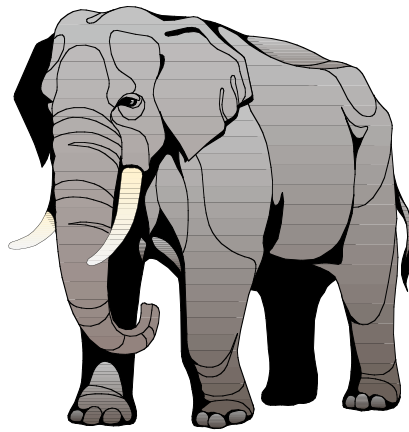


MEMORY, MNEMONICS, AND MORE



Mayland Community College
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I. HOW THE MIND REMEMBERS

The process by which we remember is still based on theory. We know that memory derives from the ability of neurons to transmit signals to one another. Most people have good memory or recall, meaning that they can use the information stored in their brain when needed, and they can add to it through learning and practice. Researchers hold that our brain's capacity to store information is limitless. We take in billions of bits of information through our senses from the time we are conceived. Most of this information is not stored for later use, as this would not serve any purpose.

Think of your memory as a kind of computer. Information enters this computer through our five senses and may stay or leave, depending on many factors. Sometimes it is saved merely because you have a strong interest in it, you need to remember it, or it is shocking, unusual or fascinating to you. Unfortunately, not all information, particularly school subject matter, is stored in our brain computer so easily. To make sure it stays, you must take steps to save it somewhere in your brain's incredible filing system. Like a computer, the brain works to group information in files of similar or related information. When information is saved, it goes into what we call **long-term memory**. If no attempt is made to store the information, it is lost when the computer is turned off. This happens similarly in our short-term memory, which keeps information for a limited time only.

The easiest and quickest way to store new information in memory is to associate it with some other information. Often this happens automatically. Think of how you associate certain smells with certain holidays. The smell of pine may remind you of Christmas. The smell of turkey cooking may bring to mind thoughts of Thanksgiving. These simple associations are linked together in our memory so that the experience of one brings back the memory of the other.

Memory works through the process of creating associations.

The techniques you will learn in this module will enable you to improve your memory. It is important to remember that practice is essential in order to have these techniques work best for you. Through practice, you will discover that you can greatly enhance your memory and recall much more than you ever thought possible!



I. Repetition: Building a Path to the Long-Term Memory

There are many ways to be sure that information remains in the long-term memory. *Repetition* is the most common way. Information follows certain paths into the long-term memory called *neural traces*. If information crosses the path only once, it does not make much of an impression. The more times it passes along the path, the more distinct the path becomes. When the neural trace or path is a well-traveled one, the information is easier to retrieve. **Doing something over and over with concentration is a sure way to make a path to it in the long-term memory.**

Repetition, however, is not the most efficient way of memorizing information especially if your time is limited or you have a great deal of information to store in memory. For this reason, using special memory techniques called “mnemonic devices” helps speed up the process and create shortcuts to the long-term memory.

III. Mnemonic (nee-mon-ik) Devices

There are six general categories of mnemonic devices: (1) acronyms (2) acrostics (3) peg system (4) loci method (5) rhymes and songs (6) link method. Experiment with each of these devices to see which ones you prefer to use.

- 1. Acronyms:** these are new words formed by the first letters of the words you want to remember. Some common acronyms are **USA, NASA, LASER, RADAR, MCC, NFL**, etc. They are simple aids to help us remember short groups of words. Many of these words have become such a part of our everyday vocabulary that we forget they stand for something else.

Can you identify the following acronyms?

ROY G BIV = _____

SCUBA = _____

HOMES = _____

(answers found on last page)

- 2. Acrostics:** these are sentences made up of words which begin with the first letters of the list of words you want to remember, in the order in which you want to remember them.

Suppose you want to remember the names of the planets in order from the sun. By taking the first letter of every planet, this new sentence is created:

MY VERY EAGER MOTHER JUST SERVED US NINE POTATOES.

(Mercury-Venus-Earth-Mars-Jupiter-Saturn-Uranus-Neptune-Pluto)

Here's a sentence that will help you remember the order of operations in Math:

PLEASE EXCUSE MY DEAR AUNT SALLY.

(Parentheses, Exponents, Multiply, Divide, Add, Subtract)

Another common acrostic is:

EVERY GOOD BOY DOES FINE. This is used to memorize the lines of the treble cleft in music. Is it easier to remember the sentence or just the letters E-G-B-D-F?

Acronyms and acrostics take a little time and effort to create and memorize, but once learned, the information may be retained longer. Why? Because you must actively focus attention to create the mnemonic.

3. Peg System: This system requires that you learn a series of pegs which you will use to “hang” information on. It is another way of creating an association with information you have already stored in memory.

Memorize the following pegs:

- 1 - bun (one, bun)
- 2 - shoe (two, shoe)
- 3 - tree
- 4 - door
- 5 - hive

Now you are going to use the pegs you memorized to remember a shopping list. Suppose you want to remember to buy the following:

eggs, milk, salad dressing, bananas, and vinegar

You can easily remember the list, without writing in down, if you link or “hang” each item to each of your pegs by creating a funny or unusual picture in your mind. For example:

1 (bun) link with eggs: You picture a huge hamburger bun with a dozen eggs in the center.

2 (shoe) link with milk: You picture a very large shoe filled with milk and as you put your foot into it, the milk squishes out.

The trick is to create an **unusual picture**, preferably with action, to make a vivid impression on your mind. The crazier the picture is, the easier it is to recall. Why does this method work? Because your mind remembers the unusual more easily than the commonplace. Often new information is difficult to link with other material because there is nothing to associate it with. Linking the information to a familiar peg by creating unusual, crazy and action-filled associations helps the brain take in new information and store it easily.

Here is a list of twenty pegs to use when you have longer lists to memorize:

1 - bun	9 - wine	16 - candles (sweet sixteen birthday)
2 - shoe	10 - hen	17 - magazine (<i>Seventeen</i> magazine)
3 - tree	11- goal post	18 - voting booth (legal age to vote)
4 - door	12- eggs	19 - golf club (the “19 th ” hole)
5 - hive	13- witch (Friday the 13 th)	20 - cigarettes (20 in a pack)
6 - sticks	14- gold ring (14 carat gold)	
7 - heaven	15- taxes (April 15 th deadline)	
8 - gate		

4. Loci (low-kī) Method:

This method is similar to the peg system in that you must first memorize a series of links or locations, then use these links to connect to new information. We’ll use parts of a house as location links. It is possible to use parts of the body (ex. head, neck, shoulders, arms, hands, etc.) or familiar landmarks such as you would see on your way to school. For this exercise, you will memorize the parts of a house in the following order:

Door - Living Room - Kitchen - Dining Room - Bedroom - Bathroom

Now you will use these locations to connect the items on the following grocery list, using very vivid and memorable images:

eggs, milk, salad dressing, bananas, and vinegar

Using the Loci Method, imagine a door smeared with dripping **eggs**, **milk** that is filling up the living room so you have to wade through it, a kitchen filled with thousands of bottles of **salad dressing**, **banana** peels all over the floor so that as you enter the room, you slip on them, and **vinegar** pouring from all the faucets in the bathroom or overflowing from the tub. Imagine smelling the vinegar, too. Remember to create vivid, silly, unusual pictures using as many of your senses as possible. Action is also very important as it makes the picture easier to remember.

This simple example can be expanded using longer lists of locations such as the parts of your body from head to toe. Just link the information to the parts of the body using very unusual, silly and action-oriented images.

5. Rhymes and songs:

Perhaps you recall as a child how easily you remembered songs and rhymes and how much you learned by means of these easy techniques. There is a reason for this. Rhymes and songs require that you use both hemispheres of the brain: rhythm = right brain, language = left brain. Also,

sound stimulates the part of your brain that interprets auditory sensations. There is one other reason why rhymes and songs are easy to recall—they're fun! Do you remember learning basic rules of grammar, such as:

“I before E except after C...” OR

“Thirty days hath September, April, June, and November, etc. ”

“In 1492 Columbus sailed the ocean blue.”

Advertising relies heavily on the use of songs and rhymes for one simple reason—people remember them easily. The next time you are studying for a test, make up a rhyme or song about some portion of the material you need to remember. Once you have repeated your rhyme or song several times, test yourself a few hours later to be sure you can still recall it. While you are taking the test, think of the song and—presto! The information you needed to memorize will be there.

6. Link Method:

Suppose you had to remember the following list of words in this order:

**Empire State Building, car, banana, Elvis, wristwatch,
wedding band, police officer, river**

Similar to the Loci Method, the link method creates an imagined movie with these words, using vivid, unusual, comical images of what is taking place. For example:

“The empire state building has a car driving up one of its sides. The car slips on a banana peel and starts to fall on Elvis who is checking his wristwatch. The car lands on Elvis and his wedding band flies off and hits a police officer in the head so hard that he falls into the river.”

Remember, the more unusual, funny, and action-packed it is, the easier it is to remember. Now memorize the following words in order using the link method:

sign post, cloud, pyramid, tuna, mule, lollipop, pencil, nose

Write your imaginary movie below:

How did you do? Do you understand the reason for creating the most unusual and action-oriented images as a means of remembering these unrelated words?

7. Create Name Associations

People often find names to be very difficult to remember, but there is a quick and easy solution that will enable you to remember anyone's name and even several people's names all at once. It uses a similar technique of creating associations between the name and what the names reminds you of. All you have to do is link the name with the image of the thing it reminds you of. For example, you meet someone called Jim Thornton. Immediately you think of GYM (Jim), THORN, and TON. Now create an image of all three words. See this man dragging a huge THORN across the floor of a GYM. The thorn is so huge it weighs a TON. Now, when you see this man again, the image of GYM-THORN-TON immediately comes to mind.

Here are some for your practice. Describe the image you have created:

Tom McDonald –

Carla Witherby–

Professor Sandy Taylor -

*Mnemonic devices are powerful tools for improving your recall of facts, dates, and lists, but they have limitations. They do not help in understanding material. They are sometimes complicated to learn and can be forgotten if not used regularly. Do not use them in place of good reading and studying habits.

8. Use key words and mental images when you study:

Key words are like “hooks” to help you remember ideas. Suppose you need to remember the properties of plants and how they affect ecology. Your data is as follows:

Plants give off **oxygen**
Plants absorb air **pollution**
Plants **cool** the air
Plants catch **dust** particles
Plants muffle **noise** (traffic, construction)
Plants hold **earth** in place

1. Make a list of key words that will trigger your memory:

Oxygen - Pollution - Cool - Dust - Noise - Earth

2. You can also make a catchword using the first letters of every word, O-P-C-D-N-E:
DENCOP OR COPDEN

IV. Steps to a Better Memory

It is not enough to rely solely on mnemonic devices to remember information, although they serve a useful purpose. The following steps are important to help you process and store more difficult or complex information.

1. Intend to remember:

The attitude in which you approach your studies is crucial. Before any study session say to yourself, **“I AM GOING TO REMEMBER WHAT I STUDY NOW.”**

2. Understand the material you need to remember:

When you try to memorize isolated bits of information that you don't understand, you will always experience difficulty. Suppose you missed a class and borrowed notes from another student. You don't understand their notes, therefore your attempts to memorize the material are futile. Or, you copied a list of words from the textbook but you didn't read the chapter so you don't know what the list pertains to. **You need to have a basic understanding of what you are studying in order to be able to remember it.**

3. Test yourself repeatedly on the material to be learned:

Once you've organized the material to be learned, use repeated self-testing to memorize it. Look at the first item in your notes, then look away and try to repeat it to yourself. Or, as you read your text, stop after each paragraph or section and ask yourself if you understood what you just read. This constant **self-testing** is the key to understanding and it greatly increases your ability to recall information.

4. Use several senses:

Studies have shown that most people understand and retain information more effectively when several senses are involved in the learning. Repeat out loud, write it down, visualize it, stand up when you read, move your arms, etc.

5. Eat a pro-memory diet:

A diet low in saturated fats and high in fruits, vegetables and protein will keep your brain healthier and functioning more efficiently. Avoid **memory killing substances** such as alcohol, marijuana and other drugs.

6. Review using 3x5 cards:

Use 3x5 cards for jotting down questions, key words, concepts, formulas, etc. on the front and the answers, explanations, definitions, etc. on the back. Review the cards one at a time, putting each at the back of the deck after you have quizzed yourself. Keep doing this until you have gone through the deck of cards as often as needed to commit the information to memory. Quiz yourself 24 hours later to see how much you remember.

SAMPLE 3 X 5 Card:

*How Plants affect
ecology*

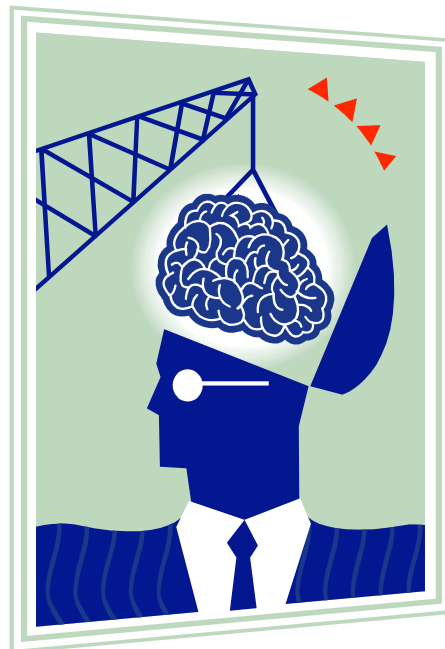
*give off oxygen
absorb air pollution
cool the air
catch dust particles
muffle noise (traffic, construction)
hold earth in place*

V. Basic Rules of Studying and Memorizing:

- a. **Chunking:** When you are trying to memorize something long or complicated, break it into “chunks” or smaller groups. Most people can remember between **five to nine items** or numbers easily (ex. Social Security number).
- b. **Give the material your full concentration:** Focused attention will do more for recall than any memory device or system you apply.
- c. **Use as many senses as possible:** Make flash cards, recite out loud, move around while you study, draw pictures and diagrams. The slowest and least efficient way to remember something is merely to read it over and over again.
- d. **Review notes immediately after class:** Studies have shown that reviewing notes within 15 minutes after a class results in 80 – 100% greater retention of material. Waiting even 24 hours to review notes can result in a loss of 20 - 50% of the material. Follow this with regular reviews to insure maximum recall.
- e. **Review before sleep:** A study showed that a group of students who had slept right after memorizing a list of nonsense words was able to recall 56% more information accurately than a group that had stayed awake after memorizing the same words and remembered only 9%.
- f. **Make it meaningful:** Having a purpose for why you are learning and being able to relate it to your life goals will make a big difference in how much time and attention you give to studying and memorizing it.

VI. Other Memory Tips:

- 1) Consider taking **ginko biloba** or the **Chinese herb called Huperzine** (Hup A). Some studies have shown them effective in improving memory.
- 2) **Get regular exercise and regular sleep.** Working out improves circulation, which helps preserve mental acuity, and helps you to sleep better. A well-rested brain functions much more effectively than a tired one.
- 3) **Work your brain.** Mental exercise keeps your mind sharp. Work on crossword puzzles, word games, mind teasers or read a challenging book or magazine. Keep your brain active on things that make you think.
- 4) **Eat berries.** Blueberries are especially good memory food. They have actually reversed short-term memory loss in aging lab rats.
- 5) **Relieve stress.** Hormones released during stress affects the brain function. One stress hormone, cortisol, actually prevents the brain from laying down new memory.



VII. Memory and Test Anxiety:

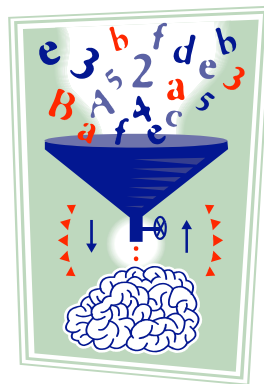
Many students who have good memories still experience difficulty with nervousness during tests. Some nervousness is to be expected, but extreme test anxiety will affect your ability to recall information you have memorized. It is a proven fact that in times of extreme anxiety, the brain is not able to access higher thinking or problem-solving centers. If you find that test anxiety is a problem for you, try deep breathing and take a few moments to relax and calm yourself. Use positive affirmations such as, "I can recall all that I studied," or "I am fully prepared to take this test."

Try not to put too much value on one test. Tests are not matters of life and death. If your memory is blocked on one question, go on to the next. Often the answers will come as you move on and stop worrying about them. Sometimes you will find the answers in other parts of the test, or other information will trigger them.

If you use memory devices such as the peg system, recall your pegs and the items you associated with them will come back. By combining a variety of memory techniques, you will get even better results. Should you need additional help with test anxiety, refer to the module on **Overcoming Test Anxiety** and work with your counselor.

For further information on Memory Skills, refer to the LRC or the S.O.A.R. lending library if you are a S.O.A.R. student.

REMEMBER, YOU HAVE A GOOD MEMORY!!!



(Answers to Acronyms: ROY G BIV = colors of the rainbow: red, orange, yellow, green, blue, indigo, violet; SCUBA- Self-contained underwater breathing apparatus; HOMES = Great Lakes: Huron, Ontario, Michigan, Erie, Superior)

**PLEASE MEET WITH YOUR SOAR COUNSELOR
TO REVIEW THIS MODULE.**