



Brain Research Confirms New Retention Strategies

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Modern brain research confirms what outstanding teachers have known all along. Recallable learning takes place when the material is relevant and meaningful, processed by many senses and is emotionally stirring.

All these factors combine to provide an answer to one of the most vexing teacher questions: How can I ensure that students recall the material in the long-term?



The study factor is crucial to learning retention.

Outside of Class Self-Learning is Key

Study is work; therefore it must be as meaningful, concise, and success-oriented as possible. Students intensely dislike homework and in-class activities that require them to try and try without accomplishment, are returned to them with no feedback or comments, or if the homework seems like busy work.

To maximize learning results, students need:

- Practice with improvement feedback; for example, have homework assignments evaluated and returned with improvement suggestions.
- Personalization of the content—take knowledge apart, reassemble it, and then, express it personally.

- An opportunity to express doubt and direct questions to learning peers, the instructor, and practitioners.
- To visualize—create charts, graphs, and symbols.
- To emotionalize—express learning using the elements of basic theater.
- To experience a sense of accomplishment.

Practice is Essential, But...

Homework is essential to learning and, as an instructor, I'm expected to assign out-of-class study. But exactly what and how much practice should I assign? And what are the factors that produce optimal learning?

- Length—the time an average student is expected to spend to complete the assignment. Tip—don't give more practice problems than needed.
- Difficulty—each practice assignment should include easy, medium, difficult, and challenging problems.
- Context—are the practice activities meaningful? Are they in terms that connect with the students' reality in some way?
- Feedback—how will student responses and answers be critiqued and improvement suggestions be transmitted to them?
- Variety—does the assignment give the student a thorough workout of all mental muscles: fact and rule recall, rule application, procedural knowledge, problem solving, evaluation, and synthesis?

Gagné, Briggs and Wagner, *Principles of Instructional Design*, stress adding variety to homework and in-class practice sessions to help students apply knowledge to new situations or retain and transfer learning from the classroom to the real world. Simulations and real-world case problems often provide the practice in critical thinking.

Memorization—a skill to develop

Even though eschewed by many educators, there is still a great need and benefit for learning how to rapidly and accurately memorize definitions, facts, formulas, and procedures. The tips, tricks, and strategies for improving memory are too numerous to list here. The best approach is to spend a few minutes with a good book on memory techniques. One that I have used and would recommend is *The Memory Bible* by Gary Small, M.D.

Dr. Small recommends using the Look, Snap, and Connect memorization system. Briefly, “Look” means to carefully observe the thing to be remembered. Note the details: color, shape texture, smell, weight, etc.

Next, “Snap” a series of mental pictures of the object or data to be remembered. Snapping a colorful, detailed and vivid mental image will improve the likelihood of recalling it later. Keep in mind the more wild and fanciful the snapshot image the easier it is to remember.

Lastly, “Connect” the images with a story that will correctly sequence the snap shots and make them easily recallable. Optionally, you can create a single visual that contains all the snapshots in a meaningful pattern, or create an acronym to remember the first letter of the title of each snap.