



Retrieval Learning for Longer Retention and Application: Making it Work in the Classroom

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Retrieval Learning

Retrieval learning is well supported in education research as an essential element in meaningful learning. Retrieval is the process of recovering knowledge and information from long-term memory, where it was encoded for this purpose (Malamed, 2012). Retrieval is instigated by a retrieval cue, which is a query, experience, or event that activates associated knowledge.

Retrieval learning allows students to: practice retrieving the information in varying circumstances and develop the ability to retrieve and apply information in multiple situations with varying cues. It prepares the students to apply what has been learned once they are employed.

Learning is changed by each act of retrieving information, by the retrieval itself. Each retrieval improves the possibility of subsequent retrieval (Karpicke & Zaroomb, 2010).

Retrieval results in meaningful learning which allows students to make inferences and apply knowledge (Mayer, 2008).

Student responses hinge upon the similarity between:

- retrieval situations in the present and
- learning experiences from the past.

Research

- Active retrieval enhances learning of meaningful educational content (Kornel, Hays, & Bjork, 2009).

- The learning is long-lasting (Karpicke & Roediger, 2010).
- Active retrieval enhances performance measured on meaningful assessments of learning (critical thinking tests) (Karpicke & Blunt, 2011).
- Active retrieval produces a better outcome using a concept map creation as the final assessment than studying by creating concept maps (Karpicke & Blunt, 2011).



Student Perceptions

Students tend to have inaccurate perceptions of what mode of study will produce the best result (Karpicke, Butler, & Roediger, 2009; Karpicke & Grimaldi, 2012).

Students were asked what strategy they would use to study after reading their notes and the text once.

- 57% reread
- 21% do something else
- 18% attempt to recall material



After participating in several studies with retrieval learning producing the best result, students were asked again. The retrieval option included retrieval followed by rereading.

- 42% retrieval with rereading
- 41% reread
- 17% something else

Strategies

Cumulative Testing

- Include at least 10% of previously tested content on each course test.
- Use a cumulative final exam.
- Include a cumulative mid-curriculum exam.
- Use weekly quizzes on content from the previous week.
- Use questions throughout the class.
- Provide debriefing for exams (Favero & Hendricks, 2016).
- Use games with questions on previous content as well as current content.

Distributed/Spaced Practice

- Distributed Practice breaks content into parcels: student studies over the week before the exam or longer.
- Student follows review of all content with a last review the night before the exam.
- Should include retrieval learning.

Interleaved Practice

- Interleaved Practice includes not only distributing practice across time, but also mixing content.
- For a nursing student, a block of content from:

Patho, Pharm, and Fundamentals.

- Initially the content is reviewed daily. Once a piece of content is mastered, it is moved to weekly, then monthly, etc.



Assessment

- Review past student performance on the exit exam, specialty, or mid-curriculum exams.
- Assess current student study practices.
- Evaluate your own courses and the curriculum for implementation of practice testing and cumulative testing.
- Assess the predominant level of existing tests. Do they include critical thinking type questions?

Tips

Begin early



Introduce to students in the first course
Incorporate throughout the program
Teach students to use retrieval
Use different approaches to retain attention

- Games
- Socratic questioning
- Pretests
- Students teaching students
- Students developing questions