tuesdays, but the minute things get busy later in the week, it's back to your usual habits." The challenge, then, is changing these default habits. I have selected the strategies described in this chapter (see summary in Figure 6.5) because I have found them to be the most practical ways you can go about changing these habits.

Having a toolkit of minimal-marking techniques at your fingertips, for example, makes it more likely you will ask students to play a part in correcting their own work. The temptation is to do all this work yourself—the more efficient approach in the short term—but these alternative approaches offer practical ways to focus instead on the long-term goal of building your students' capacity. Moreover, minimal-marking strategies save you from wasting lots of time on correcting surface-level errors.

Collaborative review exercises are similarly beneficial. They allow you to create a classroom routine where students make real-time changes to their work instead of waiting for you to give them feedback at a later date.

I often pair these approaches with alternative grading schemes and error clusters. Using routines and strategies that prompt students to act on your assessment advice helps them avoid being passive consumers of feedback. Being aware, for example, of the wide array of grading schemes makes it more likely that you will find one that will ensure that your students read and respond to your marking and advice. Similarly, if you have

a way to help students identify the types of errors they are making, it will improve your teaching and their learning.

One science teacher I worked with was reluctant to attempt any of these techniques, but after a particularly busy term resolved to give a couple of them a try: "I had to try something!" he said. He found to his surprise that one of the techniques, error flagging, was particularly successful with his middle school classes. "Who'd have thought," he told me later, laughing, "that the answer to having so much to do is not to do it all yourself!"

Not all of these techniques will suit your teaching or setting, but they offer a practical example of how small adjustments in the setup and delivery of feedback can have a profound effect on your students' work—and your workload.

Figure 6.5
REFLECTION AND THIRD-STAGE CORRECTION

How do I get students to be more actively involved in the assessment cycle?			
Instead of . . .	**You might try . . .**	**And then students . . .**	**Specific approaches you might try include . . .**
Laboriously correcting every single student error	Minimal marking, providing focused feedback	Mark some aspects of their work themselves	**Partial Correction**—You identify the general area where a student has made a mistake, and the student has to locate and correct the error: • Error Flagging • Error Counting • Double-Ticking **Shared Correction**—You and the student divide the responsibility for annotating work, writing a general comment: • Student-Generated General Comments • Student-Generated Annotations **Targeted Correction**—You annotate a selected section of the student work, rather than the entire piece: • Model Correction • Student-Selected Feedback • Single-Criterion Feedback

Instead of . . .	You might try . . .	And then students . . .	Specific approaches you might try include . . .
Always collecting work to make sure students have advice on how they might improve it at a later date	Getting students to work together during mid-lesson pauses	Review their work making real-time revisions and refinements	**Mid-lesson Student Exemplars**—Pause the lesson so the class can review a model answer and then revise their work based on what they have seen. **Mid-lesson Cooperative Feedback**—Pause the lesson so students can *take turns* looking at each other's work *together*. **Swap and Choose**—Ask your students to create multiple pieces of work and then, with a partner, to identify the most successful example.
Always using traditional grading schemes that tend to encourage students to concentrate on their grade rather than the feedback you give them	Alternative grading schemes that emphasize the importance of reflection and revision	Have to focus on how closely they followed your advice and how much their work improved	**Growth Scores**—Replace absolute scores with scores that show how much students have improved: • </=/> • Group Marks **Rewarding Revised Responses**—Use scoring systems that give students marks for how closely they have followed assessment advice: • 50/50 Grades • Second-Chance Marking Table
Double-marking—that is, giving students feedback (via peer and self-marking, classroom advice, and conferencing) but later having to give this feedback in written form to demonstrate that you have done it	Just giving students this advice but establishing some conventions for feedback annotation	Annotate the types of feedback they receive as a way to make the different types more explicit and more visible	**Oral Feedback Stamp**—Mark relevant sections of students' work with a stamp that asks them to summarize your oral feedback when you give them advice during the lesson. **Color Highlighting**—Ask students to use a different-colored pen or font to highlight what they have learned from feedback. **Feedback Codes**—Have students annotate their work with two-letter codes to indicate what types of feedback they received while they were completing this work.
Always identifying and explaining to students the types of errors they have made	Presenting students with their corrected work and a table for collating error types	Have to review the mistakes they made, looking for patterns of error	**Error Cluster**—You present your students with a piece of corrected work and a table of common types of error. They then review each mistake you have highlighted and classify what type of error it is.

Conclusion

Some years ago, I returned to teaching after taking a six-month hiatus for cancer treatment. At the time, I joked with a friend that I was surprised the school hadn't had to close without me. The school, of course, hadn't missed a beat in the time I was away—vibrant school communities are too big and complex to be really affected by the absence of a single individual.

However, in the midst of a teaching day, it doesn't seem like this. As teachers, we are constantly bombarded with imperatives: student questions we have to answer "right now"; follow-up e-mails from parents who contacted us at the start of the day and now are writing at the end of the day to ask why we haven't responded; the latest systemwide and school-level initiatives that have been deemed essential to our teaching and must be completed immediately. Perhaps the most pressing of these imperatives are the expectations we put on ourselves to maintain our personal standards, to reach every student, in every way, every single time—expectations that we would consider unfair and unrealistic to put on colleagues but somehow think are reasonable for ourselves. Teaching is a high-stakes profession, and it can feel sometimes that unless we do everything, nothing will get done.

This workload pressure is particularly acute when it comes to assessment and feedback (Gibson et al., 2015). Teachers have urgent student needs to address, system-level tests to administer, work to correct, and students who often clamor to get results back but then are quite reluctant

to follow the advice that goes with it—and limited time to do all this. The sheer volume of marking we have to do in a crowded work schedule can cloud our perspective. Sometimes it can start to feel as though the goal of feedback is just getting it done, not helping our students.

Teachers often "solve" the problem by simply working harder—by staying after school longer to correct work or carving out more time from their personal life to do more marking at home. One recent teacher survey found that full-time teachers spent, on average, 14 to 15 hours per week working beyond their paid role (Invargson & Weldon, 2016). The same survey found that teachers spent the majority of that time "planning, preparing and particularly . . . marking" (p. 9). Is it any wonder that the drop-out rate for teachers in many schools far exceeds that of students?

Obviously these are school- and system-level problems, and they require system-level solutions. However, this kind of response takes time, money, and sustained systemwide effort. The teachers I work with want quicker solutions. When I asked one teacher I was coaching when she wanted "some help with reducing her workload," she responded with a smile, "Seventeen years ago, when I started teaching."

This book offers you comprehensive advice for addressing the time and workload demands associated with assessment—while ensuring that you maintain a high quality of feedback to your students. There are, by my count, more than a hundred practical techniques presented here for improving your feedback while reducing your correction workload. Any one of these strategies (all of which I have either observed working successfully in an everyday classroom or used myself to good effect) might be a helpful addition to your teaching practice.

However, to get the most out of this book, you should think about the strategic questions underlying these individual techniques:

- Could you hone your questioning technique so you get more feedback without students ever having to put pen to paper or your having to mark written work?

- Could you do more to establish at the outset where each student's learning is headed so that the student can target his or her efforts and you have to spend less time later correcting misconceptions?
- Could you develop a wider array of techniques—including alternative testing strategies—to elicit feedback that is fast, formative, and frequent?
- Could you use more techniques not just for reducing your correction workload but also for speeding up how quickly you mark?
- Could you get your students to take a more active role in the correcting process so you can make better use of the limited time available for assessment?

My hope is that in answering these questions you might identify changes that help you refine the way you seek and give feedback to your students. As I have said throughout this book, this is not just about improving your assessment practices; it is about making them more sustainable.

The question of how sustainable a practice is, given the hectic schedule of a classroom teacher, is often lost in the debate about school improvement. I don't come across many research papers on assessment that include specific analysis of the time it will take to implement and maintain the approach that has been studied; I rarely see schools do a time-management study of new initiatives; and I am yet to meet a teacher whose university training had a course component on managing the workload associated with assessment. Time and workload capacity, it seems, are variables that are often overlooked when we explore what makes up great teaching. In my experience, though, teachers talk about these variables all the time.

And so they should. These variables have a profound impact on teacher performance. The study I mentioned earlier, for example, a survey of 13,000 teachers, found that 90 percent of the respondents said that workload affected the quality of their teaching (Invargson & Weldon, 2016). *Fast and Effective Assessment* is an attempt to address this issue. It aims

to describe what really good assessment practice looks like when you are short of time, swamped by work, but nonetheless focused on helping young people become the best learners they can be.

One of the most challenging things about teaching is that you don't immediately get feedback from students about how much you do help them. It is very rare for students to be able to articulate their appreciation for you in the moment. In workshops, I often joke with teachers what this might sound like: "I was getting caught up in adolescent risk taking, had a fixed mindset about learning, and wasn't curious about how my peers who are successful students approach their work; but I just realized this very minute how wrongheaded I have been. Thanks—you really changed my life today."

Of course, teachers do change lives, every day. It just takes a while for teachers to get that feedback. If you have been teaching 5, 10, 20 years, you'll be used to students coming up to you to tell you how much they enjoyed your class. ("You were my favorite teacher," one former student told a colleague, years after she taught him. "I couldn't tell," she replied, grinning.) Usually when students approach you like this they are earnest and their appreciative statements heartfelt. This is very personal—which makes it awkward when you have to reply, "Thanks, *buddy*" or "I really appreciate that, *mate*" because you don't recognize them at all—not because you don't care about students, but because you care so much, and you care for so many. Every single year a teacher has, on average, between 25 and 125 new students. The number is even greater for some specialist subjects. Sooner or later your brain will let go of a particular student's name (though often you'll remember a face and a story). The student, though, will remember your name. As teachers, we try to help every individual, but we do so for class after class of students.

My work in general, and this book in particular, is an attempt to make that aim more manageable. I hope *Fast and Effective Assessment* has made your job a little easier—while you wait for the praise you deserve.

Appendix A: Question Sequence Scaffold

This Question Sequence Scaffold helps you formulate a lesson plan around a sequence of questions (Marzano & Simms, 2012). As the name suggests, this approach is meant to be used as a quick planning strategy that gives some shape to impromptu lesson design.

However, some teachers might be uncomfortable with this quick approach and need a more methodical way to design question sequences. The planning process below offers a step-by-step guide to formulating a sequence of questions that guides students through a lesson.

1. **Identify your learning intention.** In a short sentence, explain what you want students to *learn* (not *do*) during this lesson.

   By the end of the lesson, students will understand what an extinct animal is and be aware of some of the factors that can lead to animals' extinction.

2. **List five foundational details you want your students to know.** Consider the important details that will provide a foundation for a deeper understanding of the topic.

   - Criminal trials are overseen by a judge.
   - Criminal trials are usually seen in front of a jury that decides the verdict.
   - Defendants in criminal trials can use legal representation.

- The judge is in charge of sentencing and may issue fines or sentence a guilty defendant to prison.
    - Criminal trials are different from civil trials.

3. Turn these foundational details into simple questions. These simple questions about basic facts or skills form the basis for the start of the lesson. They usually start with words such as *what, where, which, how many,* or *when*.

- Who oversees criminal trials?
- Who decides the verdict in a criminal trial?
- Can defendants have someone argue their case for them?
- Who sentences guilty defendants?
- What is a civil trial?

4. Formulate at least three questions about the categories you wish to study. These questions should ask students to explore how the details they have learned fit into broader categories. Typically they might require students to describe the general features of this category or identify similarities and differences between this and other categories. Here are some question types you might use:

- What other details fit under these categories?
  Example: Can you think of other extinct animals?
- What are the characteristics of these categories?
  Example: What are the common features of this type of tool?
- What comparisons can be made between examples within and across these categories?
  Example: Are there different types of nouns?
  Example: How is an adverb different from an adjective?

5. Formulate at least three questions elaborating on the characteristics of these categories. These questions encourage students to make and defend claims about their understanding. Here are some question types you might use:

- Can you explain reasons for the characteristics of these categories?
  Example: Why are these animals becoming extinct?

- Can you explain the effects of these characteristics?
  Example: How does a topic sentence determine the structure of an essay?
  - Can you predict what will happen under changing conditions?
    Example: What if this tool didn't exist? How would it change the final product?

6. Formulate three questions asking students to support their elaborations. These questions are designed to ask students to provide evidence and test its validity. Here are some question types you might use:

- What is the source of your evidence?
  Example: Which website on endangered animals provided that evidence?
- What are the limits of this example's validity?
  Example: Are there any situations where we would use a different tool to do this?
- Can you explain your reasoning for using this example?
  Example: Explain the process you used to select this evidence.
- What are other ways you could view this?
  Example: In what ways might you see extinction as a normal part of natural selection?

Use the questions you have formulated to conduct your lesson or group of lessons. The questions will serve as stepping-stones in your students' development of understanding.

My experience is that teachers regularly using this approach soon develop the ability to formulate these questions quickly and intuitively, giving them a faster way to plan questioning sequences in their everyday lessons.

Appendix B: Item Analysis

Teachers can use two simple statistical measures for analyzing test questions (or what researchers refer to as "items"): item difficulty and item discrimination.

Item Difficulty

Item difficulty shows the percentage of students who answered a particular question correctly. Lower percentages indicate difficult questions, whereas higher percentages indicate easier ones. To determine item difficulty, simply calculate the percentage of students who got the answer correct (divide the number of students who got the correct answer by the total number of students and multiply by 100).

Item Discrimination

Item discrimination shows whether students who performed well on a test were likely to answer a particular question correctly. It is used to identify questions that were good at discriminating the students who understood the content from those who didn't. An effective question is one that high-performing students tended to get right, as it reflects overall student performance. To calculate item discrimination, follow these steps:

1. Divide the students' exam results into two equal groups: high scoring and low scoring. (You can do this by dividing the class in half at the *median* (the mark in the middle of all the test scores) or separating the scores into four bands or quartiles and using just the highest-performing and lowest-performing quartiles.

2. Select an individual question and note how many students answered it correctly from each group (the following example is based on the quartile method):

> Fifty-four out of 100 answered the exam question correctly. Of the 25 students in the highest-performing group, 24 students answered the question correctly. Of the lowest-performing 25 students, only 14 got it right.

3. Now subtract the low scorers from the high scorers:

> 24 students – 14 students = 10 students

4. To calculate the discrimination index for this question, divide the resulting number by the number in each performance group:

> 10 students ÷ 25 students in each performance group = 0.4

The discrimination index mark will range from –1.00 to 1.00. A mark above .20 is considered to be a suitably discriminating question.

These measures offer teachers and students ways to analyze the performance of not only students taking the test but the test itself using questions such as these:

> Did the test provide useful feedback?
>
> Which questions were hardest? Easiest?
>
> Which questions were most effective in differentiating student achievement?
>
> What aspects of the test would you change to make it more effective as a feedback tool?

Using item difficulty and item discrimination to review test questions helps ensure that teachers make the most of the time they devote to designing and reviewing tests.

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About the Author

Glen Pearsall was a teacher at Eltham High School and a board member of the Curriculum Assessment Authority in Victoria, Australia. Glen is the author of the best-selling *And Gladly Teach, Classroom Dynamics,* and *The Literature Toolbox* and coauthor of *Literature for Life* and *Work Right*. His e-book *The Top Ten Strategic Questions for Teachers* has recently been translated into Khmer for Cambodian teachers. Glen works throughout Australia as an educational consultant, specializing in feedback and assessment, workload reduction for teachers, and instructional practice. He has a particular interest in the work of graduate and preservice teachers and has worked as a research fellow and tutorial leader at the Centre for Youth Research, University of Melbourne, Australia. He is a Cambridge Education associate and a master class presenter for TTA and has a long association with the Teacher Learning Network and a wide range of teacher unions. He was also the founding presenter of the widely popular "PD in the Pub" series. He can be reached at pearsallglen@gmail.com.

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At the time of publication, the following resources were available (ASCD stock numbers appear in parentheses).

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1 HEALTHY
Each student enters school healthy and learns about and practices a healthy lifestyle.

2 SAFE
Each student learns in an environment that is physically and emotionally safe for students and adults.

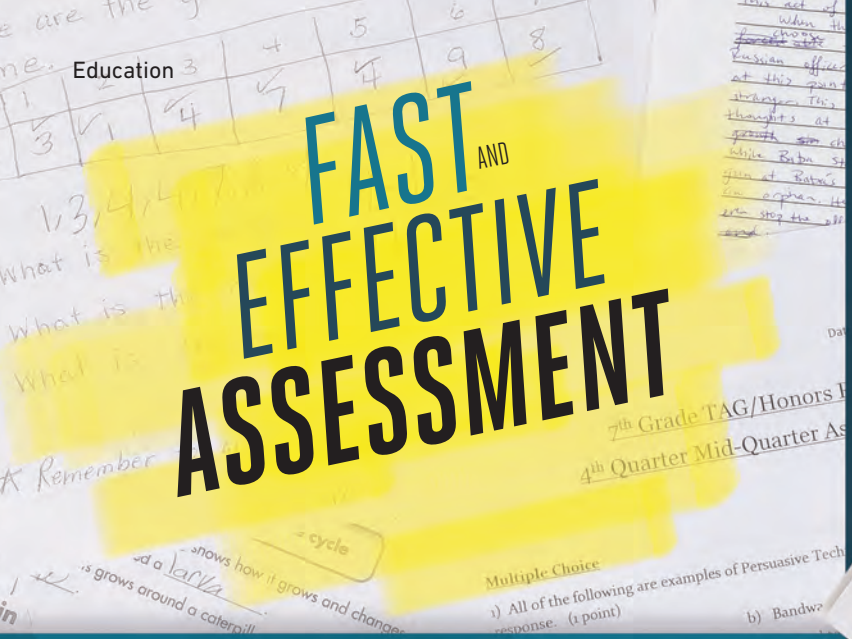
3 ENGAGED
Each student is actively engaged in learning and is connected to the school and broader community.

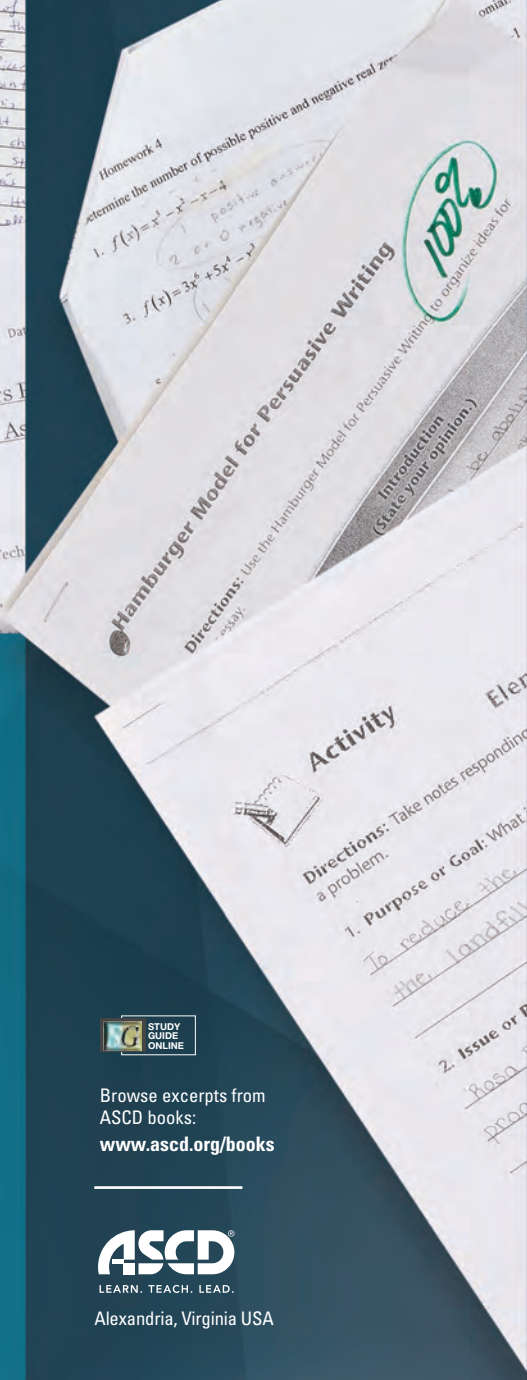
4 SUPPORTED
Each student has access to personalized learning and is supported by qualified, caring adults.

5 CHALLENGED
Each student is challenged academically and prepared for success in college or further study and for employment and participation in a global environment.

Education

FAST AND EFFECTIVE ASSESSMENT





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- Speed up the correction process via student self-proofing, representative sampling, and helpful technology tools; and
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