



# Study Smarter

*"I study by re-reading my textbook and/or notes."*

This is one of the most common study strategies used by college students, but research actually shows that this **is one of the least effective study strategies for long-term learning and test performance** (Brown et al., 2014 and Dunlosky, 2013).

So what can you do to study smarter?

Setting the stage:

1. Get enough sleep. On average, humans need 7-9 hours per night. Deep sleep is necessary to consolidate new information into long-term memory.
2. Exercise. Regular aerobic exercise increases the brain's ability to focus and to form new memories.
3. Plan your study breaks. Attention span and ability to focus declines with time. Study in 25-50 minute intervals with 5-10 minute breaks.
4. Take care of your self. High stress levels and poor physical health can reduce your ability to focus and learn.

Research-proven strategies for effective learning:

1. **Recall. Recall. Recall.**  
Study by quizzing yourself, treating assignments like a test, using flashcards, summarizing lectures or readings aloud, creating concept maps from memory, etc. The more often you retrieve information from your memory, the stronger the memory. This is the MOST effective study strategy you can use.
2. **Space out your studying.**  
You will remember more from four-30 minute study sessions spread over 4 days than a 2-hour study session in one day. Distributed study sessions enhance long-term learning and retention.
3. **Mix it up.**  
Instead of studying economics for 2 hours and then English for 2 hours, study economics an hour, English for an hour, then repeat. If practicing 3 types of problems, practice all 3 types together rather than doing all of one kind before moving onto the next. This approach feels harder because you may forget a bit of what happened in the previous study session and work to recall it, but you will create stronger memories. For problem-solving, it increases your ability to identify when and where to apply certain rules or processes.
4. **Elaborate.**  
Ask yourself how, why, and what if questions about the material and explain it to yourself. Go deeper into the details. Come up with concrete examples. You might



also create a graphic organizer (like a mind map, flow chart or comparison table) to show how you see ideas and information connected.

5. **Connect.**

Link new information with what you already know, personal experiences, real world examples, and imagine how you will apply it.

6. **Use multiple senses** (visualize, say, hear, touch, smell).

This helps anchor the memory and improves your ability to recall. You might pair movements with reciting steps aloud to better recall hands-on, practical procedures. Dual coding (pairing images with text) has been shown to increase learning and memory for vocabulary, health sciences and .

7. **Teach someone.**

This lets you actively recall what you've learned and explain it in your own words. It can also help identify where you need to do more work if you are struggling to explain a concept or process.

### Memorization Techniques (Ellis, 2012)

The techniques below are for memorizing facts and are best suited to lower levels of learning like “define, identify, list, describe, classify”. For learning objectives at higher levels like “apply, demonstrate, compare, analyze, evaluate, create,” make sure to practice at that level.

- **Flashcards**

Great for learning vocabulary. Flashcards are most effective when you make your own, whether paper or digital, and space out your practice.

- **Mnemonics**

Good for recalling lists of information, steps in a process, or formulas. Example: “RICE” – Rest, Ice, Compression, Elevation - the steps to treat a muscle injury. Mnemonics can be acronyms or acrostics.

- **Songs or rhymes**

Useful for formulas, processes, lists of information. Set information to childhood songs or jingles make remembering it easier.

- **Chunking information**

Create categories to help you remember large amounts of information by chunking it into smaller groups. Group by category, location, time, function, colour or other logical classification.

#### Resources

Ellis, D., Toft, D., & Dawson, D. (2012). *Becoming a Master Student* (5th Canadian ed.). Toronto: Nelson Education.

Brown, P. C., Roediger III, H. L., and McDaniel, M. A. *Making it Stick: The Science of Successful Learning*. Cambridge, MA: The Belknap Press of Harvard University Press, 2014.

Dunlosky, J. (2013). *Strengthening the student toolbox: Study strategies to boost learning*. American Educator. <https://www.aft.org/sites/default/files/periodicals/dunlosky.pdf>

Weinstein, Y., Madan, C., & Sumeracki, M. (2018). *Teaching the science of learning*. Cognitive Research: Principles and Implications. <https://cognitiveresearchjournal.springeropen.com/articles/10.1186/s41235-017-0087-y>

