Introduction to Memory Techniques

Mnemonics are methods for remembering information that is otherwise quite difficult to recall. A very simple example of a mnemonic is the '30 days hath September' rhyme. The basic principle of mnemonics, is to use as many of the best functions of the human brain as possible to code information.
The human brain evolved to code and interpret complex stimuli - images, colour, structure, sounds, smells, tastes, touch, spatial awareness, emotion, and language - using them to make sophisticated interpretations of the environment. Human memory is made up of all these features.
Typically, however, information presented to be remembered is from one source - normally words on a page. While language, words on a page, reflects one of the most important aspects of human evolution, it is only one of the many skills and resources available to the human mind.

Using Your Whole Mind To Remember

Mnemonics seek to use all of these resources. By coding language and numbers in sophisticated, striking images which flow into other strong images, we can accurately and reliably code both information and the structure of information to be easily recalled later.
This section of Mind Tools seeks to show you the techniques that enable you to use all of your mind to remember information.

Layout of the Memory Techniques Section

The initial articles explain the fundamentals of use of mnemonics, and how to use them most effectively. These are complemented by general articles giving the essential background to the use of memory techniques.
The next section discusses many of the most effective memory techniques currently available. Many are quite simple and easy to understand and use. Others are more sophisticated, and require a significant investment of time before their huge potentials can be realised. Mind Tools will score these, indicating their relative power and difficulty. It is for you to use these indicators to select the most appropriate strategies for your use. The best approach to this area may be to visit it several times, learning a different memory technique on each visit, and applying and experimenting with it before returning on the next visit to learn a different technique.
The final section takes a functional approach to memory techniques, suggesting strategies to apply in various fields. Some techniques, particularly those relating to language acquisition, exam/subject study, and remembering names are truly remarkable and important. Others, such as the ability to remember the order of a pack of cards, are merely amusing sidelines (unless you are a keen card-player!).
Enjoy using Mind Tools memory techniques section: your use of your memory may well amaze you!

Association, Imagination and Location

The three fundamental principles underlying the use of mnemonics are:

- Association
- Imagination
- Location

Working together, these principles can be used to generate powerful mnemonic systems. This Mind Tools presentation will show illustrations of many memory techniques and examples of areas where their application will yield serious advantage. Hopefully once you have absorbed and applied these techniques you will understand how to design and apply these principles to your field to design your own powerful, sophisticated recall systems.
These principles are explained below:

Association

Association is the method by which you link a thing to be remembered to a method of remembering it. Although we can and will suggest associations to you, your own associations are much better as they reflect the way in which your mind works.
Things can be associated by:

- being placed on top of the associated object
- crashing or penetrating into each other
- mergeing together
- wrapping around each other
- rotating around each other or dancing together
- being the same colour, smell, shape, or feeling
- etc.

Whatever can be used to link the thing being remembered with the image used to recall it is the association image.

As an example: Linking the number 1 with a goldfish might be done by visualising a 1-shaped spear being used to spear a goldfish to feed a starving family.

Imagination

Imagination is used to create the links and associations needed to create effective memory techniques - put simple, imagination is the way in which you use your mind to create the links that have the most meaning for you. Images that I create will have less power and impact for you, because they reflect the way in which we think.
The more strongly you imagine and visualise a situation, the more effectively it will stick in your mind for later recall. Mnemonic imagination can be as violent, vivid, or sensual as you like, as long as it helps you to remember what needs to be remembered.

Location

Location provides you with two things: a coherent context into which information can be placed so that it hangs together, and a way of separating one mnemonic from another: e.g. by setting one mnemonic in one village, I can separate it from a similar mnemonic located in another place.
Location provides context and texture to your mnemonics, and prevents them from being confused with similar mnemonics. For example, by setting one mnemonic with visualisations in the town of Horsham in the UK and another similar mnemonic with images of Manhattan allows us to separate them with no danger of confusion.
So using the three fundamentals of Association, Imagination and Location you can design images that strongly link things with the links between themselves and other things, in a context that allows you to recall those images in a way that does not conflict with other images and associations.

The Memory Fallacy

Most people believe that their memories get worse as they get older.
This is true only for people who do not use their memories properly: memory is like a muscle - the more it is used, the better it gets. The more it is neglected, the worse it gets.
While in education most people have to use their memories intensively - simply to remember facts and pass exams. When people leave full time education, they tend to cease to use their memory as actively, and so it starts to get flaccid.

How Memory Works

Memory works by making links between information, fitting facts into mental structures and frameworks. The more you are actively remembering, the more facts and frameworks you hold, the more additional facts and ideas will slot easily into long term memory.

Why Memory Doesn't Work!

Another reason for memory getting apparently worse is that outside academia information tends not to be as clearly structured as it is in education. The clear presentation and organisation of a good lesson or training course provides a structure that is almost a mnemonic in its own right. Where information drifts in as isolated facts, it will normally be forgotten simply because it is not actively fitted into a mnemonic.
Again, as people grow up they are trained out of spontaneous, imaginative behaviour: most peoples' jobs depend on them being predictable and reliable far more than on them being imaginative. An important feature of memory, though, is the imagination that allows you to construct the strong mnemonic links between things to be remembered and the cues for their recall. Of course be reliable, but keep your imagination fresh at the same time!
So memory in most people does get worse with age, but only because it is allowed to. By continuing your education throughout your life, by cultivating your mind and keeping it open to new experience, by actively fitting facts into clear and flexible frameworks, and by keeping your imagination working, your memory can get better and better as you get older.
Doing this not only gives you a better memory: think how many times you have heard this message in connection with other self-improvement methods! An important thing to realise is that different people learn in different ways. The way in which people learn is often a factor determining the subjects they choose to study, instructors they relate to, and careers chosen in life.

How Your Learning Style Affects Your Use of Mnemonics

The way in which people learn affects the sort of mnemonics they should consider using to store information. The three main learning styles are:

- visual
- auditory
- kinaesthetic

No-one uses one of the styles exclusively, and there is usually significant overlap in learning styles. To discover your learning style, click here (links to psychometric test)

Visual Learners

Visual learners relate most effectively to written information, notes, diagrams and pictures. Typically they will be unhappy with a presentation where they are unable to take detailed notes - to an extent information does not exist for a visual learner unless it has been seen written down. This is why some visual learners will take notes even when they have printed course notes on the desk in front of them. Visual learners will tend to be most effective in written communication, symbol manipulation etc.
Visual learners make up around 65% of the population.

Auditory Learners

Auditory learners relate most effectively to the spoken word. They will tend to listen to a lecture, and then tak e notes afterwards, or rely on printed notes. Often information written down will have little meaning until it has been heard - it may help auditory learners to read written information out loud. Auditory learners may be sophisticated speakers, and may specialise effectively in subjects like law or politics.
Auditory learners make up about 30% of the population.

Kinaesthetic Learners

Kinaesthetic Learners learn effectively through touch and movement and space, and learn skills by imitation and practice. Predominantly kinaesthetic learners can appear slow, in that information is normally not presented in a style that suits their learning methods. Kinaesthetic learners make up around 5% of the population.

Memory Implications of Learning Styles

Most literature on mnemonics assumes the visual approach to learning styles - mnemonics are recommended to be as visually appealing and memorable as possible. If you are an auditory or kinaesthetic learner you may find that this emphasis on imagery leads to ineffective recall. In this case, try adjusting the mnemonics to suit your learning style: if you are an auditory learner, use auditory cues to create your mnemonics. If you are a kinaesthetic learner, imagine performing actions or using tools as the basis of memory techniques.
From here onwards Mind Tools will assume a visual approach to mnemonics. If you are an auditory or kinaesthetic learner, adjust these techniques appropriately to suit your personal approach to learning.

Using Mnemonics to Learn More Effectively

When you are creating a mnemonic, e.g. an image or story to remember a telephone number, the following things can be used to make the mnemonic more memorable:

- Use positive, pleasant images. The brain often blocks out unpleasant ones.
- Exaggerate the size of important parts of the image
- Use humour (perhaps linked with point 2)! Funny or peculiar things are easier to remember than normal ones.
- Similarly rude or sexual rhymes are very difficult to forget!
- Symbols (e.g. red traffic lights, pointing fingers, etc.) can be used in mnemonics.
- Vivid, colourful images are easier to remember than drab ones.
- Use all the senses to code information or dress up an image. Remember that your mnemonic can contain sounds, smells, tastes, touch, movements and feelings as well as pictures.
- Bringing three dimensions and movement to an image makes it more vivid. Movement can be used either to maintain the flow of association, or can help to remember actions.
- Locate similar mnemonics in different places with backgrounds of those places. This will help to keep similar images distinct and unconfused.

The important thing is that the mnemonic should clearly relate to the thing being remembered, and that it should be vivid enough to be clearly remembered whenever you think about it

Expanding Memory Systems

Once you have mastered simple memory systems such as the number/shape system, you can use mnemonic enhancers to expand the range of the systems.
As an example, you might use the convention that encasing a mnemonic image in ice adds ten to a simple number/shape image: i.e. if you have previously linked the number 2 to the word 'wine' by using an image of a drunken swan guzzling a bottle of wine, then you can change it to link wine to 12 by imagining the swan frozen in ice.

First Stage Expansion

Tony Buzan, in his book 'Use Your Memory', suggests the following scheme. Modify it to reflect the way that your mind works so that the images created are as vivid as possible:

	Mnemonic Enhancers ap plied to:	
	Simple Peg System	e.g. Major System
	Normal Range	
	0 - 9	00 - 99
Imagine image:		
1. Frozen in ice:	10 -19	100 - 199
2. Covered in thick oil	20 -29	200 - 299
3. In flames	30 -39	300 - 399
4. Pulsating Violently	40 -49	400 - 499
5. Made of Velvet	50 -59	500 - 599
6. Completely transparent	60 -69	600 - 699
7. Smelling good	70 -79	700 - 799
8. In a busy road	80 -89	800 - 899
9. Floating on a cloud	90 -99	900 - 999

As another example, you could link 'compact disk' to the number 38 by imagining an egg timer (8) with its middle going through the centre of a CD, engulfed in flames (30-39). Perhaps you could strengthen the image by imagining the play of the light of the flames off the grooves of the CD.
This list of images can be remembered in correct order by using a simple peg system.

Expanding this approach again

Once you understand this technique, you can expand it again and again. For example you could take it to the next level by associating the images produced with a strong and vivid colour, for example:

	Mnemonic Enh ancers applied to:	
	Simple Peg System	e.g. Major System
	Initial Range	
	0 - 9	00 - 99
	First Level Expanded Range	
	00 -99	000 - 999
Imagine image coloured:		
1. Red	100 -199	1000 - 1999
2. Orange	200 -299	2000 - 2999
3. Yellow	300 -399	3000 - 3999
etc.		

The expansion here might be red - 1, orange - 2, yellow - 3, green - 4, blue - 5, indigo - 6, violet - 7, white - 8, grey - 9, and black - 0. If you prefer to use colours in a different way, then do so!

Keep on expanding the method

You might to decide to expand this system to additional level by associating sounds to the images (e.g. a soprano singing, wind chimes, etc.); by associating smells; linking friends to images; etc.

Summary

So by using these techniques to expand mnemonics, you can significantly enhance the power of simple systems and the volumes of information that can be held.
At a particular complexity of image you may find that mnemonic enhancers become too complex or unwieldy - maybe after using three or four enhancers together you find that the system breaks down. This will be individual to you, and is for you to decide. This is perhaps the stage to start investigating some of the more powerful memory systems.

Hints On Memory Techniques

This section covers a few general hints on the use of memory systems:

1. One-Way or Two-Way links

Bear in mind that in some cases you may want the link to work both ways - for example if you are using a peg system (e.g. number/rhyme) to link 2 to Henry VIII, you may not want to always link Henry VIII with the number 2 (i.e. the opposite way across the link).
If, however, you are linking the word the French word 'chien' with the English word 'dog', you will want to ensure that the link runs in the opposite direction - i.e. that the English word 'dog' links with the French word 'chien'.

2. Remember to use location to separate similar mnemonics

By setting an application of a memory system in one location and clearly using that location as a background, you can easily separate it from a different application of the same memory system set in a different place.

3. Why mnemonics might fail

Typically you may forget things that you have coded with mnemonics if the images are not vivid enough, or if the images you are using do not have enough meaning or strength for you to feel comfortable with.
Try changing the images used to more potent ones, and read the section on Using Mnemonics more Effectively.

4. Retrieving lost information

You may find that you need to remember information that has either been lost because part of a mnemonic was not properly coded, or that simply was not placed into a mnemonic. To try to recall the information, try the following approaches:

- In your mind run through the period when you coded the information, carried out the action, or viewed the thing to be remembered. Reconstructing events like this might trigger associations that help you to retrieve the information.
- If the lost information was part of a list, review the other items in the list. These may be linked in some way to the forgotten item, or even if unlinked their positions in the list may offer a different cue to retrieve the information.
- If you have any information such as general shape or purpose, try to reconstruct the information from this.
- If all the above have failed, take your mind off the subject and concentrate on something else completely. Often the answer will just 'pop into your mind', as your subconscious has worked away on retrieving the information, or something you have been working on sparks an association.