

Tips for Implementing Retrieval Practice as a Learning Activity

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What is Retrieval Practice (RP)?

An effective instructional and study strategy that involves practice drawing out (or retrieving) information from your memory system, usually in the form of a test or quiz¹.

Why use RP as a learning strategy?

Research shows that RP provides the following benefits for student learning:

- ✓ strengthens memory and long-term learning¹
- ✓ more effective than other elaborative study strategies²
- ✓ improves metacognition and influences self-regulation of learning^{3,4,5}

Key Components of Successful RP:

- ✓ **Low-stakes:** Retrieval practice works best when presented to students as a “challenge” or practice activity, rather than as a more formal or higher-stakes “test.”^{5,7,8}
- ✓ **Includes Feedback:** Provide students with feedback on the correct answers following RP to reinforce their learning. It is good for students to review *all* of their answers, though, not just the ones they missed.⁹
- ✓ **Challenges Students:** Design your RP activities so that students actively retrieve what they have learned previously from their memory, rather than relying on just recognizing the answers.¹⁰ This is common for open-ended questions, discussion, or fill-in-the-blank. However, challenging multiple-choice questions can improve learning as well (see “Types of Retrieval Practice” below).¹¹

Types of Retrieval Practice Activities:

- ✓ **Quizzes or Tests:** These can be presented in a variety of formats, usually multiple-choice, short-answer, fill-in-the-blank, or a combination.
 - Typically the more students have to struggle with the RP activity initially (i.e., the more challenging it is), the greater the benefit of retrieval practice.
 - Tip: Construct multiple-choice questions so that students need to recall the differences between the response options in order to decide which one is correct.

Example Multiple-Choice Question:

When I was out hiking last week, I saw a snake on the path. As soon as I saw it, my heart began to race, my breathing rate increased, and I ran away quickly. My _____ is responsible for the physical reaction I had to seeing the snake.

- A) Sympathetic Nervous System
- B) Parasympathetic Nervous System
- C) Endocrine System
- D) Central Nervous System

This question requires that the student recalls that (1) the increasing heart and breathing rates in this context are part of the “fight or flight” response (2) the peripheral nervous system (PNS)

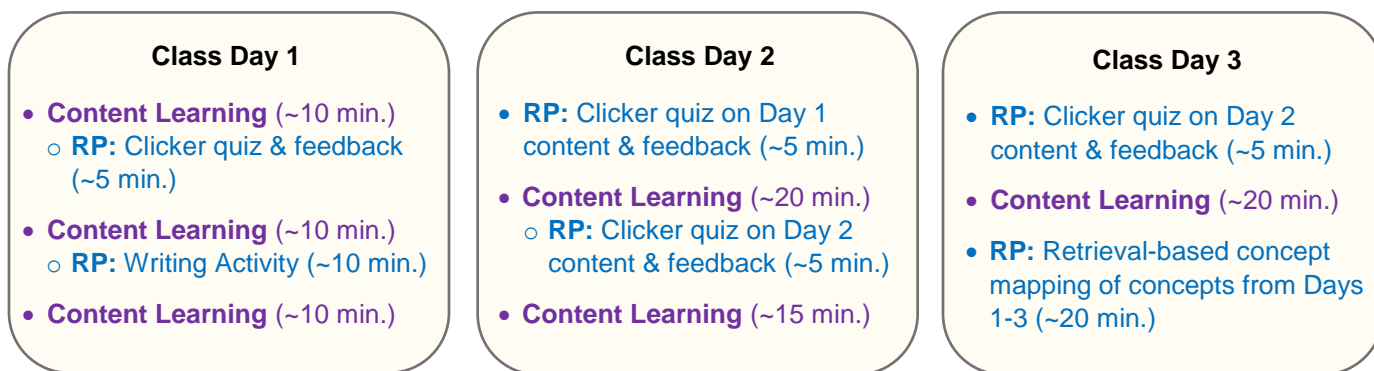
is involved in this response, and (3) the sympathetic division of the PNS increases breathing and heart rate, whereas the parasympathetic division brings these response back to the resting state after this response.

- ✓ **Retrieval-based concept mapping**
 - Ask students to create a concept map connecting the concepts they have learned, without looking at their textbook or notes until they are done.¹² By keeping their notes closed, they must engage in retrieval in order to create their map. Follow-up with feedback on their work on an individual basis or as a whole-class discussion.
- ✓ **Asking review questions in class**
 - Quizzing can be administered with clickers or as an open-ended discussion. Engage students throughout the class in retrieving and applying information they have learned that day or in a previous lesson. Encourage students to flip over or close their notebooks during these activities so that they are retrieving the information from memory.
- ✓ **Writing assignments**
 - Have students recall a concept they learned previously (closed notes and text) and write a brief summary. Asking students to include an example or application of the concept is great too.

How often and when should students engage in Retrieval Practice (RP)?

The general consensus from RP studies, is that the more practice, the better the outcome. So, if there is time to include some of the activities described above throughout a single lesson, these activities should help students learn.

Recent research also suggests that RP is even more effective when given at longer intervals between initial learning and practice, such as a day or a week after initial learning.¹³ Below is a sample RP schedule, based on a 45-minute class period, for you to adapt for use in your class. The phrase “Content Learning” refers to the curricular activities you would typically include in your class (e.g., reading the text, lecture, conducting an experiment).



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