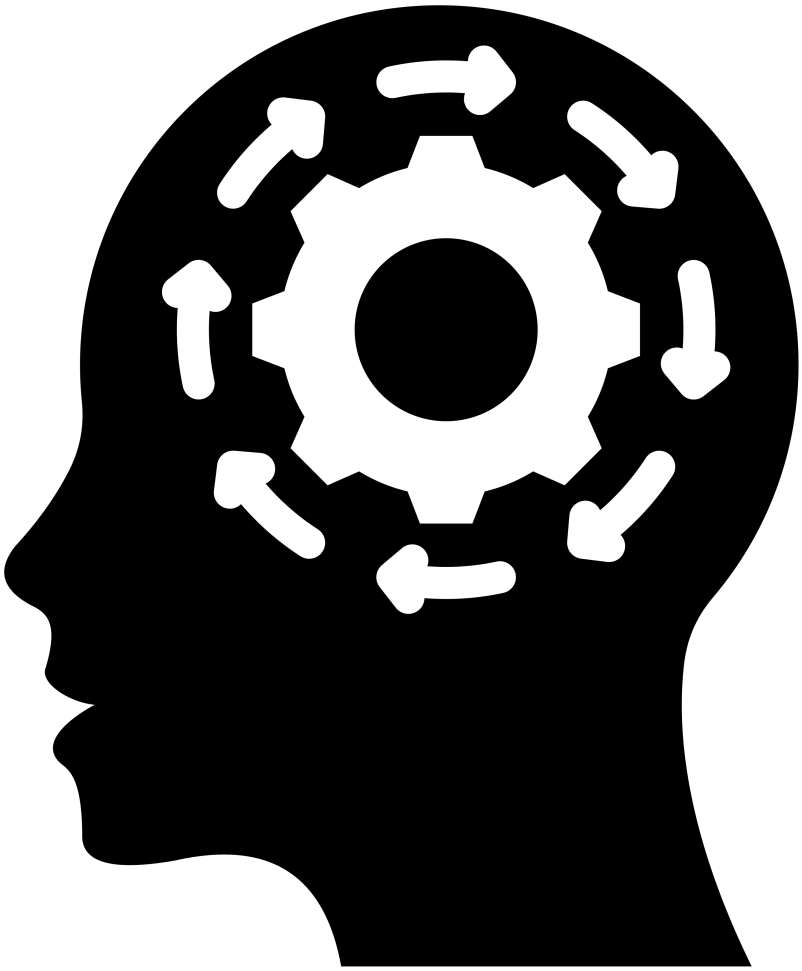
Learning How to Learn

The GCSE Edition



The Camden School for Girls 2024-25

Compiled by Simon Flynn

A True Story?

Sarah and Emma began Year 10 at Camden School for Girls with similar marks in their previous end-of-year exams, but as the Autumn term progressed, their approaches to learning began to diverge.

In Maths, Sarah diligently took notes during lessons, but once home, she tucked her exercise book away until the night before the next class. Emma, on the other hand, developed a habit of reviewing her notes for just ten minutes each evening, quizzing herself on the day's formulas and concepts.

During History lessons, Sarah often found her mind wandering, doodling in the margins of her notebook when her teacher wasn't looking. Emma made a conscious effort to engage, asking questions and relating new information to what she'd already learned.

In English Literature, both girls struggled with remembering quotes for their study of *Macbeth*. Sarah would re-read entire acts, highlighting passages, but she'd forgotten most by the following week. Emma created flashcards with key quotes, briefly testing herself each day during breakfast or before dinner.

Emma noticed she was retaining information more easily as the spring term arrived. She'd implemented a strategy of regular retrieval practice, spending just a few minutes each day recalling facts from various subjects. Additionally, she began using ‘brain dumps’ - setting a ten-minute timer and writing down everything she could remember about a topic, such as the causes of World War I or the stages of photosynthesis.

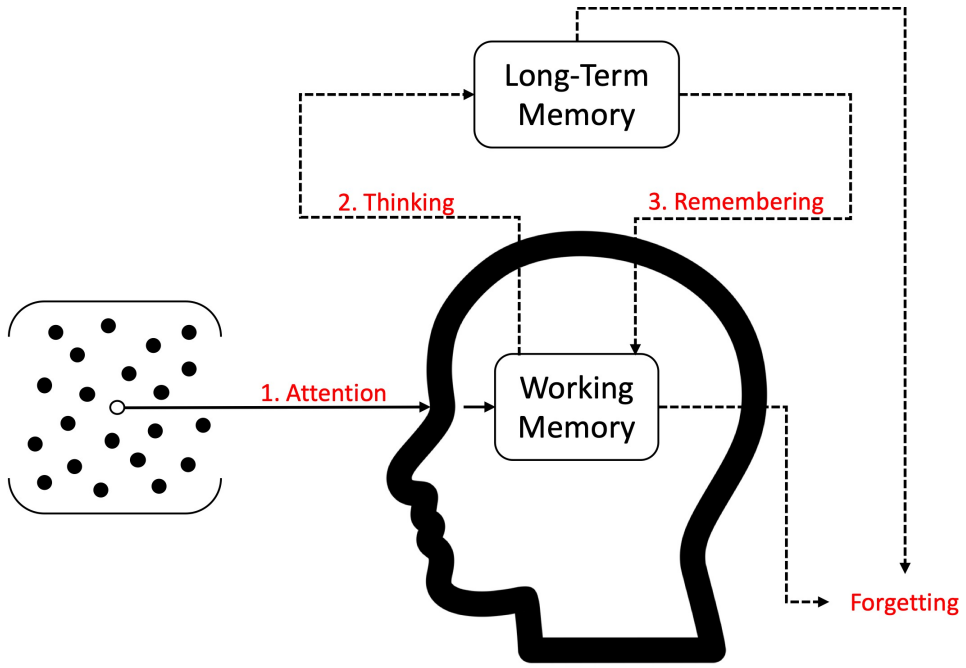
Sarah, meanwhile, found herself increasingly stressed as exams approached. She'd fallen into a pattern of cramming the night before tests, staying up late to memorise Chemistry equations or French vocabulary. While she could recall the information short-term, it slipped away soon after each exam.

Sarah also found herself often distracted at home by her mobile phone, scrolling through social media instead of working. Emma, however, used her phone strategically, setting timers for study sessions and using educational apps for quick revision during spare moments.

By the time summer term rolled around, the difference in their performance was clear. Emma's grades steadily improved across all subjects, while Sarah's remained stagnant or dipped in some areas.

As they received their end-of-year results, Emma reflected on how her small, consistent efforts had paid off. Looking at her disappointing marks, Sarah resolved to adopt some of Emma's strategies in the coming year, realising that success was about how one approached learning.

A simple model of how learning happens



[The following is adapted from Chew, S. L. (2021). An advance organizer for student learning: Choke points and pitfalls in studying. *Canadian Psychology/Psychologie canadienne*, *62*(4), 420]

Learning is a complex cognitive process that involves several interconnected stages, as illustrated in the attached image. The diagram presents a simplified model of how information is processed and retained in our minds and focuses on a few key steps. Each presents a possible choke point in learning, which can impact its progress.

Attention is the gateway to learning. Unfortunately, attention is a finite resource, and we have a limited capacity for concentration at any given time. This limitation can impede our ability to absorb and process information effectively. This is why it's necessary to remove all possible distractions while studying. Research has repeatedly shown that multitasking reduces learning.

Working memory is our mental workspace and is essential for tasks that require reasoning, comprehension, and learning new information. It has limitations, like a restricted capacity and information fading quickly over a few seconds if not actively maintained.

The cognitive psychologist Daniel Willingham has said that **'memory is the residue of thought'**. In other words, if you don't think about something, you won't remember it. Of course, it's more complicated than this. Your prior knowledge is crucial in learning and can affect how you understand and integrate new information. Effective learning often depends on connecting new concepts to existing knowledge… which requires thinking!

Regularly recalling information from long-term memory strengthens connections in the brain, making that knowledge easier to access in future. This also helps organise our understanding and frees up working memory, enhancing overall learning.

Reflecting on your learning

Ask yourself the following questions. Write your answer down, if possible, before you move on to the next question.

1. **How do you study?**

What methods do you use to help progress your learning when covering something new, i.e., while having lessons on whatever it is? What methods do you use to help progress your learning when reviewing things you've already covered?

2. ***Why* do you study this way?**

What are the reasons for your choosing the methods you use?

3. **Do your ways of studying work? If you answer 'yes', how do you *know*?**

Seriously, how do you know your studying methods are as effective as possible?

Students often rely on rereading their notes or textbooks and highlighting text as primary study methods. While these techniques may feel productive, research shows they do not significantly enhance understanding or retention compared to more active learning strategies.

If your methods feel easy, they're almost certainly not effective. If an athlete or musician wanted to make noticeable and continual improvements, how easy are their methods for achieving this likely to be? What's the difference if we change 'athlete' or 'musician' to 'learner'?

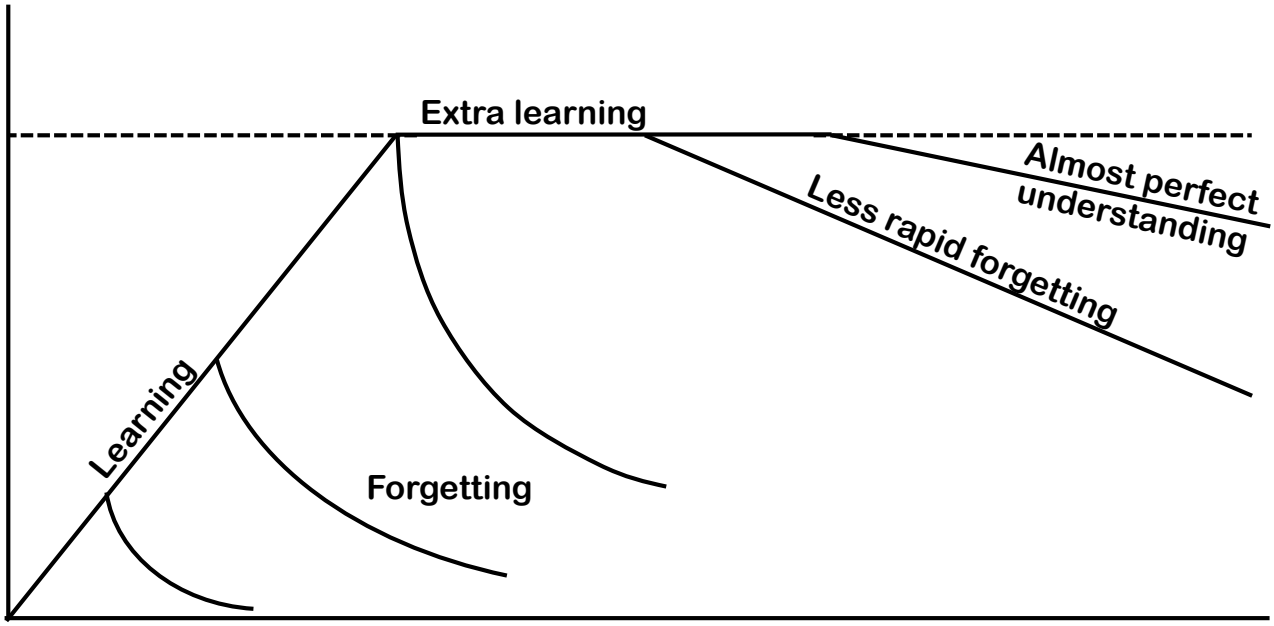
A study showed that students often misinterpret the feeling of 'This is hard!' to mean 'I must not be learning much!'. The truth is that more effortful strategies produce much more significant long-term learning gains. The longer and deeper we think about something, the more likely we are to commit it to memory; the more aspects of an idea we uncover, the more easily we can connect it to other parts of knowledge and retrieve it in the future. Difficulty is *desirable* even if it isn't always *desired.*

Effortful thinking is fundamental to learning. As demonstrated in the simple learning model presented earlier, the effort we put into thinking about a topic significantly impacts how well we learn it. For instance, testing or quizzing ourselves is more challenging than merely rereading notes. Numerous studies have shown that this increased cognitive effort results in better long-term retention of the material. The strategies outlined later in this booklet will emphasise this approach.

Successful learning takes place over time

The graph below illustrates how knowledge and understanding of something can change over time.

When you first tackle a new subject, you experience rapid learning. You absorb a lot of information quickly, but this knowledge is often superficial and prone to being forgotten swiftly. Without additional effort, much of what you've learnt begins to fade. The 'Forgetting' curve shows this. This is a normal part of the learning process and shouldn't be discouraging.



To master a subject, you must exert additional effort beyond the initial learning phase. This "Extra learning" is crucial and involves regularly revisiting the material to reinforce your understanding. We will consider some excellent methods for this shortly.

With consistent extra learning, you enter a 'less rapid forgetting' phase. Your knowledge becomes more stable and resistant to loss.

With persistent effort, you can eventually achieve a state of 'almost perfect understanding'. At this stage, the information is so well integrated into your knowledge base that it will likely be remembered for quite a while.

The Power of Habits

Success is the product of daily habits – not once-in-a-lifetime transformations.

Research has shown that about 43% of what people do daily is repeated in the same context. Habits are automated behaviours that shape our daily routines and decisions without much conscious thought.

Your identity emerges out of your habits. Every action is a vote for the person you wish to become. Every time you study, you are a learner. The best students have excellent learning habits. If you focus on the learning process, the outcome will look after itself. Almost always, it's the process that differentiates those who achieve their goals and those who don't (their goals are the same, after all). So, the most effective way to change your habits is to focus not on *what* you want to achieve but on *who* you wish to become. The goal isn't to get a Grade 9. The goal is to become a lifelong learner.

Of course, forming new habits is much easier said than done – studies show that 88% of people who set New Year's resolutions fail them within the first two weeks. Typically, their initial aim is too ambitious. Instead, we need to start small and harness the incredible power of atomic habits.

Atomic Habits

Atomic habits are small, easily achievable actions that can substantially transform one's life when practised consistently over time. When added together, they can lead to remarkable results. The beauty of micro habits is that they're so small that you hardly notice you're doing them. For example, one could begin with a single push-up or a 30-second plank each morning rather than committing to hour-long gym sessions. Over time, this can evolve into a more comprehensive fitness routine.

Here are some examples of how atomic habits can power up your learning:

1. Instead of telling yourself you must study for hours, start with just 5 minutes. Set a timer and dive into your work. Often, once you've started, it's easier to keep going. This atomic habit helps overcome the initial resistance to studying.
2. Learn one new word each day. Write it down, along with its definition and an example sentence. Use the word in conversation or writing that day to reinforce your learning.
3. At the end of each school day, write down one question about something you've learned. Seek the answer the next day. This habit promotes curiosity and deeper engagement with your studies.
4. Spend five minutes each day explaining a concept you've learned to an imaginary student or a willing family member. This habit, known as the "protégé effect", can significantly enhance your own understanding.

The power of these micro habits lies in their simplicity and consistency. They're so small that they're hard to say no to, but when done regularly, they can significantly improve your learning behaviours and academic performance. Remember, the key is to start small and be consistent.

Improving your study habits

When studying at home, you'll need to employ various strategies to manage your learning environment, minimise distractions, and enhance your concentration. Consider the following approaches to optimise your focus and productivity.

Know Where and When

Hundreds of studies have shown that planning where and when you intend to do something makes it more likely to happen. Saying 'I will [BEHAVIOUR] at [TIME] in [LOCATION]' can make a difference e.g. I will start my homework at 3.45 pm in the school library.

Use Habit Stacking

Make a list of your current habits. Now, link your new intended habit with a current one. For example, I will learn a new word after I have brushed my teeth in the evening. Increase the chance of this happening by leaving the notebook where you'll write the new word and its definition on your pillow.

Establish a Dedicated Study Space

It's crucial that you designate a specific area for studying that's free from distractions. Your dedicated space should be comfortable, well-lit and equipped with all necessary materials, such as textbooks, notebooks and stationery. Avoid using areas associated with leisure activities, like your bedroom, as this can blur the boundaries between work and relaxation, making it harder to focus. The school library is a quiet place to work after school.

Minimise Digital Distractions

Your smartphone, tablet and computer can be significant sources of distraction. Turn off notifications on these devices to avoid the constant temptation of social media, messages or unnecessary internet browsing. Consider using apps or browser extensions that block distracting websites or limit your screen time on certain apps during study sessions. Keeping your phone in another room or setting it to 'Do Not Disturb' mode can also help reduce your impulse to check it frequently. Some apps can help, too. The FOREST app helps you focus by having you plant a virtual tree that only grows when you stay off your phone. The longer you avoid distractions, the bigger your tree and virtual coin collection grows. FOREST makes resisting phone habits into a rewarding game.

Set Goals and Rewards

Establish specific, achievable goals for each study session. Knowing your goal provides a clear direction and helps maintain your focus. Reward yourself after completing tasks or reaching goals, whether it's a small treat, a short break or some leisure time. Positive reinforcement can motivate sustained attention and effort.

Establish a Consistent Routine

Developing a regular study schedule with scheduled breaks can help condition your mind to focus during specific periods. Techniques like the Pomodoro Technique can effectively maintain high concentration levels without leading to burnout.

1. Decide on the task to be done.
2. Set a timer (typically for 25 minutes).
3. Work on the task.
4. End work when the timer rings and take a short break (typically 5–10 minutes).
5. Go back to Step 2 and repeat until you complete four pomodoros.
6. After four pomodoros are done, take an extended break (typically 20 to 30 minutes) instead of a short break. Once the long break is finished, return to step 2.

Prioritise and Organise Your Tasks

At the start of each study session, create a to-do list and prioritise your tasks based on importance and deadlines. This ensures that you focus on the most critical tasks first, rather than getting lost in less important activities. Break down larger tasks into smaller, manageable segments to make them less overwhelming and easier for you to tackle with sustained attention.

Manage Your Physical Environment

Try to control the noise level in your study environment. Ensure that your study area is clutter-free, as a tidy space reduces distractions and makes it easier to find necessary materials. If possible, adjust the room temperature to a comfortable level, as extremes in temperature can distract you and affect your concentration.

Incorporate Movement and Exercise

Incorporate short physical activities into your study breaks, such as stretching, walking, or light exercise. This can help refresh your mind and body and improve your concentration when you return to studying. Consider using a standing desk or alternating between sitting and standing during study sessions to keep your energy levels up.

Prioritise Your Well-being

Ensure you get adequate sleep, as tiredness can significantly impact your attention and concentration. A well-rested mind is more capable of sustained focus. Stay hydrated and eat a balanced diet, as proper nutrition fuels your brain and enhances cognitive function. Additionally, practise mindfulness or meditation techniques to improve your mental clarity and reduce stress, both of which are beneficial for maintaining focus.

Active Learning and Regular Retrieval Practice

To learn something successfully, you have to be actively involved in constructing your understanding so that it can be stored in your long-term memory. This knowledge then needs to be regularly retrieved to help its use become automatic. Here are some guiding principles designed to help achieve this.

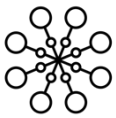
Summarising

When asked a question such as 'what have you done today?', you'll likely provide a summary. This involves you selecting, organising and integrating the critical moments of your day. Taking a similar approach to your studies can have a powerful effect on your learning. What is vital is that you use your own words and don't mindlessly copy your notes or revision guide.

Self-testing

Research has shown that every time you bring a memory to mind, you strengthen it. And the more challenging you make this retrieval, the greater the benefit. Self-testing improves the recall of information, transfer of knowledge and making inferences between information. Equally, there are many indirect effects, such as a greater appreciation of what you do and don't know, which helps you plan your next steps.

Mapping



Mapping is a brilliant way of organising and learning information, demonstrated on various pages in this booklet. It helps you break down complex information, memorise it, and see the connections between different ideas.

Drawing

This involves turning text into some form of drawing. Doing so consists in selecting, organising and integrating the information that matters, which forces you to think. This approach can be incorporated into the three strategies above too.

Self-explaining

Continually ask yourself 'How?' and 'Why?' when studying a topic and then try to answer these questions. Doing so helps you to see connections and differences between ideas. Self-explaining can also involve you saying loud the steps you're taking when solving a problem. For example, a recent analysis of 64 research studies showed that 'it is better to ask a student to see if they can explain something to themselves, than for a teacher or book to always explain it to them'.

Teaching

Einstein is supposed to have said, 'if you can't explain it simply, you don't know it well enough'. This strategy works best when you know in advance that you will be teaching someone. As with self-explaining, you're forced to select and organise what's important so that your teaching is as straightforward as possible. Having someone to interact with and ask you questions strengthens your learning.

Flashcards

Flashcards have the potential to be a powerful learning aid. However, how successful this is will depend on the thought you put into making them and how they're used. It's vital to remember that they're for testing, not summarising.

Making good flashcards

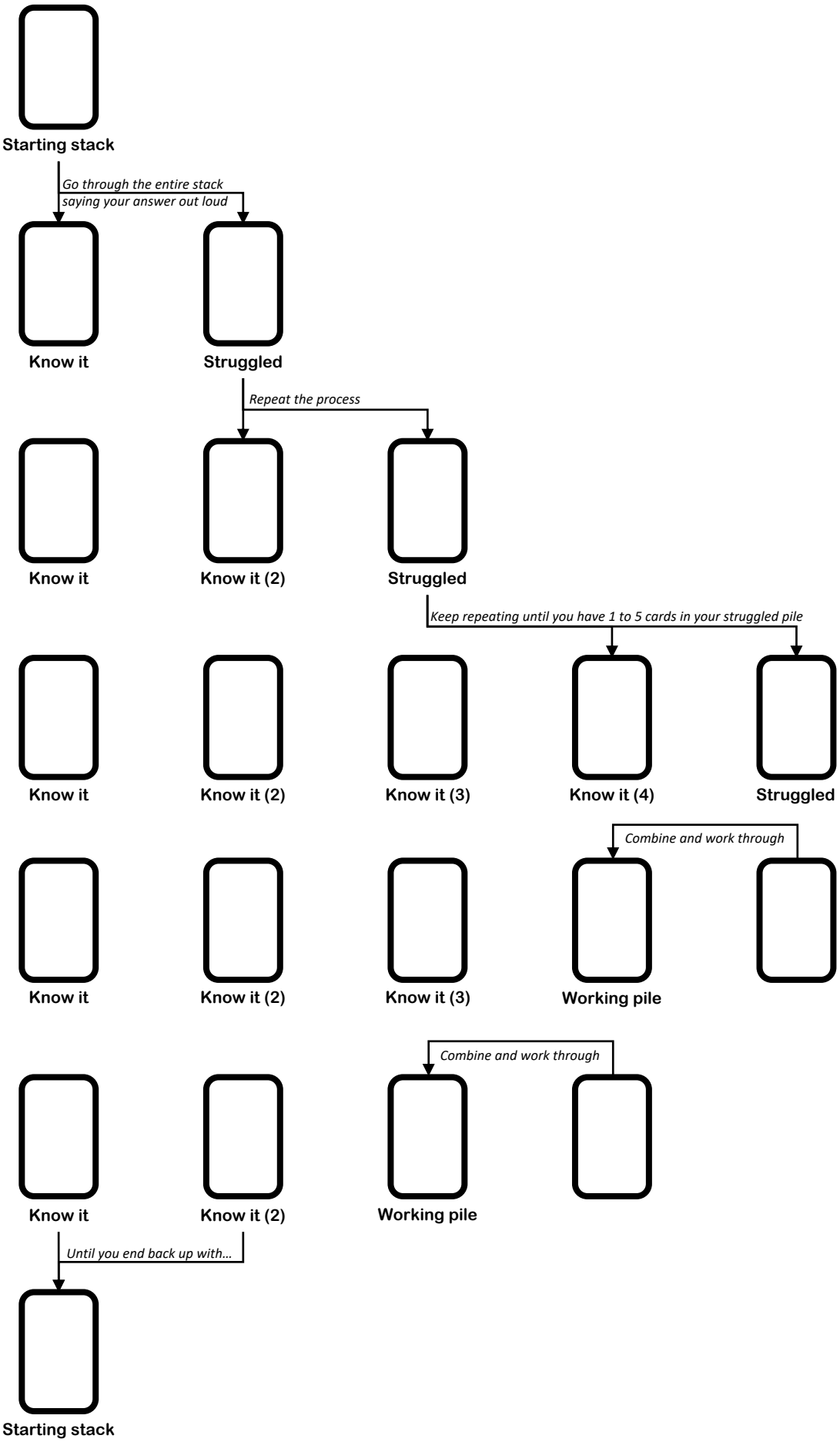
- One side of the flashcard should be a single question and its answer on the reverse.
- Select the essential information to go on each flashcard. You could use topic checklists or bolded terms in your study guide to help you choose.
- Make it clear which topic in a subject the card belongs to. Use a code to make this quicker to do e.g. C2 (make an index of topics on a separate flashcard)
- Break complex concepts down so that they cover multiple cards.
- Use drawings to illustrate answers.

Using flashcards

- Say your answer out loud and not just in your head. You must be fully committed to your response. Even better would be to write your answer as you would have to do in an exam.
- Use them both ways – look at the answers and say what the question is.

What is the word equation for respiration?	glucose + oxygen → carbon dioxide + water
Give two examples of a physical change.	Any change of state (e.g. melting) and dissolving (e.g. salt in water)
What is law of 'conservation of energy'?	Energy cannot be created or destroyed – it can only be transferred from one store to another.
Name three non-contact forces.	Weight (caused by a planet's gravitational field strength), magnetism and electrostatic.

Flashcards – The Waterfall Method



Adapted from https://blog.prepscholar.com/flashcards

List It

This is a simple free recall task that is very versatile. It can feel challenging, but this is a good thing, and it provides clear feedback on what you do and don't know. Choose a topic, set yourself a time limit and…

- List as many keywords as you can
- List as many facts as you can
- List as many key events/quotes/individuals as you can
- List as many causes of X as you can
- List as many consequences of Y as you can

Brain Dumps

Brain dumps can be incredibly effective as an extension of 'list it' above. Spend, say, fifteen minutes with a blank piece of paper and write down everything you know about a topic. Once finished, look at your class notes, textbook and/or revision guide and check that what you've written is correct. Then look at what you've forgotten and focus on this. Finally, date the sheet and store it away. Later, do the exercise again and compare the sheets – hopefully, you will remember more the second (third, fourth etc.) time and will be able to see the improvement you've made.

Brain dumps made easier

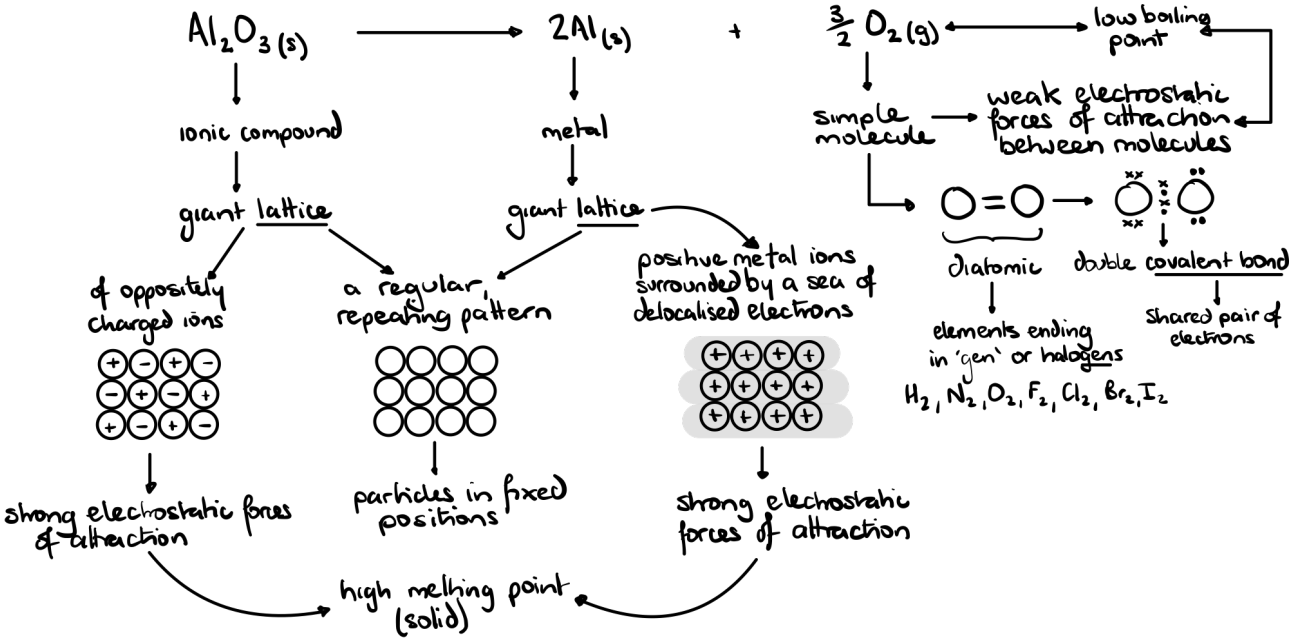
Brain dumping can be a terrifying exercise. To create a gentler, if less effective, version, compile a list of keywords, terms, people, countries etc., connected with a topic and write uninterrupted for fifteen minutes using these as prompts. For example. For example, if your brain dump was on the 'Energy' topic in Physics, your prompts could be:

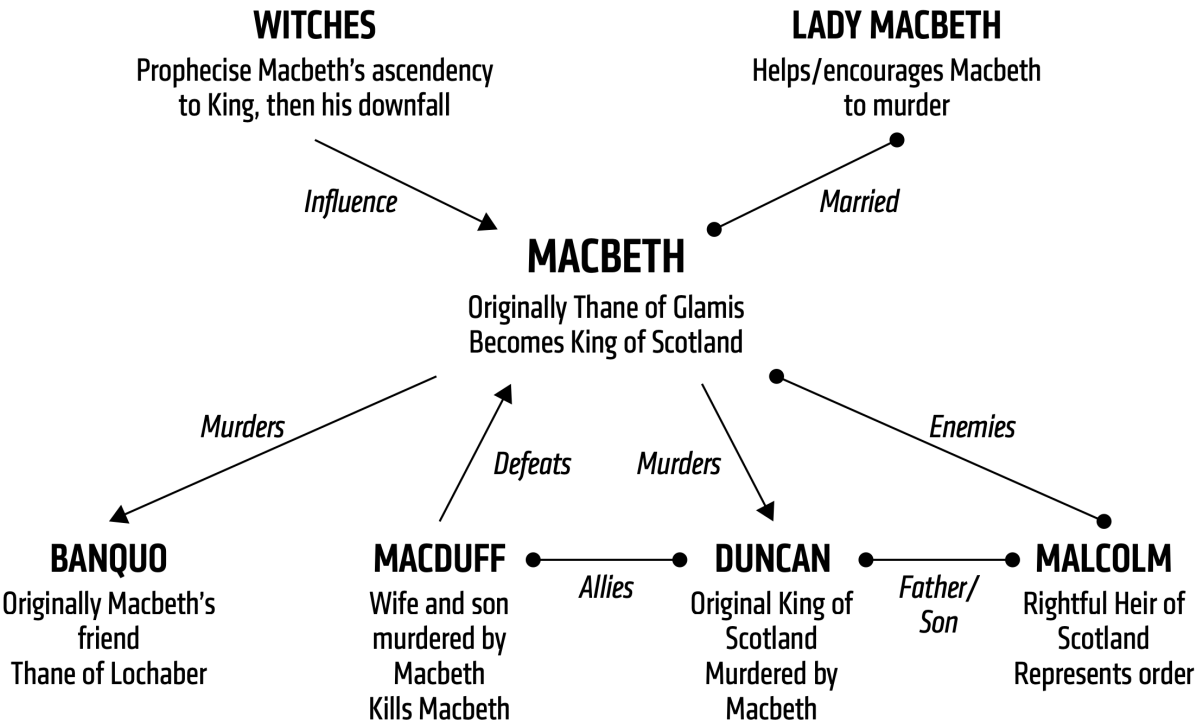
= ½ mv^2 = W/t **= F x s** = mc∆T **= mgh** biofuel **chemical** conduction **conservation of energy** dissipate **distance** efficiency **elastic potential** electricity **electrostatic** force **fossil fuels** friction **geothermal** gravitational potential **heating** hydroelectric **insulation** Joule (J) **kilogram (kg)** kinetic **lubricant** magnetic **metre (m)** Newton (N) **non-renewable** nuclear **power** renewable **Sankey diagram** solar **specific heat capacity** store **thermal** tidal **transfer** useful energy **wasted energy** water waves **Watt (W)** waves **wind** work done

So, a brain dump on energy might start… *Energy cannot be created or destroyed but is only transferred from one store to another. There are eight energy stores. These are: kinetic, gravitational potential, chemical, elastic potential, internal (thermal), nuclear, electrostatic, and magnetic. Anything moving has a kinetic energy store. Anything raised a height has a gravitational potential store. Food, fuels and batteries are examples of chemical stores. Anything that can be squashed or stretched has an elastic potential store. A change in temperature means a change in the internal (thermal) store. There are four energy transfers: work done (mechanical), radiation…*

Knowledge Maps

Knowledge maps are like Brain Dumps in that you try to recall everything you know about a topic onto a blank piece of paper. The difference is that you connect ideas visually rather than in continuous prose. As with Brain Dumps, once finished, look at your class notes, textbook and/or revision guide and check that what you've written is correct. Then look at what you've forgotten and focus on this. Here are two entirely different examples:



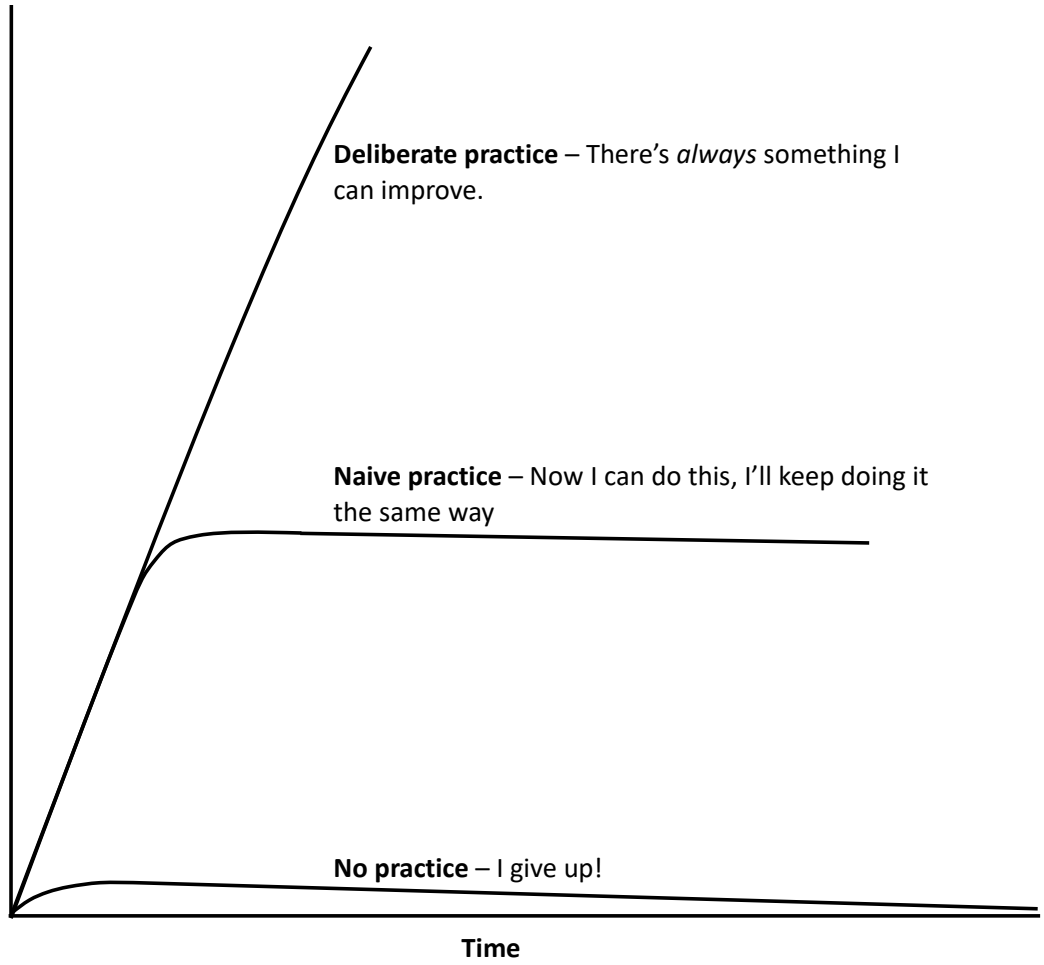


(Taken from Sweller's Cognitive Load Theory in Action *by Oliver Lovell)*

Not All Practice Is Equal!

So, practice makes perfect, right? Erm, not quite. That's because not all practice is equal. Echoing the flowchart at the beginning of this booklet, practice requires effort if it's to have an impact.

We might, for example, simply go through the motions, repeating what we've done before, including our mistakes. For instance, I've typed regularly for about twenty-five years. After an initial acceleration in my accuracy and speed, I plateaued a long time ago. Regarding progressing my typing, I've been employing what is known as naïve practice. If I want to see a real gain in my typing ability, it's deliberate practice I need to do.



Deliberate practice is always performed with a clear goal in mind, i.e., it consists of activities purposely designed to improve performance. Continuous feedback, which coaches provide elite athletes or musicians, is crucial to the success of this process. They make suggestions for improvement and hold the person to account; they are constantly raising the bar and demanding the best. Sadly, we can't all have our own coach. Instead, we must find other ways of continually sourcing feedback.

Many learning strategies outlined in this booklet provide explicit feedback on what you do and don't know, allowing you to focus on future strategies better. They are all proven to deliver tangible gains in our learning.

What does deliberate practice look like?

Benjamin Franklin (1706-1790), renowned as ‘America's first great man of letters’, developed his extraordinary writing skills through a remarkable process of self-improvement. This process demonstrates the immense value of feedback and deliberate practice.

As a teenager, Franklin received crucial feedback from his father on his writing. His father praised Franklin's spelling and punctuation but pointed out deficiencies in elegance, method, and clarity. This balanced approach to feedback—offering praise first, then supporting criticisms with examples—serves as an excellent model for providing evaluations.

In response, Franklin devised an ingenious programme of self-improvement:

1. He found superior examples of prose (*The Spectator*) to study.
2. Franklin would read articles from *The Spectator*, make notes on each sentence, and later attempt to rewrite the sentences in his own words. He identified and corrected his mistakes by comparing his versions with the originals.
3. To enhance his vocabulary, Franklin rewrote essays in verse, which required a diverse vocabulary to meet the demands of rhyme and meter. He later converted these poems back into prose, further refining his sentence structure. Again, he compared his work to the original to identify faults.
4. Franklin developed a method to improve the organisation of his writing. He wrote notes on separate slips of paper, mixed them up, and then later attempted to reconstruct the original essay. This exercise allowed him to practice organising his thoughts coherently. Yet again, he compared his work to the original to identify faults.

Franklin's method closely aligns with the principles of deliberate practice:

1. He identified specific areas for improvement.
2. He created structured exercises to target these areas.
3. He engaged in high-volume repetition.
4. He sought immediate feedback by comparing his work to the original.

Franklin pursued this rigorous practice diligently despite his demanding apprenticeship, often working early mornings, late nights, and Sundays when he should have been at Church.

The above illustrates the critical role of feedback in skill development. Franklin's initial feedback from his father sparked a journey of self-improvement. He then created a system to provide himself with continuous feedback, comparing his work to superior examples. This constant cycle of practice and feedback allowed Franklin to refine his skills systematically, demonstrating how effective feedback and deliberate practice can lead to extraordinary improvement.

Powerful Feedback

Effective learning is about more than endlessly repeating the same information. It's about identifying your weaknesses and addressing them head-on. Paying attention to the feedback from your retrieval practice can make your revision more targeted and efficient.

Understanding Feedback from Flashcards

- Identify Weak Areas: Pay attention to which flashcards you consistently struggle with. These indicate areas that need more focus.
- Track Progress: Record how often you get each card right or wrong. This will help you see improvements over time and pinpoint persistent challenges.
- Adjust Content: Modify cards that are too easy or too difficult. Simplify complex cards or add detail to overly simple ones.
- Spaced Repetition: Use feedback to determine the intervals you review each card. Review difficult cards more frequently and easier ones less often.

Utilising Feedback from Brain Dumps

- Highlight Gaps: After completing a brain dump, compare your notes to your study materials. Highlight any missing information or inaccuracies.
- Focus on Gaps: Use identified gaps to guide your next study session, concentrating on these areas to build a more comprehensive understanding.
- Reflect on Understanding: Assess the depth and breadth of your knowledge. Are there areas where you only have a surface-level understanding? Use this insight to deepen your study.
- Revisit and Revise: Perform brain dumps on the same topic regularly to track progress. Use feedback to revise your study strategy, focusing on areas that show little improvement.

Incorporating Feedback from Knowledge Maps

- Visualise Connections: Consider how concepts are connected as you create a knowledge ma. Identify any missing links or areas where connections are unclear.
- Identify Key Concepts: Use the map to pinpoint key concepts central to your understanding. Ensure you have a solid grasp of these before moving on to more complex ideas.
- Spot Gaps: Look for areas in the map that need more detail. These gaps indicate where further study is required.
- Iterate and Expand: Continuously update your knowledge map as you learn more. Use it to track your understanding and ensure all relevant information is included.

By actively engaging with feedback from flashcards, brain dumps, and knowledge maps, you can tailor your study approach to address weaknesses, reinforce strengths, and enhance learning efficiency.

SQ5R – Survey, Question, Read, Respond, Record, Recite, Review

The SQ5R study method encourages active reading, improving material comprehension and retention.

Survey

Before reading a chapter or passage, read the introduction and summary. Skim topic headings, bold-faced words, pictures, charts, and graphs to get an idea of the general structure and content before starting to read.

Question

Come up with questions from the topic and headings skimmed in the survey step. Ask who, what, where, when, why, and how questions: the best questions are general, covering main topics and important points. Doing this provides you with a purpose for your reading.

Read

Break the material into sections that take about 20 minutes to read. Look for: answers to your questions, key concepts, and supporting details. Pay attention to charts, graphs, tables, and pictures that present new information and tie together ideas from your reading.

Respond

After each section, think about the material you have just read and answer the questions you have asked. This can often be done during reading. This step aims to think about the material and notice what is important.

Record

Make summary notes – see the following sections (*Summarising and Note Taking – Delete, Substitute and Keep* and *The Cornell Note Taking Method*) for guidance on how best to do this.

Recite

Next, look away from the material and try to recite the key information and ideas in your own words. Then, reread the material until you can recall the most important points. This may be frustrating at first but it will lead to better understanding and save review time in the long run.

Review

After reading the entire chapter, scan and review the information aloud or in your head; discuss the material with a classmate if possible. Identify overall themes and relationships between concepts. Finally, edit your notes to improve them further.

(Adapted from https://www.etown.edu/offices/learning/SQ5R_Method.aspx)

Summarising and Note Taking – Delete, Substitute and Keep

Research has shown that summarising information is a highly effective way of making your learning more meaningful. One approach to summarising is to **delete** some information, **substitute** some information, and **keep** some information. Here's an example:

Original text *(from an AQA Religious Studies textbook)*	**Delete, substitute, keep**
Bar Mitzvah can literally be translated as 'son of the commandments'. It is a recognition of the fact that a young man has reached the age by which he is personally responsible for his religious acts, and is marked by his first reading in the synagogue of the Torah. From this point on, he is regarded as an adult in all religious respects, for example, he should use tefillin in prayers and can count as one of the minyan, for example. In fact, he remains Bar Mitzvah all his life, it is not just for one day, as it refers to the duty of keeping the mitzvot, which is incumbent on all Jews. Males lead the service in an Orthodox shul and so reading from the Torah is a way showing the change in status from a child to an adult. Girls have different roles within Jewish life and so they have different ceremonies. Girls reach the age of maturity at twelve, and it is common to recognise that through the Bat Mitzvah ceremony. There is no special ceremony, and it is common, especially in the Orthodox community to celebrate this at home, with the girl reciting a blessing and talking about the importance of the day. In the Reform and Liberal, and many of the Conservative, traditions, in recognition of changing societal norms and a sense of equality, there are special events in the synagogue. In the Reform and Liberal traditions, a girl may read the Torah at synagogue, so the ceremony will be the same whichever gender.	Bar Mitzvah ~~can literally be translated as 'son of the commandments'. It~~ ~~is a recognition of the fact that a young man has reached the age by which he is personally responsible for his religious acts, and~~ is marked by ~~his~~ a young man's first reading in the synagogue of the Torah. From this point on, he is regarded as an adult in all religious respects~~, for example, he should use tefillin in prayers and can count as one of the minyan, for example. In fact, he remains Bar Mitzvah all his life, it is not just for one day, as it refers to the duty of keeping the mitzvot, which is incumbent on all Jews.~~ Males lead the service in an Orthodox shul and so reading from the Torah is a way showing the change in status from a child to an adult. ~~Girls have different roles within Jewish life and so they have different ceremonies. Girls They reach the age of maturity at twelve, and it is common to recognised that through the Bat Mitzvah ceremony.~~ Girls reach the age of maturity at twelve and have different ceremonies, such as the Bat Mitzvah. ~~There is no special ceremony, and~~ it is common~~, especially~~ in the Orthodox community to celebrate this at home~~, with the girl reciting a blessing and talking about the importance of the day. In the Reform and Liberal, and many of the Conservative, traditions, in recognition of changing societal norms and a sense of equality, there are special events in the synagogue.~~ In the Reform and Liberal traditions, a girl may read the Torah at synagogue, so the ceremony will be the same whichever gender.

Summary: Bar Mitzvah is marked by a young man's first reading in the synagogue of the Torah. From this point on, he is regarded as an adult in all religious respects. Males lead the service in an Orthodox shul, so reading from the Torah shows the change in status from a child to an adult.

Girls reach the age of maturity at twelve and have different ceremonies, such as the Bat Mitzvah. In the Orthodox community, it is common to celebrate this at home. However, in the Reform and Liberal traditions, a girl may read the Torah at synagogue, so the ceremony will be the same for whichever gender.

This approach is so effective because of the need to really analyse the information you're trying to summarise.

Here's another example.

Original text	**Delete, substitute, keep**
The chemical reactions that take place in a cell are controlled by a group of proteins called enzymes. Enzymes are biological catalysts. A catalyst is a chemical which speeds up a reaction without being used up itself. It takes part in the reaction, but afterwards is unchanged and free to catalyse more reactions. Cells contain hundreds of different enzymes, each catalysing a different reaction. This is how the activities of a cell are controlled – the nucleus contains the genes, which control the production of enzymes, which then catalyse reactions in the cytoplasm: genes → proteins (enzymes) → catalyse reactions Everything a cell does depends on which enzymes it can make, which in turn depends on which genes in its nucleus are working. What hasn't been mentioned is why enzymes are needed at all. They are necessary because the temperatures inside organisms are low (e.g. the human body temperature is about 37 °C) and without catalysts, most of the reactions that happen in cells would be far too slow to allow life to go on. The reactions can only take place quickly enough when enzymes are present to speed them up. It is possible for there to be thousands of different sorts of enzymes because they are proteins, and protein molecules have an enormous range of structures and shapes.	~~The chemical reactions that take place in a cell are controlled by a group of proteins called enzymes.~~ Enzymes are <u>proteins that are</u> biological catalysts~~. A catalyst is, a~~ chemical<u>s</u> which speeds up a reaction without being used up ~~itself. It takes part in the reaction, but afterwards is unchanged and free to catalyse more reactions. Cells contain hundreds of different enzymes, each catalysing a different reaction. This is how~~ the activities of a cell are controlled **–** <u>because</u> the nucleus contains ~~the~~ genes, which control the production of enzymes, which then catalyse reactions in the cytoplasm: genes → proteins (enzymes) → catalyse reactions ~~Everything a cell does depends on which enzymes it can make, which in turn depends on which genes in its nucleus are working.~~ ~~What hasn't been mentioned is why~~ enzymes ~~are needed at all. They~~ are necessary because ~~the temperatures inside organisms are low (e.g. the human body temperature is about 37 °C) and without catalysts,~~ <u>the body's temperature is so low (37°C) that</u> most of the reactions that happen in cells would be far too slow to allow life to go on. ~~The reactions can only take place quickly enough when enzymes are present to speed them up.~~ ~~It is possible for there to be thousands of different sorts of enzymes because they are proteins, and protein molecules have an enormous range of structures and shapes.~~

Summary: Enzymes are proteins that are biological catalysts, chemicals which speed up a reaction without being used up. The activities of a cell are controlled because the nucleus contains genes, which govern the production of enzymes, which then catalyse reactions in the cytoplasm:

genes → proteins (enzymes) → catalyse reactions

Enzymes are necessary because the body's temperature is so low (37°C) that most reactions in cells would be far too slow to allow life to go on.

Cornell Note Taking Method

This is the best way for taking and reviewing notes.

1. Write notes on the area in question using the tips below.
2. Create recall cues one or two days later.
3. After a few days, write a summary of the key points.
4. At any future point, cover the notes and summary and use the recall cues to test yourself.

Topic:	**Sub-topic:**	**Date:**
Recall cues Questions and tasks based on the notes opposite	**Notes** Tips • Bullet points • Symbols and abbreviations • Write in your own words (don't mindlessly copy) • Make sure it makes sense to you What to write • Keywords and ideas • Important dates / people / places • Diagrams / charts • Formulas • Examples / case studies • Critical analysis, e.g. strengths/weaknesses Adapted from https://chloeburroughs.com/choose-best-note-taking-method/	
Summary Summarise the main points in the notes above. Think about: • Why is this info important? • What conclusions can I draw?		

Cornell Notes Checklist

Ensure your page has a clear title ☐
Identify which topic the page relates to ☐

Stage 1: Notes (Day 1)

Use bullet points for clear organisation ☐
Employ symbols and abbreviations for efficiency ☐
Write in your own words to enhance understanding ☐
Emphasise keywords and key ideas (e.g., by underlining or highlighting) ☐
Include any important studies with their publication years ☐
Insert diagrams where appropriate to illustrate concepts ☐
Provide relevant examples to support ideas ☐
Evaluate theories, studies, and concepts as you go ☐

Stage 2: Recall Cues (Day 3)

Create questions based on the main ideas in your notes ☐
Formulate tasks that require application of the concepts ☐
Ensure cues cover all key points from your notes ☐
Make cues specific enough to test understanding ☐
Include a mix of factual and analytical cues ☐
Write cues that encourage critical thinking ☐
Use cues to highlight connections between different concepts ☐
Ensure cues are clear and concise ☐

Stage 3: Summary (Day 5)

Synthesise the main ideas from your notes ☐
Keep the summary concise (aim for about 2-3 sentences) ☐
Include only the most crucial information ☐
Use your own words to demonstrate understanding ☐
Highlight any overarching themes or connections ☐
Avoid introducing new information not covered in the notes ☐
Ensure the summary provides a clear overview of the topic ☐
Review and refine the summary to ensure accuracy and clarity ☐

Topic: Weimar Republic (WR) in 1923 — Stresemann

Recall cues

What crisis did the WR suffer in 1923?

What did this mean to the average citizen?

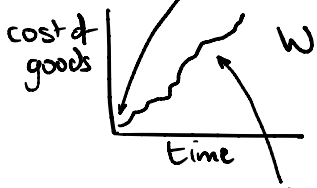
What prompted this crisis?

Name 4 things Chancellor Stresemann did that helped overcome this crisis?

What effect did each of these have?

Notes

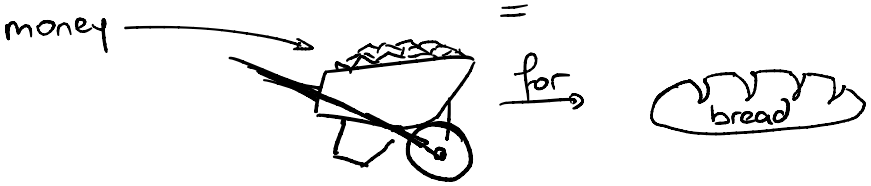
{ govt. failed to make reparation payment in late 1922



WR on verge of collapse socially AND economically

HYPERINFLATION CRISIS

=



- Aug 1923 – STRESEMANN becomes Chancellor and over 3 months.... ~~HYPERINFLATION CRISIS~~

↓ How?

① calls off passive resistance of workers in Ruhr ⇒ goods produced again; ends printing of £ for workers

② Promises to restart reparations (Belgium & France leave Ruhr by 1925). See also: The Dawes Plan (1924) and The Young Plan (1929).

③ New currency, Rentenmark, introduced. Limited printing ⇒ £ ↑ value ⇒ economic confidence ↑

④ Reduces government spending ⇒ budget deficit ↓

Summary

Germany fails to pay France & Belgium → invade Ruhr and sieze goods → HYPERINFLATION

Germans go on strike = passive resistance

Govt. prints lots more money → CRISIS

Stresemann elected Chancellor

– solves crisis by

① Ends strikes ② Promises to restart reparations

③ New currency ④ Reduces govt. spending →

HYPERINFLATION:

Jan '22: £1 = 764 marks

Jan '23: £1 = 71,888 marks

July '23: £1 = 1,413,648 marks

Sept '23: £1 = 3,954,408,000

Topic: Covalent Bonding

Recall cues

In covalent bonding, electrons are ....?

This results in each atom involved achieving a ....

Between what elements are covalent bonds formed?

What is a covalent bond?

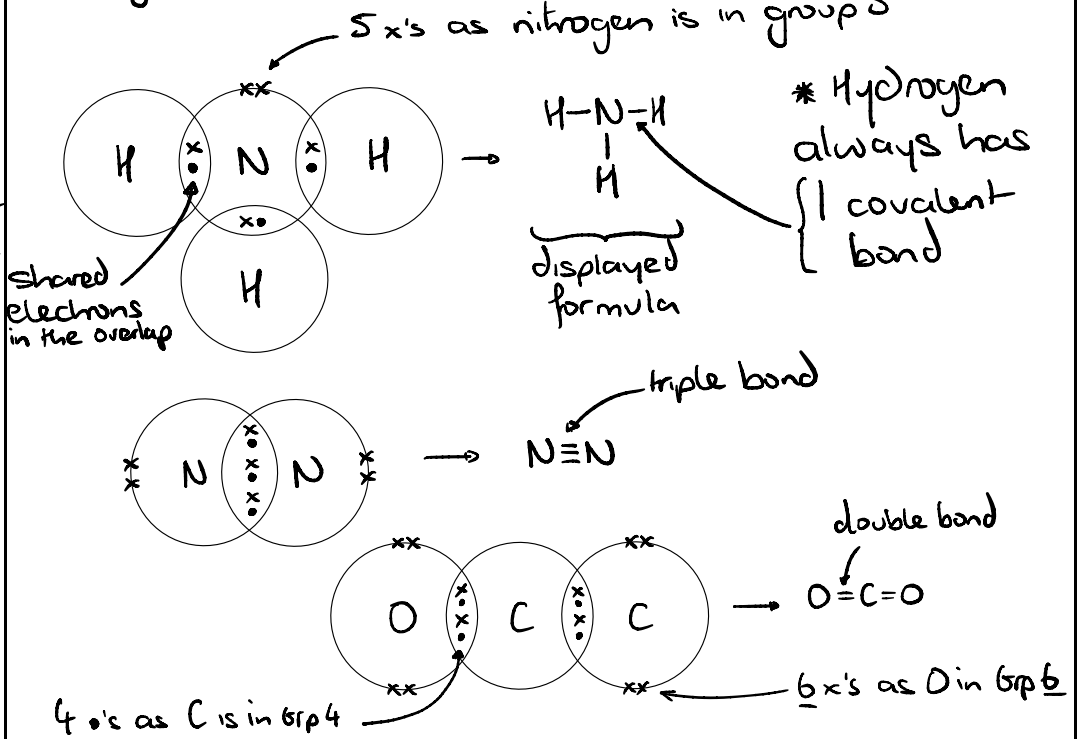
How do you work out how many covalent bonds an atom has?

Draw dot-and-cross diagrams for:
- NH_3
- N_2
- CO_2
- H_2O
- CH_4

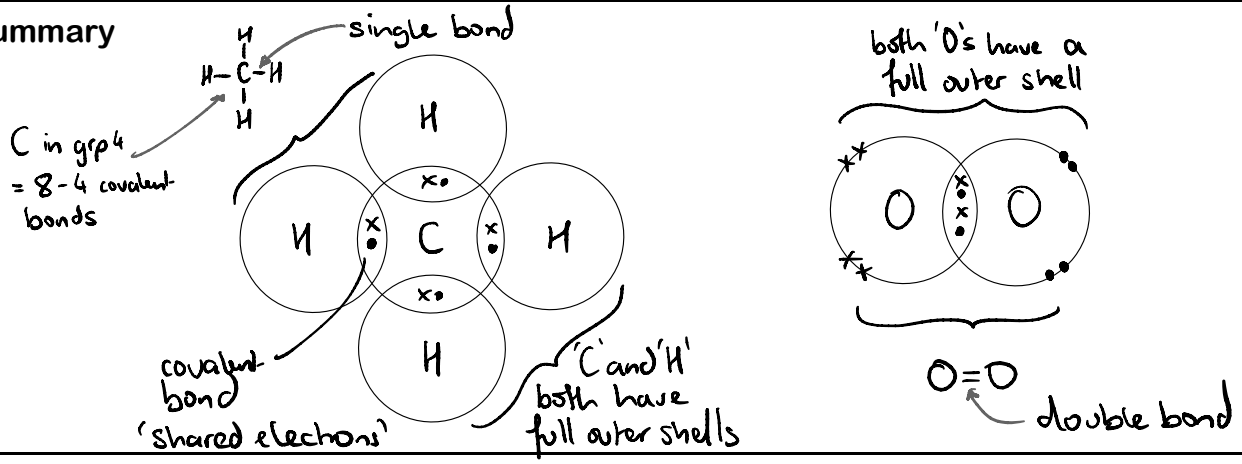
Notes

- Covalent bonding involves the sharing of electrons → each atom involved ends up with a FULL OUTER SHELL.
- Occurs between non-metals only
- A covalent bond is a shared pair of electrons (x•)
- 8 − group no.* = the no. of covalent bonds

E.g. nitrogen has 8 − 5 = 3 covalent bonds.



Summary



Folding Frenzy

You can complete the 'folding frenzy' learning strategy in one sitting or spread it out over time. Here's how you would go about it, with the option of taking breaks between stages:

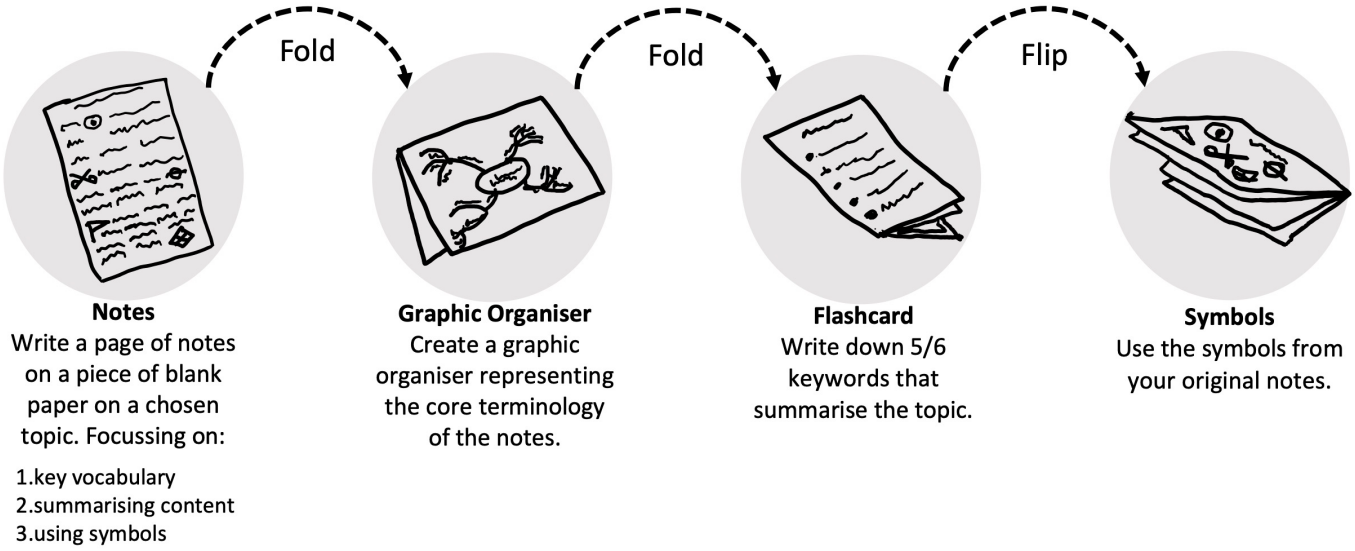
1. **Notes**. Begin by writing a page of notes on blank paper about a specific topic. As you write, focus on key vocabulary, summarising content, and using symbols.

2. **Graphic Organiser**. Fold the paper and flip it over. Now, create a graphic organiser representing your notes' core terminology on this new side. This helps you visualise and structure the information.

3. **Flashcard**. After completing the graphic organiser, fold the paper once more. Write down 5 or 6 keywords summarising the topic in this new section. This condensed version helps reinforce the most crucial points.

4. **Symbols**. Fold the paper to reveal the last section. Use the symbols from your original notes on this last side. These act as visual cues to help you recall the information.

Summary of Method



Allowing for small gaps in time between stages allows you to process the information more thoroughly. This spaced approach can be particularly beneficial for retention, allowing your brain to consolidate the information between each stage.

Using Your Folding Frenzy

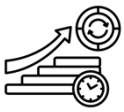
Once you've created your folding frenzy, whether in one go or over a period of time, you can use it in several ways:

- **Self-testing**: Use the words or symbols sides to test yourself, then unfold the paper to check your answers.
- **Peer testing**: Have a partner create retrieval practice questions based on your folding frenzy and vice versa.
- **Knowledge regulation**: Organise your folding frenzies into 'stacks' based on your level of understanding:

    1. Picture side up: You're exam-ready.
    2. Flashcard side up: You're almost there.
    3. Graphic organiser side up: You understand the material but have low recall.
    4. Notes side up: You're just starting.

By using this multi-layered revision technique regularly, either in one sitting or spread out over time, you'll rigorously encode and synthesise knowledge for better retrieval during exams.

Successful learning in a hardshell



If you're going to accelerate your learning, you must work hard *and* well. Both have to happen continuously over a length of time. This booklet is aimed to help you achieve both of these things.

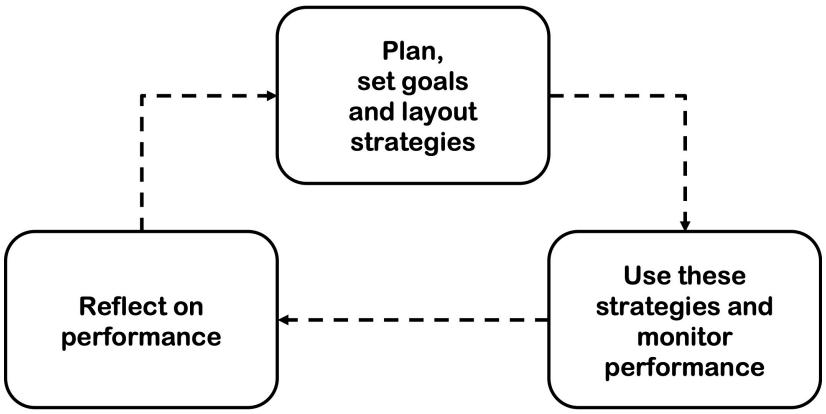
There are, sadly, no quick fixes. When it comes to learning, we're *all* tortoises.

1 2 3 4 5 6 7 8 9

But we have the choice to run as quickly as possible and train to get faster and faster. A combination of these two things will determine how far we get.

1 2 3 4 5 6 7? 8 9

We have more control over our learning than you may think; if you focus on the *process,* the *outcome* will take care of itself. Here's what the process might look like.



In addition, you need to develop the right habits to support the process. The strategies you employ must require effortful thinking. A simple question that you can repeatedly ask yourself to help guide your decisions and actions is:

What would an effective learner do?

Your goal is to become a more and more effective learner. As you achieve this, your learning will accelerate. The question above will help you consider your decisions within the process above more objectively.

What follows is designed to provide you with strategies for removing potential barriers to learning, improving your study habits, employing more effortful thinking, and monitoring your progress. It will hopefully help you answer the question:

What would an effective learner do?

Questions That Self-Regulated Learners Ask Themselves

	Thinking about your thinking	Thinking about your emotions	Thinking about your environment
Planning before learning or performance task	• What kind of a task is this? • What is my goal? How will I know I have reached it? • What do I already know about the topic? • What additional information, if any, will I need? • What strategies should I use? (actively listening, taking notes, outlining, visually representing the material, occasionally self-quizzing, reviewing, or writing a summary) • What strengths can I bring to the task? • What are my weaknesses, and how can I make up for them?	• How interested and motivated am I to do the task, and how can I increase my interest and motivation if they are low? • What's the value or relevance of what I'll be learning? • How confident am I in my ability to learn this material? If not very, how can I increase my belief in my ability to learn it, without becoming over-confident? What similar tasks can I recall doing well in the past?	• What is the best environment that I can create for the task? • Am I in a good physical place and position to do this task? • Is the temperature right for me? How about the background sounds? • Have I had enough sleep? • Have I put potential distractions far, far away? • How much time and what resources will I need? Are these resources handy?
Monitoring during a learning or performance task	• Am I sure I know what I am doing? • Does my approach to the task make sense? • Am I making good progress toward my goal? • How focused am I? Am I getting tired? If so, how can I keep myself focused and alert? • How well are my strategies working? • What changes in approach or strategies should I make, if any? • What material is the most important? • What material am I having trouble understanding? • How does what I am learning relate to what I already know? • How is my thinking on the topic changing?	• If my interest and motivation are sagging, how is what I'm learning relevant to my experience or my future? • What material is challenging what I've thought about the subject? Am I resisting it? • Am I starting to get discouraged or give up? Am I thinking I'm just no good at this subject? How can I change this negative thinking? What similar tasks can I recall doing well in the past?	• Should I try another environment to see if it works better? • How about another physical position? • How are the temperature and background sounds working out? Am I staying away from distractions? If not, I have to get further away from them. • Do I need a short break to refresh my mind and body?

Evaluating after a learning or performance task	• How well did I achieve my goal or master what I set out to learn?
	• What can I recall and what do I need to review?
	• What were the most important points I learned? Can I see and organize the interrelationships among them?
	• What am I still having trouble understanding? What questions do I have to ask my teacher?
	• How does what I learned relate to other things I've been learning or have experienced?
	• How has my thinking on the topic changed?
	• Which approaches and strategies worked well? Which didn't?
	• What do I need to do differently next time I take on a similar task?
		• How am I reacting emotionally to my evaluation of my learning?
		  ○ Being pleased reinforces your motivation and other positive emotions you generated about the material and your ability to learn it.
		  ○ Being disappointed may lead either to you improving your learning strategies or defensively withdrawing your energy from the next learning or performance task.
		  ○ This last reaction can undermine the positive emotions needed to begin the next learning or performance task.
			• How well did I avoid distractions and stay on task?
			• If not that well, how can I avoid distractions more effectively in the future?
			• Do I need to experiment more with different physical factors to find the best working environment and break schedule for myself?

Elaboration

Elaboration is a powerful learning strategy that can enhance your comprehension and retention by connecting new information with what you already know. Elaboration is crucial because it transforms superficial learning into deep learning by fostering meaningful cognitive connections. It helps you not only remember information but also apply it in various contexts. Here are some methods you can use to incorporate elaboration into your learning:

1. **Self-Explanation**
    - Try explaining concepts in your own words. This helps you integrate new information with your prior knowledge and can improve your understanding and retention by actively engaging with the material.
    - Consider recording yourself explaining ideas and listening back to identify areas for improvement.

2. **Elaborative Interrogation**
    - Ask yourself "why" and "how" questions about the material. By interrogating the content, you can create connections between new and existing knowledge, which enhances memory retention.

3. **Mnemonics**
    - Use mnemonics, such as acronyms or rhymes, to help remember information. These memory aids provide alternative pathways for retrieving information from your memory.

4. **Generate Examples**
    - Come up with your own examples or scenarios that illustrate the concept.

5. **Comparisons**
    - Use metaphors, analogies, and similes to relate new concepts to familiar ones. This helps you bridge prior knowledge with new information, making it easier to understand and remember.

6. **Self-Questioning**
    - Generate your own questions about the material. This active engagement promotes critical thinking and helps you internalise the content.

7. **Use Visual Aids**
    - Create mind maps, diagrams, or sketches that illustrate relationships between ideas.
    - This can help you see connections that might not be apparent in text form.

8. **Write Reflective Summaries**
    - After studying, write a summary that includes your thoughts, questions, and potential applications of the material.