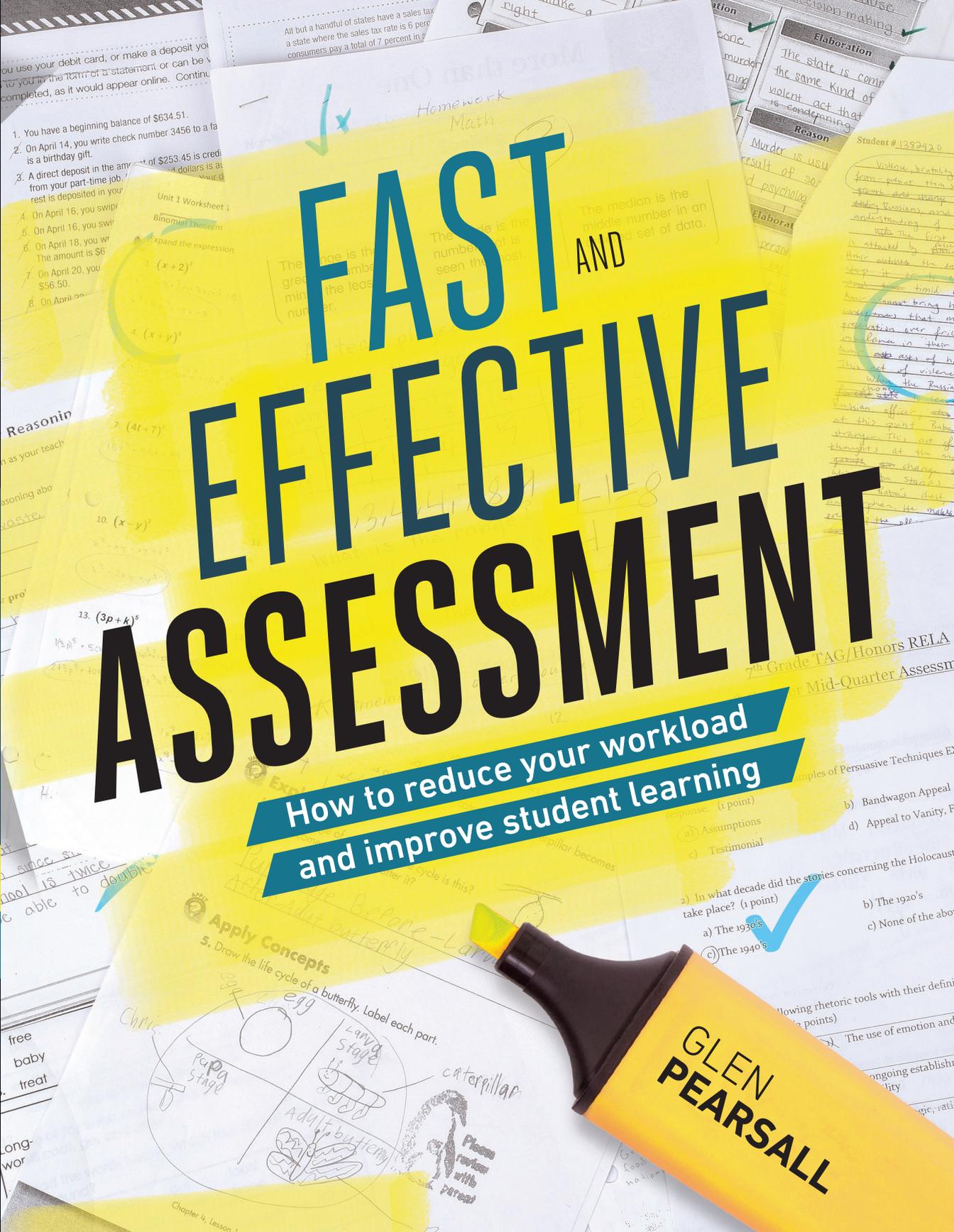


# FAST AND EFFECTIVE ASSESSMENT

How to reduce your workload and improve student learning

GLEN PEARSALL



- You have a beginning balance of \$634.51.
- On April 14, you write check number 3456 to a friend for a birthday gift.
- A direct deposit in the amount of \$253.45 is credited to your account. The rest is deposited in your savings account.
- On April 16, you withdraw \$100 from your checking account.
- On April 16, you withdraw \$50 from your checking account.
- On April 18, you withdraw \$20 from your checking account.
- On April 20, you deposit \$56.50 into your checking account.
- On April 22, you deposit \$100 into your checking account.

Unit 1 Worksheet 1  
Binomial Theorem  
Expand the expression  
 $(x+2)^2$   
 $(x+y)^2$

Homework  
Math

The median is the middle number in an ordered set of data.

Elaboration  
The state is committing the same kind of violent act that is condoning  
Reason  
Murder is usually the result of social and psychological factors.  
Elaboration  
Violence, brutality from power, than growth and strong ability Russian understanding of the the figure is attacked by American writers the step it is to find American cannot bring to awareness that manipulation over fear influence in their American uses of violence this act of violence who the Russian mission officer was at this point. But strange, this act of thoughts at the moment from strategy of the state's duty. When he makes the app.

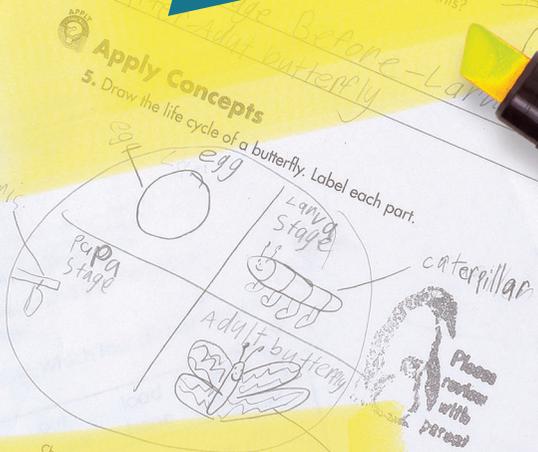
Reasoning  
as your teacher  
Reasoning about  
waste  
10.  $(x-y)^2$

13.  $(3p+k)^2$   
 $(3p)^2 + 2(3p)(k) + k^2$

7th Grade TAG/Honors RELA  
Mid-Quarter Assessment

Since school is twice as able to double

free baby treat  
long-wor



- Assumptions
- Testimonial
- In what decade did the stories concerning the Holocaust take place? (1 point)
  - The 1930's
  - The 1920's
  - The 1940's
  - None of the above

Following rhetoric tools with their definitions (2 points)  
The use of emotion and  
ongoing establishment  
ity  
ic, reti



1703 N. Beauregard St. • Alexandria, VA 22311-1714 USA  
Phone: 800-933-2723 or 703-578-9600 • Fax: 703-575-5400  
Website: [www.ascd.org](http://www.ascd.org) • E-mail: [member@ascd.org](mailto:member@ascd.org)  
Author guidelines: [www.ascd.org/write](http://www.ascd.org/write)

Deborah S. Delisle, *Executive Director*; Stefani Roth, *Publisher*; Genny Ostertag, *Director, Content Acquisitions*; Susan Hills, *Acquisitions Editor*; Julie Houtz, *Director, Book Editing & Production*; Miriam Calderone, *Editor*; Thomas Lytle, *Senior Graphic Designer*; Mike Kalyan, *Director, Production Services*; Cynthia Stock, *Production Designer*; Andrea Hoffman, *Senior Production Specialist*

Copyright © 2018 ASCD. All rights reserved. It is illegal to reproduce copies of this work in print or electronic format (including reproductions displayed on a secure intranet or stored in a retrieval system or other electronic storage device from which copies can be made or displayed) without the prior written permission of the publisher. By purchasing only authorized electronic or print editions and not participating in or encouraging piracy of copyrighted materials, you support the rights of authors and publishers. Readers who wish to reproduce or republish excerpts of this work in print or electronic format may do so for a small fee by contacting the Copyright Clearance Center (CCC), 222 Rosewood Dr., Danvers, MA 01923, USA (phone: 978-750-8400; fax: 978-646-8600; web: [www.copyright.com](http://www.copyright.com)). To inquire about site licensing options or any other reuse, contact ASCD Permissions at [www.ascd.org/permissions](http://www.ascd.org/permissions), or [permissions@ascd.org](mailto:permissions@ascd.org), or 703-575-5749. For a list of vendors authorized to license ASCD e-books to institutions, see [www.ascd.org/epubs](http://www.ascd.org/epubs). Send translation inquiries to [translations@ascd.org](mailto:translations@ascd.org).

ASCD® and ASCD LEARN. TEACH. LEAD.® are registered trademarks of ASCD. All other trademarks contained in this book are the property of, and reserved by, their respective owners, and are used for editorial and informational purposes only. No such use should be construed to imply sponsorship or endorsement of the book by the respective owners.

All web links in this book are correct as of the publication date below but may have become inactive or otherwise modified since that time. If you notice a deactivated or changed link, please e-mail [books@ascd.org](mailto:books@ascd.org) with the words “Link Update” in the subject line. In your message, please specify the web link, the book title, and the page number on which the link appears.

PAPERBACK ISBN: 978-1-4166-2533-9 ASCD product #118002 n2/18  
PDF E-BOOK ISBN: 978-1-4166-2534-6; see Books in Print for other formats.  
Quantity discounts are available: e-mail [programteam@ascd.org](mailto:programteam@ascd.org) or call 800-933-2723, ext. 5773, or 703-575-5773. For desk copies, go to [www.ascd.org/deskcopy](http://www.ascd.org/deskcopy).

### **Library of Congress Cataloging-in-Publication Data**

[to be inserted]

# FAST<sup>AND</sup> EFFECTIVE ASSESSMENT

Acknowledgments .....	ix
Introduction .....	1
1. More Effective Questioning.....	5
2. Clear Learning Goals .....	42
3. Checking for Understanding.....	64
4. Formal Formative Testing.....	99
5. Sustainable Marking.....	133
6. Reflection and Third-Stage Correction.....	163
Conclusion .....	192
Appendix A: Question Sequence Scaffold.....	196
Appendix B: Item Analysis.....	199
References.....	201
Index.....	206
About the Author .....	212

# *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

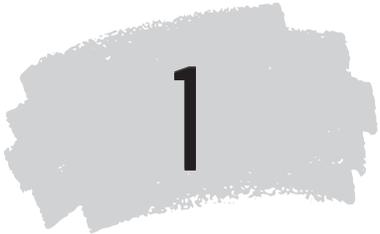
your advice so students understand and act on it more readily and you can spend less time repeating yourself.

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.



# 1

## *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 (William & Leahy, 2015). In fact, some studies have found that only around 25 percent of students regularly answer questions in class (Black & William, 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  $3 \times 1.1$  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 exempling and second drafting.

**Exempling** 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 exemplifying 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 (Wilén & 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:

**Initiate:** Marco, what is the capital of Mongolia?

**Respond:** Ulan Bator?

**Evaluate:** 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:

**Initiate:** Marco, what is the capital of Mongolia?

**Respond:** Ulan Bator?

**Follow-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. These 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 pre-arranged 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

<i>How can I modify my questioning to gather more feedback in less time?</i>	
<p><b>Questioning for Fuller Participation</b></p> <p>You need a tool kit of questioning techniques to encourage <i>all</i> 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.</p>	<p><b>Cold Calling</b>—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:</p> <ul style="list-style-type: none"> <li>• Telling students</li> <li>• Speculative framing</li> <li>• Answer scaffolds</li> <li>• Think-Pair-Share</li> <li>• Question relay</li> <li>• Selecting students at random</li> <li>• Inclusive questioning</li> </ul>
	<p><b>Thinking Time</b>—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:</p> <ul style="list-style-type: none"> <li>• Pre-cueing</li> <li>• “Many hands up”</li> <li>• Using an app</li> <li>• Placeholder statements</li> <li>• Reflective statements</li> <li>• Blank prompts</li> </ul>

*continued*

Figure 1.1

**MORE EFFECTIVE QUESTIONING**

(continued)

<p><b>Eliciting Evidentiary Reasoning</b></p> <p>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.</p>	<p><b>The Golden Question</b>—Asking students “What makes you say that?” is a quick way to prompt them to explain the thinking that has gone into their answers.</p>
	<p><b>Inverted Questions</b>—An inverted question presents students with an answer and asks them to comment on why it is correct.</p>
	<p><b>Contextual Solicitation</b>—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.</p>
	<p><b>Checking with Others</b>—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:</p> <ul style="list-style-type: none"> <li>• Exempling</li> <li>• Second drafting</li> </ul>
<p><b>Sequencing Questions</b></p> <p>We need to be wary of presuming that <i>just</i> asking the right question <i>inevitably</i> leads to better learning. It is not just how questions are asked that matters but also when they are asked and in what order.</p>	<p><b>See, Think, and Wonder</b>—This well-known thinking routine helps students develop their thinking in a scaffolded way, moving from observation through inference to speculation.</p>
	<p><b>Four Phases of Questioning</b>—Marzano's questioning scaffold provides a graduated way to develop depth and complexity over the course of a lesson:</p> <ul style="list-style-type: none"> <li>• Detail questions: Asking questions about important details</li> <li>• Category questions: Asking students to identify examples</li> <li>• Elaboration questions: Requiring students to make inferences</li> <li>• Evidence questions: Asking students to identify sources and examine reasoning</li> </ul>

<p><b>Response Strategies</b></p> <p>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.</p>	<p><b>Lateral Questioning/Pivots</b>—Changing an Initiate-Response-<i>Evaluate</i> (IRE) questioning pattern into an Initiate-Response-<i>Follow-up</i> (IRF) pattern keeps students thinking in class discussions. “Ask, Pause, Pick, Pivot” (APPP) is an easy-to-remember routine for prompting lateral questioning.</p>
	<p><b>Revoicing</b>—“Revoicing” is simply rephrasing a student’s answer, asking for verification that you have properly understood what the student is saying.</p>
	<p><b>Prompts</b>—Question prompts are carefully worded statements that preface a question with a hint about how that question might be approached.</p>
	<p><b>Cues</b>—A cue is a signal used to shift a student’s attention to something that might have been missed.</p>
<p><b>Addressing Interruptions</b></p> <p>When you are conducting classroom discussions, you need practical techniques for dealing with distractions, off-task behavior, and individuals who might monopolize the conversation.</p>	<p><b>Endorse Good Practice</b>—Don’t just block interruptions and challenge off-task behavior; celebrate those behaviors you want to see more often.</p>
	<p><b>Establish the Rules of Classroom Conversation</b>—If you have not clearly established students’ rights and responsibilities, then it is very difficult to conduct question-and-answer sessions effectively.</p>
	<p><b>Make It Safe to Answer</b>—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.</p>
	<p><b>Address Domineering Students</b>—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:</p> <ul style="list-style-type: none"> <li>• Nonverbal signaling</li> <li>• Response tallies</li> <li>• Referred questions pact</li> </ul>

# References

---

- Adams, T. M., & Ewen, G. W. (2009). *The importance of confidence in improving educational outcomes*. Paper presented at the 25th Annual Conference on Distance Teaching and Learning, Madison, Wisconsin.
- Arter, J. A., & Chappuis, J. (2006). *Creating and recognizing quality rubrics*. Assessment Training Institute Series. London: Pearson Education.
- Barkly, E. F., Major, C. H., & Cross, K. P. (2014). *Collaborative learning techniques: A handbook for college faculty* (2nd ed.). San Francisco: Jossey-Bass.
- Bertsch, S., Pesta, B. J., Wiscott, R., & McDaniel, M. A. (2007). The generation effect: A meta-analytic review. *Memory & Cognition*, 35(2), 201–210.
- Black, P., & Wiliam, D. (2014). *Inside the black box: Raising standards through classroom assessment*. London: Learning Sciences International.
- Blau, S. D. (2003). *The literature workshop: Teaching texts and their readers*. Portsmouth, NH: Heinemann.
- Boyle, M. J. (2010). *Response to Intervention: A blueprint for Catholic schools*. Arlington, VA: National Catholic Educational Association.
- Brinson, D., & Steiner, L. (2007, October). *Building collective efficacy: How leaders inspire teachers to achieve*. Issue brief. Center for Comprehensive School Reform and Improvement. Retrieved from <http://files.eric.ed.gov/fulltext/ED499254.pdf>
- Brookhart, S. (2008). *How to give effective feedback to your students*. Alexandria, VA: ASCD.
- Brookhart, S. (2010). *Formative assessment strategies for every classroom*. Alexandria, VA: ASCD.
- Brookhart, S. (2013). *How to create and use rubrics for formative assessment and grading*. Alexandria, VA: ASCD.
- Brown, P. C., Roediger, H. L., & McDaniel, M. A. (2014.) *Make it stick: The science of successful learning*. Cambridge, MA: Belknap Press.
- Brown-Chidsey, R., & Steege, M. W. (2010). *Response to Intervention: Principles and strategies for effective practice* (2nd ed.). New York: Guilford Press.
- Brualdi, A. C. (1998, November). Classroom questions. *Practical Assessment, Research and Evaluation*, 6(6). Retrieved from <http://PAREonline.net/getvn.asp?v=6&n=6>

- Bruno, J. E. (1993). Using testing to provide feedback to support instruction: A reexamination of the role of assessment in educational organizations. In D. A. Leclercq & J. E. Bruno (Eds.), *Item banking: Interactive testing and self-assessment*, NATO ASI Series (pp. 190–209). New York: Springer.
- Burns, C., & Myhill, D. (2004). Interactive or inactive? A consideration of the nature of the interaction in whole-class teaching. *Cambridge Journal of Education*, 34(1), 35–49.
- Butler, R. (1988). Enhancing and undermining intrinsic motivation: The effects of task-involving and ego-involving evaluation on interest and performance. *British Journal of Educational Psychology*, 58, 1–14.
- Cazden, C. (2001). *Classroom discourse: The language of teaching and learning*. Portsmouth, NH: Heinemann.
- Chapin, S. H., O'Connor, C., & Anderson, N. C. (2009). *Classroom discussions: Using math talk to help students learn* (2nd ed.). Sausalito, CA: Math Solutions.
- Clarke, S. (2014). *Outstanding formative assessment: Culture and practice*. London: Hodder Education.
- Claxton, G. L. (1995). What kind of learning does self-assessment drive? Developing a “nose” for quality: Comments on Klenoski. *Assessment in Education: Principles, Policy and Practice*, 2(3), 339–343.
- Clymer, J. B., & Wiliam, D. (2006/2007). Improving the way we grade science. *Educational Leadership*, 64(4), 36–42.
- Corno, L. (2001). Volitional aspects of self-regulated learning. In B. J. Zimmerman & D. H. Schunk (Eds.), *Self-regulated learning and academic achievement: Theoretical perspectives* (pp. 191–226). Hillsdale, NJ: Erlbaum Associates.
- Coyle, D. (2010). *The talent code*. New York: Bantam Dell.
- Crouch, C., Fagen, A. P., Callan, J. P., & Mazur, E. (2004). Classroom demonstrations: Learning tools or entertainment? *American Journal of Physics*, 72(6), 835–838.
- Dantonio, M., & Beisenherz, P. C. (2001). *Learning to question, questioning to learn: A guide to developing effective teacher questioning practices*. Boston: Allyn & Bacon.
- Dueck, M. (2014). *Grading smarter, not harder: Assessment strategies that motivate kids and help them learn*. Alexandria, VA: ASCD.
- Duhigg, C. (2014). *The power of habit: Why we do what we do in life and business*. New York: Random House.
- Dweck, C. (2016). *Mindset: The new psychology of success*. New York: Random House.
- Education Scotland. (2016). *Dylan Wiliam: Formative assessment* [video]. Retrieved from <https://www.youtube.com/watch?v=sYdVe5O7KBE>
- Ericsson, A., & Pool, R. (2016). *Peak: Secrets from the new science of expertise*. New York: Houghton Mifflin Harcourt.
- Elliott, V., Baird, J., Hopfenbeck, T. N., Ingram, J., Thompson, I., Usher, N., et al. (2016, April). *A marked improvement? A review of the evidence on written marking*. London: Education Endowment Foundation, University of Oxford. Retrieved from [https://educationendowmentfoundation.org.uk/public/files/Publications/EEF\\_Marking\\_Review\\_April\\_2016.pdf](https://educationendowmentfoundation.org.uk/public/files/Publications/EEF_Marking_Review_April_2016.pdf)

- Fisher, D., & Frey, N. (2014). *Checking for understanding: Formative assessment techniques for your classroom*. Alexandria, VA: ASCD.
- Foos, P. W., Mora, J. J., & Tkacz, S. (1994). Student study techniques and the generation effect. *Journal of Experimental Psychology*, 86(4), 567–576.
- Gibson, S., Oliver, L., & Dennison, M. (2015, February). *Workload challenge: Analysis of teacher consultation responses*. London: Department for Education. Retrieved from [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/401406/RR445\\_-\\_Workload\\_Challenge\\_-\\_Analysis\\_of\\_teacher\\_consultation\\_responses\\_FINAL.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/401406/RR445_-_Workload_Challenge_-_Analysis_of_teacher_consultation_responses_FINAL.pdf)
- Goddard, R. D., Hoy, W. K., & Hoy, A. W. (2000, Summer). Collective teacher efficacy: Its meaning, measure, and impact on student achievement. *American Educational Research Journal*, 37(2), 479–507.
- Good, T. L., & Brophy, J. E. (2008). *Looking in classrooms* (10th ed.). Boston: Pearson.
- Goss, P., Hunter, J., Romanes, D., & Parsonage, H. (2015). *Targeted teaching: How better use of data can improve student learning*. Melbourne, Australia: Grattan Institute.
- Griffin, P. (Ed.). (2014). *Assessment for teaching*. New York: Cambridge University Press.
- Griffin, P., & Care, E. (2014). Test construction. In P. Griffin (Ed.), *Assessment for teaching* (pp. 156–173). New York: Cambridge University Press.
- Grinder, M. (2011). *The elusive obvious: The science of non-verbal communication*. Melbourne, Australia: Hawker Brownlow.
- Haswell, R. H. (1983, October). Minimal marking. *College English*, 45(6), 600–604.
- Haswell, R. H. (2006, November 9). The complexities of responding to student writing; or, looking for shortcuts via the road of excess. *Across the Disciplines*, 3. Retrieved from <http://wac.colostate.edu/atd/articles/haswell2006.cfm>
- Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. Oxford: Routledge.
- Hattie, J. (2012). *Visible learning for teachers: Maximizing impact on learning*. Oxford: Routledge.
- Hattie, J., & Timperley, H. (2007, March). The power of feedback. *Review of Educational Research*, 77(1), 81–112.
- Hunt, D. (2003). The concept of knowledge and how to measure it. *Journal of Intellectual Capital*, 4(1), 100–113.
- Invargson, L., & Weldon, P. (2016). *Improving practice: School staff workload study*. Final report to the Australian Education Union—Victoria. Melbourne, Australia: The Australian Council for Educational Research.
- Jensen, B. (2014, February). *Turning around schools: It can be done*. Victoria, Australia: Grattan Institute.
- Kang, S. H. K., McDermott, K. B., & Roediger, H. (2007, July). Test format and corrective feedback modify the effect of testing on long-term retention. *European Journal of Cognitive Psychology*, 19(4–5), 528–558.
- Katz, N., & McNulty, K. (1994). *Reflective listening*. Retrieved from <https://www.maxwell.syr.edu/uploadedFiles/parcc/cmc/Reflective%20Listening%20NK.pdf>
- Kelly, M. (2017, February 21). Effective teacher questioning techniques: How teachers can ask the best questions. *ThoughtCo*. Retrieved from <https://www.thoughtco.com/effective-teacher-techniques-8389>

- Kohn, A. (1999). *Punished by rewards: The trouble with gold stars, rewards, incentive plans, praise and other bribes*. Boston: Houghton Mifflin.
- Kruse, D. (2009). *Thinking strategies for the inquiry classroom*. Carlton South, Australia: Curriculum Corporation.
- Langer, J. A. (2000). *Beating the odds: Teaching middle and high school students to read and write well*. CELA Research Report Number 12014. Albany, NY: National Research Center on English Learning & Achievement.
- Lemov, D. (2010). *Teach like a champion: 49 techniques that put students on the path to college*. San Francisco: Jossey-Bass.
- Lemov, D. (2015). *Teach like a champion 2.0: 62 techniques that put students on the path to college*. San Francisco: Jossey-Bass.
- Lewis, R. (2008). *The developmental management approach to classroom behavior: Responding to individual needs*. Camberwell, Australia: ACER Press.
- Mander, J. (2015). *GWI Social Summary: GlobalWebIndex's quarterly report on the latest trends in social networking*. Trendstream Limited. Retrieved from [https://www.globalwebindex.net/hs-fs/hub/304927/file-2812772150-pdf/Reports/GWI\\_Social\\_Summary\\_Report\\_Q1\\_2015.pdf](https://www.globalwebindex.net/hs-fs/hub/304927/file-2812772150-pdf/Reports/GWI_Social_Summary_Report_Q1_2015.pdf)
- Marzano, R. J. (2012, October). Art and Science of Teaching: The many uses of exit slips. *Educational Leadership*, 70(2), 80–81.
- Marzano, R. J., & Simms, J. A. (2014). *Questioning sequences in the classroom*. Melbourne, Australia: Hawker Brownlow.
- Millis, B. J., & Cottell, P. G. Jr. (1997). *Cooperative learning for higher education faculty*. Phoenix, AZ: Oryx Press.
- Nickerson, R. S., Butler, S. F., & Carlin, M. T. (2015, February 2). Knowledge assessment: Squeezing information from multiple-choice testing. *Journal of Experimental Psychology: Applied*, 21(2), 167–177.
- Nolting, P. (1997). *Winning at math: Your guide to learning mathematics through successful study habits* (3rd ed.). Bradenton, FL: Academic Success Press.
- Nuthall, G. (2007). *The hidden lives of learners*. Wellington, New Zealand: NZCER Press.
- Ogle, D. M. (1986). K-W-L: A teaching model that develops active reading of expository text. *Reading Teacher*, 39(6), 564–570.
- Olson, C. B. (2011). *The reading/writing connection: Strategies for teaching and learning in the secondary classroom*. Boston: Pearson.
- Parsons, J., & Reilly, Y. (2012). *Maths in the inclusive classroom: Book 1*. Albert Park, Australia: Teaching Solutions.
- Pearsall, G. (2010). *And gladly teach: A classroom handbook*. Melbourne, Australia: Teacher Learning Network.
- Pearsall, G. (2012). *Classroom dynamics: A teacher's handbook*. Melbourne, Australia: Teacher Learning Network.
- Pearsall, G. (2014). *The literature toolbox: An English teacher's handbook*. Melbourne, Australia: Teacher Learning Network.

- Pearsall, G., & Cahill, H. (2006). *Literature for life: Enhancing social and emotional literacy through the English curriculum*. North Sydney, Australia: Good Grief.
- Pollitt, A. (2012). The method of adaptive comparative judgment. *Assessment in Education: Principles, Policy and Practice*, 19(3), 281–300.
- Pope, G. (2013). *Questioning technique pocketbook*. Alresford, UK: Teachers' Pocketbooks.
- Poundstone, W. (2014). *How to predict the unpredictable*. London: One World Publications.
- Ritchhart, R., Church, M., & Morrison, K. (2012). *Making thinking visible: How to promote engagement, understanding, and independence for all learners*. San Francisco: Jossey-Bass.
- Ritchhart, R., & Perkins, D. N. (2008, February). Making thinking visible. *Educational Leadership*, 65(5), 57–61.
- Rohrer, D., Dedrick, R. F., & Stershic, S. (2014, October 20). Interleaved practice improves mathematics learning. *Journal of Educational Psychology*, 107(3), 900–908.
- Rohrer, D., & Taylor, K. (2007, November). The shuffling of mathematics practice problems improves learning. *Instructional Science*, 35(6), 481–498.
- Rowe, M. B. (1986). Wait time: Slowing down may be a way of speeding up! *Journal of Teacher Education*, 37(1), 43–50.
- Smith, I. (2009). *Assessment and learning pocketbook*. Alresford, UK: Teachers' Pocketbooks.
- State of New South Wales, Department of Education. (n.d.). Newman's error analysis. Retrieved from <http://numeracyskills.com.au/newman-s-error-analysis>
- Stone, D., & Heen, S. (2014). *Thanks for the feedback: The science and art of receiving feedback well*. New York: Penguin.
- Tomlinson, C. A. (2014). *The differentiated classroom: Responding to the needs of all learners* (2nd ed.). Alexandria, VA: ASCD.
- Visible Thinking. (2015). Website. Project Zero, Harvard University. Retrieved from <http://www.visiblethinkingpz.org/VisibleThinking>
- Wass, R., & Golding, C. (2014). Sharpening a tool for teaching: The zone of proximal development. *Teaching in Higher Education*, 19(6), 671–684.
- Wiggins, G. (2012, September). Seven keys to effective feedback. *Educational Leadership*, 70(1), 10–16.
- Wilén, W. W., & Clegg, A. A. (1986). Effective questions and questioning: A research review. *Theory & Research in Social Education*, 14(2), 153–161.
- William, D. (2010). *The classroom experiment* [Documentary film]. London: BBC Film.
- William, D. (2011). *Embedded formative assessment: Practical strategies and tools for K–12 teachers*. Bloomington, IN: Solution Tree.
- William, D. (2015, February 3). Practical ideas for classroom formative assessment. *Dylan William Center blog*. Retrieved from <http://www.dylanwilliamcenter.com/practical-ideas-for-classroom-formative-assessment/>
- William, D., & Leahy, S. (2015). *Embedding formative assessment: Practical techniques for K–12 classrooms*. West Palm Beach, FL: Learning Sciences International.
- Wingard, J., & Geosits, A. (2014). Effective comments and revisions in student writing from WAC courses. *Across the Disciplines*, 11(1). Retrieved from [https://wac.colostate.edu/atd/articles/wingard\\_geosits2014.cfm](https://wac.colostate.edu/atd/articles/wingard_geosits2014.cfm)

## 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.

## Related ASCD Resources

At the time of publication, the following resources were available (ASCD stock numbers appear in parentheses).

### PD Online® Courses

Assessment and Student Success in a Differentiated Classroom (#PD14OC019M)

Grading Smarter, Not Harder (#PD16OC005M)

### Print Products

*Changing the Grade: A Step-by-Step Guide to Grading for Student Growth* by Jonathan Cornue (#118029)

*Charting a Course to Standards-Based Grading: What to Stop, What to Start, and Why It Matters* by Tim R. Westerberg (#117010)

*Grading Smarter, Not Harder: Assessment Strategies That Motivate Kids and Help Them Learn* by Myron Dueck (#114003)

*How to Give Effective Feedback to Your Students*, 2nd Edition by Susan M. Brookhart (#116066)

*How to Use Grading to Improve Learning* by Susan M. Brookhart (#117074)

*Rethinking Grading: Meaningful Assessment for Standards-Based Learning* by Cathy Vatterott (#115001)

*Teaching Students to Self-Assess: How Do I Help Students Reflect and Grow as Learners?* (ASCD Arias) by Starr Sackstein (#SF116025)

*The Perfect Assessment System* by Rick Stiggins (#117079)

For up-to-date information about ASCD resources, go to [www.ascd.org](http://www.ascd.org). You can search the complete archives of Educational Leadership at [www.ascd.org/el](http://www.ascd.org/el).

### Videos

*Giving Effective Feedback to Your Students, Disc 1: The Impact on Student Achievement* DVD (#609104)

*Smarter Assessment in the Secondary Classroom* DVD with Myron Dueck (#616045)

### ASCD EDge® Group

Exchange ideas and connect with other educators on the social networking site ASCD EDge at <http://ascdedge.ascd.org/>.

### ASCD myTeachSource®

Download resources from a professional learning platform with hundreds of research-based best practices and tools for your classroom at <http://myteachsource.ascd.org/>.

For more information, send an e-mail to [member@ascd.org](mailto:member@ascd.org); call 1-800-933-2723 or 703-578-9600; send a fax to 703-575-5400; or write to Information Services, ASCD, 1703 N. Beauregard St., Alexandria, VA 22311-1714 USA.