

The Retrieval Routine: 5–10 Minutes to Seal Student Retention and Understanding

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Busy teachers are always looking for strategies to increase students' retention, understanding of content, and engagement. As two professionals who work with teachers, we have developed a research-based routine that improves student content knowledge and engagement and is easy to plan and implement.

While there is much we don't know about learning, cognitive psychology has created some guidelines that hold up under rigorous testing. They include the following four principles.

- The retrieval-practice effect (short, open-response, low-stake quizzes) improves student retention of information better than any other study strategy. The direct act of retrieving information from memory enhances learning and retention—quizzes teach! Periodic practice strengthens retrieval and is essential for retaining the knowledge you want to gain (Brown, Roediger, & McDaniel, 2014).
- Interleaving practice, or variable or mixed practice, spaces study practice over time, mixes up the content, and increases long term retention. Including recent and past content on quizzes is a proven technique for increasing students' ability to learn and retain knowledge and skills (Brown, Roediger, & McDaniel, 2014).
- Formative assessment is a critical teaching practice (Wiliam, 2011) that builds on the retrieval-practice effect and interleaving. Not only does it help students retain new content, it also tells teachers what has not been learned.
- Writing improves student engagement, deepens content understanding, and improves reading comprehension (Graham, Fitzgerald, Friedrich, Greene, Kim, & Olson, 2016). Lang (2016) advocates frequent, low-stakes writing assignments as one of the best methods for soliciting engagement and thinking in class. When low-stake quizzes are frequent, written, and cover recent and past content, we have a perfect storm of learning.

By implementing the weekly plan outlined below, all four principles become habitual for you and your students. This weekly routine becomes what Duhigg (2012) describes as a keystone habit: a habit that has a domino effect by positively influencing multiple aspects at once.

Make a Question Monday

On Monday, reserve the last 10 minutes of class to assign the following task: **Create a fair, clear, and challenging prompt about the information we have learned today (or over the last few days).** This simple task requires students to review and summarize the most essential information. Composing the prompt compels them to synthesize their prior notes into a question. It's closure and engagement at their best because the students are the ones actively sifting

through their notes and reviewing the prior material. Provide students with the following parameters to help them develop their prompts.

- Include a number in the prompt to make it clear and easy to score.
- Use and circle at least one general academic vocabulary word.
- Require higher-order thinking response, not simply recall.
- Ensure that the prompt can be answered completely in a reasonable time—under seven minutes.

SAMPLE ACADEMIC VOCABULARY
WORDS FOR CREATING PROMPTS

analyze	evidence
cite	identify
compare	precise
contrast	summarize
evaluate	supporting details

For example, a student in a language arts class might create the following three-part prompt:

Define *theme*, and **identify** one theme in *Romeo and Juliet* and one in *To Kill a Mockingbird*.

Or in science class, a four-part prompt:

Describe one difference between physical change and chemical change and give one **specific example** of each type of change.

Next, pair students to review their prompts and select the better of the two. Call on a few students to read their questions to the class. Select a few potential questions with comments like, “That sounds great, I could use it tomorrow,” or, “I think that question is too general; try and make it more specific,” or “I love the question, but it will take too long to answer. Remember, our questions should be able to be answered in under seven minutes.”

Select the best prompt to be used the next day for **Take It Tuesday**. As extra motivation, consider giving the team who authored the question an automatic 100 on Tuesday’s quiz for having created such a great question. Have the author of the prompt write the prompt neatly on an index card.

Not only will students learn how to create effective prompts by reflecting on the recent content of the class, but they will also practice using general academic vocabulary and collaboration to create a better product. If a team of teachers adopts this approach, the students get multiple opportunities to practice and become better and faster at writing prompts. Teachers also gain formative information about what content the students think is important.

Take It Tuesday

At the beginning of class on Tuesday, give the prompt generated on Monday as a quiz.

Once you've established this routine, students will begin to study the night before, reviewing the most essential information based on the prompt that has been read aloud on Monday. Grade responses to the prompt on Tuesday night. Grade only the content, not conventions. As tempting as it is to circle mistakes, don't. This activity is to increase content retention and understanding and is not about mastery of conventions. The grading system is one that most states use to score open or constructed response questions.

Work Together Wednesday

Return the graded responses at the beginning of class on Wednesday. Take a few minutes to clear up any misconceptions the students may have. Ask the student with the most complete, well-written answer to share the answer and record it on the back of the index card with the question on the front. Store the completed index card in a container (a plastic jar, fishbowl). Put one card or more per week in the container.

During the last 10 minutes of Wednesday's class, distribute one card to each student. **Have students stand and, in pairs, participate in a retrieval game, Question-Question-Trade.** For this game, one student asks the other the question on the card and, if necessary, helps the partner recall the answer from the back of the card. The process is reversed, and then students trade cards and find new partners. Repeat for as many rounds as time permits. (In 10 minutes, you should be able to get through two to four rounds.)

At the beginning of the year, you may have to add some of your own questions to the container, covering critical background information for your subject, in order to have enough cards for the Question-Question-Trade activity. This is essentially a modified version of Kagan's (1994) cooperative learning technique, Quiz-Quiz-Trade.

Having a container of questions also helps solve one of the more intractable problems of the classroom: what to do when students finish a task early. The answer: Review the questions!

Throwback Thursday

On Throwback Thursday, select a card at random from the container, and read the prompt aloud to the class as a written quiz. Collect students' responses and grade for content only. No one can predict the question on Thursday because it is pulled randomly from the container. If the index cards with answers are kept in a public space in the classroom, encourage students to use the cards to review content. As the year progresses, they will be reviewing cumulative information from throughout the year. This sends a clear message to students: We

don't just study to pass a test at the end of the week; we study to learn and retain information so that we can retrieve it from our memory and have enduring understanding.

Day of the week	Make A Question Monday	Take It Tuesday	Work Together Wednesday	Throwback Thursday
Process	Formulate question	Quiz	Cooperative learning and recall	Quiz
Research Strategy	Reviewing and writing	Formative assessment and writing	Interleaving, formative assessment, and writing	Interleaving

Following the weekly routine described above, students create one question per week (Monday), have two quizzes per week (Tuesday and Thursday), and one review per week (Wednesday). None of these activities should take more than 10 minutes and all can serve as do-nows or exit slips.

These micro routines take advantage of four of the most powerful techniques cognitive science has to offer:

- retrieval-practice;
- interleaving;
- frequent formative assessment; and
- writing as a strategy to improve student engagement, deepen content understanding, and improve reading comprehension.

They also provide the repetition necessary to create a keystone habit: “I better study on Monday to do well on Take It Tuesday, and I should review past materials during Work Together Wednesday for Throwback Thursday.” Obviously, this practice embeds the habit of consistent study. Using the most effective study skill of self-quizzing helps students get on a winning streak—success breeds success. As Duhigg (2012) states, “Small wins [high quiz scores] fuel transformative changes by leveraging tiny advantages into patterns that convince people that bigger achievements are within reach” (p.112). Researchers have found that although students initially do not like being quizzed, it becomes routine. They realize they are retaining more of the course content and, therefore, come to appreciate how beneficial the routine is.

References

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