University of South Australia

Remembering what you have learned

Learning is an active process that involves developing a full understanding and meaning of concepts and theories. Often a partial understanding comes from reading the textbook, lecture notes, study guide and practical notes (termed 'passive' learning).

However, you can create a more effective understanding by:

- asking questions in tutorials and online discussions
- talking with fellow students (e.g., discussing concepts, clarifying terminology)
- applying your knowledge to new questions or problems
- using a combination of the techniques listed below (Rhoden & Starkey, 1998)

Table 1: Techniques for learning lists of items

Technique	How to use it	Example	Use it for	Disadvantages
Understanding	Become active with the material, identify important points, list questions	Group listed items by a different principle, e.g., construct a table	Parts of a system or theory	You need to be inventive
Visual mnemonics	Learn a sequence of visual images & mentally attach the list items images	Picture a place on the route to work with one item to learn	List of unconnected items, e.g., characteristics of living things	Need to learn the items and then revise regularly
Word mnemonics	Make a word or sentence from the first letters of list items	e.g., ROYGBIV (rainbow colours); e.g., All Stations to Central (angle sign)	List of items that need to be remembered in order	You have to be inventive & revise mnemonic often
Environmental cues (i.e., flash or cue cards)	Put reminders or copies of the data you need to know in a place where you will see/hear them often	Photocopy the table of elements & cover your folder with it; write post-it notes; make cards with answers on back	Especially for equations, symbols, diagrams or pictorial representations	You need to change the items often or you stop noticing them to still treat information actively
Melody association	Make the words of the items that you need to know fit into the lyrics of a song	Learn the bones of the upper limb by singing them to 'Dem bones'	Lengthy lists, where connections or functions of the items are import-ant - maintains order	You may run out of suitable melodies or confuse the lists with the real lyrics of the song

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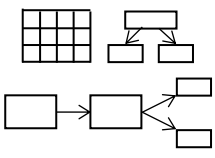
Table 2: Techniques for studying prac tasks

Technique	How to use it	Example	Use it for	Disadvantages
Listing steps	Write the steps of a procedure in sequence and memorise it; list steps next to mathematical working	Isolate the steps of preparing a microscope slide and say them over	Getting the steps into the right order; establish-ing routine problem solving steps	You need to do a lot of repetition, not practicing the actual procedure
Mentally performing the activity	As you say the steps, visualise yourself doing each one	Create a mental image of your hands preparing slides or making chemicals	Times when you can't physically practice the task	You need a bit of imagination to do it
Rehearsing the routine	As you read the steps of the procedure, mime doing them	Make movements you would make if you really had the slide in your hands or chemicals in the laboratory	Getting a feel for the physical activity	You mightn't feel comfortable doing this in the library??
Acting out the task	Work with a partner and act out the examination on each other	Examine the reflexes of the foot or lower limb on each other	Good for physical examination or learning anatomy	Might be difficult to find a partner; you might get embarrassed

Table 3: Techniques for learning theory

Technique	How to use it	Example	Use it for	Disadvantages
Mind or concept maps	Start with writing the central theme in the middle of the page and develop sub-ideas around it	Write 'cell division' and draw lines from it to related words (see Buzan, 1993)	Helping to visualise the components of a complex theory, obtain an overview	You need to be creative; ideas may look disorganised and thus hard to remember
Summaries	Read a section or chapter and then write a summary of the main ideas	Write points to form lists of the elements of the 'Big Bang' theory; annotate key equations	Helps to organise parts of a theory into a shortened form; change the format of the information	You may find it hard to use your own words, or you may end up copying and not being active
Changed format 	Make the theory look different by working it into another format: table – for comparisons hierarchy – for details & overviews flow chart – for processes	Use a flow chart to describe the elements involved in the process of glycolysis	Sequencing elements in a described or proposed theoretical explanation	You have to be inventive to change the look, be careful to include all elements
Populist speak	Practice explaining the theory in different words	Imagine that your little sister asked what quarks are – see if you can write it simply	Make sure that you've understood how the theory works in an explanation	It's hard to use your own words, you may need help to understand it first

Technique	How to use it	Example	Use it for	Disadvantages
Collaboration	Ask fellow student to form a study group – run it with definite aims and a definite time period	Work on old tute sheets and take turns to start, finish & explain questions	Tasks that you often 'get stuck' on; prepare questions for tutorials	Others may not work, some people may take advantage of your work
Disappearing data (like a crossword)	Make copies of the material to be learned. White-out different elements on each copy, and then complete them from memory	Write out the formula for calculating the heat produced by dielectric heating, copy it, white-out symbols and try to re-create it	Theoretical explanations where each element contributed essential processes; solutions to programming or tutorial questions	It might be costly, you need to leave some time between preparing the sheets and finishing them
Examiner's hat	Pretend you are the examiner and create questions from the theoretical material	Read over section on the 'action of the superior & inferior rectus muscles' and then create a short-answer question	Useful towards the end of semester when you should be trying to see the material from various perspectives	Perhaps you find it hard to act like an examiner!
Dress rehearsal	Get hold of last year's exam papers and sit parts of them under exam conditions	'Sit' the first 40 minutes of the biology exam with no coffee or music	Preparing your mind and body for the exam 'marathon'	You may find it difficult to get previous papers

Activities

- Identify learning strategies that have worked for you previously. Modify these to suit the new material.
- Be prepared to experiment with learning strategies. Tell your friends what works for you and ask them what works for them.

References

Buzan, T. (1993). *The mind map book.* BBC Books.
Rhoden, C., & Starkey, R. (1998). *Studying science at university.* Allen & Unwin.