Enhanced Learning
Educational Services
"the study skills specialist"

ALL ABOUT YOUR MEMORY

Understanding your memory can help you make informed choices about the most effective ways to approach your learning.

- **You should read each point and highlight the key phrases in that point.**
- **Discuss with a friend or parent as you read through the handout.**
- **You may like to work through this over a number of sessions.**

1. MAKING MEMORIES

Making memories. The memory process is as follows:

- **SENSES:** Information comes in through your senses.

- **SENT:** The info is sent simultaneously to the thalamus for initial processing, to the cortex for further processing in short term memory and to the amygdala to decide what to do with the info long term.

- **EMOTIONAL VALUE:** The amygdala (part of the limbic system deep in the cerebrum) decides if the info is important to you based on the emotions attached to this info. If it seems to be an emergency, the amygdala immediately recruits other parts of the brain to help.

- **EVALUATION:** Based on how the amygdala has reacted about the importance of the info, and what sort of emotional tag it has labeled the memory with, the hippocampus then evaluates the tag and uses this to decide where (and if) to put the information for long-term storage.

- **STORAGE:** If the amygdala tells the hippocampus the info is worth remembering, the hippocampus will send the info back to the cortex (the outer layer of the cerebrum). The hippocampus has to keep track of where it sends the important bits of info so it can retrieve it again if needed. Over time the hippocampus will organise, distribute and connect the memories with the appropriate areas of the cortex for long-term storage. So most of our memories are well distributed throughout the cortex. Basically the hippocampus acts sort of like a switchboard connecting short term memory and long term memory, constantly communicating between the two.

- **ORGANISATION:** Once info has been deemed worth retaining and sent to the cortex by the hippocampus, the job of the cortex is to package the memory into a coherent whole. While the hippocampus might be able to access little pieces, for example, things you have rote learnt, the cortex finds patterns, integrates information and attempts to give structure to information. The frontal cortex organises the information into a chronological and meaningful story.

Think of it like a party. The amygdala are the emotional friends who insist on certain people either being invited or not invited. The hippocampus is the organiser of the guest list, the person that looks at these emotional requests from the amygdala friends and decides who is coming to the party (ie being sent to the cortex so they can be remembered) or who is off the guest list (ie not important info so forgotten). The cortex is the party planner, it's the smart one that will make sure the whole thing comes together.

Retrieving memories:

- **HIPPOCAMPUS:** When you try to remember something, the hippocampus kicks into gear. It is not a storage mechanism remember, it doesn't actually keep the memories, it is a super efficient assembly line that will go out and get the bits needed from the cortex and construct memories as required.

- **SEARCH AND FIND:** So when you try to remember something, the hippocampus goes looking for the pieces in the cortex that it needs to pull the memory together. It can't just go to one part of the cortex that is called "memories" sadly, because memory is not stored in one place.

- **CONSTRUCT MEMORY:** Instead it retrieves info from "convergence zones" all over the brain. Convergence zones are the areas physically near the brain cells (neurons) that first registered the events and most of these are well distributed throughout the cortex. The brain packages up all these bits and pieces to make the memory. So rather than saying that memories are retrieved, it is more accurate to say that memories are re-constructed as needed.

- **LASTING MEMORY:** This pattern of reconstruction is strengthened by repetition to form lasting memories. This is where the phrase "use it or lose it" comes from.

	*a. Can you explain in your own words how we make and retrieve memories?*

2. SHORT AND LONG TERM MEMORY

Sensory filter:

As we go about our day, a large percentage of information processed by our five senses is automatically filtered out. If the information becomes important to you to remember, it has more chance of getting through this filter. And if the information gets through this filter, it will make it into your short term memory.

Short term memory:

- When information first comes in through the senses the frontal lobes hold much of the data in short term memory for around 5-20 seconds before the brain decides what to do with the info (ie before the amygdala and hippocampus kick into gear).

- Short term memory has a limited capacity to handle around 5-7 items of information, for 5-20 seconds.

"If you would like to purchase our 'Memory Strategies Workbook for Students', press 16679346295602881004, followed by the # key."

