

## Preparation for independent study

Much of the learning throughout the career of a doctor comprises of self-directed independent learning which underpins the foundation of Continuing Professional Development. The adoption of effective strategies to assist in this is of paramount importance to our busy clinical working life.

Independent learning can be defined as "that learning in which the learner, in conjunction with relevant others, can make the decisions necessary to meet the learners own learning needs". (Kesten, 1987 p 3). You may find this contrasts with the way you worked at school or previously, where you are likely to have been given hand-outs or notes which if you learnt completely would give you good marks. Here you will be expected to think about what you need to know and then research this for yourself. This is much closer to the way in which qualified doctors learn and keep up to date.

It is worth learning how you can best learn for yourself. There are several key points to think about:

- Memory skills,
- Time management skills,
- Reading skills
- Note-taking skills,
- Study habits,
- Revision skills
- Specific exam preparation

### Areas for study

You will need to build in time for preparation and follow up for all the areas of the curriculum. As you progress through your specialty training, you will need to schedule time to revisit "old" learning which you may have covered already previously.

### Memory skills

Many of the ideas of how to learn effectively are based on our current understanding of how memory works.

Memory is probably divided into three main parts. Research suggests that these are located in different parts of the brain.

Current theories suggest that working memory is located in the pre-frontal cortex, whereas the medial temporal cortex binds experiences together helping make connections and thus helping to form new memories. How long term memories are stored in the brain is less clear – this is likely to be widespread through the cerebral cortex.

### Seven things are important:

1. You must maintain attention and concentration. You cannot realistically do this for more than 20 minutes at a time;
2. Organising what you learn into meaningful patterns will help. So for example if you are trying to learn the following series of words: dog, boat, spoon, hat, car, cat, cow, knife, coat – you are more likely to remember the list if you organise the words, for example some are animals, some utensils etc.. You will be encouraged to think of concepts as a way of organising your knowledge;
3. understanding what you are reading or learning – this is often helped by working with others, and problem based learning, PBL helps as it encourages you to explain to others what you have learnt;
4. Making connections with what you already know helps you form links which aid recall of your learning – in PBL you will often be asked what you already know about a subject. This also encourages you to focus on new learning rather than going over what you already know;
5. Having thought about what you know, think then about what new things you need to know. Frame these as questions – SMART questions are the best:  
  - i Specific
  - ii Measurable
  - iii Achievable
  - iv Realistic and Relevant
  - v Timed
6. Limit the amount of information you cover in each session. Working memory is limited in the amount of information it can handle – the maximum is about seven chunks;
7. Active recall is essential; we quickly forget what we have studied (look up Ebbinghaus' forgetting curve). Active recall means putting your books and notes away and writing down what you know from memory, then going back and checking if some of what you learnt needs reinforcing.

What has been found is that if you revise a piece of information a number of times in a short period of time, your retention of that material is less than if you space out the revisions of that material with an ever-increasing interval. This is known as the 'Spacing Effect'.

One strategy for active recall is to do this after 30 minutes, at the end of each study period, at the end of a block of learning, at the end of the day, and at the end of a specialty module.

### **Understanding how to make the most of your memory suggests some ways of effectively managing your time:**

- Study at the same time every day. As much as possible, you should schedule certain hours which are used for studying almost every day in a habitual, systematic way. Having regular hours at least five days a week will make it easier to habitually follow the schedule and to maintain an active approach to study.
- Make use of the free time (10-20 min blocks) during the "normal theatre day". The hours between scheduled activities are perhaps your most valuable study time yet, ironically, the most frequently misused.
- Plan study periods to follow scheduled activities. This should be done whenever possible. The next best procedure is to schedule the period for study immediately before a theatre list in the morning (you'd have to be an early riser).
- Space study periods. Sixty to ninety minutes of study at a time works best. Relaxation periods of five minutes should be scheduled every 20 minutes. It is more efficient to study hard for a definite period of time, and then stop for a few minutes, than attempt to study on indefinitely.
- Plan for weekly reviews of new learning. At least one hour each week (distinct from study time) should be scheduled. The weekend is a good time for review.
- Leave some unscheduled time for flexibility. This is important! Lack of flexibility is the major reason why schedules fail. We tend to over-schedule ourselves. A diary helps a lot.
- Allot time for planned recreation. When you plan your schedule, you should begin by listing the activities that come at fixed hours and cannot be changed. Next, schedule your flexible time commitments – these hours can be interchanged with other hours if you find your schedule must be changed during the week. Plan recreational activities last.

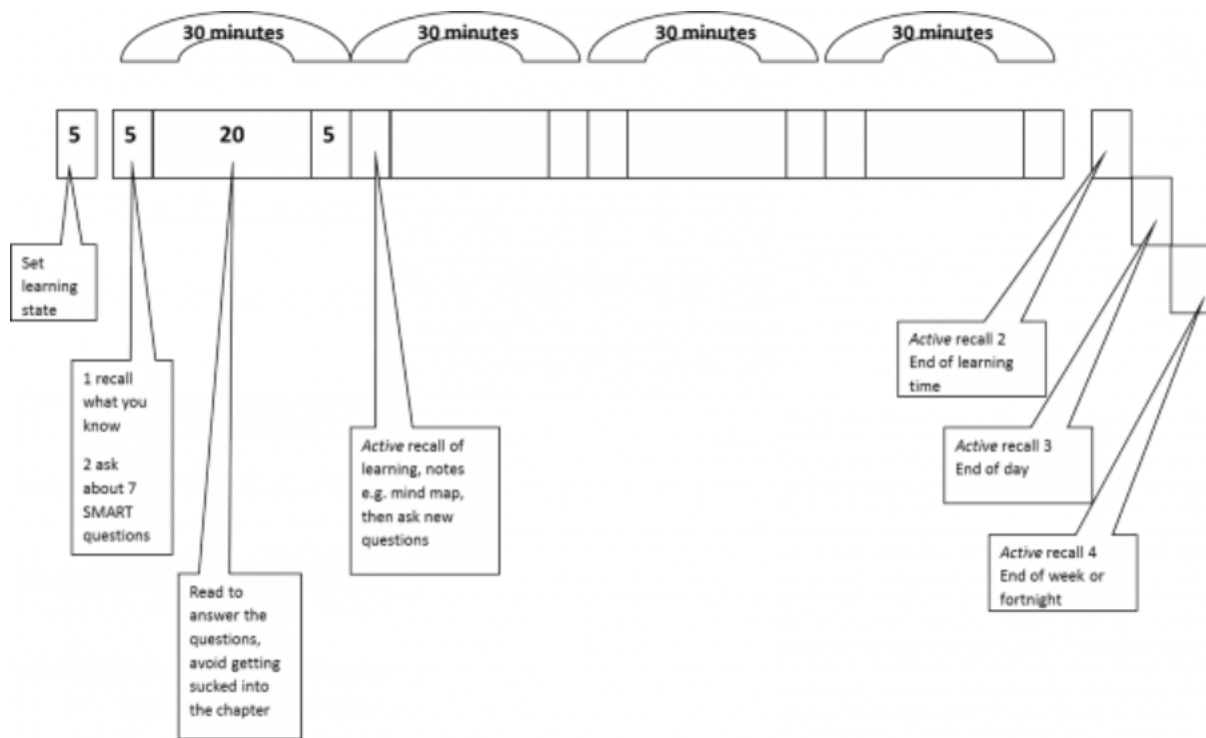
### **In practice this means,**

#### 1. When studying:

- Start with a five minute think about how you want to be, get motivated, find reasons why you want to do the work, think of how you will reward yourself as you go along. Plan how long you are going to work. Prepare your work space, and gather texts around you.
- Then spend five minutes thinking about what you already know about the subject, a mind-map can help. If you want to know more about mind maps buy one of Tony Buzan's books, [or see and hear him on YouTube here](#)
- Having thought about what you know, map out what you need to know on top of that, you could add it to the mind map. Good questions are the key to good learning, and, a reminder, these questions should be SMART.
- Now read to answer the questions you have created. Avoid getting sucked into reading the text, use SQ3R (see later) as a way of helping you read more effectively. Do this for 20 minutes.
- Now have a five minute break, exercise a bit, stretch, and have a glass of water.
- Start studying again by actively recalling what you have learnt. Again a mind map is an ideal way of doing this – or make linear notes if you prefer. Remember this is active, it is not about reading notes you took. Check to see if you are right, if not do a spot of revision
- Repeat the cycle
- You can do this cycle three or four times. Shorter periods are better than longer ones. By dividing your work time into thirty minute blocks, you can make more effective use of short periods of time that you have previously thought were too short for learning,
- Reward yourself.

#### 2. When taking part in a learning activity

- Make time before the session to think about what you already know about the topic and what you want to find out. This will help you engage with the session and retain information. Make sure you also do any preparation work you have been asked to do.
- Take an active role as possible within the session e.g. asking questions, jotting down key points.
- Build in time after each session to actively recall what you have learnt, perhaps using a mind map or notes. Then check back on your notes from the session if needed. Remember to revisit this learning (e.g. at the end of the day and end of the week)
- Build in time to do follow up work from the activity, including adding detail or following up anything you didn't fully understand
- Reward yourself



### Reading skills (SQ3R)

- **S=Survey** -Skim the material paying attention to: Headings, Topic Sentences. Maps, charts, graphs. Words you do not understand
- **Q=Question** -Make your own questions about the reading based on the information you have surveyed. Include your own questions you generated in stage one of your learning plan above.
- **R=Read** - Read the material to answer your survey questions. Avoid getting sucked into the text itself. Much of what you read is padding. Always keep in mind finding answers to your survey questions.
- **R=Recite**- Answer your questions without looking back on the reading. Use the method of recitation which best suits your particular learning style but remember, the more senses you use the more likely you are to remember what you read - i.e. TRIPLE STRENGTH LEARNING: Seeing, saying, hearing- and QUADRUPLE STRENGTH LEARNING: Seeing, saying, hearing, writing.
- **R=Recall**- Look away from the reading material and focus on the major ideas and concepts. Review the reading material frequently i.e. every 30 minutes, at the end of the block of learning, at the end of the day and at the end of a week or fortnight. Periodically review the sheet, some students make flash cards which can be very effective

### Note taking skills

The best way for you to take notes is to use the method that works best for you. If you are visual, mind maps work well, and there is some evidence that this works well for everyone. What does matter is that you make time to think about and make sense of what you have read and then make notes that summarise what you have learnt rather than it being an almost complete transcript of the chapter. Jot down key ideas or concepts as you go along, though avoid writing everything down.

### Study habits

You work more effectively if you are consistent in the way you work. Being consistent means the brain does not have to work out what you are up to. Consistency applies to how you work as well as when you work. Make a space in your room for work – that should not be the bed, as your brain will be confused whether you should be sleeping or working. Many students find the library is an ideal place to work, and find it anchors them into work mode. Remember that success is achieved through a few simple behaviours that are repeated daily.

Revision skills and specific exam preparation

You will find that if you continually revisit your work, you will need to revise much less. Ideally you will only need to look at the mind maps or conceptual summaries you have written, possibly fleshing out some of the detail.

You cannot specifically revise for the whole syllabus in details, though there are things you can do before the exam that are helpful. You may find it useful to refresh your memory by looking at the summaries you have made as you have been studying. You can also practice the technique of answering the style of question that comes up in the examination by looking at the past papers.

There are various ways of looking at how you learn. Honey and Mumford described learning styles – Activist, Reflector, Theorist and Pragmatist – and the learning cycle

Other experts suggest we have different sensory preferences when we learn; we may be visual or auditory for example. You can find out what you are at: <https://vark-learn.com/>

### **Completing the cycle**

Remember, learning is about more than just remembering information. It is also about making sense of what you have learnt and planning how you will use this in the future. Linking what you learn to the real world will also help you retain it – and recall it when you need it. This means you will need to work in all parts of the learning cycle, even though you may have preferences for one particular style. Also, learning styles indicate your preferred way of learning but do not mean you cannot learn in other ways.

### **Reference**

Keston, C (1997) [Independent Learning: A Common Essential Learning: A Study Completed for the Saskatchewan Department of Education Core Curriculum Investigation Project](#) - accessed 27 June 2007

*(Modified with permission from student support materials prepared by the Peninsula College of Medicine & Dentistry)*