18 Practical Tips for learning

LEARN BETTER, LEARN FASTER

Introduction

Hello. I'm Michele De Giorgi and this is the essay I wrote for the Coursera's course Learning How to Learn. This is a minimal list of practical tips you could use in order to get better in your studies. Everything is based on what I've learned in that course.

The tips are:

1. Get quality sleep before studying;
2. Be in the right mood;
3. Work out;
4. Follow a study plan;
5. Eat your frogs first;
6. Use the Pomodoro technique to avoid procrastination and to avoid focusing all day on the material;
7. Focus on what you're doing;
8. Develop a sense of pattern by chunking your material
9. Take a 2 minutes picture walk of your material;
10. Use the technique of spaced repetition to memorize what you are learning;
11. Don't highlight too much;
12. Recall the material instead of just rereading it;
13. Create conceptual maps to connect your chunks together;
14. Use visual memory and metaphors to memorize concepts;
15. Don't overlearn;
16. Focus on what you find more difficult;
17. Interleave your learning;
18. Test yourself.

1. Get quality sleep before studying

Why? Even if sleep seems a waste of time, it's our brain's way to keep itself clean from neural toxins that are produced during the day.
Sleep also plays an important part both in problem-solving and in memorization, since while you sleep your brain tidies up the concepts you are learning about and that you want to remember.
Prolonged sleep-deprivation could lead to depression, heart diseases, diabetes and in some cases even to death.

2. Be in the right mood

Why? Since cognition and emotions are strictly related in the amygdala, it's important to keep yourself happy before start learning.
The amygdala is a part of the limbic system which, together with the hippocampus, is involved in processing memory and decision-making as well as regulating emotional reactions.
It's also important to study in an environment that you like, without too many cues that could make you procrastinate.

What about exams? If you can't manage being calm before an exam it's fundamental that you change your mindset. It's important how we react to stress. For example, instead of being afraid of it, it's better to think about how this exam is pushing you to do good, instead of thinking about how afraid you are of it. Some breathing techniques can help as well.
Double-checking your answers using a big-picture perspective, asking yourself, "Does this really make sense?"
Also remember to have a plan B about your career, so you can avoid worrying too much if you fail on tests.

3. Work out

Why? When we learn new things, new neurons are recruited. When you don't use those newly recruited neurons, they die. In order to keep the newly formed neurons, it's important to physical exercise since it seems

physical exercise makes neurons survive. Another way to save those neurons is to learn a new skill or to experience something new.

4. Follow a study plan

Why? A study plan is very important because it could help you to avoid procrastination and to manage your time in an efficient way.
Remember to plan your studies and the tasks you need to get done weekly and daily. Setting a deadline is also fundamental because it helps to avoid studying all day.

5. Eat your frogs first

Why? Study things you don't want to study but that you need to study first, so you could avoid procrastinating them later.

6. Use the pomodoro technique to fight procrastination and to avoid focusing all day on the material

Why shouldn't you procrastinate? As obvious as it might sounds, it's fundamental that you don't procrastinate in your studies. Procrastinating makes you cram the material and since learning should be done step-by-step it's not a good idea.

Why shouldn't you focus all day on the material? Our brain can be into two different thinking modes: The focused mode and the diffuse mode. If you want to learn effectively, your mind needs to switch between these two modes.
We use the focused mode when we're actually studying by focusing on the material, activating familiar thought patterns.
We use the diffuse mode when we let our mind go free. It's a more relaxed way of thinking that creates new thought patterns. It can help us to get a broader view.

That's why it's important to take some breaks between each study sessions. Studying for 6 hours straight without breaks is not an efficient way to learn.

How does it work? The Pomodoro technique is a really good way to avoid procrastination. It consists in setting a timer and focusing on the material, usually for 25 minutes. After that period of time, you can reward yourself with a pause time where you can do something relaxing that is not work-related, like taking a walk or grab a cup of coffee.
Whenever you complete a cycle of 4 pomodoros you can take a longer break, something like 20 or 30 minutes of pause.

7. Focus on what you're doing

Why? While you're studying it's important to focus on the process, not on the product. Stop thinking about how much time you will spend studying and just study. To achieve concentrating on the process, the Pomodoro technique is the best way.
Remember that multitasking is a bad idea.

8. Develop a sense of pattern by chunking your material

Why? Chunking is a mental process that creates a chunk. A chunk is a piece of information associated through meaning or use.
The first step to gain expertise in a subject is to create conceptual chunks. Conceptual chunks are like the pieces of a puzzle. We need to understand how to use them and when to use them.

For example, if we need to solve a trigonometry equation, we would need to know how to solve a simple equation first. For example, we know that "Solving a simple equation" is a chunk that is related to math and we know we need to use it when we have to do that.

How do we form a chunk? If we want to form a chunk, we need to follow 3 steps:

- Focus: We start creating a chunk while we're focusing on the material (Focused mode), because our brain connects ideas and concepts we already know with new ideas we're trying to learn;
- Understand: It's especially important to understand the concept we want to chunk, because we need to know when to use it and how to use it.
- Practice: Practice over time could be a great way to both build and strengthen each chunk

9. Take a 2 minutes picture walk through the material

Why? Before you actually start studying, a great way to get a broader view of the material is to take a rapid two-minutes picture walk through a chapter in a book, by looking at pictures and section headings can allow you to gain a sense of the big picture over what you're trying to learn.

10. Use the technique of spaced repetition to memorize what you are learning

How does our memory work? First things first, we have two types of memory, the long-term memory and the working memory.
You can image the long-term memory as a warehouse where billions of items can be stored. Our long-term memory depends on the hippocampus. That's where our memories are stored, and they change during time.
Our working memory, instead, is like a blackboard, even if it's not a good one. The information we temporary store in our working memory gets erased as soon as new information comes in.

How does the spaced repetition technique work? If you want to move that information into your long-term memory, it often takes time and practice. This technique involves repeating what you're trying to retain, but what you want to do is to space this repetition out during various days. Remember, practice makes permanent!

11. Don’t highlight too much

Why? We usually deluded ourselves that if we keep highlighting stuff on our textbook that information goes into our head. But that’s called Illusion of competence.
Instead try to keep your underlining or highlighting to a minimum, max one sentence or less per paragraph. On the other hand, words or notes in a margin that synthesize key concepts are a very good idea.

12. Recall the material instead of just rereading it

Why? When we study, we usually tend to read the material many times, hoping we would memorize it. But that’s not an efficient way of learning.
Instead, recalling is a powerful technique that consists in reading and then trying to remember the key ideas of the material.
Recalling outside of where you are used to study is a good way to create better chunks, and it could help you to gain independence from the physical environment from a specific location.

13. Create conceptual maps to connect your chunks together

Why? Another great way to learn is to create conceptual maps. They are really useful since they can help you to get a broader view of what you’re studying, understanding where each chunk fit, connecting them together. But in order to build connections between the chunk, basic chunks need to be already formed in your brain, otherwise, it isn’t a great idea.

14. Use visual memory and metaphors to memorize concepts

Why? Another great way not to just memorizing a concept but to understand it is to create a metaphor or an analogy. The more visual, the better. A metaphor is just a way of realizing that one thing is somehow similar to another.

For example, if you need to memorize a name then you can associate that name to a picture that reminds you of the name. You can even create visual metaphors where you imagine that you are actually the concept you want to learn.
Metaphors are not only useful in arts; they are also useful in sciences.
Metaphors also help glue an idea into your mind, because they make a connection to neural structures that are already there.

15. Don't overlearn

Why? Overlearning is the practice of repeating a concept multiple times during the same study session and it's related to the illusion of competence: That's not efficient. It could only turn helpful if you want to improve your exposition.
Instead, if you want to memorize it for good, it's better to use the technique of the spaced repetition.

16. Focus on what you find most difficult

Why? Try to balance your studies by deliberately focusing on what you find more difficult. This is called deliberate practice.
A similar technique for problem solving is hard start – jump to easy. This technique consists in start working on harder problems and jump to easier problem if you realize that you can't solve the hard problem. This enables your diffuse mode of thinking to work on that harder problem in the background.

17. Interleave your learning

Why? It's really important that you don't just learn passively. Remember to interleave your studies by practising with problems or situations of different types, trying to solve them with different types of approaches, concepts or procedures. That's a really great way to learn.

18. Test yourself

Why? Don’t fall for overconfidence! Remember to revisit your work to get a broader view of everything, in order to check if it makes sense.
It’s fundamental to test yourself with mini tests in order to avoid the illusion of competence. That’s the only way to understand if you have understood the concept.
Remember that mistakes are a fundamental part of the learning process and it’s completely normal to doing wrong while you’re studying.

How do you test yourself? Using the recalling technique is a good way to test yourself.
Another way is studying with friends because it can help you to confront with others. But how do you know if your group is doing good? You should ask these questions:

- Does this group focus on the material without going off-topic?
- Do they usually arrive on time at appointments?

Remember that you can actually say you have grasped a concept when you can actually explain it to someone else.