Lecturio

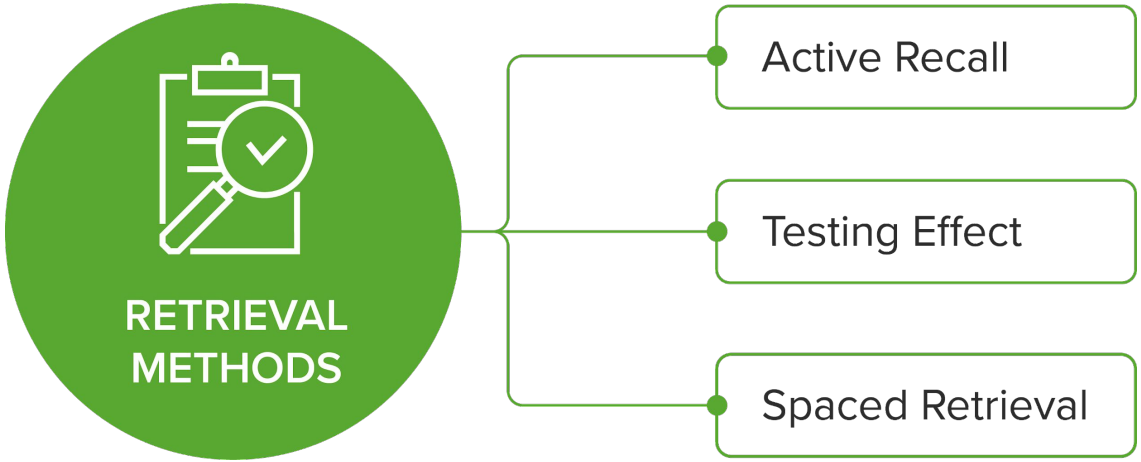
Retrieve to Retain: Applications for Modern Medical Education

Live
Online Seminar
Summary

Seminar Learning Outcomes

1. Participants will be able to **gain an understanding** of retrieval practices, including active recall, the testing effect, and spaced retrieval.
2. Participants will be able to **interpret** cognitive science and neuroscience evidence that support retrieval-based strategies as effective educational tools.
3. Participants will be able to **identify** retrieval methods from an educator and student perspective and be able to **utilize** them in their medical curricula.
4. Participants will be able to **recognize** how technology can enhance the delivery and monitor the effectiveness of retrieval-based strategies.

Retrieval-Based Strategies



Why Retrieval Works

Insights from cognitive science:

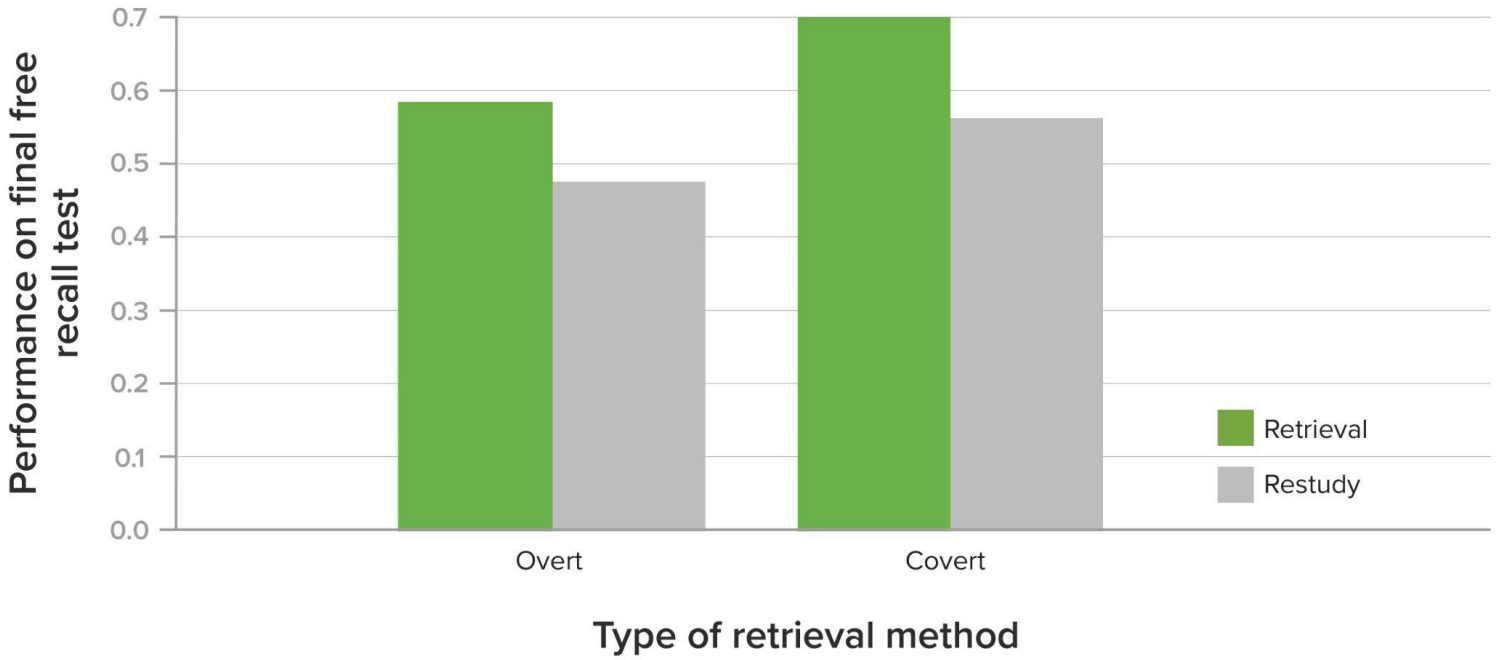
- Active retrieval enhances the ability to recall information when needed vs passive studying techniques which create an illusion of knowing.
- Spacing of retrieval greatly augments long-term recall.
- Retrieval with feedback may co-activate related information which enhances memory.

Insights from neuroscience:

- As information is retrieved, neural pathways are strengthened by changes in several cellular processes.
- Spacing of retrieval events allows for consolidation of neural pathways.
- Retrieval with feedback helps establish effective neural cross linkages.

Active Recall

Overt and Covert Active Retrieval



Smith MA, Roediger HL, Karpicke JD. Covert retrieval practice benefits retention as much as overt retrieval practice. J Exp Psychol Learn Mem Cogn. 2013;39(6):1712-25

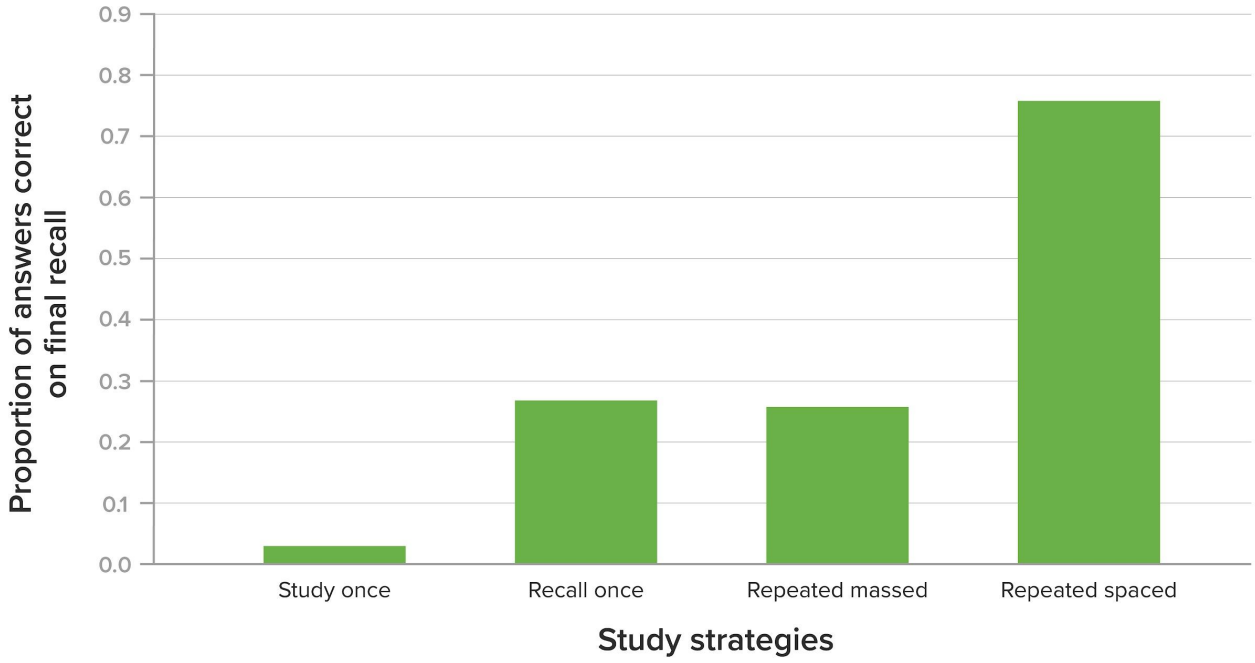
The Testing Effect

There is More to Testing than Only Assessment

- The act of taking a test **strengthens memory and ease of retrieval.**
- Student test **anxiety** can be **decreased** by assigning **low-stakes assessments,** such as practice quizzes, which still improve memory and ease of subsequent retrieval.

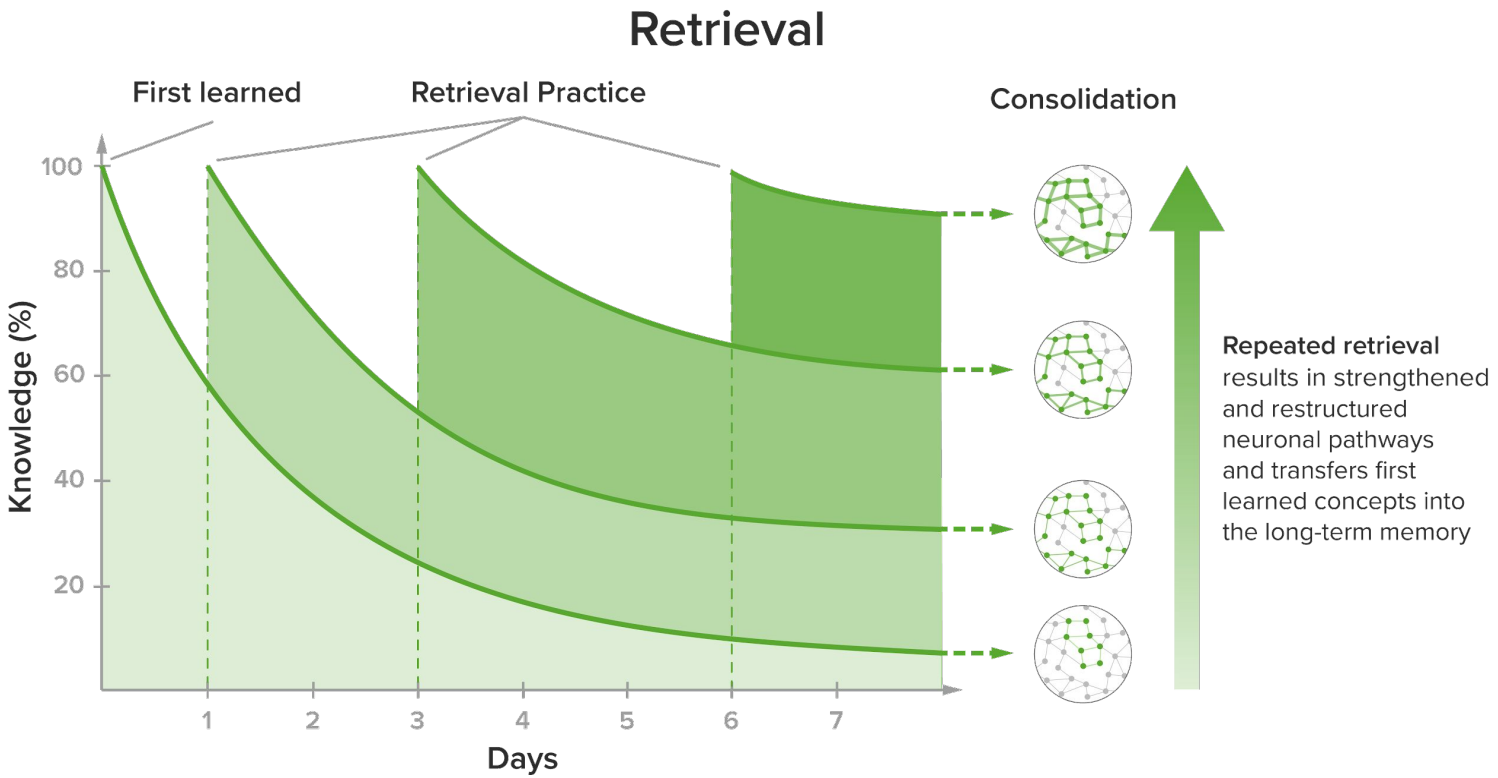
Spaced Retrieval

Spaced Retrieval Shows Superior Recall over other Methods



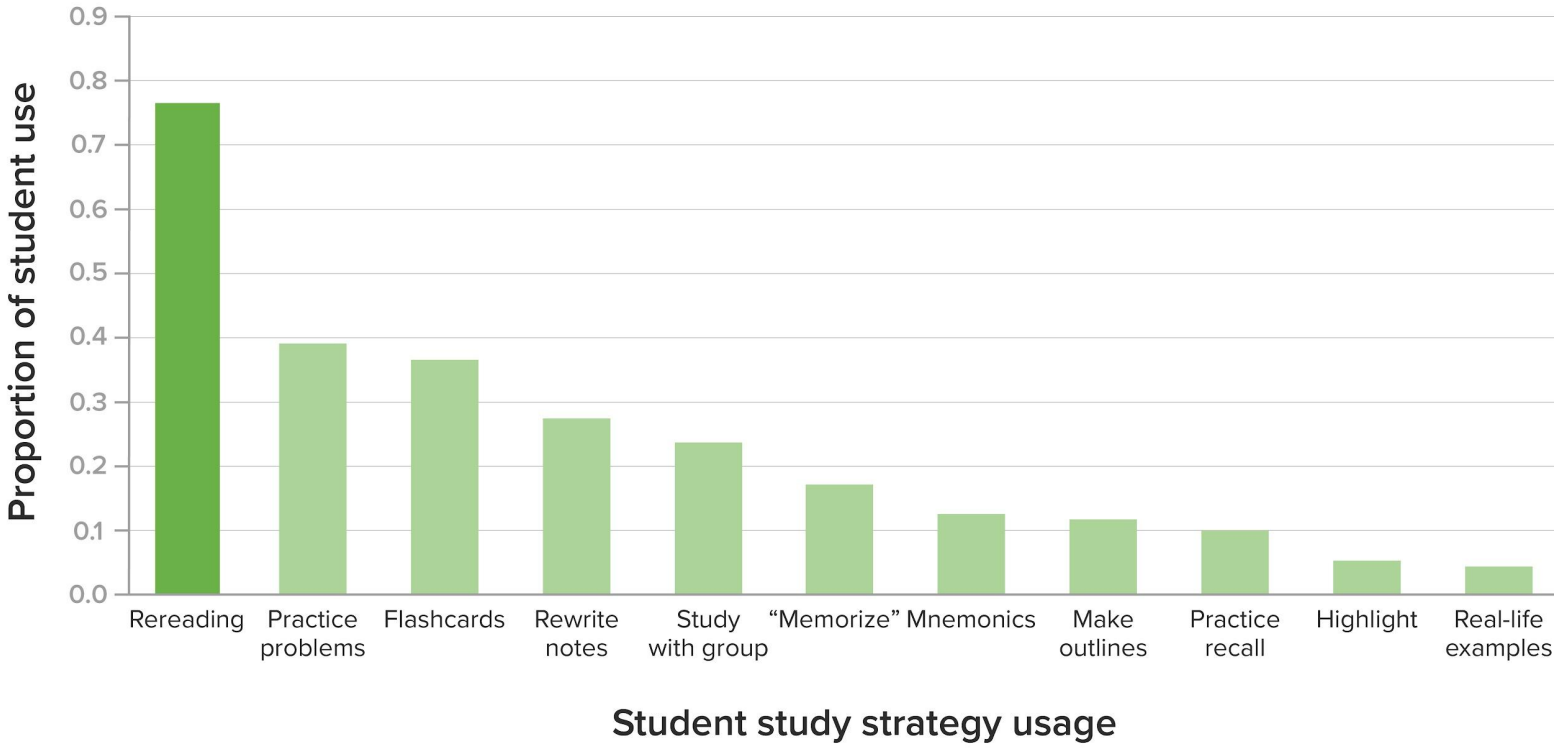
Karpicke JD, Bauernschmidt A. Spaced Retrieval: Absolute spacing enhances learning regardless of relative spacing. J Exp Psychol Learn Mem Cogn. 2011;37(5):1250-7.

What Happens with Retrieval Usage and Why?



Ebbinghaus H. Memory; a contribution to experimental psychology [Internet]. New York city, Teachers college, Columbia university; 1913 and Oakley et al. Uncommon Sense Teaching: Practical Insights in Brain Science to Help Students Learn. New York: TarcherPerigee; 2021. Lecturio adaptation.

Most Students Choose Ineffective Studying Techniques



Karpicke JD, Butler AC, Roediger HL. Metacognitive strategies in student learning: do student practice retrieval when they study on their own? Mem Hove Engl. 2009 May; 17(4);471-9.

Medical Educator’s Perspective

Experiences from a Former Student Turned Medical Educator

- Student surveys + review of medical educational literature showed concerns for student well-being and cognitive overload.

- More efficient learning = classroom time made interactive.

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Retrieval-Based Strategies Implementation

Active recall/testing effect examples:

- Required pre-work in the form of videos and articles relating to the upcoming week's content
- Monday assessments (low-stakes) recalling pre-work information

Spaced retrieval examples:

- Friday assessments (low-stakes) on content from that week + prior weeks/months/year
- Dedicated clinical cases every week
  - Requires learners to retrieve information and utilize skills from various courses

Implementation of Retrieval Methods – Recommendations

Educator's perspective:

- Utilize many low-stakes practice tests and other retrieval exercises.
- Educate students about metacognition bias and that the time investment in retrieval methods is the most efficient way to study.
- Make use of digital platforms and algorithms to take the guesswork out of spaced retrieval practice.

Student's perspective:

- Students need to recognize that passive studying techniques are inefficient methods for learning.
- Easy learning ≠ effective learning.
- Avoid the illusion of competency.
- Use digital tools to assure durable learning.

Examples of Retrieval Strategies for Foundational Learning

Retrieval Strategy	Brief Description
Practice tests or quizzes	Instructors assign **low-stakes** practice quizzes/tests (paper pencil/digital). Feedback should be provided post assessment.
Power Ticket Template (from *Powerful Teaching*)	Instructors make a table “What Did We Talk About….” today, last week, last month, last quarter etc., and students **summarize** 3 facts in each cell.
Jot Strategies (from *Uncommon Sense Teaching*)	Students asked to put away resources and summarize information by **“jotting down”** what is recalled, sketches of anatomy, or recapping older material.
Think Pair Share	Instructors pose a question and students first **think independently** about the answer, then **discuss answers** with another student, and lastly **share** responses to the class.

- Active recall, the testing effect, and spaced retrieval are exceptionally effective learning strategies.
- Retrieval enhances long-term retention of memory.
- Leveraging digital learning platforms that utilize algorithms eases implementation of retrieval methods in medical curricula.

Lecturio's Implementation of Retrieval Methods

Request a demo to learn how you can use Lecturio to implement **retrieval-based strategies**.

Contact us

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