

How your brain works & how to stay motivated



1 - How your brain works



How your brain works

We all have the same brain, but some of us train ours better than others.

The key here is that everyone has the potential to train their brain to maximum efficiency.

To understand how to train your brain, you need an understanding of working memory.

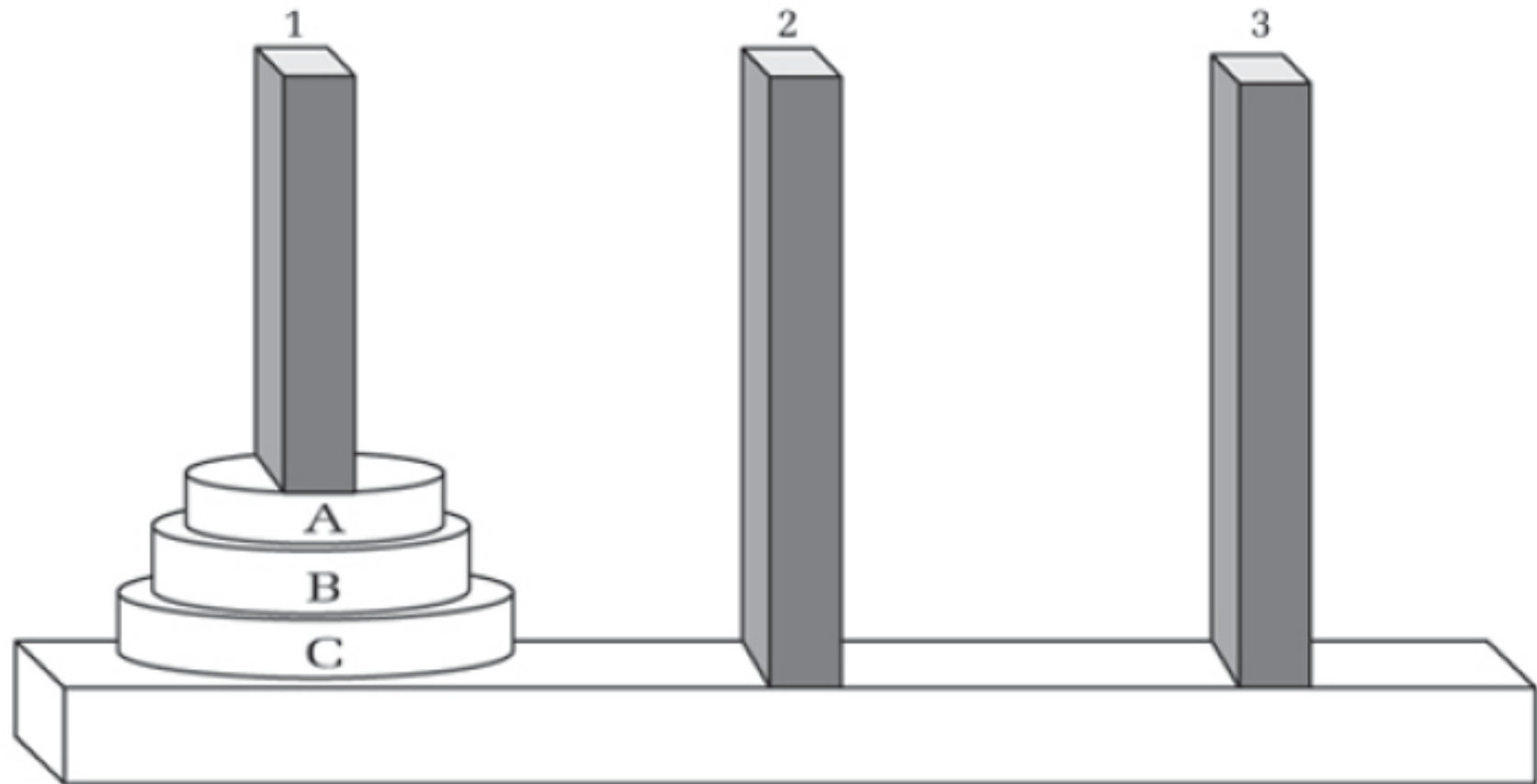
Here's an example to get you thinking about your working memory.



Figure 2

The figure depicts a playing board with three pegs. There are three rings of decreasing size on the leftmost peg. The goal is to move all three rings from the leftmost peg to the rightmost peg. There are just two rules about how you can move rings: you can move only one ring at a time, and you can't place a larger ring on top of a smaller ring.

Try and work this out....



Thinking about this problem gives you an idea as to what is meant by thinking and working memory.

You may have been able to solve this problem, but the main point was so you could get a feel what it is like to have working memory absorbed by a problem.

In this problem you –

Took in the environment

Tried to understand the rules and configuration of the game board

Tried imaging moving the discs

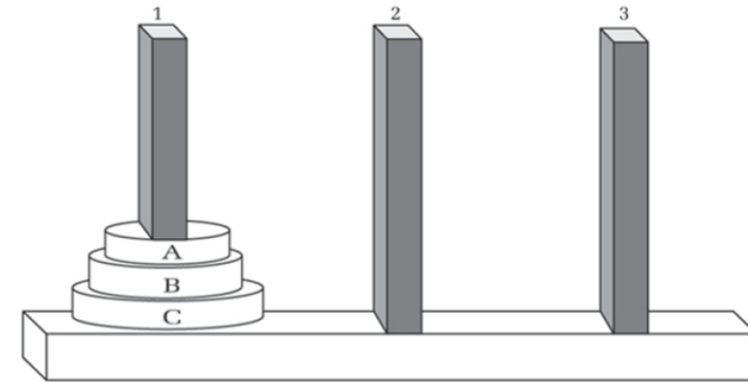
(That's quite a lot going on at once!)

For those people who found this easy, it may be because you have seen a problem like this before, therefore you have information in your long-term memory which helps you to solve it. 😊

And some of you tell us you study best whilst listening to music (a distraction) or looking at your phone (procrastination).....

Figure 2

The figure depicts a playing board with three pegs. There are three rings of decreasing size on the leftmost peg. The goal is to move all three rings from the leftmost peg to the rightmost peg. There are just two rules about how you can move rings: you can move only one ring at a time, and you can't place a larger ring on top of a smaller ring.



Now try this one.....

In the inns of certain Himalayan villages is practiced a refined tea ceremony. The ceremony involves a host and exactly two guests, neither more nor less. When his guests have arrived and seated themselves at his table, the host performs three services for them. These services are listed in the order of the nobility the Himalayans attribute to them: stoking the fire, fanning the flames, and pouring the tea. During the ceremony, any of those present may ask another, "Honored Sir, may I perform this onerous task for you?" However, a person may request of another only the least noble of the tasks which the other is performing. Furthermore, if a person is performing any tasks, then he may not request a task that is nobler than the least noble task he is already performing. Custom requires that by the time the tea ceremony is over, all the tasks will have been transferred from the host to the most senior of the guests. How can this be accomplished?³



Did that problem seem overwhelming?

Did you have to read it and re read it several times just to understand it?

It was overwhelming because you do not have the space in your working memory to hold all aspects of the problem.

Again, showing the limited nature of working memory and how focussing on one thing when you are studying is the only way to make studying effective.

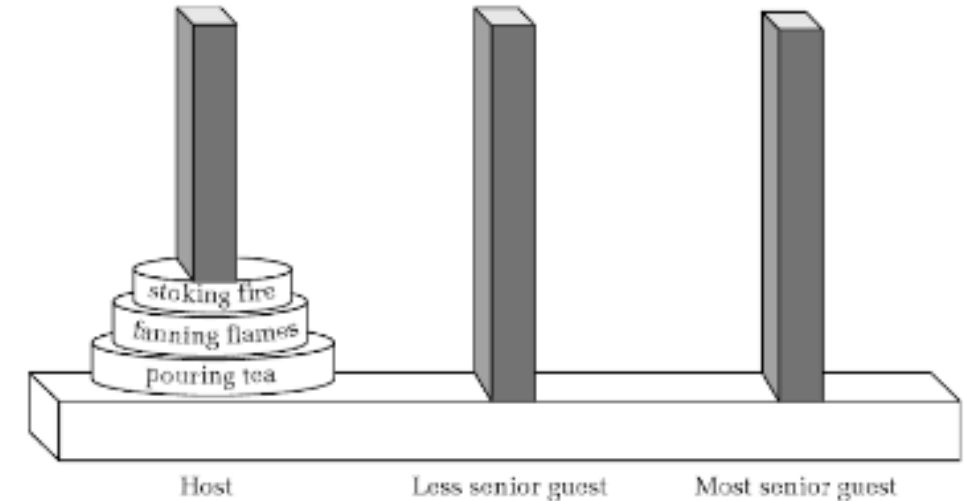
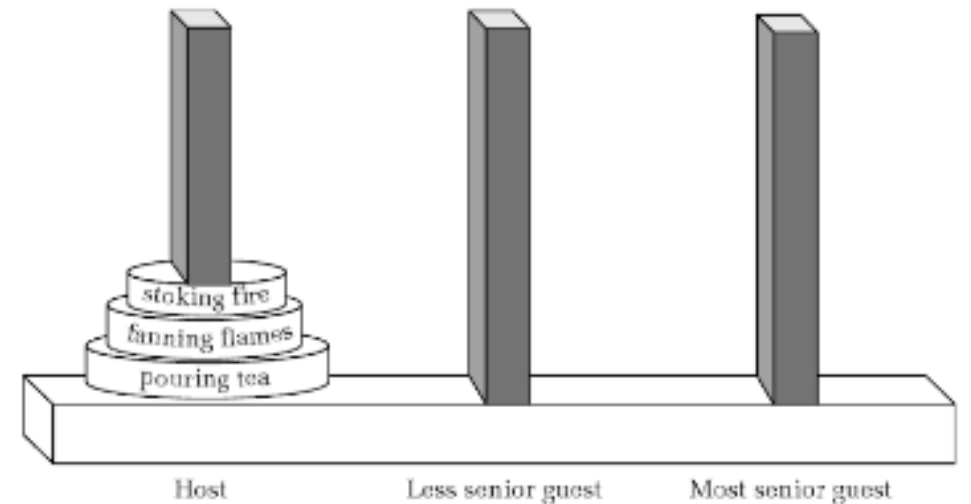



FIGURE 9: The tea-ceremony problem, depicted to show the analogy to the discs-and-pegs problem.

Working memory has limited space, so thinking becomes increasingly difficult as working memory gets crowded.

In reality, the tea ceremony problem is exactly the same as the peg problem, but you think it is more difficult because some one part of the problems in trying to solve this is that the pegs are not laid out in front of you and must be juggled round in your head.

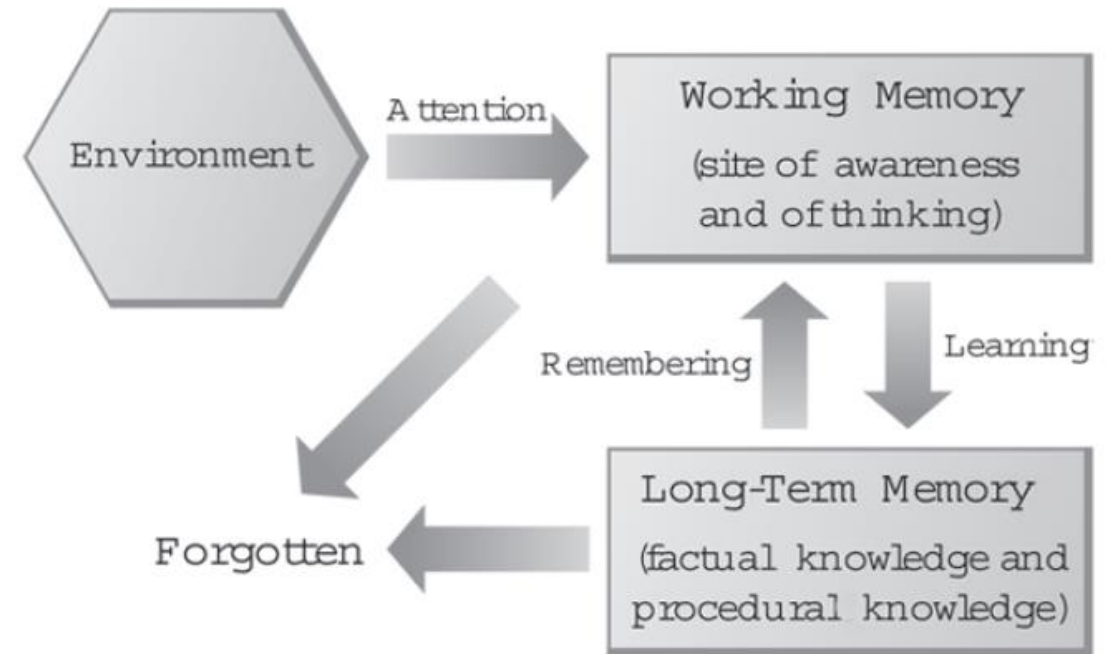
How your brain works



 FIGURE 9: The tea-ceremony problem, depicted to show the analogy to the discs-and-pegs problem.

According to Willingham (2009), successful thinking depends on

- Information from the environment
- Facts in long-term memory
- Procedures in long-term memory
- The amount of space in working memory



Let's test your working memory

You have 15 seconds to
memorise these letters:

XFB
IPP
IKF
CCI
ARI
PNY
CX

Now, write them down

You have 15 seconds to
memorise these letters:

X

FBI

PPI

KFC

CIA

RIP

NYC

X

Now, write them down

Mark your answers

You have 15 seconds to
memorise these letters:

XFB
IPP
IKF
CCI
ARI
PNY
CX

You have 15 seconds to
memorise these letters:

X
FBI
PPI
KFC
CIA
RIP
NYC
X

I'm guessing you got more right the second time?

The two lists were exactly the same!

The difference was in the second list the letters were chunked to form meaningful units of information - chunking helps recall!

Capacity: 3-7 units
Duration: 0.5-3 seconds

Capacity: 7-9 units
Duration: 5-15 seconds
(without rehearsal)



**Sensory
Memory**

attention

**Working
Memory**

encode

retrieve

**Long-
Term
Memory**

Capacity: infinite
Duration: permanent

forgotten



We all have the same brain, but some of us train ours better than others.

The key here is that everyone has the potential to train their brain to maximum efficiency, but how?

The concept of neuroplasticity helps us explain how we can rewire the brain to formulate new habits and strength our understanding when revising.

<https://youtu.be/ELpfYCZa87g>



What does that mean for me?

In order to be able to retrieve information from your LTM, you must store the information in there first!

The key to doing this lies in lots of **deliberate practice**, going over material repeatedly, changing into different forms, making links and practising retrieval.

Regular retrieval strengthens the neural pathways.

Some suggestions (you will look at these methods in more detail)

- Using cue cards
- Using knowledge organisers
- Using quizzes and tests





To take away from this session –

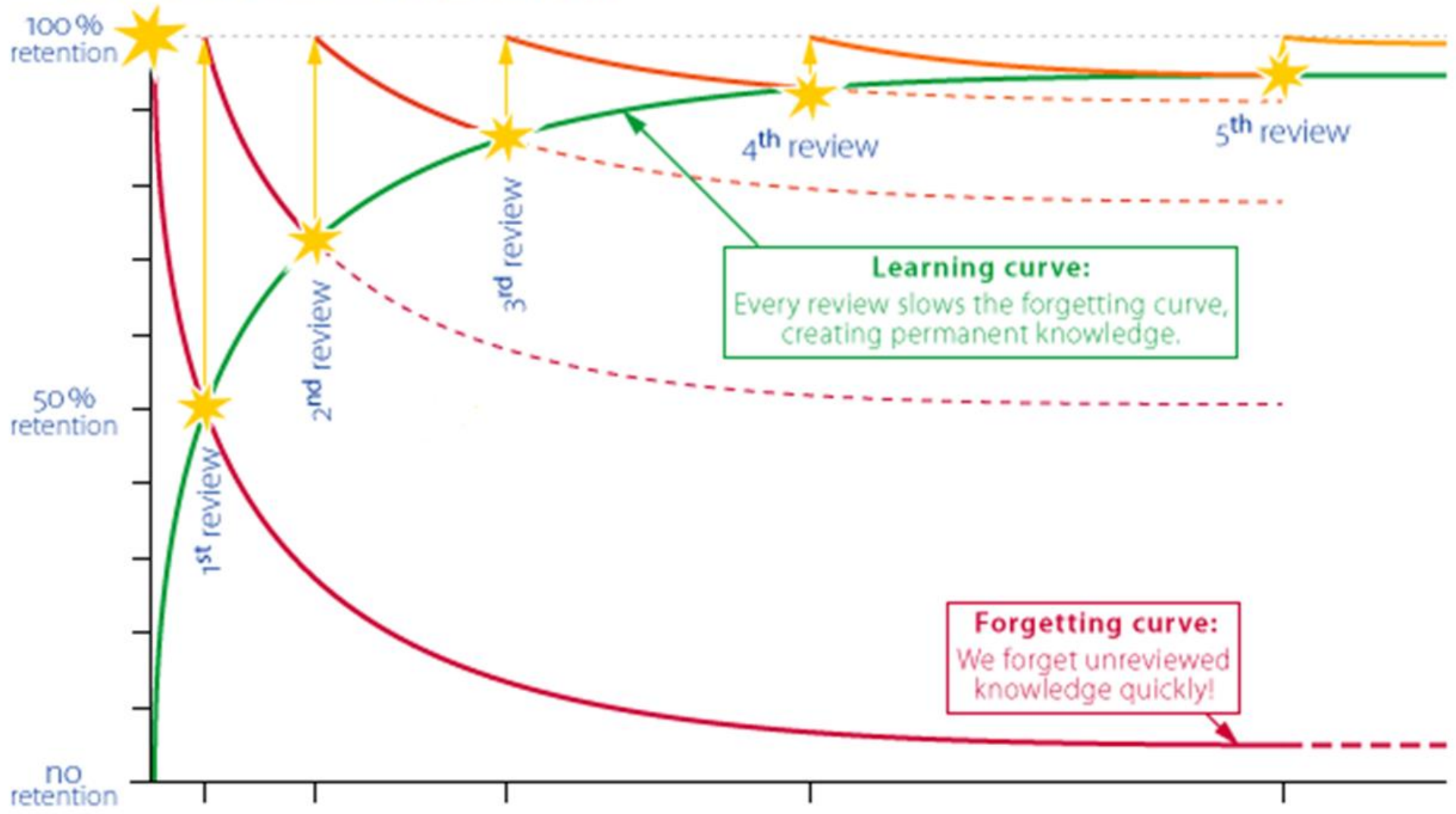
Working memory has limited capacity, you cannot work on three things at once, make the main thing (your studying) the main thing. Don't distract yourself using your phone to listen to music, it takes up part of your working memory, and can be distracting. You won't have music in the exam either!

Recall is best when material is recalled in the place you learnt the information in – no you can't take the exams in your bedroom or classroom, but equipping yourself with a desk and a space to study (rather than lying on your bed) focuses your mind far more.

Deliberate practice – strengthens neural pathways and done regularly makes a huge impact on your ability to recall. See the diagram on the next slide....

Why spaced review works

www.LearnThat.org, a LearnThat Foundation project



Motivation

Motivation is the **driving force** to achieve their desired goals. Incentive is the reason that initiates, guides and maintains the process that arouses, sustains and maintains interest. A person who will be interested in progressing further.





**Million
Dollar
Question!**

Struggling to get motivated?

- Do you find yourself saying...
- Just one more Youtube video, I'll find an inspiration clip which will motivate me?
- Just one more scroll through Facebook / Instagram / snapchat – this shows you your friends are also on social media, so it's not that bad is it?
- I'll start tomorrow when my room is clean and tidy....



What motivates some of you.... *(quotes from Yr13)*

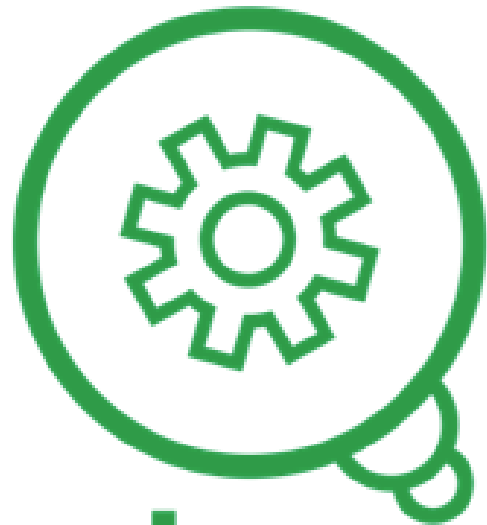
- 'I can see an escape, it's nearly over.'
- 'I've got a goal, I want to be a doctor.'
- 'I want to avoid getting in trouble.'
- 'I work because otherwise I'll be overwhelmed when things get on top of me.'
- 'Knowing my grades will be with me forever.'
- 'I have UCAS offers from uni's I want to go to.'
- 'Feeling the relief when the work is done.'



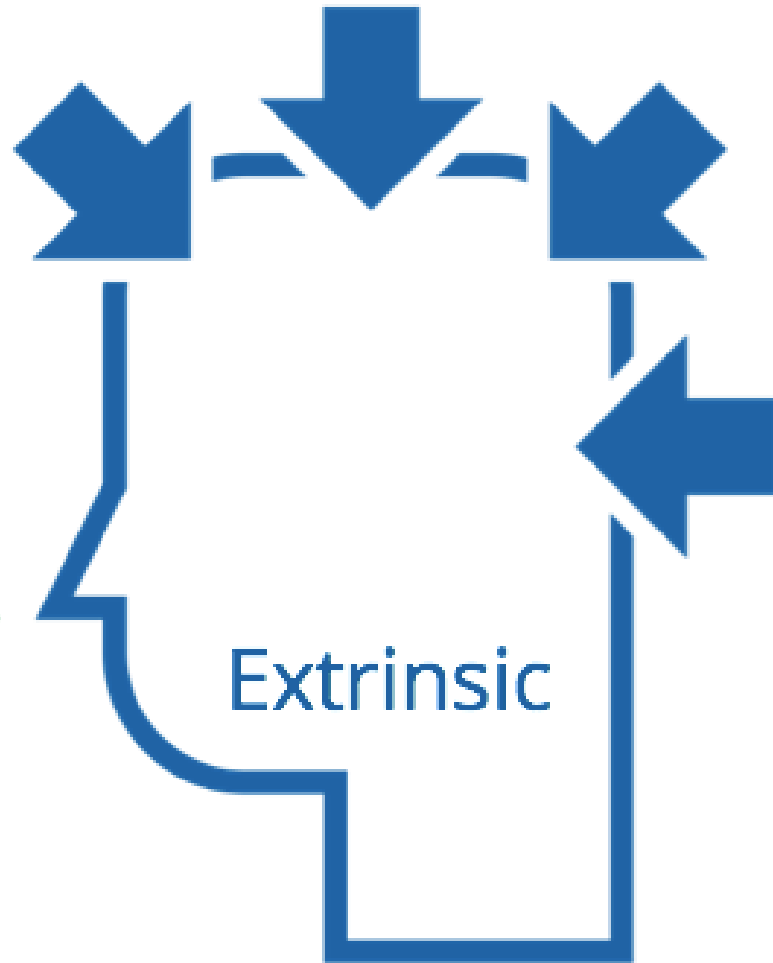
INTRINSIC VS. EXTRINSIC MOTIVATION: WHY WE DO WHAT WE DO

Because of the interest and enjoyment in the task itself

- Enjoyment
- Purpose
- Growth
- Curiosity
- Passion
- Self-expression
- Fun



Intrinsic



Extrinsic

Because of the outcome that will result by doing the task

- Promotions
- Pay raises
- Bonuses
- Benefits
- Prizes
- Winning
- Perks

10 Ways to Motivate Your Unmotivated Self



1 - Discover why you procrastinate

Procrastination is a complex problem that can have many different causes.

Here are some of the most common:

- You've convinced yourself that your homework is beyond your abilities
- Putting off your homework is a way of rebelling against your parents or teachers
- You've decided the topic is boring
- You're waiting for the "perfect" time to start
- The task has become so overwhelming that you don't know where to start

Understanding why you procrastinate is a key first step to getting motivated.

Spend some time reflecting on what makes you procrastinate. This will enable you to identify which of the following tips will help you the most.



2 – *Break the material down into chunks*

A major cause of procrastination is that the task ahead seems overwhelming.

That's when you need to “chunk down”.

Break down each task into small chunks.

Assign yourself a certain number of those chunks each day. Suddenly, you're no longer faced with a scary task, but rather a series of manageable chunks.

A chunk might be reading three pages of your textbook, completing five multiple-choice questions, or finding three reference articles on the Internet for your paper.



3 – Reward yourself

Every time you complete one or two chunks, reward yourself with a short period of relaxation or food!

It could be five minutes on your favourite smartphone game, a short walk, or playing the guitar.

Rewarding yourself with short and enjoyable breaks is a key part of the “chunking down” technique.

4 – Create a study routine

Period	1 Sat	1 Sun	1 Mon	1 Tue	1 Wed	1 <u>Thur</u>	1 Fri
1 8.45-9.45							
2 9.45 – 10.45							
3 11.15-12.15							
4 12.15-1.15							
5 2.10-3.10							
3.30 – 4.30							

By nature, we're creatures of habit. If it's a challenge for you to get motivated to study, you can put this principle to work for you.

Habits are so powerful that once you develop a study routine, you'll find it difficult to go into relaxation mode without studying.

How should you go about creating a study routine?

The first thing to do is to set up a study schedule.

Be aware, however, that habits aren't formed overnight.

Research indicates that it typically takes 20 to 30 days to form a habit. So you'll have to put in some work before this technique pays off.

Why?

5 – Be clear about why you want good grades

One of the best ways to get motivated to study is to be very clear about why you want to get good grades in the first place.

Make a list of the reasons you want to do well academically.

Here are some typical reasons:

- I want to learn more and develop myself
- I want to develop the habit of pursuing excellence
- I want to become a more focused and disciplined student
- I want to get into a good school or programme
- I want to have a meaningful career
- I want to provide well for my family and my parents in the future
- I want to know that I gave it my best shot
- I want to live with no regrets

Write down your own list of reasons for studying hard, and put the list at your study desk.

Then, when you're feeling unmotivated, read the list one more time.



6 – Understand the topic, don't just memorise it

One of the keys to effective studying is to develop an understanding of a topic rather than just memorising facts.

In some situations, rote memorisation may be required.

But, in general, the more years you spend in school, the more you'll be expected to understand relationships and connections between different concepts.

This will require you to apply principles to a given set of facts, or to draw conclusions from a given set of facts.

Understanding a topic is far more rewarding than memorising it. So this approach to studying is not only more effective – it will keep you motivated.



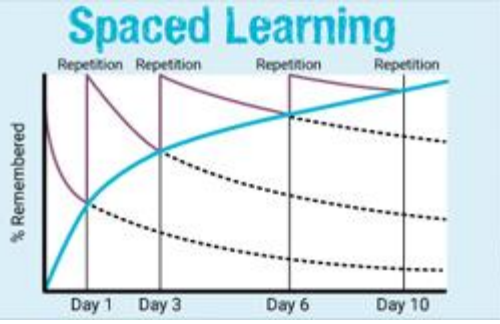
7 – Look for gaps in your understanding

Try giving a mini-presentation on a topic to a friend or relative. You can do this in a formal way, or you could simply talk to them about the topic.

By doing so, you'll deepen your knowledge.

But you'll also realise quickly if there are gaps in your understanding of the topic.

As Albert Einstein once said, "If you can't explain it simply, you don't understand it well enough."



8 – Study in small bursts

Research shows that we learn better when we study in short bursts.

It's called “spaced learning”, and the theory behind it is that learning involves the creation of memories.

Memories are formed through links between neurons. In order for these memories to become embedded, the neurons have to be left undisturbed for a period of time.

That's why we learn better in short bursts of studying. This approach gives the neurons time to “lay down” these new memories.



9 – Don't expect to feel motivated all of the time

Strangely enough, one of the best ways to deal with a lack of motivation is to stop expecting to feel motivated all the time.

The fact is that no one feels motivated all the time.

So don't rely on feeling motivated in order to get the work done.

Sometimes the motivation just won't be there.

That's why you need a study routine and study habits, because systems always beat motivation.



10 – Exercise regularly

- When you're focused on studying for a major exam, it's common to overlook exercise.
- But, as far as possible, get 20 to 30 minutes of physical activity every day.
- This is because regular exercise is vital if you want to study effectively and stay motivated.
- Aerobic activity, such as swimming, jogging or walking, sends oxygen, blood and nutrients to your brain.
- This helps you to think and concentrate.
- Research even shows that short periods of light exercise immediately after studying improves the recall of new information.


talent x effort = skill



skill x effort = achievement

Don't believe me?

- If you start now, you have time.
- How do we know? Because we have been doing this long enough!
- Research shows us that effort is worth twice as much as talent (Duckworth 2016). At GCSE may have got away with relying on being 'bright' but not at A' Level!



Above all, don't lie
to yourself.

Fyodor Dostoyevsky

