

## Upcoming Events

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for an at-a-glance view of our upcoming events for the next 3 months

## Retrieval Practice and Spaced Practice –What are these techniques and how to utilize them?

Retrieval practice involves bringing previously acquired knowledge and information forward into conscious thought through actively attempting to recall information. Supported by decades of research, retrieval practice strengthens long-term knowledge creation by schema reinforcement, and increases the understanding of content in ways that are necessary for higher-order thinking.<sup>1,2</sup> One key to retrieval practice is to utilize the strategy in such a way that retrieving information and identifying gaps is practiced often over the course of learning.<sup>1</sup>

While this technique may at first feel laborious for learners, research has shown that students who utilize retrieval practice regularly learn content more quickly.<sup>1</sup>

As an educator, there are ways to incorporate and encourage learners to apply retrieval practice:

- Examine your techniques for teaching and learning. Are you focusing on both getting information into minds and helping learners apply what they have learned?<sup>1</sup>
- Encourage learners that if the retrieval process is difficult and trying at times it is because it is effective.
- Use fact-based, concept-based, and complex questions to encourage higher-order thinking. Doing so combats against rote memorization and only storing information in short-term memory.<sup>1</sup>
- Implement retrieval practice as often as possible within and outside the learning environment.

Practical examples of using retrieval practice can include:<sup>1,2</sup>

- Concept mapping.
- Flashcards that provide a complex question and allow learners to write down answers that are more than one- or two-word responses.
- Intermittent quizzes (but remember to provide focused feedback after each quiz, particularly when summative grading is involved).
- Questioning and reinforcing retrieval during a lecture or hands-on learning experience.
- Providing writing prompts focused on previous learning engagement.
- Identifying gaps in knowledge and spending time focusing on shoring up these knowledge gaps (also known as facilitating metacognition).

Spaced practice, on the other hand, is providing an amount of time between learning and multiple retrieval practice sessions. Spaced practice lends itself to applying knowledge in more complex ways that expand beyond what may have been initially taught in a learning environment, and results in learning that is long lasting and more durable over time. While sometimes seen as two separate strategies, combining retrieval practice with spaced practice can result in maximized learning effect. By spacing out knowledge recall, the effectiveness of the retrieval process is increased. “Research in cognitive psychology shows that the spaced practice is more beneficial for long-term, meaningful learning.”<sup>1</sup> In one study, medical students were found to perform a surgical procedure more successfully if they practiced surgical skills in four spaced sessions that occurred once per week over four weeks compared to those who practiced the same skills during four sessions occurring the same day.<sup>3</sup>

As an educator, tips for implementing spaced practice can include:<sup>4</sup>

- Break up learning into smaller sessions over multiple days.
- Revisit information or concepts taught in previous sessions or lectures in creative ways like class discussions, out-of-class assignments, or group work and tie previously learned material to newly acquired learning.
- Use learning management tools to build in spaced retrieval reminders, activities, quizzes, etc.
- Remind learners that spaced practice can be difficult and it may seem that what they thought they learned may have been lost.
- Redistribute class time in ways that incorporate spaced practice within the allotted class time.
- Encourage learners to utilize spaced practice.
- Always provide feedback if spaced practice is utilized in the learning environment.

Want to learn more about how to incorporate Retrieval Practice and Spaced Practice into your teaching? Check out a [recording of this week’s TEACH Education Day keynote session](#) with Dr. Megan Sumeracki.

- Sarah M. Harendt, M.S.  
Education & Faculty Development Manager

#### References:

1. Agarwal, PK, Roediger, HL, McDaniel, MA, McDermott, KB. How to Use Retrieval Practice to Improve Learning. Institute of Education Sciences.
2. Main, P. Retrieval Practice: A Teacher’s Guide. (online) Retrieval practice: a teacher’s guide (structural-hearing.com)[October 17, 2021].
3. Moulton, CE, Dubrowski A, MacRae, H, Graham, B, Grober, E, Reznick, R. Teaching Surgical Skills: What Kind of Practice Makes Perfect? *Annals of Surgery*, 244: 400-409, 2006.
4. Beale, J. Strategies for Making Learning Last: Retrieval Practice, Spaced Practice and Interleaving. The Tony Little Centre, Innovation and Research in Learning. 2021.

**“The capacity to learn is a gift; the ability to learn is a skill; the willingness to learn is a choice.”**

**- Brian Herbert**

## Dean’s Corner

*Last year, the Dean’s Corner focused on the principles of Health Systems Science. The focus for the remainder of this year will be Diversity, Equity, and Inclusion and will be authored by Azziza ‘Kemi’ Bankole, MBBS, Carilion Clinic, Carilion psychiatrist and VTCSOM associate professor of psychiatry and behavioral medicine and chief diversity officer. Dr. Bankole devotes this month to the significance of patient histories.*

### Past/Present/Future

“Humankind has not woven the web of life. We are but one thread within it. Whatever we do to the web, we do to ourselves. All things are bound together. All things connect.”

- Chief Seattle, Duwamish

One of the first and most important skills we learn as clinicians is history taking. We are first presented with a framework to help us practice, develop, and subsequently (hopefully) master the art of history taking. As we advance in our education journey, we become more aware of the emphasis shifts in history taking that occur depending on the specialty or the information that we are presented with. We learn that one size does not fit all.

We are taught to appreciate the importance of the information we get from simply talking to our patients. We learn that the process helps us better understand the origin, progression, and possible course of what could happen to our patients. We learn the importance of knowing about the whole person and not just the symptoms or signs that they present with. Where they live, work, go to school, etc. could have potential negative or positive impacts on what they present with.

Some histories are just embarrassing or even painful. Our first instinct may be to ignore them. We may avoid asking questions about certain topics such as abuse, substance use, or sexual activity. I often find myself reminding my students and residents of the importance of obtaining accurate histories and was recently reminded of the exact same thing by a resident. This reminder to look closely at such a topic proved pivotal in the diagnosis and long-term management of my patient.

The reluctance to discuss certain issues is not just on the clinician’s part. After all we are all only human. Our patients may be reluctant to share certain information with us for a multitude of reasons. It may be because of their prior experience with health care systems and providers, related to the social needs and concerns they have, or to how they think they will be judged. It is part of our duty to provide a safe environment for open discussions to take place.

I like to think that it is just as important for us to know our histories be it familial, social, cultural, or national. We may think that how things are now is how they have always been and because this often seems immovable, we may make no attempts to change things for the better. Learning to look back at what has happened before with openness and curiosity helps us understand the circumstances that got us to where we are or that hinder us from moving forward.

- Kemi Bankole, MBBS, Psychiatry, Carilion Clinic; Associate Professor of Psychiatry and Behavioral Medicine and Chief Diversity Officer, Virginia Tech Carilion School of Medicine

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