

Day 22 - Spaced Repetition

Welcome to the how to learn anything course from Play-Doh university, where you're going to learn the science-based tools of pro learners to accelerate your learning. Remember more and master any hard skills. These are the secret techniques. They didn't tell you in school.

If you're passionate about changing your life with learning, join us, at plato.university to get exclusive content with every lesson. I'm your learning guide, Brandon Stover and let's get started.

All right. We've reached technique number nine. And this is a technique that I've mentioned many times and then previous techniques and it's called spaced repetition,

spaced repetition as the process of testing material over progressively longer intervals in order to increase the effort of recall and thus embedding knowledge further into long-term memory.

Now, this isn't a complete opposite of cramming. When you cram you study for a long, intense period, and often close to the test that you needed. But when you space your learning, you take that same amount of study time and you spread it out over much longer periods of time.

Doing it this way, that same amount of study time will produce more long lasting learning. For example, spreading out five hours of studying over two weeks is much better than, cramming all five hours into one study session.

Now spaced repetition. Doesn't only apply to formal materials that you may be learning or formal learning session, but to any skill or subject that you're learning. So let's say for example, you're learning to play the guitar and let's say you want to learn how to play all 12 major scales, Armageddon.

You learn six major scales in the morning and you're planning to learn the next six major scales tomorrow.

Instead of moving onto the six new major scales tomorrow, you should try to practice the first six major scales without looking at any of your notes or reminding yourself of the scales before learning the next. Then you should repeat this a couple days later, a week later, and then a couple of weeks later to

significantly increase the profitability of those major scales being embedded into your long-term memory.

Now what's the science behind spaced repetition. Well by testing students at progressively longer intervals spaced repetition allows some forgetting to set in. This means that the effort students have to apply to recall the material in each testing session is very significant leading to a deeper and more durable learning.

Interrupting. The process of forgetting is the most effective way to cement knowledge and long-term memory without spaced repetition.

Students may still be able to recall enough knowledge for the exam, however, because they will forget the material at such a fast rate and they are unlikely to retain it beyond a few days or weeks.

And much of the research on this from the science of learning.

goes way back to some experiments done by German cycle.

named, Herman Ebbinghaus

his experiments and research done on memory. Brought something to the forefront called the forgetting curve. And to this day, having Haas's work has left a lasting contribution to our understanding of memory. Most notably, he discovered that a memory is subject to exponential loss.

Exponential loss means that there's a sharp non-linear decline in memory immediately after learning something,

which probably doesn't surprise you a whole lot. But here's the more interesting and useful part.

Having discovered that with repeated spaced, repetition, his memory of what he was learning became better and better

While I would take him only a day or so to forget something that he was learning the first time around. By the second time he could hang onto what he was learning for twice as long by the fourth or fifth time, it would stay in his memory for weeks.

Eventually his knowledge of what he was learning would seem to become almost permanent.

If you're watching the video of this, here's the visualization of the graph showing the forgetting curve, Ms. Gradually improving memory loss, which looks like this.

Seeing this you should see now why cramming doesn't work.

Cramming can indeed do exactly what it suggests, which is cram information into your mind, right before you need to take a test for. However, there are three really big problems with us. First cramming actually takes more time.

If you learn more in the same amount of time, spaced out. For example, learning five hours worth of material in one hour increments compared to one five-hour gram. Then you have to spend more time during the cramming session to get the same level of learning.

The second point is as quickly as you learn that information during the cram session, you're also going to forget it.

You may do okay. On the test, but then all that time will be wasted because everything that you learned during those five hours is going to be forgotten.

And the final point about why not to do. Because it often replaces sleep, which is very important for learning and also for your mental and physical health more generally.

So now you see the value in doing space repetition, but what are the actual results that your going to get when you use it in your learning sessions?

Well, space Repetition is so effective in part because it allows you to associate different contexts to the same material that you have. Which will later provide more possible cues to help you recall that material.

And this has beneficial for you because of makes material easier to read.

Of course, there are other research studies that have been done more recently that show the effect of, of space repetition, Which I will provide links to below.

Remember the more cues or associative links that we have in our long-term memory, the easier it is to remember stuff and recall, it later when we need to.

So applying space, repetition allows you to say goodbye to cramming, and then immediately forgetting what you've learned and saying hello to remembering what you've learned for the rest of your life.

Now, how do we apply spaced repetition at Plato university? Well, during this course, we have revisited several topics. Like what learning is, what memory. And using techniques like active recall or retrieval practice. And this is allowing you to be exposed to those topics several times.

And then as we start introducing new techniques, we apply those skills and techniques in association with new skills to you practice both old and new material. So, for example, when we've been talking about space repetition, we may mention that you can do retrieval practice, you know, testing yourself

and during testing sessions over spaced intervals of time. So maybe you do a test on Monday. You do a test on Wednesday and you do a test on Friday getting that space repetition. So, as you can see here, we're taking some of our own old material. We're mixing it with our new materials. So you get a better understanding of how to use these things.

now, how are you going to apply space repetition in your learning?

Well, the first thing you want to do when you're learning any new skill or a new subject is start planning early about when you'll practice studying the material that you learn.

For example, set aside a bit of time every day. That's just for learning, even if your exam or the way that you're going to be applied. This is months later, this may seem strange at first, especially if you're just used to cramming right before when you need to use the skill that you're learning.

But this is really just a new habit that you will get used to if you persevere. And this is one of the reasons why we break these courses down, it's a short little, 10 to 20 minute lesson that you learn so that you get into this daily habit of learning already programming in space.

Repetition.

The next step you want to take is review information from each learning session, but not immediately after that learning session, a good way to do this is to reserve some time, one day after each one of your learning sessions so that you can practice and review the material. So for example, if you do a learning session on Monday, Wednesday, and Friday, You may want to take some time to review the information on Tuesday, Thursday, and Saturday And after you review material, From that most recent learning session that you had make sure to go back and study important older information in order to keep it fresh.

So for example, if you were studying the material from this.

You would go ahead and review some of the techniques that we previously covered in the last few days, but then you would also go back and review some of the techniques that we covered in the last second.

Now, remember when you're doing these practice sessions, it's important that you don't just sit down and reread your old notes or the old man. Instead you want to use the effective learning strategies that we've already covered, such as retrieval practice or elaboration.

Now, as you practice this, this may seem difficult and you may forget some information from day to day, but this is actually a good. Because this forces you to retrieve information from your memory,

creating these small spaces and small amounts of time for practice.

Start to add up over the longterm and really help you to create a formal knowledge base of what.

Now a tool. I want to bring your attention to, for doing space repetition, depending on what you're learning, it's called space repetition systems. And these are based on something created a long time ago, called the Latin or box a system of organizing your flashcards into five separate boxes.

So using the letter box as you study, you would move your cards between the boxes, depending on how well you understand the information. As you recognize the cards you review each box more or less frequently based on how hard each box.

However in the digital age, people have created space repetitions that allow this to be done for you. And you don't have to create physical boxes and flashcards, and the idea behind it, digital SRS, the space repetition system is quite simple.

And you create flashcards or download someone else's complete with audio, video, pictures, or texts, and then you restart reviewing those flashcards for each piece of information you tell the software, how difficult it was to answer that question on a scale of one to four, the algorithm then considers your answers.

And reaction time and predicts when you're likely to forget that card. So if you answer easy within a few seconds, you are unlikely. See that flashcard again for weeks or even months.

however, if you struggle, the answer to flashcard will come up again during that study.

In fact, you'll see the same question or material over and over again until it's easy

then, and we'll come up again tomorrow. And the day after that, until you can consistently answer quickly and confidently,

The end result of this is whittling down the amount of review necessary to learn large amounts of information. This allows you to either save time. If the amount of information you need to learn is faced or to pile on new information sooner.

Now, although you may have not heard of SRS.

The general principle behind these is often the backbone of many language learning products, including Duolingo. These programs tend to hide this spacing algorithm in the background. So you don't need to bother yourself with knowing what it is. However, other programs such as the open source On-key.

Can be used so that you can formally set up your own SRS.

Now, this is an amazing tool, but it tends to have quite a focused application, running facts, trivia vocabulary, words, or definition is really suited for this kind of tool, which we'll present knowledge and the terms of a question and a single line.

It's more difficult to apply more complicated domains of knowledge, which rely on complex information, that it has associations

and our only built up really through real-world practice.

Sort of practice-based representation today,

but I'd like you to do is download the flashcards that we made of each one of the learning techniques from this. And set up a schedule for yourself to practice going over these flashcards.

So maybe you spend some time today and you spend some time tomorrow and you spend some time later this week.

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