



How will focus make learning stick?

Welcome! We're starting the series on learning with a course on focus because attention and focussed concentration are the prerequisites for making learning stick - activating neurons and forging neural networks.

Think about it this way: What you're currently holding in your brain is three million TV shows, roughly a million gigabytes total. That's the "storage capacity" of the human brain, with its 100 billion neurons, its intertwining networks and synapses. In order for quality learning to occur, we need to be able to actually focus on what we're taking in and storing in that "database". Memory and attention cannot operate without each other. Why is that?

Because memory has a limited capacity, and attention determines what will be encoded in it. When your attention is not focused during memory encoding - when you're dividing it between two or more things - that prevents the formation of conscious memories. Simply put, we can't learn something we're not paying attention to. Without being fully present, we can't process the information mindfully, and therefore can't encode it for long-term storage - it doesn't make it into our brain's library of "TV shows".

In this course, we will teach you the key concepts on how to become a better learner through honing your focus skills. For this course to be truly helpful in shaping your learning habits, we'd like you to pick something that you really





want to learn. It can be something that you're either currently learning, or that you're planning on starting to learn it as you're going through the course.

Your task for today is to write down one this one thing that you want to apply the learning theory to. It can be learning a new language, learning how to play an instrument, learning about the geography of Africa or about behavioral economics principles.

If you're taking this course via Messenger we encourage you to reply in the conversation as a way to make notes and reminders for yourself.

Issue 2 of [The Fundamentals of Learning: Finding Focus](#)

A tale of two attention networks

Imagine you are sitting in a classroom, and you're deeply focused on what the professor is saying, but suddenly smell smoke and hear a loud bang. Your attention is refocused from the lecture to the potential source of danger in a matter of moments. It's your fight-or-flight response kicking into gear to assure your physical safety.

But this refocusing of attention towards external stimuli doesn't happen only in life-threatening situations. It's also activated in fairly mundane situations, such as hearing someone having an argument outside, or seeing an email notification pop up on your screen.

The research

Recent research distinguishes between the dorsal attention network and the ventral attention network. The dorsal attention network helps direct our





attention towards something we choose to focus on. The ventral attention network pulls our attention towards stimuli that come into our senses from the external world, and there's no way to shut it down. It is the brain's warning mechanism, and it has helped mankind survive for tens of thousands of years.

What we can do is practice what researchers call “the guided voluntary allocation of attention.” In other words, refocusing.

MRI research has proved that goal-directed tasks activate the dorsal attention network and deactivate the default network.

Apply it!

Whenever your mind wanders, practice refocusing it towards your goals.

Think of it as going to the gym. A mental gym, if you will. Refocusing your attention is the muscle you're trying to strengthen, so you can build that one repetition at a time. If you lose focus, bring it back. Then try to keep focus on the task that you're doing. If you lose focus again, bring it back again.

You're not practicing keeping focus, but bringing it back when you lose it.

Your task!

Set a timer for 20 minutes before your next learning session. Notice how many times you get distracted by external stimuli in those 20 minutes (a bang, an email notification). Practice bringing back focus to the task at hand every time you get distracted.



The 20 minute focus rule

You're sitting in class. The professor has been lecturing for about 45 minutes. You're trying to concentrate, but it's hard to grasp the new information that is being thrown at you. When the class started, you were excited to learn about this topic, but nothing seems to stick now.

What's wrong with you?

Absolutely nothing!

The research

Studies have demonstrated that we can only pay full undivided attention for 20 minutes at a time, or less. That is all the hippocampus can hold. And since the hippocampus is the key part of the brain when it comes to learning and memory, that limitation should be honored and accommodated.

Despite the fact that we've know this for the past 30 years, a large number of lecturers, teachers and trainers believe that the more information they condense during a class, the more value they provide to the students. Learners themselves think they're doing great work throughout two-hour cramming sessions before exams, only to forget most of what they've learned once the exam is over.

Apply it!





After 20 minutes of sustained attention, you have to take time to mentally refresh. When you're learning by yourself, that short break can take the form of getting up, stretching and having a glass of water. Or looking out the window to let your mind wander for 5 minutes. You can also change the learning format (switch from reading to watching a video on the same topic, for example).

If you're sitting in a training session, and you can't get up and move around, the alternative is to mentally tune out for a few minutes in order to restart your attention timer.

Remember of the mental gym analogy. You wouldn't go to the gym and work out for two hours straight, right? You would collapse because your body needs breaks in order to recharge. Guess what? So does your brain!

Your task!

Write down 2-3 short activities that you can do in between learning sessions. They have to be short and allow your mind to refocus without difficulty once they're done. (So no, watching a cat video on YouTube isn't really the best choice.)

Issue 4 of [The Fundamentals of Learning: Finding Focus](#)

The curse of the laptop!

Clickety-click-click-click!

If you've stepped foot in a college classroom in the past five years, that's probably the sound that you had to put up with. In fancier schools, you get a charging station per every row of seats and a wifi connection in every corner of the campus.





Actually, research shows that taking notes by hand improves our learning and retention.

The research

A joint study by Princeton University and UCLA by Pam Muller and Daniel Oppenheimer discovered that students can remember information better if they take notes by hand rather than by typing them. Students were asked to watch TED Talk videos and either take notes by hand or type their notes on their laptop. They were then given a quiz. The students who took notes by hand outperformed laptop-notetakers. The same thing happened when the quiz was administered a week later.

By analyzing the notes taken by the two groups, researchers noticed that the students who typed their notes did so verbatim. They wrote down almost everything they were hearing, without filtering the information. But processing the information while we're receiving it adds an extra layer of understanding and aids long-term retention.

Another reason is that typing is linear, while handwriting doesn't have to be. We can easily take notes by hand using mind maps, bubbles, underlining or circling the key information. That helps with the review process later, when we tend to recall the reason why we made the notations.

Apply it!

Put your laptop away when you're in class and keep it closed when you're studying at home. For a week, try to only use your laptop once an hour while you're learning, and only if you want to look something up or to watch a video related to what you're learning.





Your task!

Next time when you sit down to take notes from a book or a lecture, try to do so by hand. Can you notice a difference in the quality of your retention?

Issue 5 of [The Fundamentals of Learning: Finding Focus](#)

Does multitasking improve learning?

Tell me if this sounds familiar. You sit down at your computer with every intention to get some studying done. It's going well. You're even able to keep your focus on a task for a good seven minutes until your concentration is interrupted by a chat notification from your colleague. You cave in.

You may think that multitasking is being productive. After all, you're chatting about the material you're learning, for the most part. In fact, what you're doing is not multitasking - paying attention to both at the same time. What you're doing is switch tasking - you're rapidly transferring focus from one to the other and back.

The scenario above is quite generous, in that we're assuming that you were attempting to multitask with two tasks related to learning. A much more common situation, however, is "multitasking" between learning and something completely unrelated, such as checking your email and scrolling through Facebook.

The research

A very recent study that further debunks the multitasking myth comes from British researchers Elena Gherri and Martin Eimer. Participants in their MRI





study had to learn a text that was narrated to them (much like a lecture is in a classroom context) while at the same time looking for a visual target (think about checking email in class).

What the study found was that the participants were using two different regions of the brain in order to accomplish these two tasks, but the regions were not activated at the same time. On the contrary, the two tasks required them to rapidly alternate and switch focus. Not only did the participants perform poorly at both tasks, but they were also wasting time going from one to the other.

Apply it!

Your task today is to practice the trick we've learned about in lesson 3. Set a timer for 20 minutes. For that time, focus only on one task - whether it's reading your textbook, taking notes, reviewing notes, drilling new concepts. Whenever your focus slips and you're tempted of doing something else, bring it back to the task at hand. This is a skill, and you need to practice it before you get better at it.

Your task!

Think about what makes you multitask? Is it boredom or just a bad habit? If you're taking this course via Messenger, write down your answers in there.

Issue 6 of [The Fundamentals of Learning: Finding Focus](#)

More lies about multitasking

Can you answer this super short pop quiz?





1. People think they perform better when they multitask rather than when they single task.

*True

*False

2. Multitaskers perform worse than single-taskers.

*True

*False

3. When we multitask, we're actually training our brain to be bad at focusing and remembering.

*True

*False

End of quiz. What did you answer?

If your answer was True for all three questions, then your answer is backed by recent research into attention and memory.

The research

Researchers at Stanford University found that people who multitasked assessed themselves as having performed better than when they were single-tasking, even though the opposite was true. Chronic multitaskers had low concentration abilities, low retrieval abilities, and they were not able to filter out what was not relevant to their current goal. "They couldn't help thinking





about the task they weren't doing," said one of the researchers in the study, Eyal Ophir for Stanford News.

Researchers also found that multitaskers instill bad habits into their brain, actually training it to be bad at focusing. The more you multitask, the harder it gets to focus. So when you're multitasking, you're not being as productive as you think you are. On the contrary, you're actually being wasteful with one very precious and scarce resource: focus.

Apply it!

Focusing is a skill. The more you practice, the better you get at it. Conversely, the more you give in to your multitasking tendencies, the more that will negatively affect your ability to focus.

Your task!

When you're learning, rather than dividing your cognitive effort, focus on one task at a time. That will be hard to do for a long period of time, so set a timer for 20 minutes and practice keeping your focus on one task. If your focus slips away, practice bringing it back.

Bonus resource!

We think singletasking is super important in reaching your personal and professional goals. That's why we're offering a course that reveals in-depth techniques on how to practice singletasking. It's written by Swedish psychologist and procrastination-fighting expert Alexander Rozental. [Check out the course here!](#)

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Study? But I don't FEEL like it!

It turns out there is an optimal emotional state for learning - slightly positive.

Think about it.

Have you ever had one of those days in which nothing seems to be going right? Your alarm didn't go off so you woke up late, and your commute to the office took twice as long. Your to-do list is full, and to top it off, you have this stupid training that will take up all morning. You walk into the room already feeling mad.

And even though the topic is interesting and the presentation is engaging, you can't focus, can't process the new information, and your motivation to learn is low.

That's because you have let your emotions take over your focus.

On the other hand, what if, during a break, your boss tells you that he's giving you a promotion and a significant raise. You're psyched about it, but once you're back in your seat in the training room, chances are you won't be able to focus. Your strong positive emotions have taken over the ship, and they're steering the focus away from what's right in front of you.

The research

Research has shown that emotions have an effect on the main processes involved in learning: from focus (What did the trainer say?), to perception





(This seems pointless!), to motivation (Why am I even doing this?) to creating the connections necessary for the encoding and retrieval of information.

In order to focus - which, as we've seen, is a prerequisite for learning - our emotions need to be balanced. Strong emotions (either positive or negative) have been shown to distract focus and drive our attention away from the material we want to learn or the problem we're attempting to solve.

Apply it!

We're aiming for moderate levels of emotional arousal, but slightly tipping the scale towards positive emotions helps improve our levels of creativity, curiosity, motivation, as well as making us more willing to give more mental effort to a task (applying ourselves).

In our next lessons, we'll discover two ways to optimize emotions for learning.

Your task!

Think about a time when emotions hijacked your concentration while you were learning. What happened? Why do you think that happened?

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Get your emotions ready for learning (Step 1: Emotional check in)

In our previous lesson, we talked about needing to keep our emotions at a slightly positive level.





It is important to understand that we are not helpless in the face of emotions. There are ways to work with your emotions and bring them back to balance. The first step in doing this is by doing an **emotional check-in**. The simple act of labeling an emotion without thinking more about it can reduce its negative effects, according to Dr. Lila Davachi from New York University.

The research

This act of putting feelings into words is called “affect labeling.” It has been scientifically proven through fMRI studies that it can be an effective way to manage unwanted emotions and improve long-term mental health. A joint study from UCLA, Carnegie Mellon University and the University of Cambridge showed that labeling emotions (This is how I feel) have a role in regulating them, which frees us the brain from distractions. The fewer the distractions, the better the focus. More recently, Gerardo Ramirez and Sian L. Beilock from the University of Chicago showed that writing down one’s worries regarding an upcoming exam significantly improved performance on that exam just moments later. Through acknowledging and labeling their fears, students tamed the distracting emotions.

Apply it!

There’s a lot to be said about the positive benefits of journaling, but you probably wouldn’t have thought to apply the same principles to focusing your attention on better learning. You can make it a habit of writing down or say out loud how you feel before you start to learn something. It doesn’t necessarily have to be a negative emotion. You can also label your emotions if they’re positive. For example “I feel excited about this” or “I’m so curious now” or “I feel hopeful about where this will lead”.

Your task!

Next time you find yourself unable to focus, simply ask yourself:

How do I feel about having to learn this?





If you're taking this course via Messenger, it's a good idea to use this medium to express your emotions before or after reading a lesson.

In our next lesson, we'll look at the second step in regulating your emotions for better learning.

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Get your emotions ready for learning (Step 2: Emotional reframing)

Think about the situation we've described before, in which the bad start to a day could clearly affect your ability to focus and learn.

You've asked yourself: *How do I feel about having to learn this?*

And your answer was: *I'm feeling irritated because nothing seemed to go right today.*

Even though that may be beneficial in regulating your emotions, you feel like it wasn't enough. Here's where emotional reframing might help.

The research

Reframing an emotion refers to changing your initial interpretation of an event or a situation. You are looking at it from a different angle, so that you notice or experience a different outcome. This emotional reframing will boost your





motivation and increase your ability to resist distractions according to research at the Université Catholique de Louvain, Belgium, and Stanford University.

In a different study, researchers found that emotion regulation plays a role in memory encoding. When participants were asked to reappraise their emotions when looking at negative images (for example, that the image was just fictional, not real), it was shown that in the brain, the amygdala, the hippocampus, and the left inferior frontal gyrus (a region associated cognitive control and language), worked together to help memory. By activating those regions at the same time through reappraisal memory was enhanced significantly.

Apply it!

Here's how you can reframe the emotion in the example above:

I'm feeling irritated because nothing seemed to go right today. But this training is a good opportunity to improve my understanding of the subject and it allows me to practice a skill that will help me advance my career. It's also something I've always been curious about.

This example of positive task-related emotion (I enjoy learning this), will help you focus your attention on learning and facilitate the use of learning strategies. Think about it: aren't you more likely to stick to a focused 20-minute learning session if you have positive feeling about what you're learning?

Your task!

After you've labeled a negative emotion related to learning, think of a way to reframe it as a positive emotion. It may not always be possible, but it's worth trying.



Finding Focus in a nutshell

The topics of focus and attention have been studied by psychologists since the 1860s, and some argue even longer than that. Every year, studies on the subject are published in peer-reviewed journals. We've delved into recent research to bring you the bite-sized version of the most recent findings, and how they can help you become a better learner.

Let's go over the main point in the course again.

- The optimal attention time to keep your focus on one task is 20 minutes. It helps to set a timer for 20 minutes so that you're not constantly tempted to look at the clock.
- While you're focusing for 20 minutes, only work on one task.
- If you notice your focus slipping away, practice bringing it back.
- Singletasking is a skill that you can practice. Think of it as another exercise that you can add to the list of exercises in your mental gym. Just like in a regular gym, deliberate practice is the key to improvement.
- You'll be able to focus better if you take notes by hand.



- You'll be able to focus better if you can regulate your emotions throughout your study sessions. The optimal emotional state for learning is slightly positive.
- Two ways of regulating your emotions for learning are emotional labeling (this is how I feel) and emotional reframing (looking at a situation from a different angle).

As a final task, let's go back to the learning topic you've set for yourself at the beginning of the course. How can you apply some of the things you now know about focus to improve your learning experience?

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Further reading for learning junkies

Throughout the course, we've mentioned some current research that is being conducted in the field of neuroscience. Here are some of the articles that will give you a deeper understanding of the

On Dorsal Vs. Ventral attention network

[The Reorienting System of the Human Brain: From Environment to Theory of Mind by Maurizio Corbetta, Gaurav Patel, and Gordon L. Shulman in *Neuron*. 2008 May 8; 58\(3\): 306–324.](#)

[Dorsal and Ventral Attention Systems: Distinct Neural Circuits but Collaborative Roles by Simone Vossel, Joy J. Geng, and Gereon R. Fink in *The Neuroscientist*. 2014, Vol. 20\(2\) 150 –159](#)





On handwriting vs. typing

[The Pen Is Mightier Than the Keyboard: Advantages of Longhand Over Laptop Note Taking by Pam A. Mueller, Daniel M. Oppenheimer, Published in Psychological Science, June 2014 vol. 25 no. 6 1159-1168](#)

To listen to a short interview with Pam Muller, the lead researcher on this study, [check out this article](#).

On multitasking

[The Laptop and the Lecture: The Effects of Multitasking in Learning Environments by Helene Hembrooke and Geri Gay in Journal of Computing in Higher Education, Fall 2003, Vol. 15\(1\),](#)

[Media multitaskers pay mental price, Stanford study shows by Adam Gorlick in Stanford News](#)

On emotions

[Can words heal? Using affect labeling to reduce the effects of unpleasant cues on symptom reporting by Elena Constantinou, Maaïke Van Den Houte, Katleen Bogaerts, Ilse Van Diest, and Omer Van den Bergh in Front Psychol. 2014; 5: 807.](#)

[Subjective responses to emotional stimuli during labeling, reappraisal, and distraction. By Matthew D. Lieberman and Tristen K. Inagaki, Golnaz Tabibnia and Molly Crockett, Emotion, 11, \(3\), 468.](#)



[Math Anxiety: Can Teachers Help Students Reduce It? by Sian L. Beilock and Daniel T. Willingham in American Educator, Summer 2014](#)

[Resisting the sirens of temptation while studying: Using reappraisal to increase focus, enthusiasm, and performance by Véronique Leroy, Jacques Grégoire, Eran Magen, James J. Gross and Moïra Mikolajczak in Learning and Individual Differences, 22, \(2\), 263-268.](#)

[Staying cool when things get hot: emotion regulation modulates neural mechanisms of memory encoding by Hayes JP1, Morey RA, Petty CM, Seth S, Smoski MJ, McCarthy G, Labar KS. in Front Hum Neurosci. 2010 Dec 22;4:230](#)

