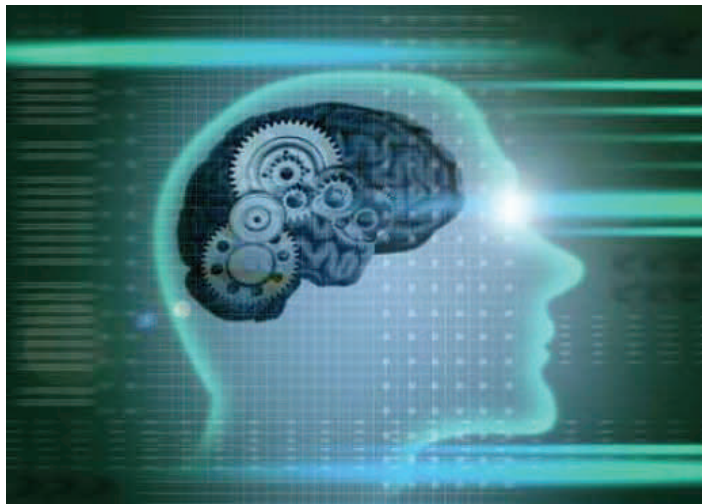


LWTC's TRiO Student Support Services Presents:

Tips for Improving Memory Techniques



http://z.hubpages.com/u/435415_f520.jpg

Achieving Excellence Together

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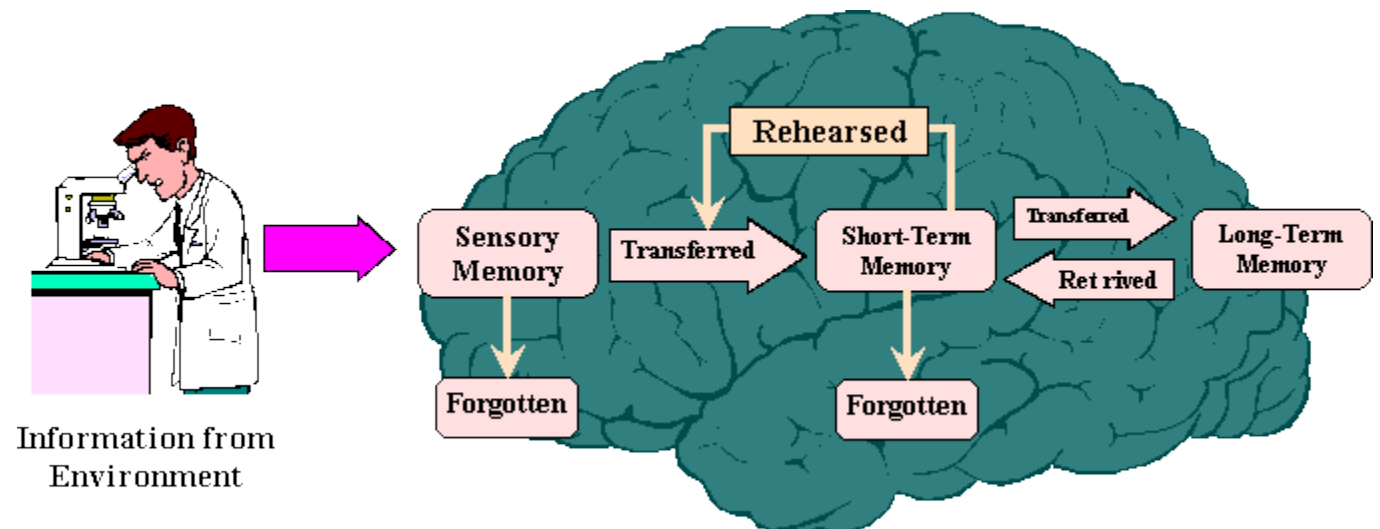
Learning and Memory

In cognitive psychology, memory is usually divided into three storage systems: sensory, short-term, and long-term.

- **Sensory Memory:** The sensory memory retains an exact copy of what is seen or heard (visual and auditory). It only lasts for a few seconds, while some theorize it last only 300 milliseconds. It has unlimited capacity.
- **Short-Term Memory (STM)** - Selective attention determines what information moves from *sensory memory* to *short-term memory*. STM is most often stored as sounds, especially in recalling words, but may be stored as images. It works basically the same as a computer's RAM (Random Access Memory) in that it provides a working space for short computations and then transfers it to other parts of the memory system or discards it. Is thought to be about seven bits in length, that is, we normally remember seven items. STM is vulnerable to interruption or interference.
- **Long-Term Memory** - This is relatively permanent storage. Information is stored on the basis of meaning and importance.

Information Processing Model

The progress of information through these storage systems is often referred to as the **Information Processing Model**, which can be mapped as:



Adapted from <http://www.nwlink.com/~donclark/hrd/learning/memory.html>

The role of sleep in memory

- Some evidence that neuronal connections may be remodeled during sleep, and this may explain why young birds and mammals need so much more sleep than adults
- Some memory tasks appear to be more vulnerable to sleep deprivation than others
- Sleep deprivation may produce effects in the brain that resemble those associated with aging
- The evidence now seems reasonably convincing that sleep plays an important role in memory consolidation - at least for procedural/skill memory
- It also seems most likely that it is the deep, slow-wave (non-REM) sleep that is important for this process
- New sleep studies support a view of a "memory life-cycle", which involves three stages - stabilization, consolidation, and re-consolidation
- Initial stabilization of memories may take as much as six hours

Improving Memory: Lifestyle Changes, Diet and Memory

Evidence continues to build that many of the same poor lifestyle choices that lead to major health problems, such as heart disease, diabetes, obesity, and cancer, are similarly detrimental to the brain. Our dietary decisions are no exception. The quality of the diet appears to affect brain health and function, including memory.

So what makes for good brain food? Despite the claims on various snacks, beverages, and other food products, there is no miracle brain food that can boost your thinking and memory skills (just as there is no single food or food ingredient that can ensure heart health or protection from cancer). The best diet for your brain is, basically, the kind that's also healthy for the rest of your body -- a well-balanced diet, filled with whole grains, a wide variety of colorful fresh fruits and vegetables, and moderate amounts of protein that supplies just enough calories to fuel your daily activities. That diet should also include some fat, but not just any kind of fat: A diet that is healthy for cell membranes, including the cells in the brain, appears to be one that includes monounsaturated fats and polyunsaturated fats that are high in omega-3 fatty acids rather than saturated fats.

A brain-healthy, memory-wise diet should also provide sufficient amounts of the vitamins and minerals the body needs for health. Of course, loading up on any particular vitamin or mineral will not turn you into a memory machine, but there is some evidence that taking in less than optimum levels of certain vitamins can keep your mind and memory from performing at their best. That's one of the reasons it's so important to consume a wide variety of fresh fruits and vegetables (they also contain myriad phytochemicals and other substances that can help protect the body from damage, disease, and some of the effects of aging). And, if you find yourself struggling to consistently achieve such variety in your diet, you may want to consider taking a multi-vitamin-mineral supplement that supplies the recommended allowances (but not mega amounts, because more is not necessarily better and can actually be detrimental) of these nutrients. B vitamins, Vitamins C and E, as well as Magnesium all play a role in memory.

Articles adapted from <http://health.howstuffworks.com/improving-memory4.htm> and <http://www.memory-key.com/NatureofMemory/sleep.htm#effect>

Sleep and Your Brain

www.utexas.edu/student/utlc

Most college students pull all-nighters more than two times a month. They also get less sleep than they need approximately 1 out of every 3 nights. What are the effects of sleep deprivation on your brain, and on your ability to perform well in your classes?

As you might expect, the effects are serious. But it's difficult for most people to understand how serious. Here's part of the problem: 24 hours of sleep deprivation significantly affects fatigue and confusion. But—and this is the confusing part—it has little effect on mood states.

So if you stay up all night, scientific evidence demonstrates that you'll be physically and mentally exhausted, and unable to perform your best academically. But at the same time you might *feel* alright, which could lead you to think that all-nighters are perfectly acceptable.

Be careful about making this kind of assumption! Studies show that college students consistently overrate their ability to concentrate and perform academically when lacking sleep. Most students simply aren't aware of the degree to which sleep deprivation impairs their ability to complete cognitive tasks successfully.

DID YOU KNOW?

Studies have shown that after 19 consecutive hours or more without sleep, performance on tests is equivalent to that at a blood alcohol concentration of 0.1%.

In other words, if you pull an all-nighter, your cognition is no better than if you were legally drunk!

So what can you do about it? Think about trying some or all of the following strategies for a good night's sleep.

1. Go to bed and get up at the same time every day, including weekends. A regular routine keeps you in step with your biological rhythms and helps you make it through an entire day without needing a nap.

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Sleep and Your Brain

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2. Exercise regularly, especially if you can fit in a workout late in the afternoon. Most people find exercising close to bedtime makes sleep more difficult.
3. Avoid stimulants. Using alcohol, caffeine, and cigarettes are likely to result in sleeplessness.
4. We all have the ability to fall asleep; it's hardwired into our brains. But trying to **force** ourselves to sleep often has the opposite effect. So if you can't sleep, try to alter your location: get out of bed, and find something soothing or boring to do.
5. Try to find a quiet place to sleep. Noisy environments disturb even the soundest sleepers. Wear ear plugs if you have to.
6. Try to reserve your bedroom for sleeping only. If possible, watch TV, eat, study, etc. somewhere else. Otherwise, you'll associate your sleeping place with stimulating activities.
7. Practice some sort of relaxation technique; examples include meditation, biofeedback, and deep breathing. Another good technique is alternately tensing and relaxing your muscles for several minutes.

Understanding Body Clocks

Your body clock is a tiny cluster of nerve cells in the center of your brain; it relies on sunlight to keep you synchronized with planetary time. The quality of your sleep depends on how well your body clock is synchronized. For example, if you go to bed every night at 11 pm and get up every morning at 7 am, you'll probably find yourself becoming sleepy and waking close to those times automatically, even if you don't set an alarm clock.

This happens because our bodies have the ability to keep their own time. In fact, we have two major internal timing systems. The first is set by the light-and-dark cycle of the day. When your eyes sense the sun, for example, they tell your brain it's time to wake up. The second system regulates your body temperature; it naturally rises during the day and drops during the night. This temperature clock is reset through the routine of waking, sleeping, and possibly eating. Because we do these activities on day-to-night cycle, the two biological clocks typically run in synch.

If your body clock is out of synch, it's very hard to feel rested, no matter how much you sleep. The good news is that it's possible to reset your body clock. Try getting up at the same time every day for a week, no matter what time you go to bed. Chances are you'll soon find getting up easier. And the longer you get up at the same time, the better your body clock will work.

"Used with permission UT Learning Center, The University of Texas at Austin."

Principles of Memory

www.utexas.edu/student/utlc

1. MAKE AN EFFORT TO REMEMBER

- **Intend to Remember.** Setting out with the intention to learn something the first time around means that you'll probably spend less time reviewing it later. Read actively to identify and make yourself accountable for information you need to remember.
- **Get Interested.** In order to remember something thoroughly, you must have a **reason** to remember it. In other words, you must cultivate an interest in what you're trying to learn and making it meaningful. Try talking to students who seem interested in the material to learn what motivates them.
- **Use What You Know Already.** Your understanding of new material depends largely on how much you already know about the subject. Increasing your basic knowledge and reviewing materials in advance will help you build new knowledge on this background. Try to grasp the big picture before attempting to remember the details.

2. CONTROL THE AMOUNT AND FORM

- **Be Selective.** It's impossible to remember everything, so decide what's important, then select and learn those items.
- **Organize in a meaningful fashion.** Grouping ideas into meaningful patterns or categories will help you learn and remember them more effectively.

3. STRENGTHEN NEURAL CONNECTIONS

- **Review Immediately.** Taking a few moments after your initial reading to stop and mentally quiz yourself about what you've just read is the essential first step to remembering the material later.
- **Recite.** Saying ideas aloud in your own words is probably the most powerful tool for transferring information from short-term to long-term memory.
- **Visualize.** Making a mental picture of what you need to remember triggers an entirely different part of the brain than listening or reading.
- **Associate.** Making connections between things you want to learn and things you already know with enhances memory. Before reading or studying, ask yourself what you already know about this topic in order to trigger the relevant mental associations.

4. ALLOW TIME FOR CONNECTIONS TO SOLIDIFY

- **Consolidate.** Your brain needs time for new information to soak in. When you make a list or review your notes right after class, you're using the principle of consolidation.
- **Practice.** A series of shorter study sessions distributed over several days is preferable to fewer but longer study sessions.

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Principles of Memory

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WHAT?	WHEN?	WHY?
intend to remember / learn	before beginning study	Intention is crucial. If you don't actively plan to remember something, you won't remember it very well.
preview the task	whenever you begin a new learning project	Getting a preview of the whole task will help you later as you read, practice, etc. You'll be able to fill in details of each part if you start with a simplified version of the whole task.
review immediately after learning	at the end of each study session	Most forgetting takes place immediately after learning occurs—not two hours or two days later. So review immediately, even if it's just for a few minutes. For example, try to review your notes as soon after class as possible. Use short periods of time (10-15 minutes) to quickly review notes.
learn actively	always	Spend most of your learning time on self-testing and practice. Expose as many senses as possible to the material: read it, hear it, visualize it, etc. Avoid the common attitude, "Well, I'll just look over this stuff now, and I'll really learn it later."
spend an hour or two	when you're trying to read a whole chapter	Complex learning, such as understanding new relationships or solving problems, requires longer periods of time for effective learning. But don't study too long—most people can actively learn for about 45 minutes. Then take a 10-minute break. Break up large reading assignments into smaller parts; spread out the task.
use short periods of time (2 to 10 minutes)	when you have a simple mechanical task or rote-memorization tasks	Simple tasks and anything you have to memorize are best learned in short, frequent practice sessions rather than in longer sessions of an hour or two.
practice what you've learned	between the time you first learn something and the time you're tested on it	Most forgetting takes place because people haven't periodically practiced or reviewed what they learned. Try to do some review before beginning each new assignment.
learn in an organized way	always	You'll remember much more easily when you have a systematic, orderly view of what you've learned. If you've studied concepts as isolated events without drawing connections, then you'll forget more quickly.
set and understand the goals or objectives for your study	at the beginning of any learning or retrieving sessions	Having a complete overview of each study session will help you become a more systematic and organized learner. This process goes right back to Step One!

"Used with permission UT Learning Center, The University of Texas at Austin."

How can I improve my memory?

If you think you have a poor memory, you may just have some less-than-effective habits when it comes to taking in and processing information. Barring disease, disorder, or injury, you can improve your ability to learn and retain information.

General Guidelines for Improving Memory	
Pay attention.	You can't remember something if you never learned it, and you can't learn something — that is, encode it into your brain — if you don't pay enough attention to it. It takes about eight seconds of intent focus to process a piece of information through your hippocampus and into the appropriate memory center. So no multitasking when you need to concentrate. If you distract easily, try to receive information in a quiet place where you won't be interrupted.
Tailor information acquisition to your learning style.	Most people are visual learners; they learn best by reading or otherwise seeing what it is they have to know. But some are auditory learners who learn better by listening. They might benefit by recording information they need and listening to it until they remember it.
Involve as many senses as possible.	Even if you're a visual learner, read out loud what you want to remember. If you can recite it rhythmically, even better. Try to relate information to colors, textures, smells and tastes. The physical act of rewriting information can help imprint it onto your brain.
Relate information to what you already know.	Connect new data to information you already remember, whether it's new material that builds on previous knowledge or an address of someone who lives on a street where you already know someone.
Organize information.	Write things down in address books and datebooks and on calendars; take notes on more complex material and reorganize the notes into categories later. Use both words and pictures in learning information.
Understand and be able to interpret complex material.	For more complex material, focus on understanding basic ideas rather than memorizing isolated details. Be able to explain it to someone else in your own words.
Rehearse information frequently and "overlearn."	Review what you've learned the same day you learn it, and review it at intervals thereafter. What researchers call "spaced rehearsal" is more effective than "cramming." If you're able to "overlearn" information so that recalling it becomes second nature, so much the better.
Be motivated and keep a positive attitude.	Tell yourself that you <i>want</i> to learn what you need to remember and you <i>can</i> learn and remember it. Telling yourself you have a bad memory actually hampers the ability of your brain to remember, while positive mental feedback sets up an expectation of success.

IMPROVING MEMORY

1. PULLING IT ALL TOGETHER.

- By organizing and adding meaning to the material prior to learning it, you can facilitate both storage and retrieval. In other words, you can learn it better and recall it easier.
- Outline, or Mind
- Creating associations

2. THE FUNNEL APPROACH.

- This means learning general concepts before moving on to specific details.

3. ORGANIZING THROUGH MEANING AND ASSOCIATION.

- When you are having difficulty recalling new material, you can help bring it to mind by thinking about what you have associated it with. In other words--retrace your mental path.

a) *Deep processing--relating the material to yourself.*

b) *Grouping.*

EXERCISE: GROUPING

Read the following list of sports one time. When you are done, write down as many of the sports as you can without looking back at the list.

Snow Skiing Basketball Tennis

Long Jump Bobsledding 100-Meter Dash

Hockey Baseball Ice Skate

Discus Golf High Jump

Volleyball Javelin Soccer

Luge Curling Cricket

Decathlon Hurdles

Note the number of sports you remembered correctly.

- You can organize material by grouping similar concepts, or related ideas, together. Arranging the material into related groups helps your memory by organizing the information.

4. VIVID ASSOCIATIONS.

- When learning something new and unfamiliar, try pairing it with something you know very well, such as images, puns, music, whatever. The association does not have to make logical sense. Often times it is associations that are particularly vivid humorous, or silly that stay in your mind.

5. ACTIVE LEARNING.

- Although you may passively absorb some material, to ensure that you remember important information requires being active and involved, that is attending to and thinking about what you are learning.

6. VISUAL MEMORY.

- diagrams, tables, outlines, etc. Often these are provided in texts, so take advantage of pictures, cartoons, charts, graphs, or any other visual material. You can also draw many of these things yourself. For example, try to visualize how the ideas relate to each other and draw a graph, chart, picture, or some other representation of the material. You may even want to make it a habit to convert difficult material into actual pictures or diagrams in your notes, or to convert words into mental images on the blackboard of your mind.
- writing out vocabulary words, theories, or algebraic formulas.

7. TALK IT OUT.

- When trying to memorize something, it can help to actually recite the information aloud. You might repeat ideas verbatim (when you need to do rote memorization), or you can repeat ideas in your own words (and thus ensure that you have a true understanding of the information).
- Repeating information aloud can help you encode the information (auditory encoding) and identify how well you have learned it.

8. VISUALIZE YOURSELF TEACHING THE MATERIAL.

- An effective way to enhance recall and understanding of dense material is to teach it to an imaginary audience. By doing so, you are forced to organize the material in a way that makes sense to you and to anticipate potential questions that may be asked by your students.
- Moreover, by articulating your lecture aloud, you will uncover gaps in your comprehension (and recall) of the material. (Far better to discover those "weak" areas before a test than during it.)

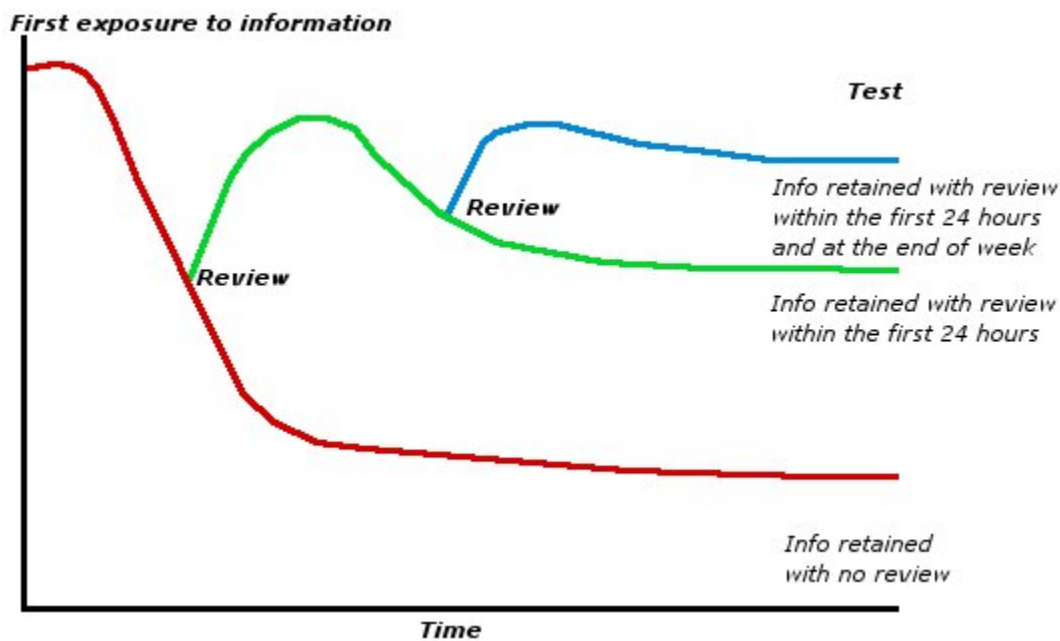
The Importance of Review

The most important part of note taking is *reviewing your notes after class*. Notes do very little if they are never looked at again! The average student forgets up to 80 percent of the information within 24 hours of learning it. Students can dramatically increase the amount of information they retain by reviewing the information within that first 24 hours.

When reviewing, edit and clarify notes, focusing on main ideas and key points. One way of doing this is by using the Cornell System. To further improve retention, do a weekly review as well. Choose one night of the week (weekends work well for this) to go over notes from the past week of class for all of your classes. Plan to spend about 30 minutes per class.

Review also improves retention of information from textbooks and can be done in almost the same manner. After reading each chapter or section of the text, do a short review within 24 hours and a comprehensive review on a weekly basis.

Nobody is anxious to add another task to their list of things to do, but reviewing often saves time in the long run, since consistent review leads to less cramming before tests. Studying for a short period of time each day is more effective than studying for many hours on a single day.



Adapted from WWU's Tutorial Center