



Study Hacks: The Most Effective Study Methods

Introduction

Highlighting, re-reading, and taking notes are some of the most common study methods used by students to learn new content. However, numerous studies show that these methods are not the most effective study strategies. The methods listed above are all considered passive studying, which may take less time and feel easier, but is not effective for long-term retention or critical analysis. This contrasts to active learning, where you are actively analyzing, synthesizing, and manipulating information, strengthening both your memory and comprehension. Read along for some effective active learning techniques that you can integrate into your learning.

Topic Flags

While going through this handbook, you'll likely notice these little icons at the edges of the page. These are used as markers to help you, as a learner, identify the kinds of methods that are best suited for your goals. For example, there are flags for methods used at different times throughout the school year, as well as flags that identify what kind of subject it would be best for.

Learner Flag

To indicate if this method is for visual, auditory, kinaesthetic or all types of learners!



Visual Learner



Auditory Learner



Kinesthetic Learner

Expertise Flag

To indicate if this method is student suggested and tested, or scientifically researched!

Click the flag to access a more in depth explanation of an expert method.



Student Reviewed



Expert Reviewed

Note from Webstraw

Thank you for opening this resource! At WebStraw, we have researched the most effective study techniques to share with students because we recognize that students are taught what to learn, but not how to learn. We hope that you find this compilation of study techniques useful in your studies and we wish you all the best in your endeavours! Be sure to check out our other guides!

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Passive vs. Active Recall

Material to Learn	Passive Recall	Active Recall
Lecture Notes	Re-read Notes	Identify main points in notes and explain in your own words
Assigned Texts and Articles	Read	Change chapter headings into questions and look for answers as you read
Assigned Problems and Exercises	Try to solve while looking at class examples	Try to solve on your own first and then look at class examples
Power Point Slides	Print out and read	Print and write possible test questions in the margins and quiz yourself on slide info
Lab Reports	Re-read Answers	Go to lab and quiz yourself while looking at models/materials

A | Spaced Repetition

ALL



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Introduction

Did you know that we tend to forget 90% of the information we learned within 3 days?! This is called the forgetting curve, and it illustrates the rate at which we forget information: when we use spaced repetition, however, the curve becomes much less steep.

Instructions

Step 1: Review your notes within 24-48 hours after first learning them.

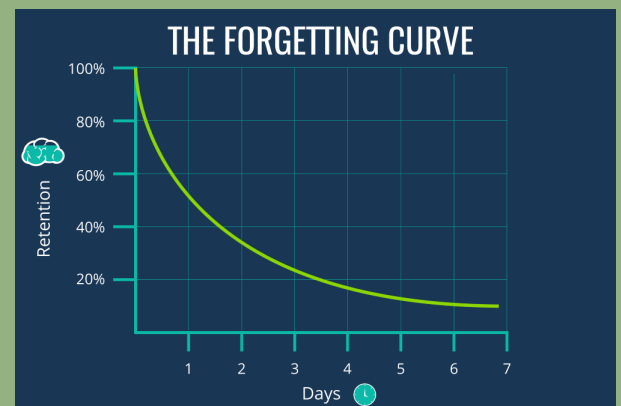
Step 2: After the initial review, try to recall the material again the next day; avoid re-reading, but rather see if you can recall the information without looking at your notes.

Step 3: Recall the material every 24-36 hours over the course of several days; this doesn't have to take hours because you are repeating the process so often.

Step 4: After several days, take out your material and study it all over again; try to do this 1-2 weeks before a big exam instead of cramming 10 hours the day before, as the information is much more likely to be committed to long-term memory.

Example

A	B	C	D	E	F
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Demand VS Supply	Electromagnetism	Demand VS Supply	Electromagnetism	Life Cycles	Demand VS Supply
Electric Field	Plants Cells	Electric Field	Plants Cells		Electric Field
		Life Cycles			
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Demand VS Supply	Electromagnetism	Life Cycles	Demand VS Supply	Electromagnetism	Life Cycles
Electric Field	Plants Cells		Electric Field	Plants Cells	
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Life Cycles	Demand VS Supply	Electromagnetism			Demand VS Supply
	Electric Field	Plants Cells			Electric Field
		Life Cycles			Life Cycles



B | Anticipation Guide

ALL



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Introduction

Anticipation guides are a method of creating a personalized study bank throughout the semester for each lecture in preparation for assessments by anticipating possible questions that your professor might ask.

Instructions

Step 1: Take your lecture notes and fill in any gaps of knowledge or questions you may have by using textbook readings, knowledge questions or signing up for office hours.

Step 2: Create some comprehensive flashcards using your notes or create some self-test questions. This is your anticipation guide.

Step 3: Review your comprehensive flashcards or self-test throughout the semester, and you'll see how much more prepared you are for the exam!

Example

Eukaryotes vs. Prokaryotes

STEP 1: The learning objective tells you to focus on the components of eukaryotes and prokaryotes. Take lecture notes to fulfill this objective.

STEP 2: In your comprehensive flashcards, you write down the question "Compare the similarities and differences between eukaryotic and prokaryotic cells".

STEP 3: Review your flashcards and test yourself throughout the semester

AVOID: Do not only study the questions that you are anticipating. The questions formed in the anticipation guide are meant to be used as supplementary tools and self-testing strategies along with understanding the material.

TIP: Refer to the lecture learning objectives throughout each class to know which concepts to focus on.

Review Similarities and Differences between Eukaryotic and Prokaryotic Cells

Eukaryotes

- Multicellular
- Membrane-bound organelles
- Linear DNA
- Has introns

Ex: Mammals, Plants

Prokaryotes

- Unicellular
- Free-moving organelles
- Circular DNA
- No introns

Ex: Bacteria, Archaea



Introduction

The acronym SQ3R stands for survey, question, read, recite, and review which are the five steps that a person can take in order to understand what they are reading.

Instructions

Step 1 - Survey: Skim the titles and subheadings of the chapter to predict main ideas that the author will be highlighting in a particular section. Scan through all the graphics and charts and pay attention to any bolded text.

Step 2 - Question: For each subheading and title, write down several questions that come to mind about the topic so that you are actively searching for answers. Use the class learning objectives as a prompt for creating questions.

Step 3 - Read: Read one section at a time and as you read, search for the answers to your questions.

Step 4 - Recite: After reading, see if you can answer the questions you have written down or if you can easily find the answers in the text

Step 5 - Review: Go over the questions and test yourself!

Example Phylogenetic Trees

STEP 1 - Survey: You see that the chapter will discuss, monophyletic, polyphyletic and paraphyletic trees

STEP 2 - Question: You write down a question about identifying types of trees

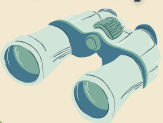
STEP 3 - Read: You write down key identifiers of each tree to answer your question.

STEP 4 - Recite: Practice reciting key factors of each type of phylogenetic tree

STEP 5 - Review: Test yourself!

AVOID: Do not write down questions that you already know the answers to and do not skip to the next section if a large portion of your questions remain unanswered. If a concept is challenging, take some extra time to really understand it before moving on.

Survey



Question



Read



Recite

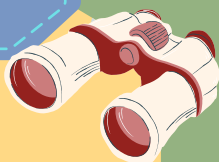


Review



C | SQ3R Organizer

SURVEY



Ask yourself the following questions when surveying a text:

1. What is the topic?
2. What is the title?
3. How is the text organized (look at subheadings and bolded words)
4. How do the graphics relate to the title

READ

Take the time to thoroughly read through the content. Keep your questions in mind



RECITE



An example of a summary:
Psychological disorders can be characterized by the abnormal behaviours of the patient. Abnormal in this case means distressing, dysfunctional and/or deviant behaviour. There are many categories of disorders including anxiety, mood, eating, dissociative and childhood. Each have their own biological, sociocultural, psychological and environmental causes which help identify the disorder

QUESTION

Remember to write down specific questions that you would like answered by the end of the reading. For example:

1. What are the biological factors relating to anxiety disorders?
2. What is the vulnerability stress model?
3. What is the most common anxiety disorder?



REVIEW

1. Too many emotional response neurotransmitters and not enough GABA
2. Given enough stress, each person is vulnerable to a psychological disorder
3. Social and Agoraphobias



D | Feynman Technique

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Introduction

The Feynman method is used for learning a concept quickly by explaining it in plain, simple language. The purpose of this method is to be able to identify gaps in your knowledge if you're unable to explain it in simple terms.

Instructions

Step 1: Choose a concept you would like to study.

Step 2: Pretend you are explaining this concept to a 6th grader by using simple terminology and understandable examples.

Step 3: Acknowledge areas of the topic where you had difficulty in explaining it and review and simplify those concepts further. Keep practicing until you feel confident in your understanding.

Example

Entropy

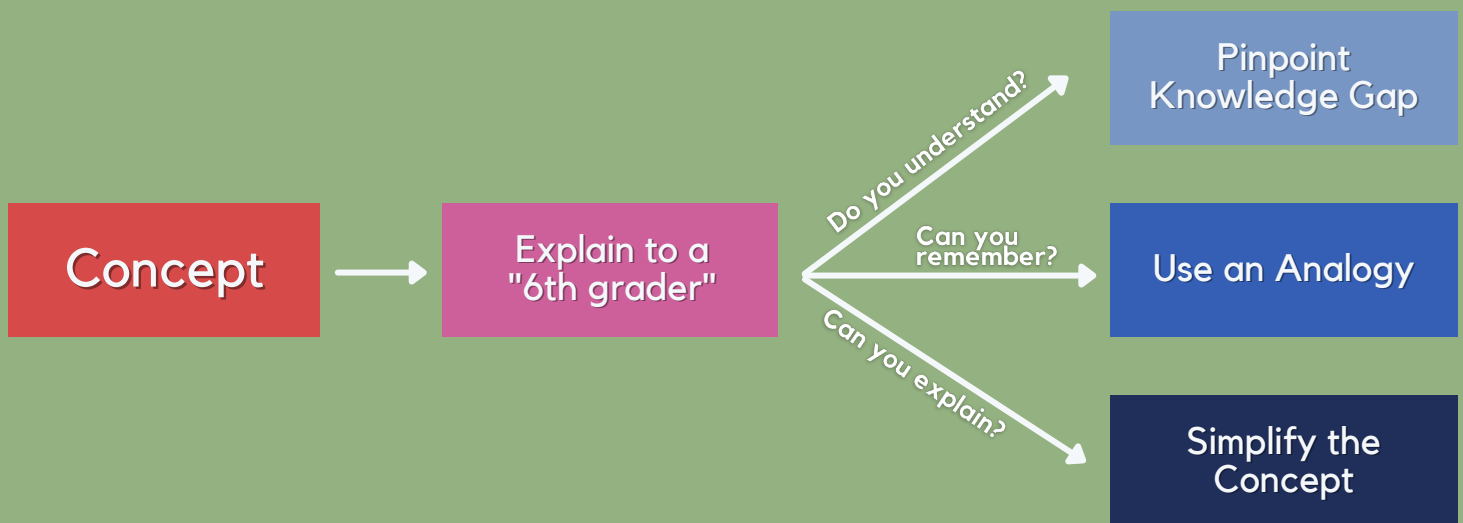
STEP 1: You would like to study entropy

STEP 2: Entropy is often known as the amount of disorder present in a system. An example of this would be an ice cube left out in the open, which will eventually end up melting. Before, the ice cube molecules were more compact, and as the cube melts the molecules are freer leading to an increase in disorder.

STEP 3: Practice the areas of the concept that you had difficulty describing

TIP: While working through the Feynman Technique, it is also useful to keep asking yourself why and how certain parts of the concept work

Example: Why will the ice cube melt? Why does this mean entropy increases?



E | Pomodoro

ALL



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Introduction

Do you find yourself losing focus when studying or taking “breaks” that end up with you scrolling through TikTok for 2 hours or watching an entire episode on Netflix? Well, then the Pomodoro technique is perfect for you! The Pomodoro technique allows you to alternate between focused work sessions and deliberate breaks.

Step 1



Prioritize tasks based on importance.

Step 2



Set an alarm for 25 minutes.

Step 3



Focus until the timer runs out.

Step 4



Take a short 5-minute break.

x4

Step 5

After 4 cycles, take a longer 10-20 minute break



TIP: Try to make your breaks 'productive breaks', such as cleaning up your desk or making a cup of coffee instead of reaching for your phone



Introduction

Anki is a flashcard app light years ahead of quizlet that makes memorization easier with the use of an algorithm that integrates the most important study techniques: active recall and spaced repetition. It allows for you to rank your confidence on each flashcard, and it will then present you the cards in accordance to the level of priority assigned to each one. Some flashcards will be given to you to review a few days later, whereas others may be meant to be reviewed the following day.



Pro-Tip: Make sure to include any relevant lecture slides or diagrams in the "Extra" section, this allows you to create a link between the definition and the slide it refers to. This can also improve convenience.

Instructions

Step 1: Create a deck!

Press the "create deck" button to create a new deck for a unit

Step 2: Add to the deck

Once you've created a deck, you can press the "Add" button to add different types of card to it

Tip: Use varying card types

Step 3: Be on top of your stuff!

"Due": Tells you how many cards you have to review for a deck

"New": Tells you how many new cards you have to learn for a deck

Tip: Do this DAILY, otherwise the cards WILL pile up

Step 4: Branch out!

Once you've gotten into the groove of doing your cards everyday, you can branch out and find new card types, different add-ons

Avoid: Not being honest with how well you know a specific card; for the algorithm to work most effectively, you should rank your confidence on each card accurately.

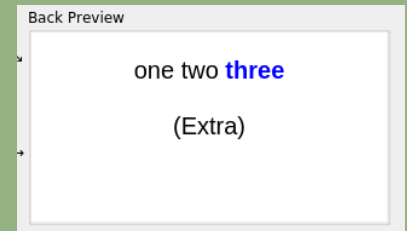
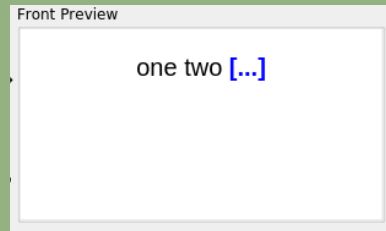
Avoid: Writing too much on a single card. Break it up into smaller, more digestible chunks.



Card Types

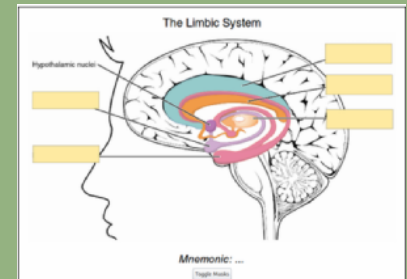
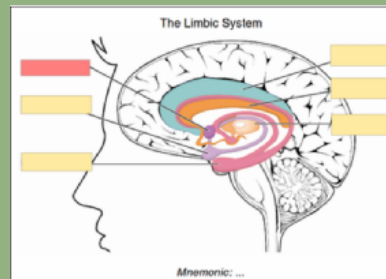
1. Cloze Deletion

This type allows you to transform sentences to fill in the blank style questions.



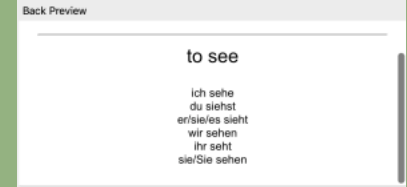
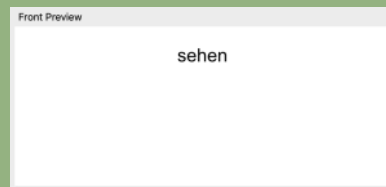
2. Image Occlusion

This card lets you hide areas of an image, with the option to 'hide all' or 'hide one, guess one'.



3. Basic Flashcard

This is the basic front and back flashcard that you're likely familiar with



Mistakes to Avoid

- Using Anki at the last minute
- Writing too much on a single card
- Not being honest with how well you know a specific card. For the algorithm to work best, you need to rank your confidence accurately!

G | Interleaved Practice

ALL



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Introduction

Interleaving involves studying multiple related topics at the same time, forcing your brain to **differentiate** between concepts, make **connections**, and continually **retrieve** information. If you study multiple subjects at the same time, you build stronger neural pathways in your brain which improves long-term retention and comprehension.

Instructions

Step 1: Choose your topics!

These topics could be given to you before an exam. If not, try to choose topics that are most related to each.

Step 2: Spread it out

Spread your chosen topic over the number of days you plan to study for; depending on the number of topics, try to spread them evenly throughout the study sessions

Note: This method can also work for different subjects, but experts suggest that it is most beneficial when subjects are somewhat related to each other

Benefits

Changing things up, whether by topic or subject, forces your brain to make new connections between similar concepts. This has been shown to be more effective than "blocked practice", which involves studying for one topic very thoroughly before moving on to the next.

Example

Let's say you're taking these 5 courses:

Calculus

Biology

Chemistry

Physics

Psych

See the next page for some Do's and Don'ts for planning your schedule

G | Interleaved Practice

ALL



DON'T: Study the same course or concept all day

4/5 MONDAY	4/6 TUESDAY	4/7 WEDNESDAY	4/8 THURSDAY	4/9 FRIDAY
5 hours of Calculus	5 hours of Biology	5 hours of Chemistry	5 hours of Physics	5 hours of Psychology

DO: Spread out your courses throughout the week!

4/5 MONDAY	4/6 TUESDAY	4/7 WEDNESDAY	4/8 THURSDAY	4/9 FRIDAY
				1 hour of Calculus
2 hours of Calculus	2 hours of Biology	2 hours of Calculus	2 hours of Physics	
				1 hour of Biology
2 hours of Chemistry	2 hours of Psychology	2 hours of Biology	2 hours of Psychology	1 hour of Psychology
				Extra time if needed!
1.5 hours of Physics	1.5 hours of Physics	1.5 hours of Chemistry	1.5 hours of Chemistry	