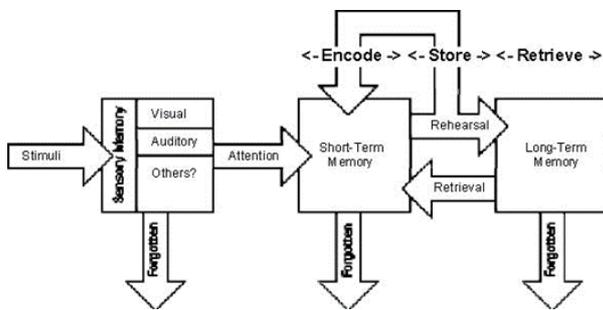


Memory

The ability to process and retain information effectively is an essential skill for university study. To improve your ability to remember, let's examine how information is absorbed in the first place.

There are three distinct stages involved in remembering information: Encoding, Storage, and Retrieval. How each stage is managed is critical to whether information is learnt or lost. Developing a basic appreciation of how each stage operates will help you understand the various factors that influence your capacity to learn and remember.

Encoding



Not all of the information that comes to your attention is likely to be remembered. We constantly filter information by giving our attention selectively to certain stimuli - attending to everything would clutter our minds. Selected information is deposited into our Short Term Memory (STM) which is a temporary repository (i.e. cache) for small bits of information.

Unless the information is significant to you, it is likely that it will be lost before it can be passed on to Long Term Memory (LTM). LTM holds information that represents your entire understanding of the world, including simple information (addresses, tying your shoelaces) as well as complex information (beliefs, theories). As information passes from the senses into STM and onwards to LTM, it must be **Encoded** to make it memorable.

Memory Exercise 1

Read these numbers once, and see how many you can remember:

3587564

Memory Exercise 2

Now read the following set of numbers once, and see how many you can remember:

67854721483

Did you remember fewer from the second list?

Due to a limitation of our short-term memory to the "magic" number seven (\pm two) bits of information, items of information *in excess of seven* are likely to be lost.

Memory Exercise 3

Look at the 25 letters in the grid below for 30 seconds, then try to reproduce the puzzle exactly.

A	C	W	O	H
M	E	R	I	N
R	E	B	M	E
P	S	I	H	T
E	L	Z	Z	U

Although the number of items here exceeds the magic seven \pm two, you may have been able to recall the puzzle by using a technique called **chunking**.

Chunking relies on grouping items together using pattern recognition strategies. It is enhanced by *associating* items with other scraps of information in your LTM and using these to help you recall. By converting the letters into nonsense words (ACWOH, MERIN etc.) you only need to remember five items (fewer than seven). You may even associate these with other information (e.g., MERIN sounds like "Merlin"). So... What if the 25 letters could be reduced to just **one chunk of information**?

Try reading backwards from right to left, top to bottom. It now spells...

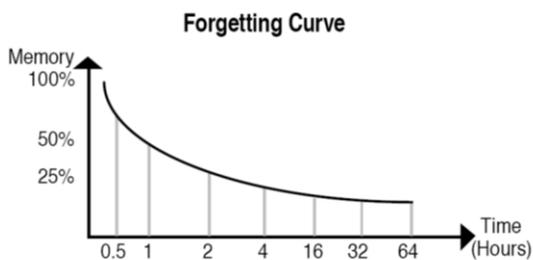
HOW CAN I REMEMBER THIS PUZZLE?

It is more likely that you will remember the puzzle now because the *elements* have been reduced to a single chunk - a sentence. Adding to this is your

understanding of the overall *structure* of the puzzle and the rules that define the *relationships* between the elements.

If you can break down any item to be learnt into its *structure*, *elements* and *relationships*, it demonstrates comprehensive understanding of the content. This allows you to encode this information in preparation for Long Term Storage.

Storage



Short Term Memory (STM) is temporary. Information is likely to be lost unless active steps are taken to commit the data to the LTM. A process called **rehearsal** is required, in which you review the information systematically to bring it to the attention of the STM. Information that is used regularly becomes well-rehearsed and is more likely to be committed to LTM. Less useful information requires greater conscious effort to remember it. Greater effort means **concentration**.

Concentration

The first step towards learning anything is to be involved with the material, which translates as **concentration**. Many students have difficulty sustaining concentration enough to ensure they absorbed, understand and commit it to memory.

Take steps to improve

1. **Minimise all distractions:** You will study more effectively if you are not being interrupted. Turn off your mobile phone.
2. **Prepare yourself for work:** Decide what you will cover beforehand, and how much time you will spend. Have all materials at hand.

Retrieval

Learning & remembering: How?

The learning and retrieval process is influenced by several factors including: the complexity of the

material, why it needs to be learnt, how it is to be used, and how you feel about learning it. Understanding these factors can enable you to develop a strategy for learning even the most difficult material. Part of the secret is to make the material more personally memorable.

Interest: Much of the information that confronts you is lost or ignored depending on its relevance. Things that are interesting will be easier to retain. Applying the concepts to the world around you can also help to make the information relevant to you.

Necessity: Not everything you cover must be learnt. Determine whether the information represents the main point or is just an illustration of it.

Approach: Use an approach to suit the type of material. Learning to solve statistics problems by doing examples is more effective than writing explanatory notes. Learning complex theories (e.g., photosynthesis) can be made easier using flow charts and other visually descriptive means.

Pacing: Some material requires comprehensive study so your learning is unlikely to proceed rapidly. It is better to study for 30-60 minutes with a short break than many hours without a break.

Reflection: Test yourself by summarising the material. Review your work and reflect on the content whenever you take a break as this can help to maintain your memory of it.

Application: Use what you have learnt regularly as this will help you to retain it. Information that is not used regularly is forgotten quickly.

Fatigue and stress

The ability to absorb and remember unfamiliar concepts is compromised if you are tired, emotionally drained, or under stress. Our capacity to learn and recall is dictated by a physical process: information arrives at our senses, is attended to/ignored and is added to our internal map of the world. Consequently, an ability to focus on *why* you need to learn will help sustain your commitment to acquiring, memorising and recalling course material.

Other helpsheets available

- Examination Strategies
- Reading & Writing Critically
- Mind Maps