

AS and A LEVEL
Teacher Guide

PSYCHOLOGY

H167/H567
For first teaching in 2015

Spaced review and interleaving: An introduction

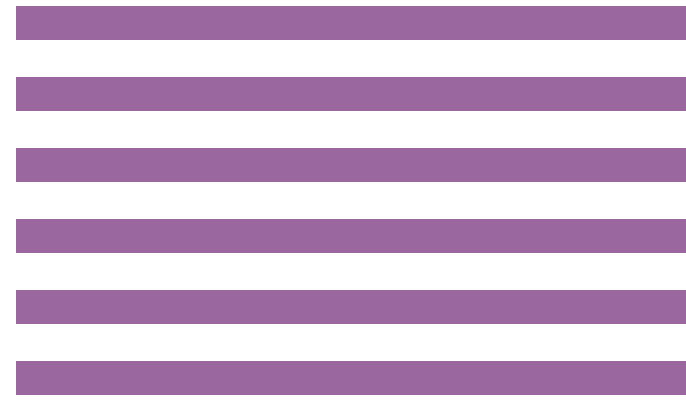
Version 1



AS and A LEVEL **PSYCHOLOGY**

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What is spaced review?

Many teachers find that supporting students in recalling the content for Psychology is challenging and whilst students can do well in short-term recall tests they find it challenging to recall theories and studies later in the year - or indeed the exam. Spaced review is a method that takes advantage of how our memory works to increase the accuracy and detail of recall.

Research such as that by Kelley and Watson (2013)¹ has suggested extremely quick reviews of course material improves memory recall rapidly and that by getting students to revisit material every 10 minutes, with distractor tasks in between, we could revolutionise the way students learn.

Spaced review is a technique embedded over a longer period of time using the same principles of repetition to strengthen long-term memory recall. The principle underlying this is that students are using maintenance rehearsal to revisit material over time and thus strengthen the memory trace.

Ebbinghaus in 1885 suggested understanding how forgetting occurred could actually aid efforts to improve learning. He suggested that if you 'overlearn' material you are less likely to forget it at a later date; we can use this principle to support students in preparation for the A Level exams by building in repetition into schemes of learning.

The following guide gives ideas about how and when to use spaced review to improve your students recall in A Level Psychology.

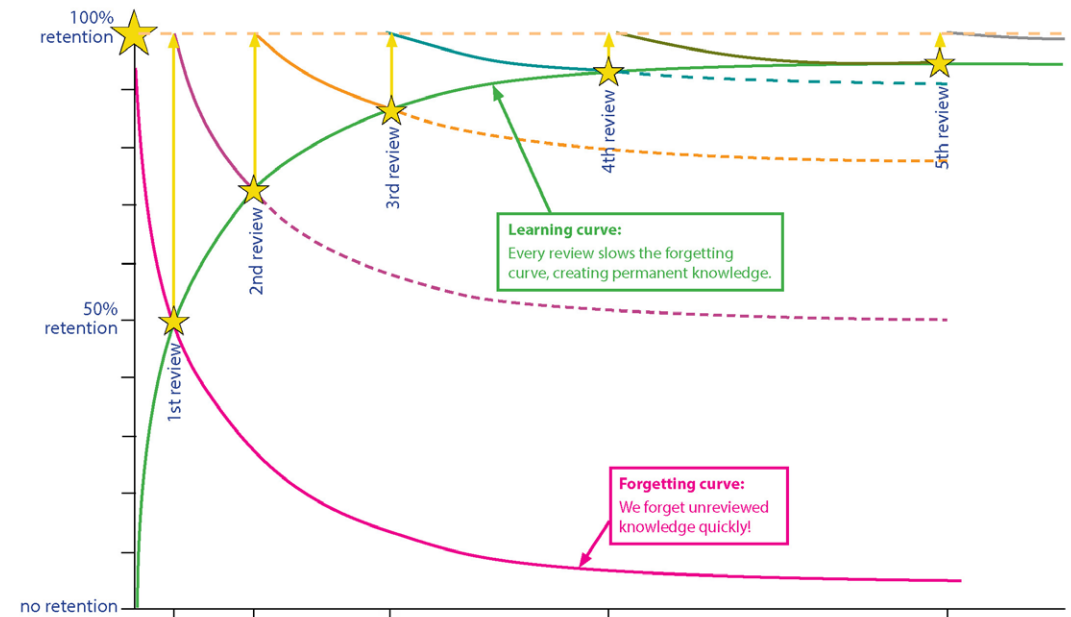
Pros?

- Improved outcomes for your students in external exams
- More engaging learning.

Cons?

- Takes time initially
- Students may find it more challenging

Why spaced review works



“Practice makes perfect.”

¹ Reference: Kelley, P. and Watson, T. (2013) 'Making long-term memories in minutes: A spaced learning pattern from memory research in education', *Frontiers in Human Neuroscience*, 7. <http://journal.frontiersin.org/article/10.3389/fnhum.2013.00589/full>

What is interleaving?

Interleaving, otherwise known as distributed practice, is a method used to revisit learning, put spaced review into practice and improve memory recall.

As Pan (2015)² says 'Mixing it up boosts learning' compared to more traditional methods of block learning where students master one topic before moving on to the next in preparation for exams.

As you can see from the diagram to the right, learning is spread over time rather than concentrating on narrow topics one after the other.

How does interleaving work?

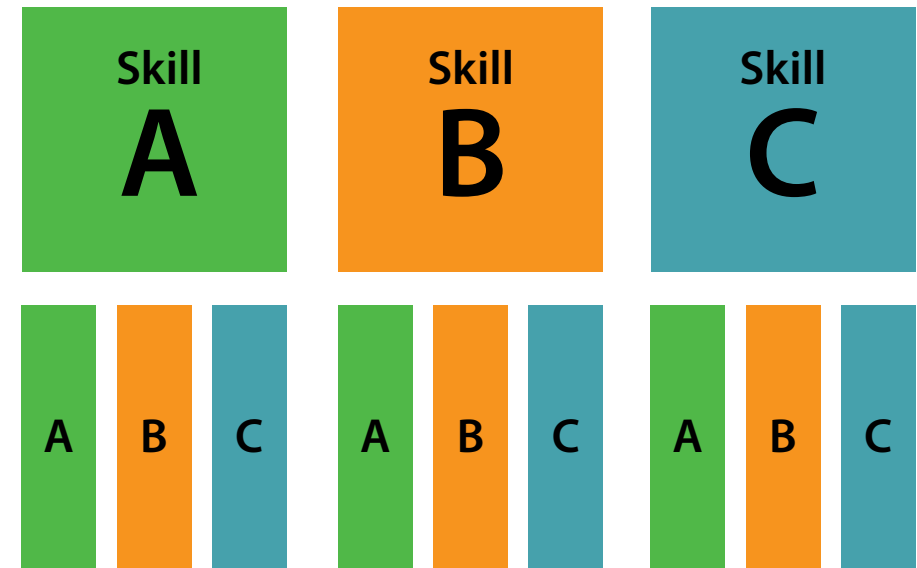
There are a few theories about the cognition behind interleaving. A few ideas according to Pan (2015) are:

Interleaving, "improves the brains ability to tell apart, or discriminate, between concepts. The brain continuously focuses on searching for different solutions...which better enables you to execute the correct response."

"Interleaving strengthens memory association. The brain is continuously engaged at retrieving different responses and bringing them into short-term memory. Repeating that process can reinforce neural connections between different tasks and correct responses, which enhances learning."

The beauty of interleaving is that you can embed it as little or as much as you like and tailor the interleaving to your students. The diagram above suggests mixing topics up entirely, which can prove highly effective. You can also mix blocking most of your lesson content with interleaved homework tasks that complement current learning and develop deeper understanding of prior topics.

Blocking vs interleaving



² Pan, S (2015) Up Boosts Learning. Scientific American. August 4. <http://www.scientificamerican.com/article/the-interleaving-effect-mixing-it-up-boosts-learning/>

How to plan and deliver using these methods

Students are often aware of material they have already covered and one challenge we face as teachers is how to make the material engaging whilst interleaving concepts and repeating exposure to material. The key to interleaving over time and embedding spaced review is developing material that is challenging and engaging.

This guide explains how to use the 'Mental Health spaced review worksheets teacher guide' to embed these strategies in your curriculum and deepen students' knowledge whilst improving their long-term memory recall. The guide has a focus on reviews of learning and checking at different levels which can be adapted for your lessons as you wish.

These include:

- Starters
- Plenaries
- Extension
- Reflection
- Stretch opportunities

The aim of these resources is that you can 'pick and mix' activities to suit your learners and build up their knowledge for the Issues in Mental Health unit.

The next page is aimed at students, explaining the benefits of spaced learning.

Curriculum plan example: Issues in Mental Health (Component 3)

Below is just an example of **how to embed spaced review** and interleaving into your scheme of learning for the component 3 element 'Issues in Mental Health'. Each week the lessons the homework will be based on are marked with a purple box. The homework tasks are aimed to build on knowledge and become more challenging as the term progresses by combining concepts and presenting material in novel ways that enable students to think about the topics deeply. You could combine the resources in the mental health Student Handbook to create homework tasks.

Lesson No. (1 hour)	Lesson content (Taught over 3 weeks)	Weekly homework for the first term														No of times covered		
		1	2	3	4	5	6	7		8	9	10	11	12	13		14	
1	Background: Historical views of mental illness and definitions	■		■		■							■				■	5
2	Background: categorising mental disorders		■		■		■	■									■	5
3	Key research: Rosenhan	■		■								■		■	■			5
4	Applications: Characteristics of an affective disorder, a psychotic disorder and an anxiety disorder		■		■							■				■		5
5	Assessment for learning on the historical context of mental health																	
6	Background: The medical model						■				■		■		■		■	5
7	Key research: Gottesman et al. (2010)		■					■			■			■			■	5
8	Applications: Biological treatment of one specific disorder		■		■			■				■				■		5
9	Assessment for learning on the medical model																	
10	Background: Alternative to the medical model – the behaviourist explanation of mental illness		■		■		■					■				■		5
11	Background: Alternative to the medical model – the cognitive explanation of mental illness		■									■	■				■	5
12	Background: Alternative to the medical model – humanist explanation of mental illness			■		■							■					3
13	Key research: Szasz (2011)				■							■		■				3
14	Applications: Non-biological treatment of one disorder		■				■				■					■		4

Further reading

Birnbaum, M., Kornell, N., Bjork, E. and Bjork, R. (2012). *Why interleaving enhances inductive learning: The roles of discrimination and retrieval*. *Mem Cogn*, 41(3), pp.392-402.

Kelley, P. and Watson, T. (2013) 'Making long-term memories in minutes: A spaced learning pattern from memory research in education', *Frontiers in Human Neuroscience*, 7. doi: 10.3389/fnhum.2013.00589.

Pan, P.C. (2015, August 4) 'The interleaving Effect: Mixing It Up Boosts Learning' Retrieved from: <http://www.scientificamerican.com/article/the-interleaving-effect-mixing-it-up-boosts-learning/>

<http://gocognitive.net/interviews/benefits-interleaving-practice>

<https://newteachers.tes.co.uk/content/how-mix-your-teaching-get-better-results>

<https://classteaching.wordpress.com/2014/06/12/spacing-and-interleaving/>



Student information sheet

What is interleaving and why should I use this method to revise?

Ever crammed for an exam? Found it challenging? Interleaving is a method to use when revising to help you remember more for the exam and to understand it better as well!

By revisiting material from each topic several times, in short bursts, you can increase the amount you remember in the exams. The forgetting curve, to the right, shows how typically we forget a lot of the information we learn if we don't revisit it at all. Each time you revise information it strengthens your memory recall as you can see by the 'learning curve'.

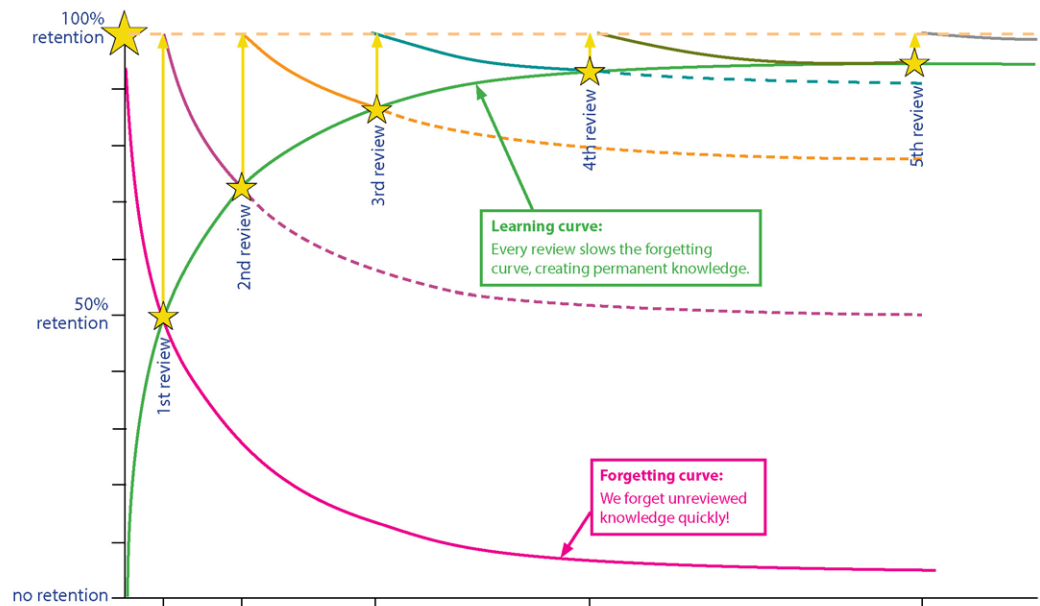
When planning revision try to break units down into small chunks and split these over several days rather than cramming one topic all at once. This can mean doing just 10 minutes revision for each subject in a revision session and then the next day covering a different subtopic for each subject again.

You can create a revision timetable like the one below to organise your time so you can space learning from the first lesson right up to the exam.

Subtopic	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
History of mental health	Mon – 10 mins		Mon – 10 mins		Mon – 10 mins	
Medical model		Tues – 10 mins		Tues – 10 mins		Tues – 10 mins
Cognitive model			Tues – 10 mins		Tues – 10 mins	
Humanistic model				Mon – 10 mins		Mon – 10 mins



Why spaced review works





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