

Organizing/Storing Information

1. **Learn from the general to the specific.** Many students approach new material in their textbooks by jumping right in and tackling the details before they get a sense of the “bigger picture” of the information. A more effective approach is to begin your next reading assignment by skimming the material for a general idea. Acquiring an understanding of the “big picture” will allow for the details to make more sense.
2. **Make it meaningful.** Know what you want from your education; then look for connections between what you want and what you are studying. If you are feeling overwhelmed with quadratic equations, stand back for a minute. Think about how the math course relates to your goal of becoming an engineer. When information helps you get something you want, it is typically easier to remember.
3. **Create associations.** The data and information stored in your memory are arranged according to a scheme that makes sense to you. When you introduce new information, you can recall it more effectively if you store it near similar data.

Using Your Body

4. **Learn the information actively.** Action is a great memory enhancer. You can test this theory for yourself by studying with the same energy that you might bring to the basketball court, treadmill, etc. When you sit at your desk, sit up. Sit on the edge of your chair, as if you were about to spring out of it and sprint across the room. Also, experiment with standing up while you study. It is harder to fall asleep in this position. Pace back and forth and gesture as you recite material out loud. Use your hands. Get your whole body involved in studying. These techniques are a great way to battle boredom. Boredom puts memory to sleep. **LEARNING TAKES ENERGY.**
5. **Relax.** When we are relaxed, we absorb new information quicker and recall it with greater accuracy. This idea might seem to contradict #4, but it really does not. Being relaxed is not the same as being drowsy, “zoned out,” or asleep. Relaxation is a state of alertness, free of tension, during which our minds can effectively process new information.
6. **Create pictures.** Draw diagrams. Make cartoons. Use them to connect facts and illustrate relationships. Relationships within and among abstract concepts can be seen and recalled more effectively when they are visualized. Another reason to create pictures is that visual information is associated with a different part of the brain than verbal information. When you create a picture of the concept, you are anchoring the information in two parts of your brain. This increases your chances of recalling the information.
7. **Recite and repeat.** When you repeat something out loud, you anchor the concept in two different senses. First, you get the physical sensation in your throat and lips when voicing the concept. Second, you hear it. The effect of using two different senses is greater than the sum of their individual effects. The repetition part is important too. **Repetition is the most common memory device because it works. Recitation works best when you recite concepts in your own words.**
8. **Write it down.** This technique is obvious, yet often forgotten. Writing engages a different kind of memory than speaking. Writing forces us to be more logical, coherent, and complete.

Using Your Brain

9. **Reduce interference.** Turn off the stereo when you study. Find a quiet place that is free from distractions. Two hours of studying in front of the television or while listening to familiar music is likely worth about ten minutes of studying in a quiet environment.
10. **Overlearn.** One way to fight mental fuzziness is to learn more than you intended. Students often stop studying when they think they know enough to pass a test. Another option is to pick a subject apart, examine it, add to it, and go over it until it becomes second nature. **This technique is particularly effective for problem-solving.** Do the assigned problem, and then do more problems. Make up your own problems and work those. When you pretest yourself in this manner, the potential rewards are speed, accuracy, and greater confidence at exam time.
11. **Escape the short-term memory trap.** Short-term memory is different from the kind of memory you will need during an exam. For example, most of us can look at an unfamiliar seven-digit phone number once and remember it long enough to dial it. See if you can recall that number the next day. Short-term memory can fade after a few minutes and rarely lasts more than several hours. A short review within minutes or hours of a lecture or study session can move information from short-term memory into long-term memory. This quick mini-review can save you hours of study time when exams roll around. **Review all lecture notes, textbook notes, and study session notes within 24 hours (maximum).**
12. **Use daylight hours.** Study your most difficult subjects during daylight hours. Research has shown that 60 minutes of studying during the day is the equivalent of 90 minutes of studying at night.
13. **Distribute learning.** Psychological research suggests that marathon study sessions are not effective. You can get far more accomplished in three two-hour sessions than in one six-hour session. You can get more done if you take breaks, and use them as mini-rewards. After a productive study session, give yourself permission to make a short phone call, check email, etc.
14. **Be aware of attitudes.** People who think history is boring tend to have difficulty remembering history. One way to befriend a self-defeating attitude is to relate it to something that you are interested in. We tend to remember what we find interesting.
15. **Choose what not to store in memory.** We can adopt an “information diet.” Just as we can choose to avoid certain foods, we can choose not to retain certain kinds of information. Decide what is essential to remember from a reading assignment or lecture. Extract the core concepts. Ask what you will be tested on, as well as what you want to remember. Then apply memory techniques to those ideas.
16. **Combine memory techniques.** All of these memory techniques work even better in combination. Choose two or three techniques to use on a particular assignment. Experiment for yourself. For example, after you take a few minutes to get an overview of a reading assignment (#1), you could draw a quick picture to represent the main point (#6). Or you could overlearn the math formula (#10) by singing a jingle about it (#7) as you drive in the car. If you have an attitude that math is difficult, you could acknowledge the feelings (#14); then you could distribute your study time in short, easy-to-handle sessions (#13). Combining memory techniques is combining sight, sound, and touch when you study. The effect is synergistic.

Recalling It

- 17. Remember something else.** When you are stuck and cannot remember something you know you studied thoroughly, remember something else that is related to it. During an economics exam, if you cannot remember anything about the aggregate demand curve, recall what you know about the aggregate supply curve. You can unblock your recall by stimulating that area of your brain. A brainstorm is a good memory jog!
- 18. Notice when you do remember.** Everyone has a different memory style. Some people are best at recalling information that they have read. Others remember best what they have seen, heard, or done. To develop your memory, notice when you recall information easily and ask yourself what memory techniques you are using naturally. Also, notice when it is difficult to recall information. Get the facts, and adjust your learning techniques accordingly.
- 19. Use it before you lose it.** Even information stored in long-term memory becomes difficult to recall if we do not use it regularly. The pathways to the information in our brains become faint with disuse. This points to a powerful memory technique. To remember something, access it a lot. Read it, write it, speak it, listen to it, apply it – find some way to make contact with the material regularly. Each time you do so, you widen the neural pathway to the material and make it easier to recall the next time.

Adapted from Becoming a Master Student, Ellis, 8th ed. Houghton Mifflin Company, 1998.

More Tips for Promoting Concentration & Memory

Creating a Study Environment

- 1. Find a place to study** and keep it for study only.
- 2. Tool-up the environment** with all your study needs.
- 3. Control noise level and the visual environment** at acceptable levels.
- 4. Create a work atmosphere.**

Finding the Best Study Time

- 1. Best during the day and early evening** – you'll remember better
- 2. Best when there are the fewest competing activities in progress** (i.e., external distractions)
- 3. Best when adequate rest periods are provided**
- 4. Stop studying when fatigue or lack of attention occurs.**
- 5. Plan the length of your study period by the amount of material you have decided to cover**, not by the clock. (Often the clock is one of the most serious distracters.)