Things to Know About Memory

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I. How Memory Works

A. Three stage theory of memory

Memory is thought to be a three stage process whereby information is transferred from one stage to the next. The three stages are: sensory memory, short term memory, and long term memory.

**Sensory Memory:** Our five senses take in information which lasts in sensory memory for a fraction of a second. Unless this information is paid attention to, it will be lost. If the information is paid attention to, it will be transferred to short term memory.

**Short Term Memory (STM):** Our short term memory computes how and where to store information in our long term memory. There are several principles that affect the transfer of information into long term memory and strengthen the neural trace of this information. These will be discussed in the second section of this handout.

**Long Term Memory (LTM):** You need information to be in long term memory if you want to recall necessary information at a later date. We can improve our memory only by learning our material thoroughly in the first place. This is necessary for laying down a crisp, clear strong neural trace at the time of original learning; without a neural trace there is nothing to remember. The stronger the neural trace, the better your chances of recall later.

B. Whole brain

Our brains are divided into two halves that have specialized functions. Simply put, the left side of the brain is responsible for words, verbal communication, numbers, logic, and analytical abilities. The right side of the brain is responsible for colour, sounds, shapes, intuition, creativity, and imagination. Students can improve their chances of recall if they use both sides of their brain. Some of the principles described next employ both sides of the brain, and therefore improve memory.
II. Principles That Help Improve Memory

A Number of principles that you should know about are related to how well a neural trace is placed in LTM. You can use these principles to guide you when you want to remember something well.

A. Attention

An important principle of memory is that you have to pay attention to information if you want to remember it. There are several things that you can do to improve your ability to pay attention and to concentrate on information. These include:

1. eliminating distractions
2. studying in the same place each time
3. making a study plan: setting goals and accomplishing them through small steps

B. Interest

Learning is influenced by interest. We pay attention to things that we are most interested in, and thus we are most likely to remember them. Try to find something about the information you are studying, and you will be more likely to remember it.

C. Feedback

When you are studying, you should test yourself to see if you have learned the information. If you make errors in recall, you know that you do not have the information in memory. It is better to discover this before an exam when you have the opportunity to do something about it rather than during the exam.

D. Distributed practice

You should try to space your study. Sitting down to study for many two hour blocks of time is much more effective than studying for one long period of time. Studies find that immediate and long-term retention of information is greater for students who practice spaced study than for students who cram for hours at a time.
E. Meaningfulness

You are more likely to remember something if it is meaningful to you. If it does not make sense to you, it will be harder to learn. If you want to increase your chances of remembering information, you need to attempt to understand it and make it personally meaningful.

F. Repetition

One way to improve your chances of recall is to repeatedly expose yourself to the information. Repeated exposure to information makes the neural trace stronger. Reviewing immediately after exposure to new material (i.e., after lectures; after reading a text chapter), and on a regular basis, improves the neural trace of the information in memory and your chances of recall later.

G. Organization

The more you consciously organize material when you are trying to learn it, the easier it will be to retrieve the information. If you put information into memory in an organized way, then it will be easier to find it when you want it. Try to take notes in lectures and from your text in an organized fashion. When you are preparing for an exam, study related information in your lecture and textbook notes together.

H. Visualization

Visualization is a very powerful way to remember information. When you use mental pictures, or imagery, you can make learning more effective. When you use imagery, you are using the right side of the brain.

I. Association

You are more likely to remember something if you associate it with something you know very well. For example, how do you find Italy on a map? You look for a shape of a boot. Thus, you associate Italy with something that you know very well: a boot.
III. Memory Aid Techniques

There are numerous techniques for assisting you in recalling the information. However, memory aids cannot be used to replace attending to and understanding the material.

A. Rhymes

Rhymes are useful for remembering important information. Here are some examples of some common rhymes.

1. When to use a comma: If in doubt, leave it out.
2. Number of days in each month: Thirty days in September, April, June and November. All the rest have 31, except February, which has 28 days clear and 29 in each leap year.
3. Spelling: Write I before E, except after C, or when sounding like AY as in neighbour and weigh.

B. Acronyms

Acronyms are code words. Each of the letters in the code word stand for the first letter of the words that you want to remember.

1. What are the five Great Lakes?   HOMES
   H  Huron
   O  Ontario
   M  Michigan
   E  Erie
   S  Superior

2. Who are the members of a quartet?   STAB
   S  Soprano
   T  Tenor
   A  Alto
   B  Bass
C. Acrostics
Acrostics are like acronyms, except they are code sentences instead of code words. The first letter of each of the words in the code sentence stands for the first letter of each of the words you want to remember.

1. What are the five Great Lakes? Only Elephants Have Massive Snouts

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D. Key word
The key word technique is very useful for remembering definitions, the meaning of abstract words, or words from foreign languages. You associate an abstract word and its definition with familiar and concrete items already in memory. This involves two steps. First, take the word and think of something that the word reminds you of. Next, take the meaning of the word and try to work the meaning into the picture you have of the word.

1. **OSTRACIZE**: to socially exclude.
   Imagine an ostrich standing alone. Not far away is a group of other ostriches who are talking amongst themselves, ignoring the poor ostrich.

2. **PAMPLEMOUSSE**: french for grapefruit.
   Imagine a moose with pimples all over it. The pimples are grapefruits.