

Chapter 1

Retrieving

Retrieval is the foremost foundational skill taking place in our classrooms. My favorite memory of the retrieval effect goes back to a waitressing job I held in grad school. In retrospect, I spent far more hours waitressing to pay for my M.Ed. than I did on the Boston College campus. To fund my education habit, I worked at a farm-to-table restaurant called Armsby Abbey in the 2010s. It was the height of a “slow food” boom, which refers to the made-to-order nature of a kitchen, but never the service. At Armsby Abbey, we were expected to memorize all of the farms and an exhaustive list of ingredients on an ever-changing menu. Our customers always had a lot of questions.

“What animal did the Blue Ledge cheese come from?”

“Goat.”

“What was the apple-fed cow’s name?”

“George.”

“How fresh are the strawberries?”

“I picked them myself, this morning.”

A shift at Armsby Abbey might sound like an episode of “Portlandia,” but it was my reality for five years—and I loved it. My family rarely dined out at restaurants when I was growing up, with the exception of my birthday. At Armsby Abbey, my palate blossomed. I learned to love pastrami beef tongue, smoky blue cheese,

gobs of bone marrow spread on toast, and pickled watermelon rinds. Every shift felt like my birthday, with new oddities to explore.

We were routinely tested by management on pickle lists, allergens, and farmers' names. Coming straight out of grad school, this level of study felt natural. The career servers teased me about my binder full of flashcards and T-charts, but I knew what worked for me. A lot of them could memorize the list of 22 rotating draughts, the soup du jour, and the specials with just one glance. I, on the other hand, would ask my colleagues to quiz me in the back while we polished silverware and brewed coffee. The owners even went so far as to leave certain information off the menu to encourage guests to engage in conversations with us about the food. By the end of my tenure, I had a personal story for every farm—an asset that Google could never provide to my customers.

It made sense why the lifers had such powerful memories; practice really does make perfect, or close to it. This learning phenomenon is called the *retrieval effect*. Put simply, if you hope to retrieve knowledge from your memory, you should practice retrieving knowledge from your memory. The more you practice, the more capable your memory becomes. Without the frequent assessments at Armsby Abbey, whether they came from guests or management, I would not have been forced to routinely draw the information from my memory. Had I simply read my responses to customer questions from a cheat sheet tucked into my notepad, I would have never had to activate my memory. This would be the student equivalent of studying by reading the textbook over and over again—a practice that cognitive psychologists deem one of the least effective modes of retaining information.

At the restaurant, even when I forgot the beekeeper's town of origin, or heaven forbid, the flavor profile of a foraged elderberry, I was forced to practice drawing the information from my memory by finding the answer to guests' questions. The same principle follows suit for K–8 students in the classroom. The more they

practice remembering something, the more firmly that content becomes lodged in their brains for the long term.

Contrary to popular thought, the brain is not a muscle, but our long-term memories can be trained like a muscle with frequent and deliberate practice. Our long-term memories are capable of building stamina in the same way a marathoner gains endurance as she delves further and further into her training. Her very first 10-mile training run might feel brutal, but come race day, mile 10 will have her feeling light on her feet. Alternately, our *working* memories are limited. An adult's working memory generally hits capacity at four new pieces of information. The best teachers are able to help students move as much information as possible from their working memories to their long-term memories.

Another name for the retrieval effect is the testing effect. We normally think about testing as *measuring* student learning, but what we learn from the literature on retrieval practice is that it can actually be a potent tool to *promote* student learning. This is because tests force students to engage in memory practice. Rather than just viewing tests (and quizzes) as learning measurement exercises, researchers have pointed to them as highly effective learning tools. Frequent assessment breaks allow students an opportunity to transfer information from their working memories to their long-term memories.

I'll be honest, when I hear "the testing effect," it evokes a wave of foot-tapping anxiety from deep within me. (Quick, somebody hand me a paper bag to breathe into.) It makes me think of standardized tests I have taken, and the standardized tests my students have to take. But the testing effect doesn't really refer to these kinds of high-stakes, one-off exams; it refers instead to the practice of "testing" student memories in frequent, low-stakes ways throughout the school year. We can get the testing effect in everything from daily reading quizzes to oral exams, to gamified online assessments.

These kinds of low-stakes memory practice exercises, or retrieval practice exercises, can solidify the knowledge base around which students begin to build complex networks of information in their long-term memories. The research about testing that we will consider in the following section refers to learners who are recalling information, concepts, or skills from memory in regular, short bursts. Later, when I talk about testing, I won't be referring to high-stakes final exams or standardized state benchmarks—I'll be talking about the kinds of quick activities that can take place in six minutes or less. These retrieval practices will refer to small teaching activities that can be implemented with minimal grading and little planning.

WHAT'S THE THEORY?

Recall the introduction to this part in which Bloom's Taxonomy is discussed. Retrieval practice supports the mastery of material at the base level of the Taxonomy, but that material is no less important than any other echelon of learning. Through retrieval, we solidify in our minds the facts, concepts, information, and basic skills that enable us to do our deeper thinking. Retrieval provides the foundation required for creative application and innovation.

The introduction of the Common Core Standards in 2010 did not just alter the content deemed most significant for American public-school students. The Common Core Standards aimed for the application of content across disciplines through writing and speaking in order to show a deep understanding of the material. This shift fed a public misconception that we had done away with memorization in schools—the biggest scandal since teachers stopped teaching cursive. In reality, the memorization of foundational information became more important than ever before.

Shortly after the rollout of the Common Core Standards, Arizona State University Researchers Peter Rillero and Helen Padgett acknowledged that education was moving away from rote memorization in favor of deep conceptual learning (2012). Still, Rillero and Padgett championed a key finding: “The role of prior knowledge is important to deep conceptual learning, as it may support or hinder learning new material” (2012). The prior knowledge they refer to here is what we can support through retrieval practice. When students are encountering new ideas, or facing new challenges in their learning, they will be best equipped to meet those challenges when they have a solid foundation of facts, information, and basic skills in their brains—and not just in their Google search histories. The stronger their long-term memories become, the more capable their working memories are of processing and holding new information.

The Memory Lab of Henry L. Roediger at Washington University in St. Louis has dedicated its work to test-enhanced learning and the belief that retrieval practice enhances long-term retention. But once again remember here that “test-enhanced” learning does not necessarily refer to those fingernail-gnawing experiences that we might associate with the word *testing*. In fact, the findings of the Memory Lab have been used by many teachers to identify small ways in which they can incorporate retrieval practice into their classrooms on an easy, everyday basis.

Three strategies that help students do this were discussed in a paper published by Roediger in 2018 in collaboration with Psychology Professor James S. McDonnell and Washington University doctoral student Oyku Uner. The first strategy, pausing to formulate a summary of a textbook chapter after reading, proved far more effective than merely rereading the chapter. But note that these summaries have to be conducted from memory, and not just from looking at the material again. Summaries like these are sometimes called brain dumps or free recall exercises;

students read the text, close the book, and then write a short summary of what they remember. Simple, fast, easy—and effective.

Next, Roediger and his colleagues suggested spacing out retrieval practice. “The longer the spacing, the greater is learning for the long term” (Roediger et. al., 2018). In other words, it’s much better to engage in retrieval in three six-minute activities throughout the week than it is to engage in one 18-minute session on Friday. The more we space out our retrieval practice into different sessions, with time elapsed between them, the more effective that retrieval practice will be. For example, you might ask your students to retrieve something a few times during the first week of exposure to help them transfer the information from their working memories to their long-term memories. Then, you’ll still want them to come back to the information a few additional times in the coming weeks and months to ensure it has been adequately lodged in the long-term memory.

Finally, Roediger and his colleagues recommend interleaving or layering the study of related topics, rather than engaging in the massed repetition of a single topic (2018). As *New Today* contributor Mary Ellen Flannery puts it, “If you were coaching a new basketball team, would you ever have a single 45-minute practice on a Monday and then expect your rookies to win a game the following Friday?” (2021). Of course not. Likewise, educators should not teach a new skill one week, then follow up with a test the following week and expect positive results. For example, if I were to teach my students the basic skill of writing a thesis statement, I might introduce the main strategies and have students practice retrieval through some low-stakes quizzing. Good start. But over the course of the year, as I am introducing new writing strategies, I should continually return to the skill of composing a thesis, and each time I do, I would ask them to remember the basic skills they have learned. Returning to thesis-writing time and time again in new contexts will be more effective than asking students to write seventeen thesis statements, one after the other, during the first month of the school year.

Another example of applying interleaving strategies was described by cognitive scientist Pooja Agarwal and Chicago middle-school math teacher Anne Agostinelli. They analyzed interleaving in the mathematics classroom because they took issue with textbooks introducing large blocks of problem sets focused solely on new skills. In these cases, they witnessed students “plug and chug”—falling into repetitive and predictable routines that did not require deep processing (Agarwal and Agostinelli, 2020). With interleaving, students were asked to tackle a range of problems, leading to far greater long-term retention of concepts.

Agostinelli grew especially fond of applying interleaving to her middle schoolers’ homework assignments. Each week, she assigned five problems for homework, two of which referred directly to her current instruction and three that referred back to earlier content. Agostinelli praised the ease of interleaving, “It took remarkably little effort on my or their part,” she concluded. “By organizing information in more meaningful ways, and applying powerful tools that are supported by cognitive science research, we can lessen the pressure and strengthen the confidence, joy, and performance in our classrooms” (Agarwal and Agostinelli, 2020). Not only did interleaving improve retrieval, it made her curriculum planning and preparation more efficient.

The means by which new information is introduced can also impact retrieval. Daniel Schwartz, Catherine Chase, Marily Oppezzo, and Doris Chin of Stanford University examined a common instructional sequence in K–8 classrooms intended to help students retain new information (2011). They found most teachers begin new units of study by telling students about a principle or skill and then assigning a series of directly related questions or problems. Schwartz, Chase, Oppezzo, and Chin sought alternatives through an experience-first approach. “The mechanics of these alternatives withhold didactic teaching at first,” they explained, “lest it undermine the processes of discovery” (2011).

While initial test performance was the same for eighth-grade students regardless of telling-first or experience-first approaches, long-term transfer proved far more common among the experience-first group. The researchers found that telling-first caused students to zero in on one problem at a time, while experience-first caused them to seek out similarities and make their own connections—a surefire path to long-term memory (2011).

You might wonder whether all of these retrieval activities, even if they are very low-stakes, would just make your students anxious all the time. You might therefore be as surprised as I was to learn that giving your students frequent opportunities to engage in retrieval can actually *lower* their anxiety about testing. Henry Roediger was part of the first team to examine the relationship between retrieval practice and classroom test anxiety. In a survey of 1,408 middle and high school students, the study found, “For classes in which retrieval practice occurred, 92% of students reported that retrieval practice helped them learn and 72% reported that retrieval practice made them less nervous for unit tests and exams” (Agarwal et al., 2014). Despite researchers’ suspicions that students would prefer to limit the number of tests taken in schools, results showed that more regular retrieval practice actually *decreased* their testing anxiety.

Retrieval comes down to familiarity and consistent practice. Whether you are taking orders in a restaurant or studying for a final exam, retrieval practice will help the long-term memories of your students to strengthen and improve over time, preventing the need to “cram” for exams. “When it comes to the trade-off of time versus content,” say Agarwal and Roediger, “think about it this way: If students remember more, you save time by reteaching less” (2018). Your first and quickest entry point into the practice of small teaching, then, is to find as many ways as possible to inject into your classroom small opportunities for your students to stop, think, and draw from their memories whatever you want them to learn most deeply.

IN SHORT

- The levels of Bloom's Taxonomy are not a hierarchy; they are building blocks. Without achieving one level of thinking, it is nearly impossible to arrive at the next.
- The Common Core Standards are skills focused, but that does not mean content knowledge is irrelevant. The more prior knowledge of content a learner possesses, the easier it becomes to apply a new skill within that content area.
- Summarizing new information is a more powerful path to the long-term memory than rereading the new information.
- Spacing out retrieval practice is more effective for moving new information to the long-term memory than engaging in one long retrieval practice session before an exam.
- Refer back to information introduced earlier in the year on a regular basis. Do not compartmentalize units of study.
- Students who grapple with new information or a new skill prior to direct instruction will have an easier time transferring it to their long-term memory than students who receive direct-instruction first.
- Retrieval practice through frequent quizzing and testing actually makes students less anxious, rather than more so, for high-stakes assessments.

MODELS

The biggest barrier standing in the way of retrieval is time. Let retrieval become a consistent part of your routine by devoting just six minutes per day. The following models allow you to incorporate retrieval in bite-sized moments during both synchronous and asynchronous instruction.

Three-Two-One

One of the most common forms of retrieval I see in elementary classrooms is the three-two-one, a strategy first introduced to me by *Facing History*. Students are required to recall three facts from the previous day’s lesson or homework, two things they want to know more about, and one lingering question. That’s it. Couldn’t be simpler, and couldn’t be a more direct application of the theory of retrieval practice in the classroom.

Asking students to complete a low-level remembering task like the three-two-one will not only ensure that students are completing their asynchronous work, it will also lay the groundwork for a later higher-level discussion. Students should not be expected to recite minute details of a 50-page reading verbatim. Exercises in retrieval at the start of class, like the three-two-one, should instead focus on the most significant or primary elements of the required content. Retrieval practice will help students recognize the difference between their working memories (“I knew this yesterday, but I can’t seem to remember it today”) and their long-term memories (“I have a solid understanding of this and I can connect new information to it”). Rest assured, working memories grow stronger with age.

Bell-ringers and do nows are a nice opportunity to use strategies like three-two-one questions because every student is required to create hard evidence of their learning; whereas, if you just throw out the question orally and ask for volunteers, only a handful of students might actually get to engage in retrieval practice. Habitual participants are sure to raise their hands and provide their responses aloud, but quieter students will be robbed of the benefits of retrieving. Whenever possible, ask students to respond to activities like the three-two-one in writing or by talking to one another in pairs or small groups before you ask students to raise their hands and volunteer. Make sure every student gets the benefit of this powerful technique.

THREE things you remember
from yesterday.

TWO questions you still have.

ONE thing you enjoyed from
yesterday and want to know
more about.

Closing Questions

Like a bell-ringer at the start of class, an exit ticket at the end of class creates an opportunity to emphasize key takeaways from the lesson. Psychologists call this the “serial positioning effect,” which says people generally remember the first and last things they hear or read (Flannery, 2021). The easiest closing question you can ask is also the simplest: What’s the most important thing you learned today? But there are endless variations on this simple query: What did you learn today that you want to remember for the rest of your life? What did you learn today that you are still a little uncertain about? What did you learn today that made you curious about something? All of these questions require students to remember something from class that day, and thus give them a quick shot of retrieval practice.

You might even consider asking the same question at the start of class for your bell-ringer and at the end of class for your exit ticket. Sometimes an exit ticket can function as an opportunity to revise the written response created during the bell-ringer.

For example, if my lesson objective states, “Students will be able to recall three key details from the novel that contribute to the protagonist’s characterization,” then I might begin class by asking students to provide three adjectives to describe the protagonist based on the previous day’s reading. For the exit ticket, I would expand on the opening question by asking students to provide a passage that demonstrates one of the adjectives they chose and explain why it correlates.

Processing opening questions together comes much more naturally than processing closing questions because of the standard timing of a class period. The bell-ringer can be addressed and discussed in various ways over the duration of the class, while the exit ticket is apt to linger as students barrel out the door. The longer misconceptions hang in the air, the more onerous they become. The last line of defense should be opening the next day’s lesson with a clear explanation of the previous day’s exit ticket. A better solution is to reveal the correct answer in the final moments of class or in a flipped classroom video students can watch at home as part of their homework.

One-to-one computing environments make it difficult for students to resist simply searching the internet for the answers when it comes to basic retrieval questions. Often, I ask students to answer on paper with their devices in “courtesy mode,” meaning their Chromebooks are partially closed or their iPads are face down. Retrieval questions are not intended to be a scavenger hunt; they aim to improve memory function. Nearly every experiment and study I have read on learning and memory has featured a control group in which students are free to review their notes or textbooks. Time and time again, this method proves less effective than retrieval practice for the long-term retention of core information.

Bell-ringers and exit tickets should not feel like nasty surprises to your students. You can explain to them why these retrieval tactics are brief, but important parts of your daily routine. Logging

off their computers and shutting their books will help them remember what they have learned, benefiting them in the long run, and laying the context to amass and apply more knowledge.

Big Basket Quizzes

Prepare for a BBQ. I'm not talking about burgers and dogs. In their book *Powerful Teaching*, Pooja K. Agarwal and Patrice M. Bain introduce Big Basket Quizzes or BBQs (2019). In this model, teachers keep a basket full of quiz questions at the front of the room and continuously contribute questions to the basket throughout the year. A few questions are selected at random for every quiz to help students retrieve foundational knowledge from earlier in the course.

The BBQ does not have to consist solely of questions from the basket. Instead, focus on recent and relevant content and then pull a few questions from the basket as supplements to provide retrieval practice. It's okay to put questions back in the basket for repetitive use. The more a question is drawn from the basket, the easier it will be for students to retrieve information they learned weeks or even months previously.

The basket can also come in handy if you find yourself with spare moments at the end of the day or the period. Ask for a volunteer to fish a question out of the basket and provide an incentive to students who answer correctly. You can even turn it into a competition. Divide the class into two teams and keep track of the score whenever someone answers a BBQ question. Get into the practice of pulling a BBQ question every day during morning meeting and then again during dismissal.

Multi-Part Quizzes

Consider quizzing in two parts. Begin by posing assessment questions for students to complete individually. Then, ask students to

tackle the next set of questions in small groups. The second stage of quizzing could include the most complex question from stage one, or you could try posing an open-ended question to help facilitate collaboration. Either way, students will benefit from providing or receiving peer feedback.

You can get a little creative with this one. For example, Kansas psychology teacher Jen Schlicht is in the habit of creating retrieval grids, which she likens to a bingo card. “You put questions of varying difficulty on the grid and assign point values to each question,” explains Schlicht. “A question on today’s content might be worth 1 point. Something from last week might be 3. Something harder might be 5” (Flannery, 2021.) Students are given a set amount of time to earn as many points as they can independently or in groups. Not only does the grid help students to retrieve old material, it also provides the perfect structure for a multi-part quiz. Ask students to complete as much of the grid as they can independently and then pair up with students who can help them fill in their gaps.

By instituting multiple parts for each quiz, students will be able to tackle more complex concepts. The stages of quizzing should follow one after the other in a single class period. Group dynamics can be troublesome for certain students, especially those who are motivated by achieving high grades. Use your judgment to decide how much you weigh each part of the quiz. I prefer to reward successful group responses, but never penalize unsuccessful groups. In other words, the group’s work can only improve but never detract from an individual grade.

Adding a collaborative part to your quiz will also help to alleviate grading by consolidating the number of responses to which you have to provide feedback. Allow students to discuss, explain, and retrieve among themselves. Do your best to make the groups equitable. To ensure fairness, avoid grouping together those who

finish the independent part first. Pre-determine your groups with inclusion in mind.

Polling

Rather than calling on individual students and asking them to retrieve information in front of the class, polling encourages full class participation without risk of public humiliation. During virtual schooling, I found myself utilizing the polling feature of Google Meets nearly every day. Polls, or audience response systems, are quick and easy ways to take the pulse of a class and encourage retrieval practice in a low-stakes environment. Google Forms offers equally compelling and instantaneous data that can be displayed to the whole class. The teacher can see how individual students respond, while the full class data remains anonymous. Implementing a screen of anonymity will help students to overcome their anxieties and actively participate in class.

Polling is a great way to practice retrieval. Build up a database of questions to recycle throughout the year. You don't have to feel confined to multiple choice questions when it comes to polling. Platforms like Socrative, Poll Everywhere, Kahoot, and Pear Deck allow you to ask open-ended questions and display significant answers for class discussion.

You can also use polling to cultivate student ownership. Allow students to contribute to your database of questions throughout the year. A 2020 study psychology professor Mirjam Ebersbach and her colleagues at the University of Kassel found that students who generated their own quiz questions performed a full letter grade higher than students who simply revisited the material. Your learners will be excited when they see their question get pushed out to the whole class. Better yet, you won't have to spend hours formulating all of the questions for retrieval practice by yourself.

PRINCIPLES

Building a base of foundational content material is pivotal for students in the earliest years of their education. Start by incorporating regular opportunities for retrieval with the simplest material on your syllabus. The following principles intend to guide you through the models of small teaching retrieval, but they can be easily tailored to your own grade level or discipline.

Frequency Matters

The more students practice retrieval, the better they learn. Consistent quizzing is not old-fashioned; it should be your default. Quiz your students for six minutes every class period, with or without grades, if it fits into your routine. Online tools like Gimkit, Google Forms, and Socrative can dramatically reduce grading, but not every assessment needs to be graded. Formative assessment is the most valuable tool in your toolkit for gauging the effectiveness of your own instruction. Formative assessments should be reviewed to clear up misconceptions, but they should not contribute to a student's final number or letter grade on a report card. Use bell-ringers, do nows, and exit tickets as a means for frequent quizzing. Whatever strategy, or mix of strategies, you choose, implement them with consistency.

Align Practice and Assessment

The questions you intend to ask on your summative assessments (midterms or final exams) should resemble the questions you have used for retrieval practice throughout the year. If you ask students to memorize all of the colors of the rainbow in Spanish, make sure to refer to those color names as much as possible throughout the year in other contexts. If you use multiple-choice questions on

your summative assessments, incorporate them in day-to-day activities as games or low-stakes competitions. If you plan to use open response questions requiring the synthesis of retrieval and critical thinking, assign writing exercises in class that do the same.

Require Thinking

Give your students something to think about. Retrieval practice can be as simple as a basic memorization exercise; every third grader needs to know their multiplication tables. But, rather than asking students to commit a chart of numbers to memory, I might start with a word problem. “I want to provide a bottle of water for every member of our class after recess. If there are 20 members of our class, how many will I need? How many bottles will I need for the whole week?” By creating an authentic context for a brief retrieval task, students will be more likely to engage and master the material.

SMALL TEACHING QUICK TIPS: RETRIEVING

Memory retrieval exercises are brief. You can carve out a moment or two in every class period, but the most effective use of your time will likely come at the opening or closing of class. Regular quizzes or writing prompts are my preferred form of retrieval practice.

- Use bell-ringers and do nows as an opportunity to ask students to recall information from the previous class session. Try the three-two-one approach. Ask them to recall three key details, two lingering questions, and one thing they want to know more about.
- Use exit tickets at the end of class to ask students to write down the most important takeaway of the day.

- Compile key questions throughout the school year for “Big Basket Quizzes.” Draw old questions from the basket at random throughout the year to supplement regular assessments.
- Use polling platforms to pose questions for the class in a low-stakes environment. Continue adding questions after each unit until you have a rich database that is representative of your full course.

CONCLUSION

In my first year of teaching, I decided it was important to let my students take some ownership over the curriculum. Students would preview the following week’s text every Friday and select three potential words for our weekly vocabulary list. They’d write their choices on a sticky note, sometimes campaigning with their seatmates to choose the same terms. When the bell rang, they’d smack their sticky notes onto our classroom door and head off for the weekend.

I still remember the delight of one struggling reader named Catherine who arrived at our classroom on Monday morning to find her word, *loquacious*, on the official vocabulary list. It became an inside joke between the two of us. She’d be chatting off-topic during class months later and I’d give her my teacher-stare.

“Sorry Miss,” she’d say, “I’m just feeling loquacious today.” I couldn’t help smiling.

Last week, I ran into Catherine at a Red Sox game. She is 25 now, and a far cry from the pre-teen who sat in my classroom so many years ago. Without skipping a beat, she walked over to me and said, “Miss, do you remember me? I’m your most loquacious student!” How could I forget?

I have met many teachers who take great pride in never “teaching to the test.” I made similar remarks at the start of

my career. I wanted my students to get lost in the magic of literature and debate. Why taint their youthful curiosity with constant quizzing?

Flash forward to dozens upon dozens of class discussions with students who had not actually done the reading, but were very skilled at faking their way through, and then retained none of the salient information by the end of the school year. No matter how many cute projects or lively class periods resulted, I came to understand that if I had not contributed to the long-term memories of my students, then I had failed them.

On days when I lose sight of the lasting impact educators can have, I like to return to the words of one of my mentors, Superintendent Erin Nosek:

I think working in education is the best job you can have, and I mean that sincerely. Every day, we get the opportunity—whether it’s as a classroom teacher, a para-professional, a cafeteria worker, or a superintendent—to impact the lives of children. That is a very special calling and a unique opportunity. Our collective responsibility in education is to support the development of children so they can maximize their potential and pursue their dreams. We need students to have access to the content and resources that are important to them. We need students to build a foundation so that when they graduate, they are ready for whatever they choose to pursue. We also need our students to feel physically, socially, and emotionally safe, and to ensure that they have whatever support they may need. We are trying to educate the child from a very young age all the way up to high school with the goal of everyone graduating and receiving all that they need in order to maximize their potential. I’d argue that it’s the most important job you can have. It’s really special.

I understand looming fears that you might be compromising your educational philosophy in some way by incorporating routine retrieval. The truth is, retrieval practice will help students master the foundational knowledge they require to revel in the wonders of your content area and engage in deep, intellectually charged discussions. It takes no more than six minutes a day. Your students will be grateful for the consistency and accountability. Be transparent. Tell them what you expect them to know. If our tests are based on the learning standards, there's certainly no shame in teaching "to" them.