

Part 1: Concept Learning

Learn by teaching *ie. rubber duck debugging, the Feynman technique*

1. Attempt to **explain it simply** to someone else: write down or verbally describe [to a friend- real or imagined, a wall, a teddy bear] the concept in the simplest terms possible.
2. Scrutinize it; **highlight the parts you can't explain clearly**. Identify the "how" and "why" you can't answer, etc.
3. **Practice until a good explanation comes easily.** Don't shirk away from the hard parts.

Turn the abstract into concrete

- We remember vocabulary better when they're not abstract definitions. Apply them.
- Come up with everyday examples and metaphors.
Ex. Compare these two descriptions and think which is easier to remember...
When described as a scenario: "When you buy something on Amazon, the warehouse computer automatically shows there's 1 less item to sell, and 1 more item to restock."
When described by definition: "A method of accounting for inventory that records the sale or purchase of inventory immediately through the use of computerized point-of-sale systems software."

***Note:** You should probably memorize the formal definitions to cover your ass, but this helps for learning concepts.

Practice information retrieval; *People don't realize that information recall is a skill. In this day and age, it's one that we don't often have to practice because we rely on technology as an outboard brain (more than we think). Exercise this skill like a muscle.*

- Put the learning materials away. After at least an hour - write down/draw diagrams of everything you can think of on blank paper. **Take this opportunity to identify gaps in your info.**
- Do this once a week in various capacities to exercise the skill of recall, which is as important as understanding the info itself.
- This is different from flashcards because flashcards provide a trigger-- not having a trigger makes it more difficult to remember what you know.

Make outlines of each class and identify key learning objectives

1. Identify key concepts, + Ask yourself: "What do I know?" Add bullet points next to each vocab/formula/concept/etc. that you learned.
2. Ask yourself: "What do I not know?" Flesh out areas you struggle with for each week. Identify things that would help you grasp the topic better. **Go to office hours** or link up with someone. Two heads are better than one.
3. Ask yourself: "What's important to know?" Ascertain what's key, and improve on your notes.

Ask the right questions when practicing these techniques.

- To recap, read the discussion questions, read the lectures, do the readings-- **understand the prof's learning objectives for each class. What info/skills do they want you to take away?** Don't skip the hard stuff-- lean into it.
- When studying, write notes to compare, analyze, clarify-- **actively engage with the material.**

"What's the difference between?"

"Why does this happen and that doesn't?"

"What is the importance of...?"

"What is the connection between?"

Part 2: Memorizing Techniques

Spaced repetition *whether via *Brainscape, flashcards, written notes, etc.*

- Break your information into concise pieces
- Review for 30-60 mins, going over harder material more often.
- Review again **after an interval** of 20-60 mins, then use the **forgetting curve** to review again after an interval of 24 hours, then after 72 hours have passed, then a week, then 2 weeks, a month, etc. so things become rote by the time you need them (ie. midterms and final exams).
**Brainscape is a free website that allows you to build decks of flashcards and then shows you your weaker cards more frequently.*

Common mnemonics

- Create an acronym, or borrow one: "Dear King Phillip Came Over For Good Soup" > Domain, Kingdom, Phylum, Class, Order, Family, Genus, Species is one used in biology.
- Can be applied to rhyming and musical (like a commercial jingle) mnemonics.

Memory palace

- Have your grocery list, formulas, a paragraph, a set of flash cards, etc. in front of you.
- Think of a place you're familiar with-- a room, a house, a town, etc.
- Plan out a route, thinking about each feature and object.
- Take one or two items at a time; a sentence or sentence fragment if it's a literary article, parts of an equation if it's math, etc. and place them along your route.
- Pair each item with an object, exaggerate it, interact with it- make it humorous, make it memorable. (Eg. if you're memorizing parts of an equation like > $2(x+3)=(4x-1)/2+7$ and the first image is of your front door- picture yourself solving the first part of the equation to enter the door, if you have a mirror to your left- picture it as blurry until you solve the next step, and so on.)

Part 3: Study and Focus Tactics

Time Management & Focus

- Put your study time to good use. Set a timer for around 30 minutes (or whatever works best for you) and focus completely on the material. No messaging, no reddit, no answering texts from your boyfriend or best friend, etc. Then allow yourself a 5-10 minute break to answer texts, get coffee, etc.
- Check your concentration (esp with dense information) by stopping after every page to restate the main idea and sub points to yourself in your own words. Draw a diagram, make sure your notes reflect anything that you need to clarify, etc. **Bonus! Pairing your notes with images or diagrams so you have two points of reference for recall- think intently about how an image pertains to the information.**
- Keep a piece of scrap paper to your side. If something unrelated pops into your head, write it down and deal with it during your break.
- Build study time into your day. Not homework-- but review/engaging with your notes. Get up a bit earlier, make a cup of coffee. Open up your notes. Or maybe your best time is right after class. Or between classes. Whenever it is, **build it into a routine.**