

Learn to study using... Spaced Practice

Space out your studying over time

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How to do it

Start planning early for exams, and set aside a little bit of time every day. Five hours spread out over two weeks is better than the same five hours all at once.

Example provided by an image. Two weeks are described where lessons are on the Mondays, Wednesdays, and Fridays. Studying takes place on the Tuesdays, Thursdays, Saturdays, and Sundays.

Review information from each class, but not immediately after class.

Attached image shows three stages. Lesson, the character is in a classroom setting. Break, the character is in a relaxed setting. Review, the character is independently studying.

After you review information from the most recent class, make sure to go back and study important older information to keep it fresh.

Example provided by an image of a person studying information from one month ago, one week ago, one day ago, and now.

Hold on!

Image of a character with three study strategies floating around their head; testing, spacing, and sketching.

When you sit down to study, make sure you are using effective study strategies rather than just re-reading your class notes.

Image of character trying to remember information while studying. Older information is more faded than the newer information.

This may seem difficult and you may forget some information from day to day, but this is actually a good thing! This forces you to retrieve information from memory (see Retrieval Practice poster).

Image of character studying on more than one day.

Create small spaces (a few days) and do a little bit over time, so that it adds up!

Research

Read more about spaced practice as a study strategy.

Benjamin, A.S., & Tullis, J. (2020). What makes distributed practice effective? *Cognitive Psychology*, 61, 228-247.

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Learn to study using... Retrieval Practice

Practice bringing information to mind

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How to do it

Put away your class materials, and write or sketch everything you know. Be as thorough as possible. Then, check your class materials for accuracy and important points you missed.

A two-panel graphic, starting with a figure working to put their thoughts on paper either as text or images. They are not looking at their notes or class readings. The next panel shows the figure checking what they recalled in the first panel to what they see in their notes or class readings.

Take as many practice tests as you can get your hands on. If you don't have ready-made tests, try making your own and trading with a friend who has done the same.

Graphic of two people who have swapped tests and are now completing the test in front of them.

You can also make flashcards. Just make sure you practice recalling the information on them, and go beyond definitions by thinking of links between ideas.

A three-panel graphic of a figure making flashcards, then using the flashcards to recall, and finally putting the ideas on the flashcards into a larger context.

Hold on!

Image of a person taking a close look at written text.

Retrieval practice works best when you go back to check your class materials for accuracy afterward.

Image of a person sweating while thinking of an idea. They see three possible options.

Retrieval is hard! If you're struggling, identify the things you've missed from your class materials, and work your way up to recalling it on your own with the class materials closed.

Image of a person looking at a concept map or a mind map.

Don't only recall words and definitions. Make sure to recall main ideas, how things are related or different from one another, and new examples.

Research

Read more about retrieval practice as a study strategy.

Roediger, H.L., Putnam, A.L., & Smith, M.A. (2011). Ten benefits of testing and their applications to educational practice. In J. Mestre & B. Ross [Eds.], *Psychology of learning and motivation: Cognition in education*, (pp. 1-36). Oxford: Elsevier.

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Learn to study using... Elaboration

Explain and describe ideas with many details

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How to do it

Ask yourself questions while you are studying about how things work and why, and then find the answers in your class materials and discuss them with your classmates.

A three-panel image of a figure thinking about gears which represent the fine details of a topic, followed by the figure looking up the answer to their questions. Finally, the figure shares the details with a second figure.

As you elaborate, make connections between different ideas to explain how they work together. Take two ideas and think of ways they are similar and different.

An image of a figure holding one idea in each hand. The two ideas form a concept map where some concepts are similar and connect to both ideas, and where other concepts are different and only connect to one idea.

Describe how the ideas you are studying apply to your own experiences and memories. As you go through your day, make connections to the ideas you are learning in class.

A three-panel image of a figure doing three activities; sitting in a classroom, leaving the classroom, and relaxing at home. In all three panels the figure is thinking about the same thing with the later thoughts relating back to the earlier panels.

Hold on!

A graphic of a person saying something and then checking a book.

Make sure the way you are explaining and describing an idea is accurate. Don't overextend the elaborations, and always check your class materials or ask your teacher.

A two-panel graphic of a person elaborating while looking at a text. Then the person elaborates while only thinking about the same text.

Work your way up so that you can describe and explain without looking at your class materials.

Research

Read more about elaboration as a study strategy.

McDaniel, M.A., & Donnelly, C.M. (1996). Learning with analogy and elaborative interrogation. *Journal of Educational Psychology, 88*, 508-519.

Wong, B.Y.L. (1985). Self-questioning instructional research: A review. *Review of Educational Research, 55*, 227-268.

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Learn to study using... Interleaving

Switch between ideas while you study

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How to do it

Switch between ideas during a study session. Don't study one idea for too long.

A graphic that shows a person studying. Above the person is a representation of studying topic A, B, and C for a third of the study time each.

Go back over the ideas again in different orders to strengthen your understanding.

A three-panel graphic. Each panel is a study session. In the first the person studies the topics in the order A-B-C. In study session two the order of topics is C-B-A, and the order is A-C-B during the third session.

Make links between different ideas as you switch between them.

A graphic of a person connecting ideas while studying.

Hold on!

An image showing a figure frantically switching between topic A and B.

While it's good to switch between ideas, don't switch too often, or spend too little time on any one idea; you need to make sure you understand them.

A two-panel image of a figure working toward a goal. In the first panel, the figure spends entire study sessions studying one topic. It is easy for the figure but the goal remains far away. In the second panel, the figure studies multiple topics in a study session and switches the order of those topics each session. The figure is sweating with effort, but the goal is much closer.

Interleaving will feel harder than studying the same thing for a long time. But don't worry – this is actually helpful to your learning!

Research

Read more about interleaving as a study strategy.

Rohrer, D. (2012). Interleaving helps students distinguish among similar concepts. *Educational Psychology Review*, 24, 355-367.

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Learn to study using... Concrete Examples

Use specific examples to understand abstract ideas

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How to do it

Collect examples your teacher has used, and look in your class materials for as many examples as you can find.

An image of a person taking examples from a book and putting it into a folder.

Make the link between the idea you are studying and each example, so that you understand how the example applies to the idea.

An image of a person looking at a folder full of examples and gaining understanding.

Share examples with friends, and explain them to each other for added benefits.

An image of two people swapping examples and talking about them.

Hold on!

A graphic of a figure looking up images on the internet. Some examples they accept and collect, other examples they reject.

You may find examples on the internet that are not used appropriately. Make sure your examples are correct – check with your teacher.

A graphic of a figure thinking about new examples.

Ultimately, creating your own relevant examples will be the most helpful for learning.

Research

Read more about concrete examples as a study strategy.

Rawson, K.A., Thomas, R.C., & Jacoby, L.L. (2014). The power of examples: Illustrative examples enhance conceptual learning of declarative concepts. *Educational Psychology Review*, 27, 483-504.

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Learn to study using... Dual Coding

Combine words and visuals

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How to do it

An image of a person comparing an image to a text.

Look at your class materials and find visuals. Look over visuals, and compare to words.

A graphic of a figure examining an image and talking about it.

Look at visuals, and explain in your own words what they mean.

An image of a figure turning text into an image.

Take information that you are trying to learn, and draw visuals to go along with it.

Hold on!

Try to come up with different ways to represent information visually, for example an infographic, a timeline, a cartoon strip, or a diagram of parts working together.

Visual representation of an infographic, a comic strip, a diagram, a timeline, and a graphic organizer shown.

Work your way up to drawing what you know from memory.

A graphic of a person illustrating their thoughts on paper.

Research

Read more about dual coding as a study strategy.

Mayer, R.E., & Anderson, R.B. (1992). The instructive animation: Helping students build connections between words and pictures in multimedia learning. *Journal of Educational Psychology, 4*, 444-452.

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