

Study Principles to Empower Boys at TC

Study

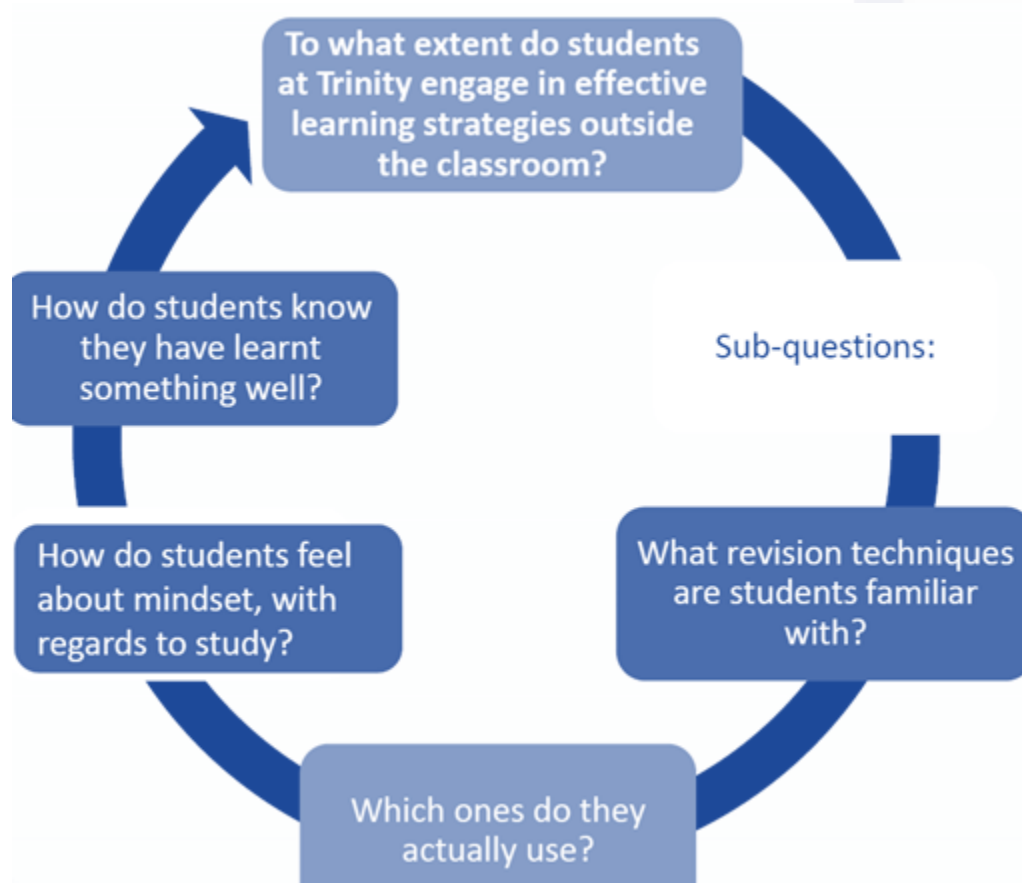
...to apply oneself to the acquisition of knowledge.

How did you study? Has it changed?



Were you taught how to study?

Initial Questions



What does the research say?

- Importance of **Maintaining positive mental health**
- **Active beats passive revision**
- **Spaced practice** is more effective than cramming
- **Retrieval practice** is beneficial
- **Interleaving** is more effective than massed practice
- **Metacognition** is required by students



Maintaining Positive Mental Health...

Maintaining Positive Mental Health

- We know that the boys will achieve better results when they are both mentally and physically healthy.
- We know that the boys will achieve better results when they feel happy and safe in their environment.
- We know that the boys will achieve better results when they feel connected to their Community.

Maintaining Positive Mental Health

What might this look like?

- 8 hours of sleep every night
- Regular daily exercise
- Healthy eating
- Taking breaks during Study
- Only using electronic devices when necessary

Active beats passive
revision...

The image shows three young boys in school uniforms sitting at a red desk in a library. They are all focused on reading books. The boy in the center is holding an open book and looking at it intently. The boy on the left is also reading a book. The boy on the right is reading a book. The background is filled with colorful book covers on shelves. The text "What is the difference between active and passive revision?" is overlaid in white on the image.

What is the difference
between active and
passive revision?

Active beats passive

Active Learning	Passive Revision
Answer questions	Re-reading
Create flashcards	Highlighting
Create mind maps	'Going over' power points
Test what you recall	Copying out notes word for word
Write concise notes in your own words	
Explain in your own words	
Gain greater understanding-wide range of sources	
Online quizzes	
Create your own exam questions	
Draw a flow chart	
Complete practice tests	

Most boys engage in Passive
Revision because it is easier...

Passive Revision can lead to
an illusion of knowledge...

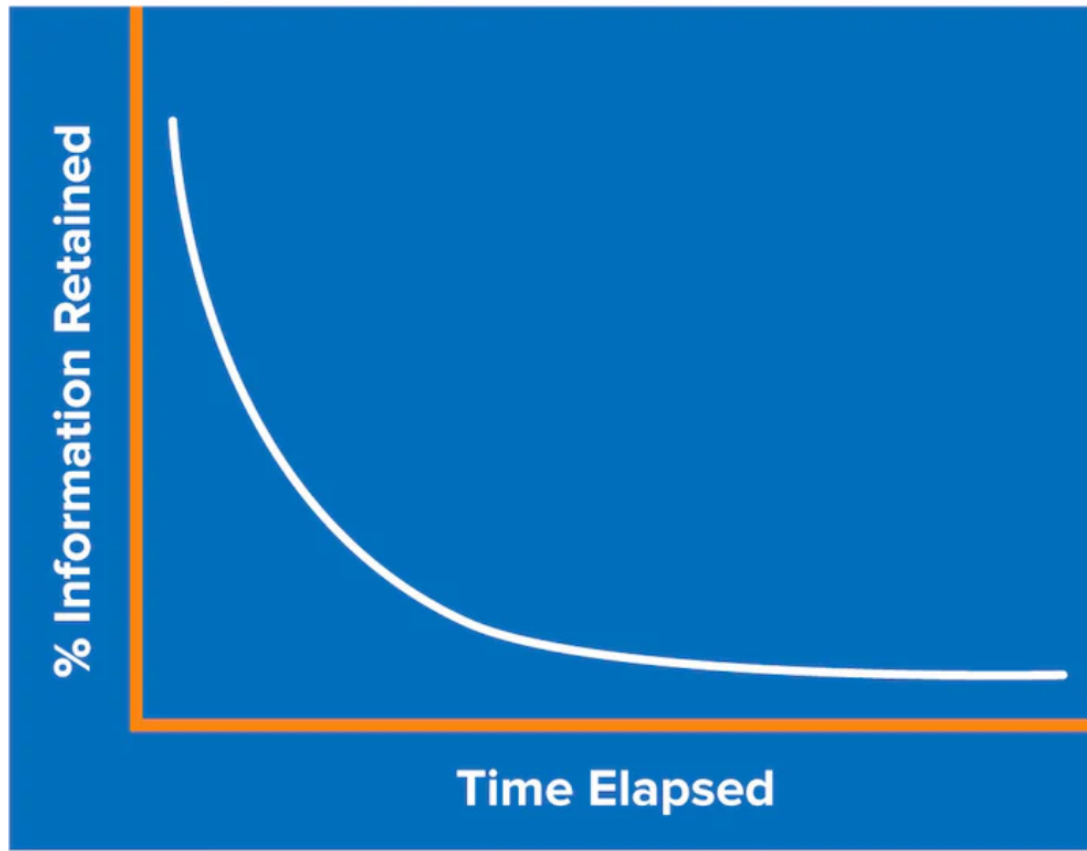
Passive versus active strategies for studying

Below is a comparison of some passive learning strategies to avoid as well as active learning strategies to try out!

Material to study	Passive strategy	Active strategy
Powerpoint slides	Print out and follow along during class. Highlight key slides as the professor goes through them.	Print out and read before class. Take additional notes in your own words during class. Condense each slide into a flashcard to repeatedly quiz yourself with.
Lecture notes	Write down exact words that the professor says during class. Look through notes a few times before the exam.	Summarize key points in your own words during class. Write questions you have in the margins and go to office hours asap to clarify. Re-write the same concepts in different words when reviewing.
Textbook/homework problems	Look at examples from class as you complete problems. Write down what the TA tells you to write during office hours.	Try to solve problems on your own without looking at examples and take note of where you get stuck or make a mistake. Rework the problem by yourself after asking TA for help. Try to “teach” a similar problem to the TA so they can understand and correct your thought process.
Readings and articles	Highlight headings and topic sentences as you read.	Change chapter headings and topic sentences into questions and look for key points throughout the paragraph that address those questions. Summarize each paragraph in 1-2 sentences in your own words. Discuss the reading with a classmate and ask each other questions.
Lab reports	Read through the lab manual for the first time as you complete the experiment during class.	Read through the lab manual and write down the procedure to understand the goal and expected results of the experiment before class. Ask the TA about the reasoning behind certain steps/reagents as you complete the experiment.

Spaced Practice is more
effective than cramming...

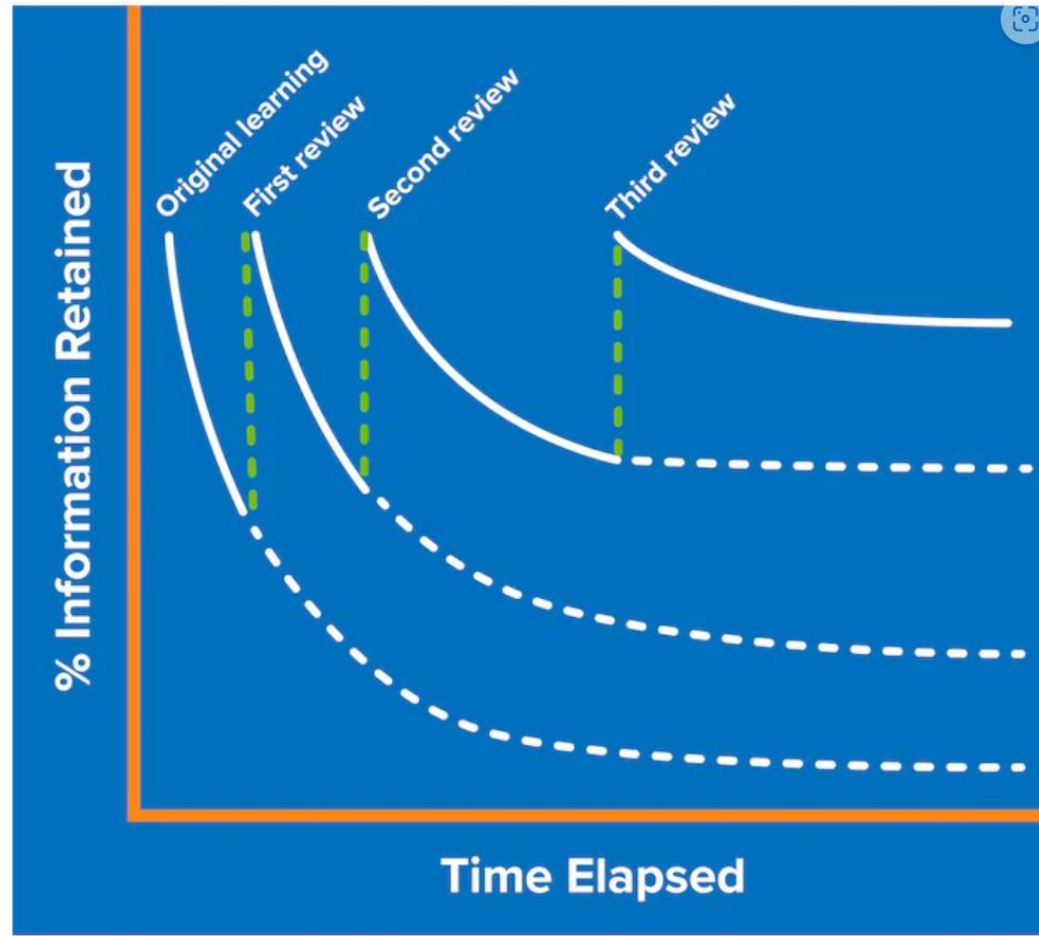
Spaced Practice, Ebbinghaus and the forgetting curve...









Ebbinghaus' Forgetting Curve

- Memories weaken over time.
- The biggest drop in retention happens soon after learning.
- It is easier to remember things that have meaning.
- The way something is presented affects learning.
- How you feel affects how well you remember.

With Spaced Practice...



Spaced Practice beats cramming...

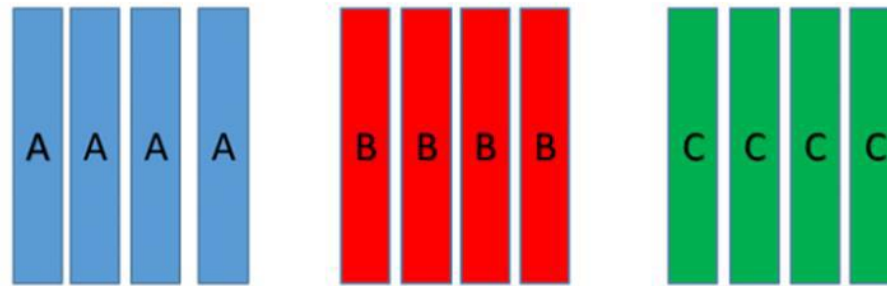
Mon	Tues	Wed	Thurs	Fri	Sat	Sun
						
						

Interleaving is more effective
than massed practice...

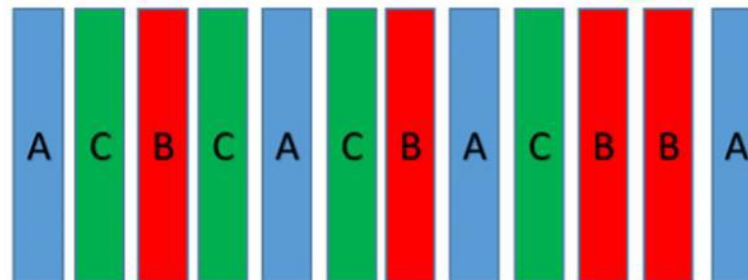
Interleaving is constantly
changing between skills...

Interleaving vs Massed Practice...

Massed Practice



Interleaved Practice



Interleaving better replicates
a game/test/exam situation...

Retrieval Practice is
beneficial...

Retrieval Practice...

Retrieval practice is the **strategy of recalling facts, concepts, or events from memory in order to enhance learning**. The act of retrieving something from your memory actually strengthens the connections holding it there, making it more likely that you'll be able to recall it in the future.





Retrieval practice

- What do you recall?
- Establish what you know
- Practice getting the information 'out' of your head



4 Methods of Retrieval Practice

@ImpactWales

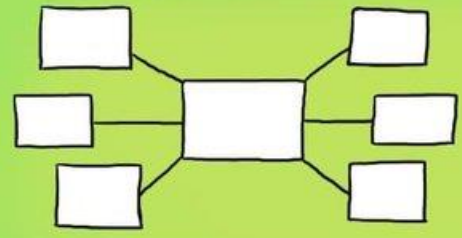
Before you start put away all your books & classroom materials.

Retrieval Practice Examples

- * Exit Tickets
- * Starter quizzes
- * Multiple choice quizzes
- * Short answer tests
- * Free write
- * Think, pair, share
- * Ranking & sorting
- * Challenge grids

BRAIN DUMP

Write, draw a picture, create a mind-map on everything you know about a topic.



Give yourself a time limit, say 3 minutes, then have a look at your books & add a few things you forgot.

QUIZZING

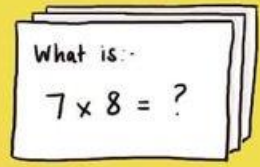
Create practice questions on a topic. Swap your questions with a partner & answer.

Question - What is a metaphor?

- A comparison using 'like, as, than'.
- A comparison where one thing is another.
- A comparison with a human attribute.

FLASHCARDS

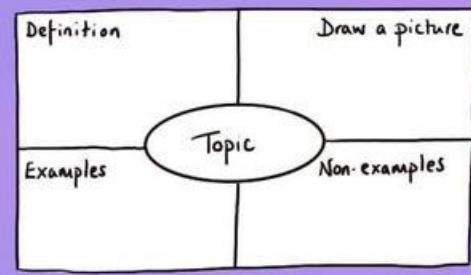
Create your own flashcards, question on one side answer on the other. Can you make links between the cards?



You need to repeat the Q&A process for flashcards you fail on more frequently & less frequently for those you answer correctly.

KNOWLEDGE ORGANISERS

Complete a knowledge organiser template for key information about a topic.



You can use knowledge organisers to learn new vocab & make links in between subjects or ideas.

After you have retrieved as much as you can go back to your books & check what you've missed. Next time focus on that missing information

Find a way to get the
information out of
your head...

Metacognition is
required by students...

Metacognition is thinking about
your thinking...

Metacognition

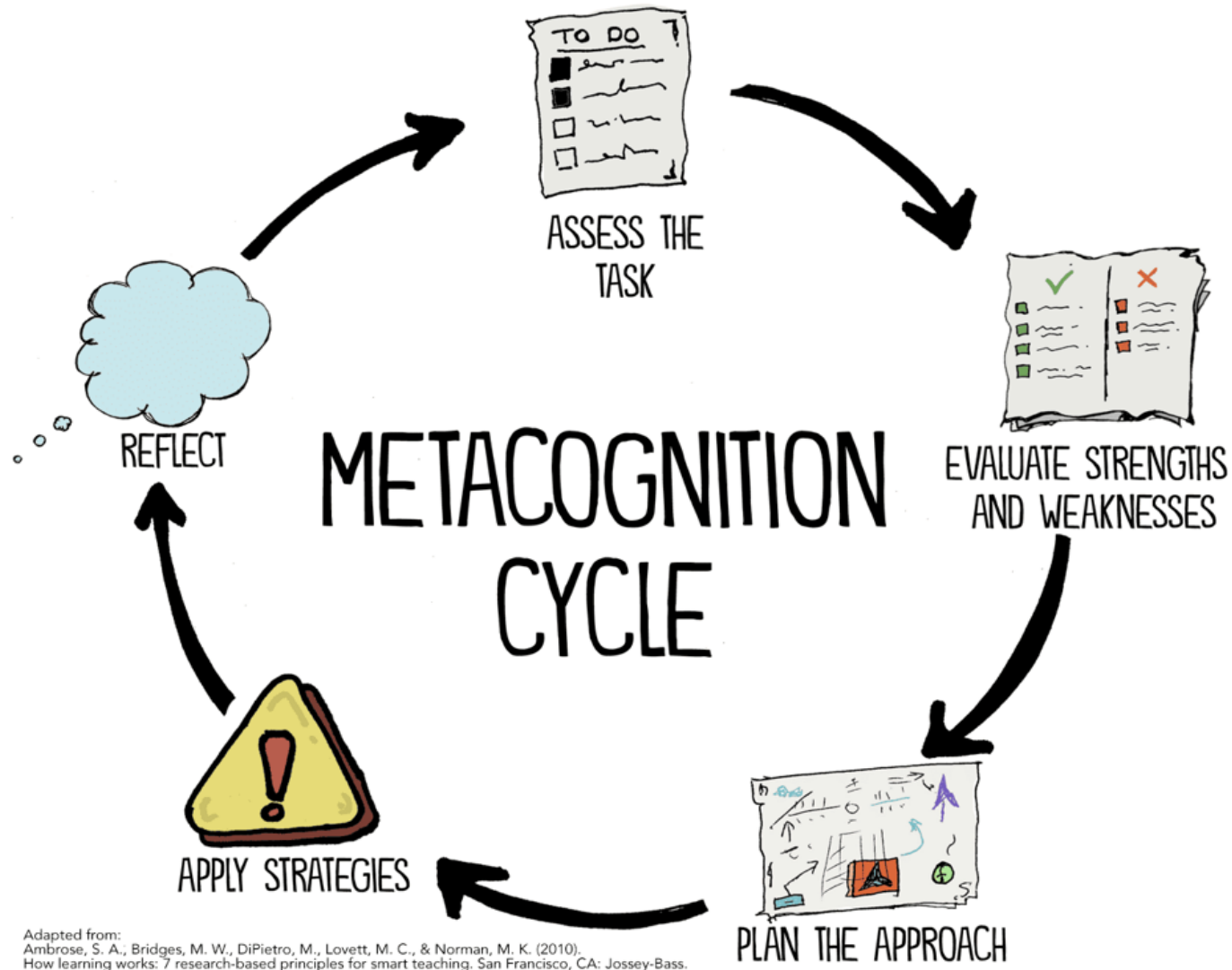
Thinking skills that a student needs for life...

- Reflection
- Evaluation of learning
- Goal setting
- Planning how to study and learn



You are preparing for a maths test tomorrow. After reviewing class notes and solving practice problems for over an hour, you reflect upon your knowledge. “I seem to be able to solve these problems successfully, but I’m not totally confident. I feel like I could still get confused.” You decide that you need to spend additional time solving practice problems.

Metacognition comes from
an internal drive to want
to do better...



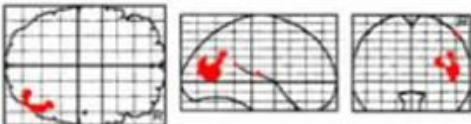
Adapted from:
 Ambrose, S. A., Bridges, M. W., DiPietro, M., Lovett, M. C., & Norman, M. K. (2010).
 How learning works: 7 research-based principles for smart teaching. San Francisco, CA: Jossey-Bass.

What do the brain pictures
say about this...

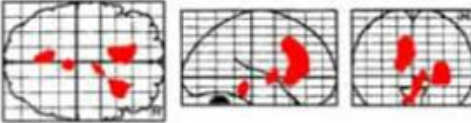
Neuroscience

Active Revision

Neuroscience



This brain is passively reviewing a list of previously seen words.



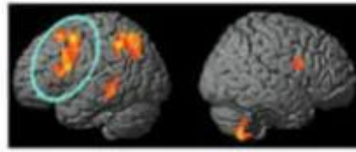
This brain is actively recalling a list of previously seen words.

The utilization of more and deeper brain regions during active recall suggests deeper processing and than does simply reviewing and passively recognizing learned information.

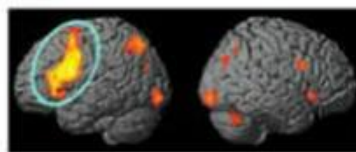
Cabrita, R., Abreu, L., Cook, F.J., Mitchell, R., de Souza, L., & Leung, C. (2015). Functional neuroanatomy of recall and recognition: A PET study of episodic memory. *Journal of Cognitive Neuroscience*, 27(2), 224-233.

Spaced Practice

Neuroscience



This brain is learning new words in a 'massed' fashion (1 long, continuous study session).



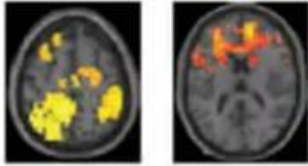
This brain is learning new words in a 'spaced' fashion (4 short, spread out study sessions)

Frontal activity decreases during massed practice leading to impaired learning. Frontal activity increases when study time is distributed across spaced sessions.

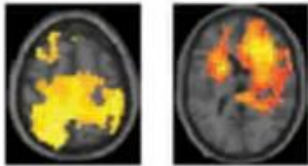
Cabrita, R., & Schooler, J. (2015). Neural correlates of the spacing effect in explicit verbal memory: Accounting against the distributed processing theory. *Human Brain Mapping*, 37(12), 453-470.

Interleaving

Neuroscience



This brain is learning in a repetitive, 'massed' fashion.



This brain is learning in a mixed-up, 'interleaved' fashion.

This suggests interleaving improves learning by enhancing communication & coordination between task-relevant brain areas and enhancing memory storage & retrieval.

Oh, C.A. et al. (2012). Interleaved practice advances skill learning and the functional connectivity of frontostriatal networks. *Human Brain Mapping*, 33(7), 1342-1358.

Oh, C.A. et al. (2015). Brain behavior correlates of optimizing learning through interleaved practice. *NeuroImage*, 104, 1738-1752.

Study Skills



Maintaining Positive Mental Health

At least 8 hours of sleep every night, regular daily exercise, healthy eating, taking breaks during study and only using electronic devices when necessary.

Active Beats Passive Revision

Write bullet point notes, think, understand, explain, clarify, label diagrams, answer a range of questions, create flashcards. Most importantly do the hard work involved and put in the time that this requires.



Spaced Practice

Spread out your sessions over days, weeks, months rather than cramming for the most effective result. Build this spacing of subjects into your study plan.

Retrieval Practice

Get the information "out". Find out what you recall and what you don't know yet, answer questions, mind maps, flow charts, flashcards, checklist points.



Interleaving

Mix up your practice, change subjects to switch your minds focus, switch to different areas within your subject as you would in an exam.

Metacognition

Think and reflect on both feedback and what you need to do to improve. Plan your week, decide what/how/when to study. Regulate and motivate yourself to make sure you do the work. Make realistic judgements from self-testing about how you are progressing.



#tcspirit



Study Skills

Maintaining Positive Mental Health

Active Beats Passive Revision

Spaced Practice

Retrieval Practice

Interleaving

Metacognition

