

EP 4

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Neuroscience of Learning - Dr. Artyom Zinchenko

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Cognitive neuroscientist Dr. Artyom Zinchenko on how memories form and fade, and the three study habits the evidence backs: space it out, test yourself and mix your topics.

60%

of meaningless material is forgotten within an hour
[13:14](#)

4 ± 2

chunks of information fit in working memory [26:06](#)

80%

kept a week later with spaced practice; 60% when crammed [34:33](#)

7 h

of sleep a night, at least, for memories to consolidate
[48:42](#)

KEY TAKEAWAYS

1 Space it out

Two sessions a week apart beat one double session: 80% retained a week later against 60%. The nights in between do the consolidating. [34:24](#)

2 Test yourself, don't reread

Students who read a text once and then quizzed themselves outscored those who read it four times. Rereading only feels like knowing. [40:36](#)

3 Mix your topics

Switching between kinds of problem is harder in the moment and gave better results both a day and a week after the course. [45:05](#)

4 Preparation blunts exam nerves

Anxiety lowers test scores, but the more practice tests students had taken, the less their anxiety mattered. [23:13](#)

5 Break the load into chunks

Working memory holds about four chunks. Get the overview first, then study one manageable piece at a time. [26:56](#)

Dr. Artyom Zinchenko · 42:18

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TERMS EXPLAINED

Hippocampus

A structure in each half of the brain that is needed to form new conscious memories.

Forgetting curve

Ebbinghaus's finding that memory decays steeply at first unless the material is revisited.

Desirable difficulty

Effort during practice that slows learning now and improves what is kept later.

Working memory

The few items held in mind, for seconds to minutes, while they are being used.

Consolidation

The strengthening of a new memory into a lasting one, much of it during sleep.

Contextual interference

Mixing different kinds of task in one session instead of practising one at a time.

MENTIONED IN THIS EPISODE

Patient H.M.

The forgetting curve

Desirable difficulty

Test-enhanced learning (2006)

Spaced typing practice (1978)

Interleaved maths practice (2015)

Listen, watch or download the transcript: aarsentyev.com/podcast/ep4-artyom-zinchenko

Each time opens the video at that moment. Hosted by Arseniy Arsenyev. A summary of a conversation, not medical advice.