

The LEARN Method: An Interactive Guide for Effective Learning

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DR. KARLA LASSONDE



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About this textbook

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How to use this textbook

This text is not like a traditional textbook. You will not be reading long sections of text. Instead, I will be speaking directly to you, the learner, to improve your thinking about HOW YOU LEARN. Along the way, you will be asked to engage in small tasks like answering short questions or completing an activity that reinforces a topic.

Activities that require your direct feedback or input will be



marked with an  .

Your instructor may ask you to complete these activities and turn some of them in for them to further review or use in class. Whether you are given further instruction or not, it is in your best interest to actively engage in all text activities. As with any and all learning, you will get out of what you put in!

The text is separated into five sections of information:

Listen

Elaborate

Associate

Retrieve

Night

Each section represents one module of instruction. Under each module you will see a series of activities. Each activity can be done on its own and it is best that you move through each activity in order. However, you should feel free to move back and forth to repeat or reinforce information by selecting a section more than once.



When you see this symbol: this signals an activity or part of an activity that your instructor may collect outside of the in-textbook activities. Be prepared to turn in your reflection or answers when directed to do so by your instructor.

Example:



Activity #E2.1

How would you encourage someone to remember your name better? Maybe it is something about how your name sounds that is memorable. For example, my last name is “Lassonde,” so I have students imagine a lasso to recall how my name begins. Perhaps it is a visual image your name makes you think of. It can be anything. The more creative you are, the better.

You will have other activities that you can complete right inside the textbook such as a matching activity or a multiple choice question. Make sure you complete these activities because they will help you practice what you are learning!

Example:



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LEARN: Introduction



Did anyone ever teach you how to learn?

If you are like most students, then the answer is “no.”

In this text, you will be introduced to a method of instruction

called **LEARN**.

LEARN stands for the five factors of learning success:

L = Listen

E = Elaborate

A = Associate

R = Retrieval

N = Night

I will explain how each strategy can contribute to your ability to remember. You will have an opportunity to use these strategies through the descriptions and activities that follow.

What does it mean to want to learn? Consider what learning looked like when you were small. Did you love to find out everything you could about baseball or bugs? Were you excited to learn how to ride a bike or swim?



When my son was in Kindergarten, I joined him on a field trip to an apple orchard. Imagine the learning that took place that day as the children touched, smelled, and plucked apples from the trees. From washing, sorting, and final packing, they were immersed in everything apple.

I'm curious to hear about your own childhood experiences of learning something new. What were you excited to learn? What did you learn? How did learning that new thing make you feel?



Activity #1

Describe a childhood experience when you were really excited to learn something new.

I'm also curious to hear about a time currently (in college or similar) when you were excited to learn. What were you excited to learn? What did you learn? How did learning that new thing make you feel?



Activity #2

Describe a time currently (in college or similar) when you were excited to learn.

It seems like learning in our primary and secondary education, at times, doesn't unfold out of curiosity. With tests and standards taking priority, many students and educators focus on content memorization, leaving curiosity behind. It is important to be curious. Now think about what a college course experience is like. Are students always having an immersive experience? Do they appear curious, like kindergarteners at an apple orchard?

Research has repeatedly shown that successfully completing your college education can significantly impact your future happiness and well-being. Taking charge of your own academic success is the first step toward becoming a strategic learner. Strategic learners are students who set their own academic goals and know how to take responsibility for reaching those goals.

Many of us have misconceptions about how learning works. One example is that students think they will learn best when teaching is matched to a preferred learning style.

Consider this set of prompts to determine things you may know about learning. You will be selecting whether you believe the statements to be true or false.



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Use the blue arrow on the right side to move through the questions.

If you didn't know the answers to these, that is okay. Throughout this text, we will learn information that either debunks some of these misconceptions or reinforces some of the true information.

This popular YouTube video will help you understand why teaching to learning styles is perhaps one of the biggest myths in learning. If you believe this to be true, don't worry, there are many learning myths.



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PART I
LISTEN

1. Listen



“L” LISTEN

The “L” of **LEARN** stands for “**LISTEN**”. Learning requires listening in the form of attention. You have probably been asked to pay attention many times in your life. Most students are surprised about the importance of attention in learning. However, students are not usually given instruction on how to

pay attention and how critical attention is for further learning to take place. In addition, there are so many things competing for our attention when we are trying to learn. In this module, I will describe the importance of listening and attention for overall learning to occur.

Learners gain knowledge and skill by:

- Understanding the limits of attention
- Practicing listening
- Engaging in exercises to build focus and motivation to learn

I would like to ask you a few questions about your own listening skills as they are applied to learning.



Use the blue arrow on the right side to move through the questions.



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These questions will help you to assess your own listening skills and identify areas where you may need to improve. By understanding your own strengths and weaknesses, you can

develop strategies to improve your listening skills and become a more effective learner.

One of the foundations for successful learning is paying attention. It takes curiosity and motivation for learners to focus and really immerse themselves in a subject.

The science of how we learn (yes, learning can be described as a science because we need to test ideas for how learning best works and then refine our ideas – the heart of the scientific method) is part of a broader field called Cognitive Psychology. Cognitive psychologists study how mental processes like thinking and problem-solving influence behavior. Many topics in cognitive psychology (because you cannot “see” your brain thinking by looking at a person) require a metaphor. A good metaphor for the process of paying attention is to think of a spotlight. A spotlight highlights an actor on a large stage. This spotlight is required to focus on one specific thing. Comparing attention to a spotlight can help you understand three important features of attention:

- 1.) It is selective
- 2.) It is shiftable
- 3.) It is divisible

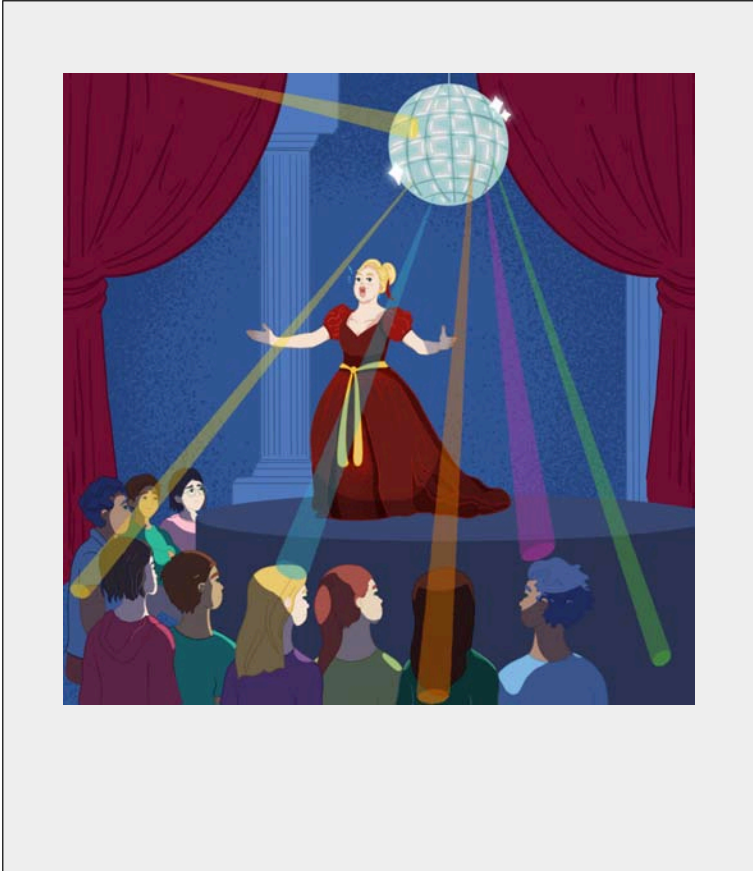
Attention is like a spotlight, and we can use attention to **select** or choose what we are listening to.



Attention can change easily. Like a spotlight, we can start to listen to one thing, and then, suddenly, our attention **shifts** and something else has captured our focus.



Attention can be **divided** to an extent. For example, attention is limited like any other human resource (e.g., breath, strength, and endurance). We only have so much of it, and sometimes we cannot choose how we use it.



For example, it may seem possible to send a text while listening to a lecture video. You may have the attention to type and send the text while still “following” along with the teacher. The problem for most is that our attentional resources are maximized by switching from putting a “spotlight” on the video lecture to typing the text. Unfortunately, we may not notice how our attention has changed and stopped us from understanding the video. If a teacher stopped the lecture, though, at the exact moment you sent the text and asked a question, it is quite likely you could not answer the question nearly as well as if you hadn’t shifted what you were paying

attention to. This happens all the time, and the point is we are just not that good at deciding when and how we pay attention.

2. Listen Activity 1

Activity #L1: Selective Attention, Find the Mascot

Do you remember the “Where’s Waldo?” books from your childhood? They are a “seek and find” style book where you look for one thing in a very busy scene of many, many objects. The task can be easy or more difficult depending on the image and environment.

Our version is called “Find the Mascot.” Most of you are familiar with team mascots. They can often be found in a crowded sports arena and are dressed in the same team colors as the players and fans. Sure, almost anyone can spot the mascot if it is dancing center court during game intermission; however, what happens when the mascot gets “lost” among fans in the bleachers?

Check out this picture.



Finding this same mascot among the crowd is not as easy as you might think. Check out this picture of the crowd and “Find the mascot.”



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If you haven't found him yet: focus on the middle of the picture; still don't see him? Once you see the mascot, it is difficult to go back in time and unsee it.

Use the right arrow to slide to the next photo and see if your identification was correct.

This process of finding one thing among many demonstrates how attention is SELECTIVE. Our attention at any given moment can be highly focused on one thing (like the mascot) or divided among many concepts or ideas (the crowd, the mascot, the players, or in some cases, we may not even be looking at the correct picture).

Listening while we learn is similar to this activity. It sometimes takes all of our focus to understand a new topic or idea. If our listening is not focused or we fail to even listen at all, it becomes difficult, if not impossible, to learn.

The first feature of attention you need to know for effective learning is **“IT IS SELECTIVE”**.

3. Listen Activity 2

Activity #L2: Selective Attention, Icon Test

When my niece was about 2 years old, we were driving down a commercial district in town. From her car seat, she pointed out the window toward a McDonald's sign and said – “I'm loving it.” Without the ability to read and really know the intentions of this iconic food brand, she was drawn to SELECT the hamburger chain out from a crowd of signs and billboards. Marketing tactics are designed to build a relationship between product and consumer. With success, these tactics lead to brand familiarity that is hard to unlearn.

Do you have strong consumer relationships with brands? See if you can pair these brand slogans with their iconic company:



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Activity #L2.1:

Do you have a favorite brand slogan?

Remember, the key to selective attention; at any given moment, our attention can be highly focused. Pretend you are scrolling through cable TV channels. All you keep seeing are ads. This is annoying, but my guess is that you can, even with a fairly fast pace of channel surfing, select the brand being advertised. Try it out:

Check out these popular brand icons in the activity below:

Watch the video then try the activity below to see what you can recall from the images you saw. Try not to refer to the video when completing the activity.

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Icons are an extremely important part of remembering. We all benefit from using imagery to learn new information. Your keen ability to select the brand name/icon association demonstrates our unique relationship with images. In fact, research has found that the average person can recognize between 85-90% of images that they have seen before.

Just like “McDonalds” spending millions of dollars to gain your business through advertisements and brand loyalty, you need to be able to dedicate that same level of selective attention (not money 😊) to what you are learning. My students often tell me they can remember the picture on the page the information is located on in their textbook but still have trouble remembering the important information. In a later lesson, we will talk about how pairing images with new knowledge can enhance memory.

4. Listen Activity 3

Activity #L3: Select the Difference

Selective attention is all about focusing your mental energy. Remember the spotlight? When your attention is dedicated to one piece of information at a time, you are more likely to notice details you wouldn't otherwise.

When I think of a time in college when I was asked to remember a detailed image, I think of a neuron (brain cell) and its parts. My professors required me to remember all the parts of the neuron and the process of how neurons communicate – called an action potential. This is not an easy task. My efforts were enhanced by a detailed drawing of a neuron and all of its parts. One way I studied was to draw the cell and include blanks that I could go back and fill in. The point is, I had to be so focused on the details of the neuron in order to learn the fundamentals of how the brain works!

Think of a time when you were given a detailed image to remember if you didn't take the time or effort to really focus on learning the details of the image, it would be quite hard to detect differences.



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Check out these two images. At first glance, they may look the same, but they are not. Count how many differences you can SELECT and answer the question below.



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This select the difference activity calls out our ability to really make sure we are focusing on something – in detail. We often mistaken the level of detail to our remembering. For example, memory experts know that people are quite bad at remembering details from the scene of an accident. If you were a witness to a fender bender where the car that caused the accident fled the scene could you remember details like: What color was the car? What was the make and model? What about the license plate? While it isn't fun to image being witness to an accident, our failure to recall detail demonstrates how we can focus without REALLY remembering. Being able to detect differences is a key feature of selective attention.

5. Listen Activity 4

Activity #L4: Shiftable Attention: Trail Making Task

Now that you know a little bit about attention, you may begin to wonder how good you are at focusing. Here is an attention task that can measure both how **SELECTIVE** your attention is and your ability to **SHIFT** attention quickly from one thing to another.

Do you remember the game Connect the Dots?

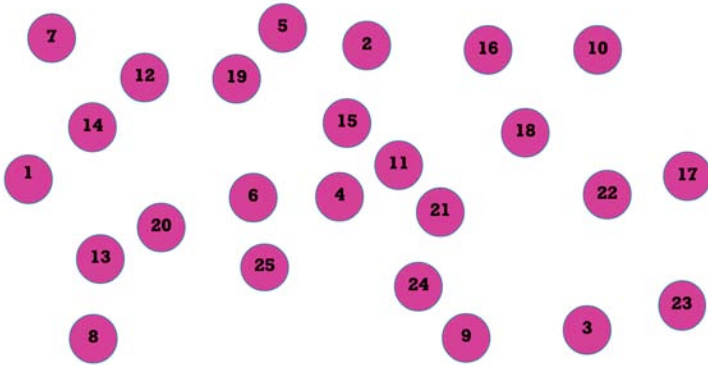
Activity #L4.1

Match each balloon to the child at the end of the balloon string.



Finding which child is holding what balloon is not difficult but it does require selective attention. A Trail Making Task, used in Psychological Science to measure attention, is a lot like Connect the Dots. The picture below contains colorful dots with a number written in the middle of each. Take your finger,

and acting like it is a pencil, move from dot to dot. As you move, make sure you are “connecting the dots” in numeric order from #1 until you find dot #25.

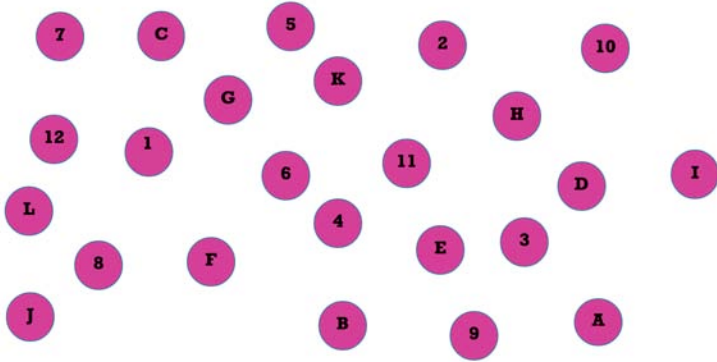


Trail Making Image with Numbers

Cognitive psychologists use this to determine a person’s ability to pay attention. They would be watching you complete this task and make special note of two things: 1) How long it takes you to complete the activity and 2) Your accuracy – whether you made any mistakes and skipped over a numbered dot. People with short time and high accuracy may be good at paying attention. If you take a long time and/or make several errors, it could indicate you need to train your attention.

Thought that the task was too easy? This is trail making task, part B! Again, you want to move your finger from dot to dot in numeric order. This time you also have to pay attention to letters in the alphabet! For example, you would first find the dot with the number “1.” Then, instead of going directly to “2” you need to find the dot with the letter “A” on it, then “2” then

“B” and so on. Do this until you finish with the number 12 and the letter “L.”



Trail Making Image with Numbers and Letters

Think back to this task. You were required to SHIFT your attention over and over between two different details (numbers then letters). First, you should realize that you can do it! Also, you get better at shifting your attention with practice (especially when you know the information like numbers and letters – imagine how hard this task would be for a 5-year-old!).

Shifting attention may be trainable; however, how effective it may be depends on the WHAT – what it is you are shifting your attention to and from.



Activity #L4.2

Can you think of a college career that requires a worker to shift their attention quickly?

Perhaps the training piece of shifting your attention makes you think of the term multi-tasking. Multi-tasking is our ability to do more than one thing at a time. I used to declare myself the best multitasker and would boast to my husband (then boyfriend) how effectively I could do more than one thing – better than him, of course. Being good at multi-tasking is a big learning myth. This is one that even I had to learn as a psychology student. There is really no such thing as being a good multi-tasker.

People think they can do more than one thing at a time, and they can! However, what happens more often than not is that one of the two activities suffers. Government authorities like health and safety departments have relied on decades of research on multitasking to tell the general public that talking on a phone while driving is not safe. While I'm sure you've heard this 1,000 times, it sometimes takes a very harsh lesson to fully realize the truth. That is why authorities and even cell phone companies have spent millions of dollars on advertising to show the realities of texting or talking while driving. We now know that texting while driving proves to be more dangerous

in terms of traffic violations and potential accidents than driving under the influence of alcohol (insert citation).

Less serious but still effective is the example of talking to your dad on the phone while browsing the internet. You know you cannot truly listen to what your dad is saying when you are checking social media.

Selective attention can be trained so that you CAN effectively do more than 1 thing at a time. The training is important as you have to be able to prove that you can do both tasks without either one of them suffering.



Activity #L4.3

Describe a time when you tried to pay attention to more than 1 thing and failed in that you made a mistake on those activities or tasks.

The second feature of attention you need to know for effective learning is "**IT CAN SHIFT**" Importantly, what we have typically thought of as multi-tasking is really our brains shifting from one task to another. In only more rare occurrences or with intensive practice can we do two highly skilled tasks at a time.

6. Listen Activity 5

Activity #L5: Change Blindness Tasks

Psychology educates learners about the fascinating inner workings of the brain! A feature of understanding how our brains help us view the world is to understand perception.

Perception is what happens when our brain takes the sights, sounds, and smells of the world and, using our brain cells creates a reality. Perception is a type of experience of the world that is unique to each person.

Now back to attention. We've already learned how difficult it is to focus. Part of that is the fault of our brains deciding what to experience from the world.

Take a look at this image:



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How good of a look did you get?



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Now look at this picture. It looks similar with the exception of a few changes. Now it is likely you can easily answer the two questions from above, and most of us remember something about the picture but have to admit that we didn't remember it perfectly.





Activity #L5.1

There are several items that “changed” in the picture in that they are completely different. Can you name any of them?

My guess is that you didn't get all of those and you have to scroll back and forth to see the changes. To form our reality, we have to recognize the limitations of our ability to pay attention. Like the picture, we fail to remember so many details of our world; and with good reason because it would = information overload! Sometimes though we WISH we could remember a detail that may be important later (think being an eyewitness to a car accident and being asked to remember the color and type of car or missing detail from a class reading that your instructor asks a question about on an exam. When we miss something “important,” it may be no fault of our own – it is something called inattentive blindness.

Once changes are brought to your attention, you cannot un-see them. This is the magic of attention. Once we know what to pay attention to (especially in our learning), we are so much more likely to remember and know it. Just like the details in this scene, what we are learning can be made more or less important by the amount of attention we pay to new information. Once we are told the importance of our attention and focus, we begin to become more self-aware.

7. Listen Activity 6

Activity #L6: Verbal distraction task

Do you listen to music or the TV when you read or study? If you are like many of my students, you said, “Yes.” We love background noise and have become used to a steady stream of “noise” at all times. Even though it is fun to jam out to a favorite song or binge a show “just in the background” of your study sessions, there may be some disadvantages to learning.

Take a look at this list of words knowing that you will be asked to remember them later:



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Now see what you were able to remember. How did you do?



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Let's try this one more time. Here is another list of words for you to remember later. Be sure the volume is up on your machine for this activity.



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Now see what you were able to remember this time. How did you do?



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here:

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Most people find that a song immediately adds to the difficulty of remembering. When we use our memory, we pay special

attention to language (much of what we remember as humans is through language processing in the brain). A song's words direct our attention away from what we are studying and toward the message in a song.

Although it may sound boring or disappointing, we should not listen to any sound with words when we are learning. If you need some noise in the background, try switching to instrumental-only music. You will get used to it and be amazed at how much attention you can put to your studying that was before being lost to background noise.

Mind Wandering

Students report having difficulty studying or listening, especially for longer periods of time. Cognitive psychologists decades ago viewed 20 minutes as about the maximum time a student could focus on learning before needing a break. Now learners view 20 minutes as an extraordinary amount of time and can find even 10 minutes of focus difficult!

Part of the problem is that we have trained ourselves to be distractable.



Activity #L6.1

Answer these questions:

- 1.) How long can you listen to an instructor's lecture

before losing focus?

2.) How many times do you check your phone when doing a class assignment or task?

3.) Imagine you are asked to sit alone, without any technology for five minutes. How do you think this experience would make you feel?

It is natural for our minds to wander when doing something. In fact, researchers have found that being bored is a key to creative thinking. The problem is we have become uncomfortable with sitting with our own thoughts. Try this task to think more about your wandering thoughts.

The next time you read a college textbook or any similar reading, consider the number of times your mind wanders to another thought. You might even use tally marks off to the side of the text or on a separate piece of paper to indicate mind wandering.



Consider how many times your mind wandered(s) off-topic when you read. It might be quite a bit, and this is totally normal. Along with awareness can come the recognition that you are off track and the desire to refocus.

Imagine that every time your mind wandered from the text, instead of letting it pass and then regaining focus, you checked your phone for notifications. Rather than sitting with the urge to do something else, yet try to refocus, you have completely changed tasks. There is a huge cost to attention when this happens. It can double the time it takes to complete any task.

Try having a conversation with your roommate or parent about how they avoid becoming distracted. They may tell you their need to put their phone away or turn off their email as a solution.

The 3rd feature of attention you should know for effective learning is, **IT IS DIVISIBLE.**

8. Listen Activity 7

Activity #L7: Mindfulness training

Meditation and mindfulness tips are abundant; especially on social media. Which is somewhat ironic because a technology break is sometimes necessary to re-learn how to quiet the mind and regain focus. For most of us, it has taken years to learn how to be always “on” or distracted by our phones and social media. Learning how to be less distracted can take a good deal of un-learning. Whether you want to meditate or just quiet the mind from distraction, it is a good idea to learn how to sit with your thoughts.

Many newbies to any type of meditation put up barriers to their success. For example, they have big goals like totally quieting the mind or meditating for a long period of time. Trying to be still and completely quiet for 20 or even 10 minutes can be a nearly impossible task to start.

TRY IT OUT: Set a timer on your computer or

phone for 2 minutes. Close your eyes if that is comfortable for you or just sit quietly. While you do, do a scan of your body and environment for other sensory information you may not have otherwise been focusing on.

Did you make it to 2 minutes? How did that feel?

Setting a short timer to be quiet with your thoughts or just focus on your breathing is a good start to learning how to be more mindful. The “Brain Yoga” activity described below is another good starting point for mindfulness.

Brain Yoga

One option is to train your brain to attend before jumping into a more strenuous meditation plan.

See if “Brain Yoga” would work for you.



Brain Yoga Pose 1: Make a fist with your left hand, extending your pinkie finger.

Brain Yoga Pose 2: Make a fist with your right hand, this time extending your thumb.

Brain Yoga Pose 3: Alternate by making a fist with your right hand, extending your pinkie finger, and making a fist with your left hand, extending your thumb.

Repeat this exercise approximately five times!

If this is too challenging, start by listening to some calming music and focus on your breath for about 2 minutes.

Think you can do something like this every day?
Find a way to be alone with your thoughts as a way

to become more mindful. Breathe for a minute, listen to a relaxing song, and sit alone outside. These are simple but effective ways to quiet the mind and develop attention.

This activity concludes the module on the importance of listening in effective learning. [Read on to learn](#) a little bit about how memory works. This information will prepare you for the following module: Elaboration.

9. What you need to know about memory

What you need to know about memory!

To make the most of your understanding of attention, it is important to learn a little about how memory works and the specific role it plays in remembering.

We are constantly making and using our memory. In this diagram, the first piece that is important for making a memory is a process called Perception. Imagine taking a walk down a street filled with restaurants and shops. **PERCEPTION** is your brain's ability to take in information from all the senses: sight, sound, touch, taste, and smell, and change it into something you can make sense of. This is a very complex process; however, think of seeing a dog while you are walking or smelling bread from a nearby bakery. Your brain uses cells called neurons to change the sight of the dog and the smell of the bread into a pattern. These patterns are referred to as **SENSORY MEMORY**. You have about $\frac{1}{4}$ of a second to decide which of these patterns are important and then **ATTENTION**, which you already know is a precious resource for memory, filters information from our environments. We are usually left with

information we want to focus on. For example, if we love the smell of bread and are hungry, then we may stop in our tracks and go into the bakery. However, because of what we know about attention and distraction, it is possible the dog, who is our favorite breed – a black lab, has caught our eye and we bend down to give it a pet. Before we know it, we have forgotten about food! These decisions happen just before we are aware of them. This type of awareness occurs in what is called **WORKING MEMORY**. Working memory is our conscious self. The thoughts we have take up our working memory. Like attention, information in working memory can be limited to only a certain amount (a work that Cognitive Psychologists refer to as capacity). Most of us are able to focus on something for about 30 seconds and during this time hold about 4 to 6 pieces of information in our minds at a time.

TRY IT OUT: This is why you can only repeat back so many numbers at a time (for most people it is between 7 and 9). It is also difficult to do complex math problems in your mind because of the limits of working memory. Similarly, it is why we must write down our grocery lists because we can only remember about 4 to 6 items before we forget.

The final stop for knowledge is **LONG-TERM MEMORY**. This is the goal of everything we learn. We will discuss the process later of how it can take hours and even days to ensure knowledge is long-term. For now, know it is the goal that what we learn becomes stored in long-term memory. This is information that we should be able to remember as long as we want and there is no limit to how much we can remember!

The only limit is that most of us haven't been given strategies to best store knowledge for the long term.

WHAT YOU NEED TO KNOW ABOUT MEMORY

1

PERCEPTION

Brain transferring information from outside world through senses



SENSORY MEMORY

Usually visual and verbal but may use all senses (about 1/4 a second of brain work)

2



3

ATTENTION

Filter that determines WHAT you may remember



PART II

ELABORATE

10. Elaborate



“E” ELABORATION

The “E” of **LEARN** stands for “**ELABORATION**”. Learning requires describing and explaining new ideas with as many details as possible.

Learners gain knowledge and skill by:

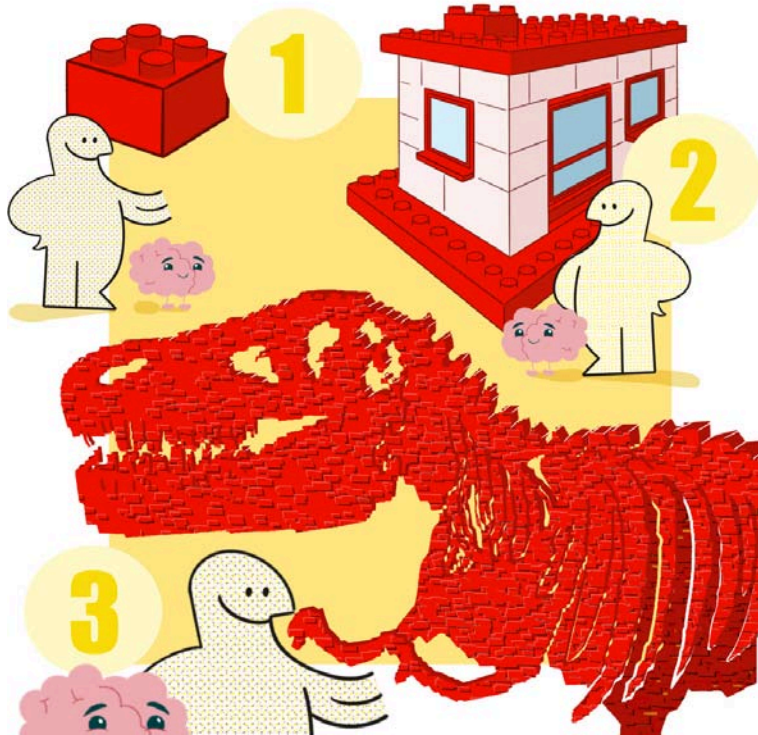
- Understanding how Elaboration benefits knowledge
- Learning strategies to practice Elaboration
- Considering Elaboration in the context of the classroom

Students need to be able to master the process of building knowledge from simple to more complex. The term elaboration is the 2nd part of LEARN. Elaboration means to add to something; to expand or build upon with detail. In this section, you will understand how to move from simple studying, which often leads to memorization, to learning which is enhanced by elaboration.

Elaboration means to add to something; to expand or build upon with detail.

Think about building your first Lego structure. What did it look like? What color were some of the blocks? Chances are your very first building experience with Legos was straightforward, with you sticking to basic squares and using pre-made windows and doors to complete the structure. If you continued to build, things may have gotten way more complex.

Consider the intricacies of a Lego build in the show Lego Masters!



Learning is similar to building. You often start off with simple concepts like definitions or words before moving on to something more complex, like how concepts work together.

11. Elaborate Activity 1



Activity #E1: Mountain Visualization



Look at the top of the mountain. At the top, imagine your teacher has hidden key information from a class in a lock box. You'd like to get the information as it will be the key to success in the class.

Now look at the base of the mountain. Looking up from far below, what if you were told you only had one possible trail to the top? No matter how steep or rocky or wet that one path to the top might be, you only have one chance to get there. Learning sometimes is limited like this.

Consider the examples below:

If you need to remember the definition for part of the body (from anatomy class) or the name of a type of rock (from geology class) you often get a basic definition.

- **Anatomy term**: dorsal (dictionary.com) of, relating to, or situated at the back, or dorsum.
- **Geology term**: igneous rock (dictionary.com) rocks formed by the cooling and solidifying of molten materials formed beneath Earth's surface, or at its surface, as lava.



These basic definitions for dorsal and igneous lack detail and are not very interesting. And you likely have piles of words just like this to learn in your classes. A common strategy to remember is to make a note card or use an online quiz program to learn the definition. This strategy takes time but may set you up for failure. Just like having only one path to the top of the mountain, you are forced to remember one specific and potentially boring definition.

Elaboration for learning is different.

Think of adding as much detail to one of the terms above (or pick a concept from your area of study). Before you do so, remember that passion for learning I discussed earlier. Put yourself into the shoes of a child learning about the body. You know less about the world and EVERYTHING is more interesting because you are more naturally curious.

Now, brainstorm all of the things that come to mind when you think “dorsal/igneous/or pick your own vocabulary word”.

This building out of the word “igneous” is elaboration. Describing and explaining ideas with as many details as possible increases the likelihood that you will remember something later.



A well-written textbook about rocks or a good teacher will show a picture, describe a place where igneous rock is common, and may even tell a story about how people may be impacted by these rocks. The more detail like the way the word sounds, pictures you may think of along with the word, and stories related to the word build upon your knowledge. You no longer depend on a single definition to remember.

You are no longer building basic Lego houses, you are moving on to more complicated and fun structures!

12. Elaborate Activity 2

Activity #E2: Name Elaboration

Ever have trouble remembering someone's name? "YES, almost all of the time" is the common response. By the way, this is also true even if you are a memory researcher 😊

Remembering a name can be a great way to practice the skill of elaboration and impress those you meet!

When you learn a name, consider the cartoon images below: William Baker and Emma Jewell. In these examples, you can imagine William wearing a baker's hat and Emma with jewelry on to remember their names. You are elaborating by using something visual and connected to their name to create an image. Not all people you meet will have such simple and visual names to learn though.



Consider this scenario: You have a job interview today. Your nerves are running high, which means you are easily distracted (remember how listening is impacted when you are distracted?). Losing focus due to being anxious often happens when learning and, as you now know, can hijack your ability to think clearly. Considering this you need to put your new skill of elaboration to use for the interview.

You walk into the interview room and are greeted by Mrs. Garcia. With laser attention, you listen to her name while smiling. You tell her your name and then repeat hers, "Nice to meet you, Mrs. Garcia, thank you for meeting with me today."

Saying her name ensures you have 1 path (*up the mountain, remember the picture from before) to remembering it. But you need more. Quick, try to elaborate by adding as much detail in your mind to help you remember her name. You may consider the room, how Mrs. Garcia is seated, a facial feature like glasses (glasses start with a “g” like Garcia), or a friend she reminds you of....ANYTHING as long as it is related to your current state of mind AND makes you think of Mrs. Garcia.



Now you have built more than one connection to her name, and you are WAY more likely to remember it later when you

thank her at the end of the interview. You will stand out for remembering her name, and it could help you get the job!

If you enjoy elaboration to remember names, you may want to become a contestant in the next Memory Olympics. The United States version is described here: <https://www.usamemorychampionship.com/>

In this competition to find the next great memory master, contestants compete in the “names and faces” event. It is like a job interview with the addition of having to remember several names in one sitting. According to their event site, “Mental Athletes will have 15 minutes to memorize 135 color photos of different people, with a first and second name written below each picture.”

Once the memorization period is over, competitors are given 20 minutes for recall. Mental Athletes are given the same photos again but without the names and in a different order from the memorization sheet. A point is awarded for every correctly spelled name, either first or last.

How do they do it? Or maybe you’re asking, why do they do it? In either case, they use the tool of elaboration. In order to remember they build off of the person’s face and name (using images, sound, personal thoughts, actions....ANYTHING detailed) to ensure they can remember.



Activity #E2.1

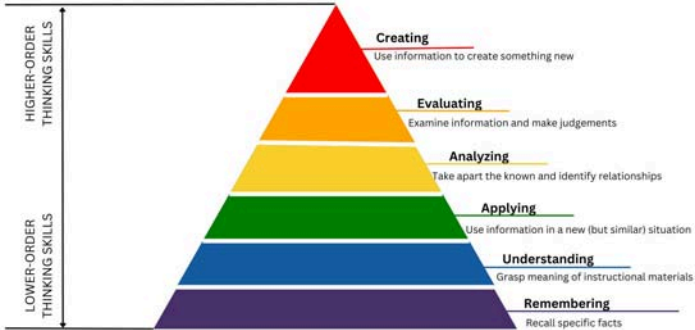
How would you encourage someone to remember your name better? Maybe it is something about how your name sounds that is memorable. For example, my last name is “Lassonde,” so I have students imagine a lasso to recall how my name begins. Perhaps it is a visual image your name makes you think of. It can be anything. The more creative you are, the better.

13. Elaborate Activity 3

Activity #E3: Understanding types of knowledge

We intuitively understand that there are many ways to learn. Cognitive psychologists spend a lot of time considering how different ways of thinking influence how we learn. Many years ago a person named Benjamin Bloom (now that name is an easy one to remember – think of a flower) came up with a system to describe these ways of thinking. Your teachers often use this system when they decide what they would like you to learn in a course.

Bloom's Taxonomy - Cognitive Domain (2001)



The triangle represents many types of learning. Each color indicates a specific type. The base of the triangle forms the foundation for learning. As you move up to the top of the triangle, deeper learning occurs, along with that a better chance of remembering information. Like a climb up a mountain where your goal is to reach the summit, when you learn something most fully and completely, you reach the top of the triangle.



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Take a look at the triangle and its colors:



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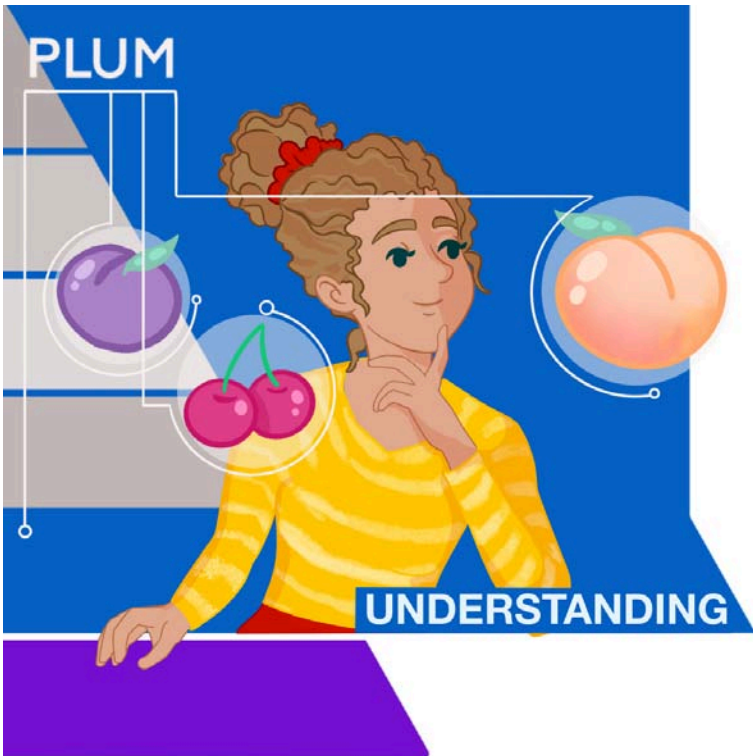
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Purple/Remembering



Purple is at the base and indicates learning to remember. This is the most basic or simple way to learn. It is where you start in most introductory college classes. Think of notecard land. You often spend a lot of time in introductory type classes like biology or psychology focusing on definitions and facts before anything else. This is also quite dull for some students and often leads to memorization without any excitement for learning. On their own, the facts can be boring and quite difficult to remember. That is where moving up the colors of the triangle become helpful.

Blue/Understanding



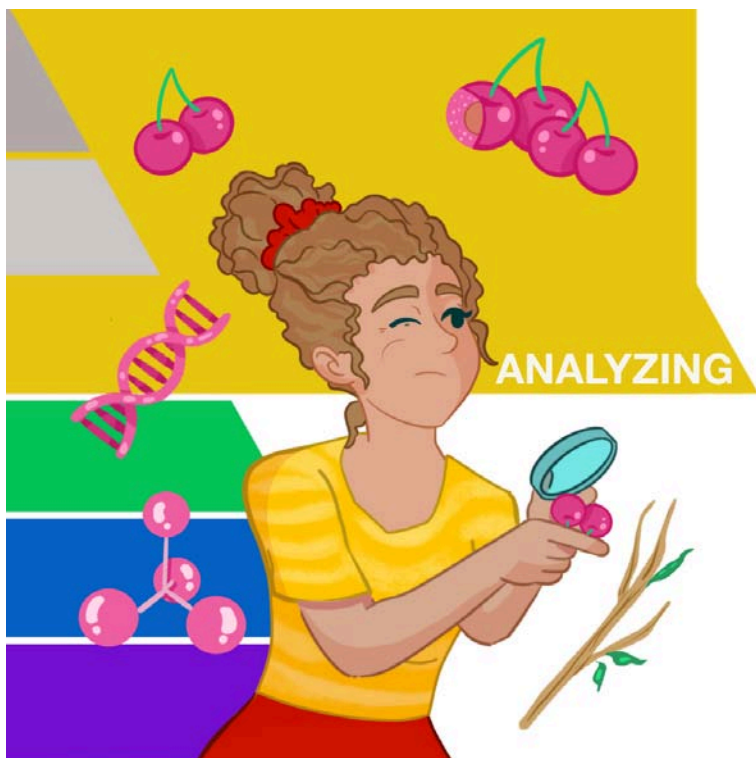
The next color, Blue/Understanding, is when you are asked to think more deeply about a piece of knowledge by learning to understand the meaning of information. To do this, you move beyond the most basic definition and add an example.

Green/Applying



The next color, Green/Applying, represents applying or using what you have learned so far to enhance what you know. Once you have a fact and an example, you can use it or apply it to a totally new but related situation.

Yellow/Analyzing



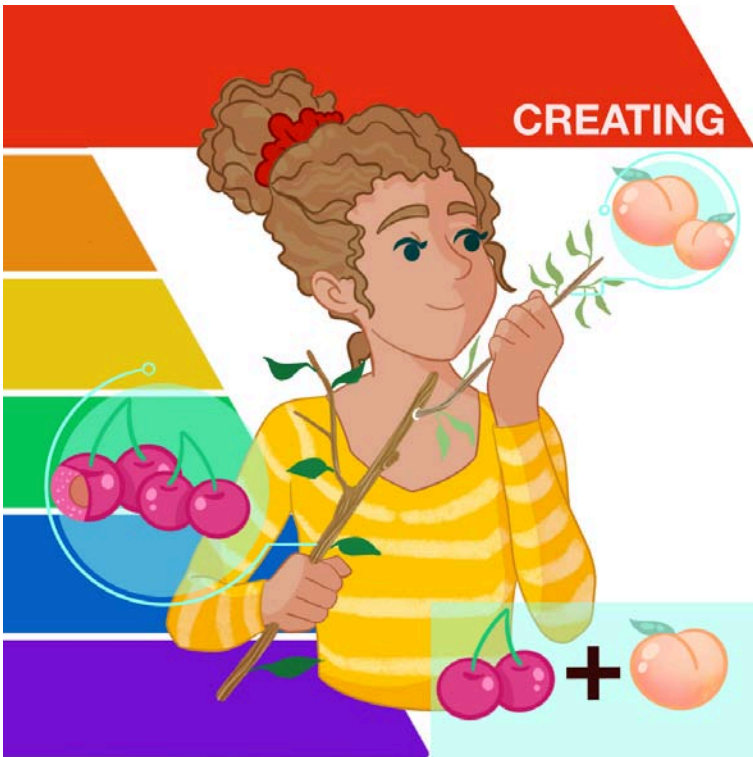
Moving on up the triangle, you'll see yellow. Yellow/Analyzing represents analyzing information. This goes beyond application. To analyze means to take apart. Here you apply the information to a new situation and then break pieces of that situation down further to look at how the pieces relate. Green and yellow types of learning most often occur in upper-level courses in college. In these classes, you often are expected to apply knowledge and analyze it to show what you have learned.

Orange/Evaluating



Near the top is the color orange. Orange/Evaluating represents evaluating. When you evaluate, you make decisions about knowledge and judge its value.

Red/Creating



Finally, Red/Creating represents making something totally new that relates to all of the knowledge that has come before. In college think of an original painting, a new design, or a research project as examples of creating something new. You tend to complete creative projects in senior-level courses.

14. Elaborate Activity 4

Activity #E4: Applying Blooms Taxonomy; example of learning through stages of Blooms

Anxiety is a well-known topic of focus in psychology. Students also unfortunately know a lot about how anxiety shapes their own mental health. Let's consider learning about anxiety through Bloom's taxonomy.

In the following activity, you will be prompted with a learning scenario. For each, choose the color and Bloom's label that best fits.



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15. Elaborate Activity 5



Activity #E5: Elaboration Planning

You now know the importance of elaboration and how knowledge is described using Bloom's — from simple to more complex. However, it can be hard to transfer the skill of elaboration to coursework. Let's take a look at how Blooms may be applied to your coursework.

Think of a class you have taken or are currently taking.

1. Name the class
2. Using Bloom's, what type of knowledge (i.e., color and term) do you think you are most often asked to use and learn during this class?
3. Think about how your learning is assessed in this class. Common methods include: Multiple choice, short and long-answer essays, and writing assignments.



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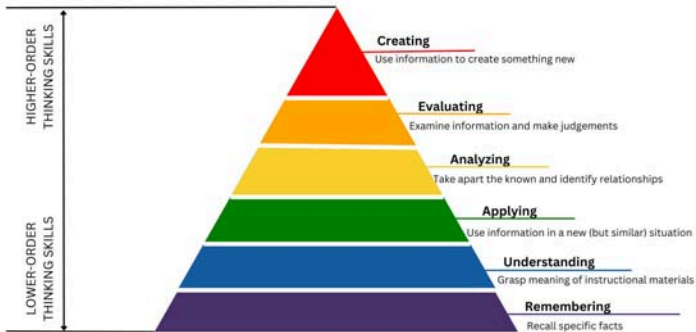
16. Elaborate Activity 6



Activity #E6: Bloom's Taxonomy with course content

Now it is your turn to match learning content from your class or a topic that is interesting to you to Bloom's.

Bloom's Taxonomy - Cognitive Domain (2001)



Create a learning triangle. First, write down your topic (i.e., don't choose anxiety but something else that you have learned about in class). With that topic in mind, place the colors next to a description of how that topic is learned. For each color, be sure the description fits appropriately with the learning concept (remembering, understanding, applying, analyzing, and creating).

17. Elaborate Activity 7



Activity #E7: Connecting Bloom's with Elaboration

Bloom's triangle of knowledge relates back to elaboration. Like a kid who is curious about space and has learned all they can get their hands on to better understand it when you learn through all of these stages, you develop a deeper (elaborative) understanding of knowledge. Remember, it is all about connecting new information to additional details.

It is important though that the details relate or are important. We all have a chatty friend or relative (I'm looking at you, Mom) who, when we want to talk to them about a special event in their day, dominates the conversation with lots of irrelevant details (what they ate for breakfast, how much they cleaned their apartment that day) before getting to the good stuff. Elaboration is not just extra stuff; rather, meaningful well-connected information that directly relates to new information.

It is time to put some real elaboration work in.

- First, access course information from a current class. If you are not currently in a class, think of something you have always wanted to learn about. Consider a test you have coming up. Locate information that you need to learn for that class (if not in a class, use your imagination). You don't have to include EVERYTHING you need to know, but you do want to think of more than one topic.
- Second, write down what you want to learn.
- Next, go back to the levels of Bloom's. Write down what type(s) of knowledge you think it is.
- It is also a good time to think about how you will be tested (multiple choice, essay). This can determine whether the level of knowledge matches or is appropriate.
- Pick one or two concepts and provide as many relevant details as you know. You may need to rely on notes or course materials to do this.

Tips :

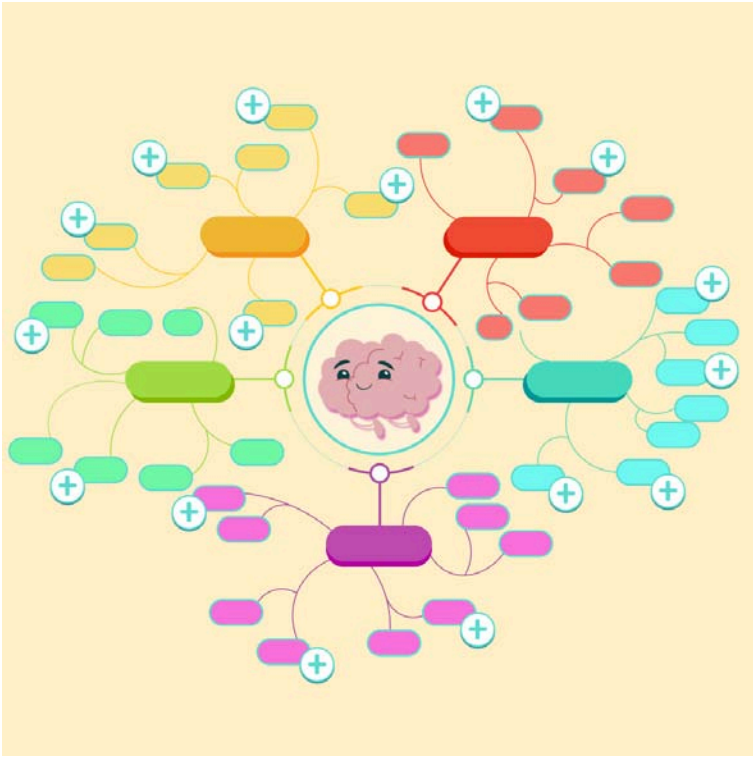
- Be sure you can pronounce the topic. Our brains process knowledge verbally, meaning having the correct pronunciation is key to you being able to recognize that new information later.
- Are there any images from course materials that can support the information?

- Remember, the more details you use (how something looks, smells, feels, and relates to us), the more likely you are to remember. Most likely you will not have knowledge that “smells” but if new knowledge reminds you of a smell, more power to you!
- Finally, are there any personal details that you can connect to the information? This may be something you recall about when and how you learned the information (e.g., often teachers say to do funny things that can add to learning information). It may be something related that you saw on social media or heard in a podcast.

18. Elaborate Activity 8

Activity #E8: Mind Mapping

Humans are very visual. Have you ever heard the notion that seeing is believing? Imagery is often quite helpful as an elaboration tool. Just like icons on a map to mark locations and destinations, a learning map is often useful in aiding our memory.



Mindmaps

Find examples of mindmaps here:
<https://learningfundamentals.com.au/resources>

Elaboration is a skill for learning that, like paying attention takes practice. It is difficult to decide what is important to learn so it is crucial for students to partner with their teachers to make good use of class resources. If you are unsure what knowledge to elaborate upon (from a lecture or your texts) ask your teacher for some good examples. Also, stay tuned for some additional guidance on studying and effective note-taking.

PART III
ASSOCIATION

19. Association



“A” Association

The “A” of **LEARN** stands for “**ASSOCIATION**.” New learning benefits from making connections with what you already know. Prior knowledge is like an anchor, it stabilizes new knowledge by connecting it in memory together.

Learners gain knowledge and skill by:

- Understanding how Association benefits knowledge
- Learning strategies to connect old knowledge with new
- Connecting new information with interests

Part 1: Introduction of Association

The State of Minnesota may be best known for its cold winter temperature and the number of lakes, but not outdone is the landmark, Mall of America. With parking for about 12,000 cars, the Mall of America, or (MOA) as it is referred to by Minnesotans, is like a working city! After a long day of dining, shopping, and riding roller coasters, it is not unheard of to forget where your family parked their car.

Not to worry, MOA, like students and memory experts (more on that later), know the key to quickly making new memories is **ASSOCIATION**. Each parking level, let's say level 3, is marked with a US state like Hawaii, along with an image related to that state, like a Pineapple, along with a large letter P for parking. Visitors are encouraged to make a fast association. "I ate 3 pineapples in Hawaii."



Associations are memory tools, and they are used to expand upon new information, which is like the practice of Elaborating on new information. Unlike elaboration, though, which emphasizes expanding upon knowledge, association is based on connected to-be-learned information with something you already know.

You likely have experience using association through mnemonics. Mnemonics is a fancy word for “memory tool.” The words Memory and Mnemonics come from the Greek word “mneme,” which means memory. Did you know there was even a Greek Goddess called Mnemosyne? This emphasizes how important the idea of memory was in ancient times. Greek and

Roman cultures named Gods and Goddesses for major Earthly phenomenon like wind, water, love, and war, just to name a few.

Find out more about the Greek Goddess of Memory here:

[Mnemosyne The Greek Goddess of Memory](#)

Bowen, K. (2022, January 2). Mnemosyne The Greek Goddess of Memory.

What memory tools can you remember? Mnemonics usually come in the form of rhymes or series of letters called acronyms that take a lot of information and group it down into something smaller and more memorable. The one I remember the most from my childhood is: My (Mars) Very (Venus) Educated (Earth) Mother (Mercury) Just (Jupiter) Served (Saturn) Us (Uranus) Nine (Neptune) Pizzas (Pluto) to remember the names of the planets. This won't work for those of you who learned about Pluto in the last 15 years being downgraded to a dwarf planet! Nevertheless, consider what mnemonics you remember, often from K-12 education.

One I still use is: PEMDAS or: Please Excuse My Dear Aunt Sally. PEMDAS, as an acronym, signifies with each letter the mathematical operation required in the correct order: Parentheses, Exponents, Multiplication, Division, Addition, and finally, Subtraction.

20. Association Activity

1

Activity #A1: Mnemonics

Mnemonics work and are often remembered for a lifetime because you are connecting new, often previously meaningless information (in that you had no prior knowledge) with something familiar. Memory tools that break things down into these smaller pieces based on association allow the familiar and often fun knowledge to provide a context for the new.



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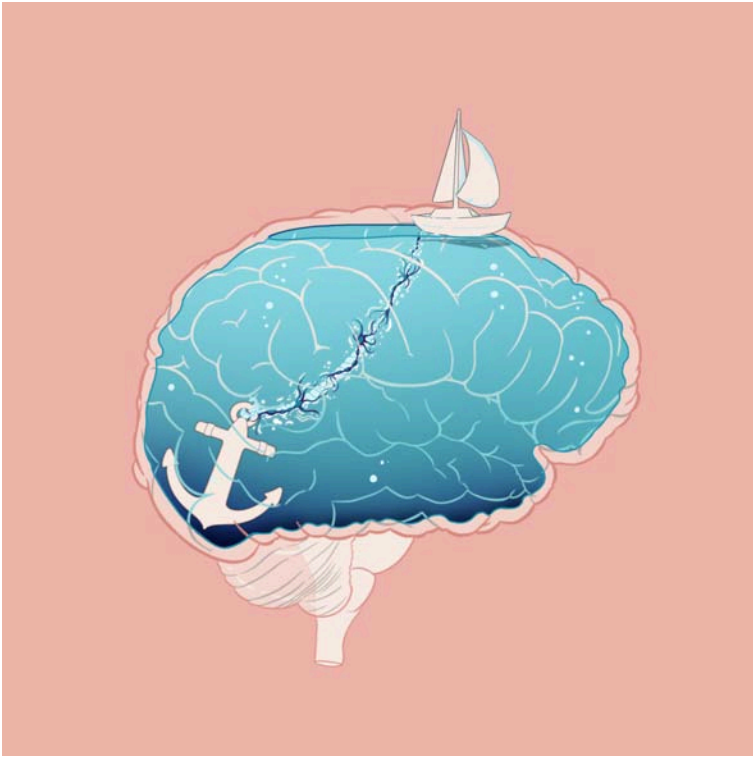
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Activity #A1.1

Give examples of mnemonics you have used.

One way to think about the benefit of association is to think about an ANCHOR.



An anchor keeps a ship in one place. Similarly, when we associate new knowledge with old, the old knowledge is like the anchor. It is more resistant to forgetting and has been held in our long-term memory for a lengthy period. The parts of our brain responsible for making memory (the hippocampus) and individual brain cells from other parts of the cortex communicate and connect through synapses. When new memories are formed, cells form patterns of communication through these synapses. The more a particular group of cells communicate or activate in the brain together, the more likely you are to remember something.

This video will explain more about the memory-making process here:



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New information is linked together like how connections are formed in the brain; related information is stored together. For this linkage to occur, there must be a starting point – some original piece of knowledge or information links new information together. The original knowledge becomes the anchor of association.

When to-be-learned information starts out with an anchor, we have a much better chance of remembering it.

21. Association Activity

2

Activity #A2: Dual Coding

In this demonstration, you will see 14 pairs of words, each containing a STIMULUS and a RESPONSE. Try to remember the pairs of words so that later, when you see the STIMULUS word, you'll remember the RESPONSE word. Use whatever techniques you can think of to recall each pair of words. You'll have 5 seconds to see each pair.



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How did you do when trying to remember the word pair? If you are like most people, you remembered words that cognitive psychologists refer to as “concrete” words. These are words that

have a visual representation of the others, which are more abstract. Let's test your recall with the activity below:

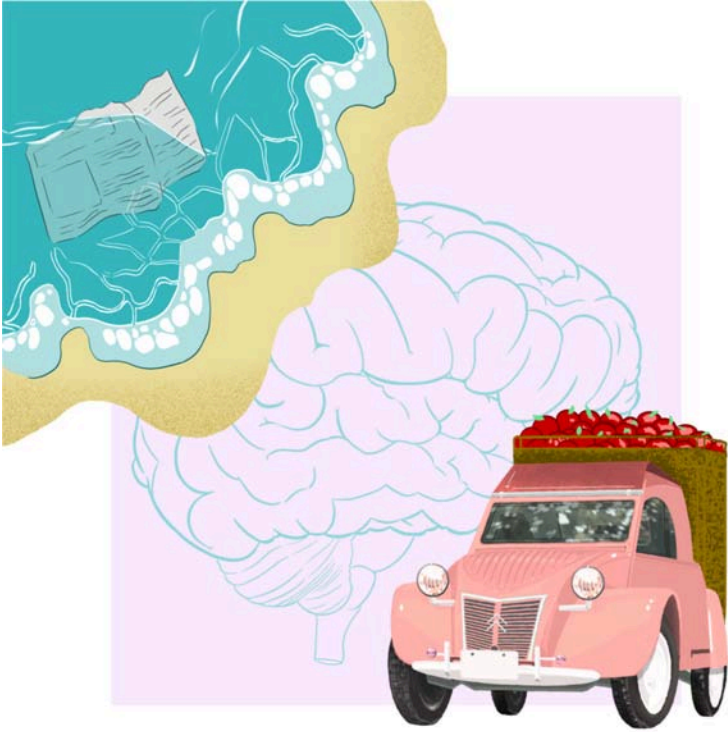


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It is likely that you recalled word pairings that had two visual words like “Ocean-Newspaper” and “Truck-Apple” because they are common and highly visual. Like in the image seen here, you are able to easily create a mental representation of these types of concrete images. This is less likely to be true for word pairings like, “Judgement-Concern” and “Reason-Freedom.”



It is likely that you recalled word pairings that had two visual words like “Ocean-Newspaper” and “Truck-Apple” because they are common and highly visual. Like in the image seen here, you are able to easily create a mental representation of these types of concrete images. This is less likely to be true for word pairings like, “Judgement-Concern” and “Reason-Freedom.”

Many people consider themselves to be “visual learners.” While committing to specific learning styles in education does not lead to the best learning, it is true that when we use visual

information while learning, it creates something called a dual-code. Cognitive Psychologist Allan Paivio demonstrated that concrete word pairs were better remembered because our memory is enhanced by visual information. The “dual-code” or “two-code” aspect of remembering means that any chance we get to use more than one sensory feature (in Paivio’s case, visual with the verbal word) can enhance our memory. You already knew this, though, as multiple coding is the basis for ELABORATION!

References: Clark, J. M. & Paivio, A. (1991). Dual coding theory and education. *Educational Psychology Review*, 3(3), 149-170.
Paivio, A. (1971). *Imagery and Verbal Processes*. New York: Holt, Rinehart & Winston.

A great historical example of the benefits of visual information in memory is a mnemonic tool called “method of loci” or (MOL). Loci is the plural word for “locus,” which means place. Humans have been using the MOL, which involves taking a familiar location (like your house/apartment) and doing a mental walk through it as you attempt to remember a series of information. Let’s say you need the following items at the grocery store, and you want to practice training your memory: Bread, milk, oatmeal, sugar, apples, eggs, peanut butter, chicken, yogurt, and carrots. Using the MOL, you would place an item along a mental walk through your home (e.g., bread is just the right size to sit in the loaf-size mailbox outside your front door, you open the front door and find a giant-oversized gallon of milk is spilling down the stairs, pooling into the entry-way of your home, you turn right and on top of a side table is an oatmeal

container. You tip the container into the entryway so that it helps to soak up all the milk).

Is this easy? Not exactly, and it does take some work, but the more imaginative and creative you can get with storing images in a familiar location (that is to ASSOCIATE) it will be hard to forget the items on your grocery list! (at least until you must make a new list).

Journalist and former US. Memory Champion Joshua Foer demonstrates his version of the MOL here: YouTube. (2015, December 7). This guy can teach you how to memorize anything. YouTube.



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22. Association Activity

3

Activity #A3: Story Method

Association through mnemonics like rhymes, acronyms, and the MOL are useful but mostly for the information you want to remember right away. A possible limitation is you could remember the acronym (like PEMDAS) but forget the new/associated information. Another pitfall is interference. For example, using your apartment for the MOL for one grocery list may interfere with the next set of grocery items you attempt to pair up with the items in your home.

The story method is another fun method for ASSOCIATION that can help remember lists of items. If we want to remember the following list of words:

HAT, RUN, FAT, BIRD, GREEN, GRANDFATHER, AIR...

I can challenge myself to come up with a little story. The challenge is in making sure the story contains every word on my list. Like this, "I see a man with a very tall hat, I call him, and he runs away but then bumps into a large, fat bird, sitting on

the village green. My grandfather appears out of thin air and grabs him for me.”

The story is the right amount of association to anchor your memory for all of the words.



Activity #A3.1

Now it is your turn: Come up with a story for the following list of words.

Before you begin, note that as you read the words, you will see there is a picture associated with each one below. Visualize the word with the picture and then click on the arrow to see the next picture (to combine with the next word):

FISH, CACTUS, PEANUT, HORSE, UMBRELLA, TATTOO, BOTTLE, SHELF, FREUD, COFFEE, RAIN, TICKET, ABOVE



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here:

<https://minnstate.pressbooks.pub/learnmethod/?p=299#h5p-42>

Now that you have connected each of the words to the images, continue to be sure you have created a story. You may want to go back through the images to look at the pictures again. There is no “right” way as long as you are considering the words and images to make a silly story of your own. It is quite possible you will have to pause and write it down.

Did your story look something like:



Association and Limitation

The association activities and previous discussions will not necessarily translate perfectly into your schoolwork. They do

provide cues and tips to get you started. Here is what we know so far about how memory and association work:

- 1.) Connecting new knowledge with old leads to a better chance of understanding
- 2.) Visual cues and cues that have multiple connections or codes (using other senses) build networks of associations of memory in your brain.
- 3.) Visual maps and mnemonics can be good starting points for association, but when used over and over again can lead to a problem called interference.

Interference is when something gets in the way. Knowledge interference can occur when you mix up old and new information. The more times you use your apartment to recall a list of grocery items, over time, you might mix up what item you stored in what location. I used to use several mnemonics called acronyms when studying for the Psychology class in which you learn about types of mental health issues. I remember creating an acronym for 3 types of anxiety disorders: GAP (G = Generalized anxiety or worry and tension that is not related to one specific event or issue, Agoraphobia = anxiety for leaving the house or going to public places, and Panic Disorder = excessive and sudden fear that leads to panic. I would do the same type of thing for the dozens of terms in the course. One limitation is that the short acronyms could begin getting mixed up with one another. An additional possibility is that I remember the phrase: GAB but do not take the time to elaborate on the actual meaning of the terms.

23. Association Activity

4

Activity #A4: Association and Motivation

Think about a favorite subject or activity. How does this relate to the knowledge you are learning in one of your classes?

Having trouble making a specific association between something you like and a class? This might be a time to reconsider the areas you are studying. It can be very difficult to learn new information without having the motivation that comes from enjoying that knowledge as you learn. In fact, that can be why it is so difficult to make your way through general education courses.

In that case, lean on your teacher to make associations with the material and real-world application. And if, for some reason, that isn't happening, think about how you can shift your mindset to change your motivation in class. Perhaps asking for more real-world examples or illustrations would help. Sometimes it is up to you to take a more active role in your learning.

24. Association Activity

5



Activity #A5: Knowledge Association

Write down any links in knowledge association that you have had in your high school or college career. For example, is there a series of courses that you have taken or must take that will build upon one another?

In Psychology, we ask our students to 1st learn about Introductory topics, then they learn to do statistics on these topics (that usually doesn't work well unless the instructor brings statistical computations alive with fun psychological examples). Finally, students put psychology topics and statistics together into a course called research methods (the image below depicts these connections). The final glue that tests knowledge and associates it is when students plan their own experiments on topics they are interested in researching.



It can be difficult to associate all new information with what you are learning to something you know. If you are really having a challenging time with this, one last piece of advice is to try explaining a new concept to a friend or family member. I call this teach and tell. When you explain something to people who might know little about that topic you must use simple words and ideas. Thinking of challenging concepts in ways your grandpa would best understand slows you down and is effortful. This effort is good for memory as it provides an opportunity to make more connections for learning. Who knows, your grandpa may be able to add to the conversation or at least ask questions to guide more learning.

PART IV
RETRIEVAL

25. Retrieval



“R” Retrieval

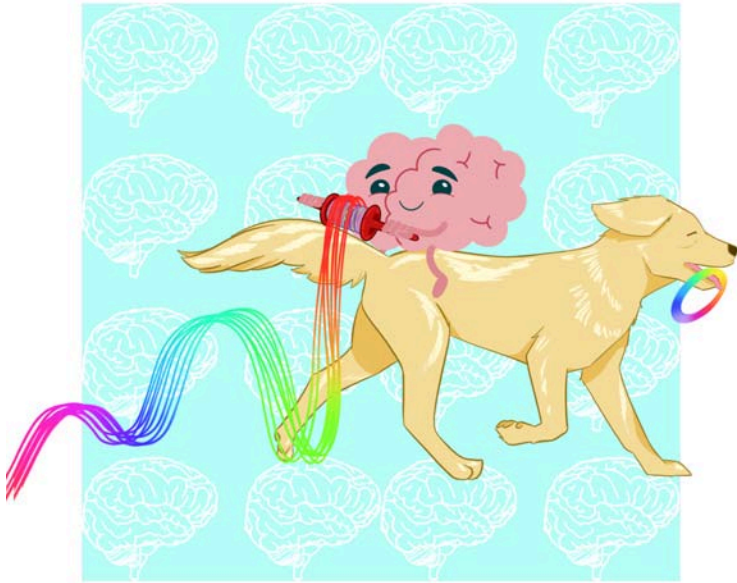
The “R” of **LEARN** stands for “**RETRIEVAL**” of newly learned information. For long-term learning, you need to retrieve information from memory many times before a test to ensure you will remember it on test day and beyond.

Learners gain knowledge and skill by:

- Understanding the benefits of retrieval over cramming and other poor study methods
- Learning strategies to practice Retrieval.
- Considering the role of feedback, spacing, and interleaving on retrieval

Retrieval is the process of bringing learned information from long-term memory (stored memory in the brain) back into (working memory) your conscious experience. Your consciousness is where you use initial memory resources, and it is where you “hear” your inner voice. When someone suddenly speaks to you or a noise breaks your inner concentration, those experiences help you to understand the same workspace that we will discuss when it comes to memory retrieval.

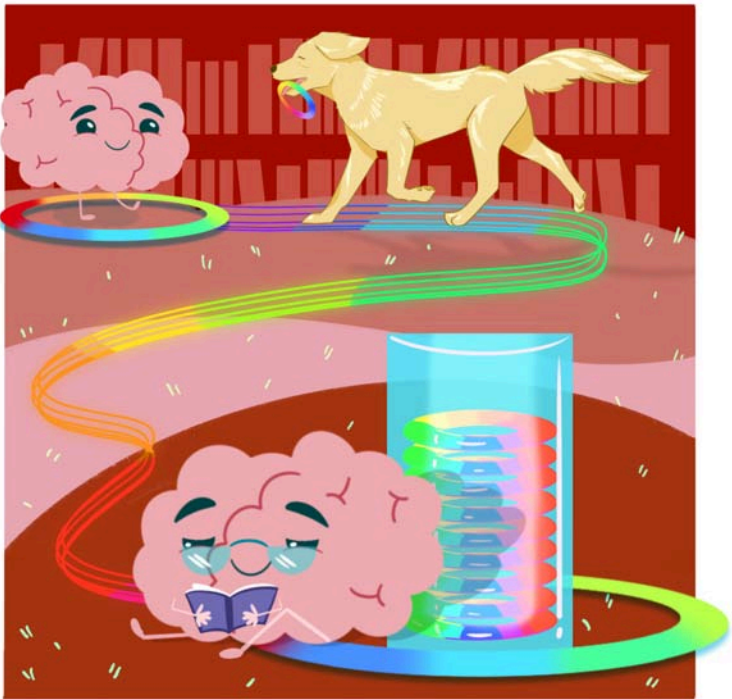
Good retrieval is like having the best ball or frisbee-catching dog. When I was studying Psychology, one of my mentors had a Border Collie. I would throw a frisbee to him many times during a visit (frankly to tire him out – these dogs have endless energy) and he was excellent at bringing it back to me. You might have a retrieving dog (think Labrador or Golden Retriever or maybe your dog would want nothing to do with playing fetch – and when a toy is thrown there is zero chance it is coming back to you).



Retrieval success demonstrates learning. Anytime you bring information to mind (in class typically through questions / quizzes / exams / writing prompts), you are demonstrating learning.

In the brain, retrieval works like turning a light switch on and off. If I say, “Think about your favorite elementary school teacher,” then electrical energy is sent through specific

neurons in the brain. Trillions of neurons can be responsible for storing memory, and we can only hope the information we learned is stored well enough that information from our brains (long-term memory) sends something back to conscious short-term memory that we can use. Most likely you've got the name or names of teachers you were not thinking about AT ALL until this moment. That is the magic of retrieving well-learned information.



See this reminder video and an additional explanation of how memory works:



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Retrieval success is the cornerstone of evaluating your own learning. Many times, when we are trying to remember something, nothing comes back to us by way of the retrieval process. I know I've blankly stared at an exam hoping the correct information will come to me.

26. Retrieval Activity 1

Activity #R1: Basic Retrieval

Problems with retrieval happen quite a lot with names (as we discussed in the “Elaboration” chapter of LEARN).

Let’s practice basic retrieval. Answer the following general knowledge questions. You should have learned or heard of most of this information before.



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here:

<https://minnstate.pressbooks.pub/learnmethod/?p=524#h5p-35>

Did you get the questions correct? I’m most concerned that you understood the retrieval process. Did you get a sense of how easily available some of that information was or how, for some of the questions, there was no way you were going to

recall the correct answer today. For most of us, the knowledge is somewhere in long-term memory, but we do not have access to it because it wasn't well encoded (no elaboration or association) or at this moment we do not have cues or reminders available to help us access it. Have you ever considered writing down a response on an exam, "I know the answer, but I just cannot find it right now." It is humorous but not completely wrong!

Want more retrieval? Some people love having their knowledge tested. Jeopardy is a perfect game for this! You can find practice tests [here](#).

27. Retrieval Activity 2

Activity #R2: Study Methods

When we think of retrieving most of us think of testing, and when we think of testing, we think of studying.

Consider your go-to methods for studying. These questions will help you assess your typical methods for preparing and studying for a test. Use the blue arrow on the right side to move through the questions.



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here:

<https://minnstate.pressbooks.pub/learnmethod/?p=526#h5p-36>

By understanding your own strengths and weaknesses, you can develop strategies to improve your retrieval skills and become a more effective long-term learner. Consider your

responses to the questions above. If you are like many students, you may have answered that you often read and re-read your notes or a textbook as a major study method. You are also not alone if you often find yourself waiting until the last minute to prepare for an exam – a method that we often refer to as cramming!

See what other college students are saying here: [CSU Learning Video](#).

28. Retrieval Activity 3

Activity #R3: Best Learning Habits

Cognitive Psychologists interested in helping students have the best learning habits have researched the most popular methods for studying and learning.

John Dunlosky describes results in the paper, [Strengthening the Student Toolbox: Study Strategies to Boost Learning](#)

Students have their own ideas about what are the best methods for studying. The strategies found to be used the most by students, such as highlighting and re-reading are actually the least effective for remembering. The image below tells the story. The most effective study methods, practice testing and distributed practice involve testing yourself to see what you know. Some of the middle strategies like summarization and key-word mnemonics are good strategies that do provide learning benefits. We will continue to reinforce the best strategies as you continue reading this module.

TOP 10 LEARNING TECHNIQUES

Cognitive Psychologists interested in helping students have the best learning habits have researched the most popular methods for studying and learning. These techniques are characterized by accessibility, ease of use, and applicability.



PRACTICE TESTING



DISTRIBUTED PRACTICE

THE BEST



ELABORATIVE INTERROGATION



SELF-EXPLANATION



SUMMARIZATION



KEYWORD MNEMONICS



IMAGES FOR TEXT

GOOD



REREADING



HIGHLIGHTING



UNDERLINING

BAD



(See more information about the power of these methods here:

[“How We Learn”](#) in SA Mind 24, 4, 44-45 (September 2013).
doi:10.1038/scientificamericanmind0913-44)

References

Dunlosky, J. (2013). American Educator, 37(3), 12-21.
<https://files.eric.ed.gov/fulltext/EJ1021069.pdf>

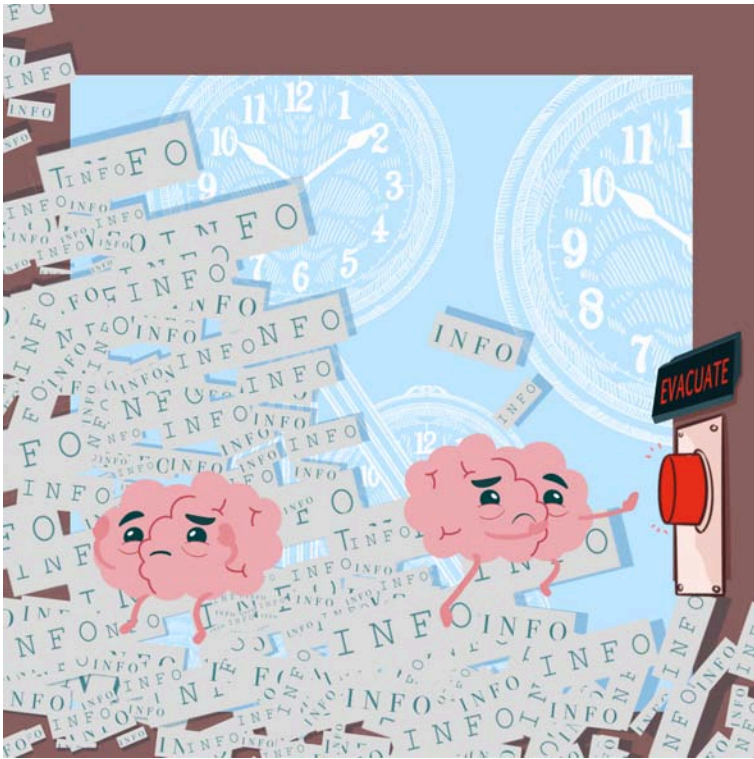
29. Retrieval Activity 4

Activity #R4: More on Cramming and Retrieval

In activity 2 you were asked, “When preparing for a test, how often do you wait until the last minute to study?” If you responded that you often study this way, then you are not alone. In addition to poor study habits like re-reading and highlighting being popular, cramming is common among students, AND it can be beneficial, at least in the short term.

Yes, you heard me correctly! Cramming works. Most of the time we can study before a test (for several hours) and have some success the next day. It comes at a cost though: 1.) you may be tired the next day and require “catching up” with napping or avoiding choices like exercise or other time-consuming choices like cooking a meal vs. eating something quick. 2.) you likely put your body and mind through a bit of stress. We’ll talk about sleep and mental health benefits for learning more later.

When we cram, our minds make initial long-term memory for the learned information. Though, researchers have found that forgetting occurs quite quickly with cramming and in the long-run we are left remembering only a small amount of the information.



Think of it this way, here are several classes you take in high school and college that might be less interesting to you (imagine that subject now). Perhaps you cram because you lack the motivation to be more planful about your studying. You wait until the last minute (usually the night before) to study and find that this has worked, getting you the grades you want.

Overtime, this should be less acceptable. If you are studying a topic that continues to progress (like nursing, biology, engineering, math, psychology) most areas..you need to be able to retrieve information from previous courses to use in

new ones. The brain dump that comes along with cramming is not worth your time and money!



Activity #R4.1:

Describe a time when you crammed and it worked out, you got the desired outcome.

In this short instructional video, one of my own students talks about the trap of cramming and how to change behavior to a better way of studying: [Solutions for students who cram](#).

Here in the video Emma talks about a better way to study called spaced retrieval. Sure, it sounds great and all to carve out time to study for about an hour a day for five days before a test instead of for five hours the night before, but for many people they cannot change their behavior easily.

Behavior change in Psychology requires a combination of external (like grades being a motivator, what your friends say and do) and internal (being personally interested in the topic, you want to learn) motivators.



Activity #R4.2:

Thinking back to your response from prompt 1. What was the desired outcome of the cramming? Do you consider it to be an external motivator (a motivator that comes from the outside: grade, reward, others seeing you do good) or is it an internal motivator (one that only fulfills your inner desire to learn or do something well – no reward or benefit)?

Our school systems, sometimes without intention, sets students up to be more grade or externally motivated. One explanation for this is the emphasis on state-wide test taking for educational gains. Benefits may be for a school to look good or to obtain more resources, without being the best indicator of student learning. For behavior to change it is often necessary to have a combination of inside and outside forces of motivation. You can consider motivations you may have had to eat a healthy diet.



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[https://minnstate.pressbooks.pub/
learnmethod/?p=606#h5p-44](https://minnstate.pressbooks.pub/learnmethod/?p=606#h5p-44)

Chances are if you've attempted to adopt better eating habits you would need to have more than one motivator to keep you going. The same is true for learning.

In the next activity we'll talk about building your motivation to start a studying routine that ditches cramming using small, external rewards.

30. Retrieval Activity 5

Activity #R5: Retrieval, External Motivation and the Pomodoro Method

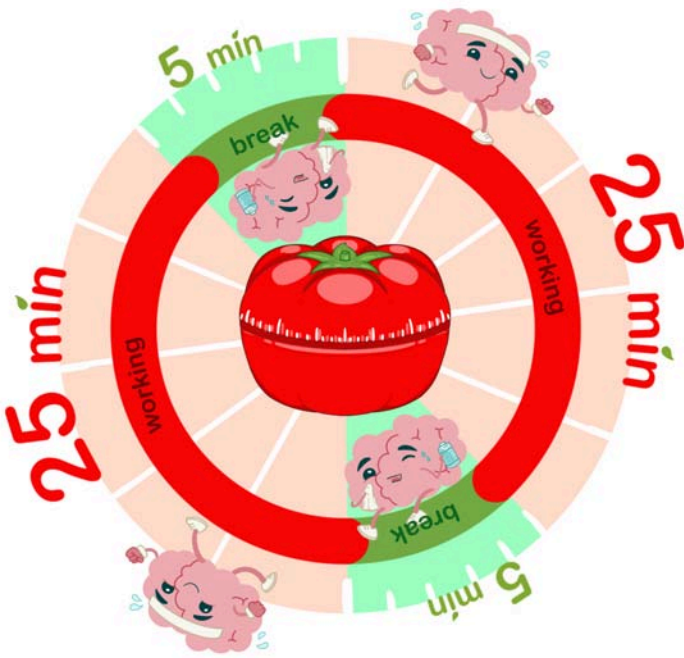
Many students are not equipped with the behavioral tools to study over days instead of all-in-one day. It can seem easier to pull an all-nighter when there is no other choice (it is either now or never! But it isn't good for your overall well being not to mention long-term learning).

One behavioral tool that my students have enjoyed is called the Pomodoro Method. A student named Francesco Cirillo developed this technique for short study sessions and breaks when he used a tomato-shaped kitchen timer to study (The Italian word for tomato is pomodoro). He would set his "tomato-timer" for 25 minutes and when it went off, he would then set another 5-minute time period for a break. This might be all the time you have, and that is okay OR you could set a timer again for another 25-minute interval. Oh, and I forgot to mention, you have to make your 25-minutes distraction free (no media at all and the quieter the environment the better; remember if you choose to listen to music make sure it is instrumental only).

See the Pomodoro method explained here:



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31. Retrieval Activity 6

Activity #R6: Retrieval, Determining your Learning Motivation

For each of the prompts, indicate if it is an explanation for why you attend college.



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here:

<https://minnstate.pressbooks.pub/learnmethod/?p=613#h5p-45>

Look at the prompts you choose as major motivators for why you attend college.

To see which motivators are internal and which are external,

 Check

click the blue “check” button

It is okay to have some of each, but most students will have

some internal motivators to be successful in college. It probably takes a combination of the two to pursue a degree when faced with obstacles, which there may be numerous. If you have only external motivators, you may find it more difficult to persevere when you face obstacles.

Reference:

Vallerand, R. J., Pelletier, L. G., Blais, M. R., Brière, N. M., Senécal, C. B., & Vallières, É. F. (1992). Academic Motivation Scale [Academic Motivation Scale–College Version Echelle de Motivation en Education] <https://doi.org/10.1037/t25718-000>

32. Retrieval Activity 7

Activity #R7: Retrieval Practice – What do I study?

As of now you should have learned two main ideas about retrieval:

1. The process of answering questions or testing yourself on knowledge improves memory!
2. You must practice, EARLY and OFTEN (no cramming)!

See this YouTube Video from one of my former students to summarize these important points before moving on:



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However, just as important about these two main ideas is what

you are studying! Remember, many students' go-to methods of what to study is to read and re-read their textbooks or notes.

This will not help.

Retrieval practice can come in the form of the following:

- Quiz questions you or your instructor create before a test
- Short summaries you can ask yourself questions about
- Quizzing apps like Quizlet or resources from your textbook that provide practice questions
- Note cards with ELABORATED detail or concept maps, images, drawings that you can use to test yourself

Once you have materials to use, then the key is to break up the to-be-learned material into short study sessions. During these sessions, you need to be active in your learning. Be sure you do not lazily resort to reading information. The key is to question.

Sort information into piles or sections that indicate what you know and what you don't.

Sort information by areas you need more information on. When you begin studying early you can take advantage of asking your instructor for help or look up the information.

There are many variations that RETRIEVAL practice can take on. What should change, and here is the toughest part, is your MINDSET about studying. Some might find they can easily practice material on their own and yet others may rely on working with friends to study. If you do this be careful that you don't mistake your friend knowing the material though for your own understanding! It is also possible that you will have educators who haven't learned about the benefit of retrieval practice. Many teachers are receiving training too, just like you, on the science of learning and some are understanding how memory and attention work for the first time. If you are in

a class in which the educator doesn't give you many opportunities to show what you know, you can take the advice to practice retrieval into your own hands. Testing and quizzing yourself in between bigger tests may seem like it isn't your responsibility; however, remember your motivation. It can be up to you to ensure you learn information for the long-term!

PART V
NIGHT

33. Night



“N” NIGHT

The “N” of **LEARN** stands for “**NIGHT**” and places emphasis on how you spend time outside of the classroom with a specific emphasis on sleep and time management. For long-term learning you need to get high-quality sleep as sleep is important in memory formation. In this section you will also

gain information on best practices for using time and resources that can assist in the learning process.

Learners gain knowledge and skill by:

- Considering how time is managed outside of the classroom
- Understanding the benefits of sleep
- Learning about how sleep affects memory
- Knowing resources available to assist in the learning process

It can be difficult to fit learning into our daily lives outside of our classes. For example, I recently asked my science of learning class to estimate how much time they spent studying or preparing for their courses each week. I was surprised to find out there were several students who reported little to no time. I had a hard time believing they thought there was no work to be done outside of the classroom to be a successful student. I decided to ask additional questions....

I found out that many of them came from high schools in which their study time, or extra time for the completion of class assignments was built into their daily schedule. For example, students might have a study period designed for them to complete their work or teachers gave them the time to work on assignments during class. Now that they were in college, the idea of planning their own time to study and learn outside of the classroom was something new. It was something new they would need to begin planning for.

In this module I will emphasize how students can plan to use time outside the classroom wisely, so they make the most of what remains in their day to do things like study and engage in healthy activities for the brain like getting the right amount of high-quality sleep.

34. Night Activity 1



Activity #N1: Time Management Life Focus

To prioritize time for learning, it is first important to see the bigger picture of how you spend time each week.

In the following activity, you will consider 5 major areas you focus your time on each week. Consider these areas as your priorities. They may not be priorities in that they ALL are the most fun or enjoyable things to do but, they should be aspects of your life that you need to live so that you can be your best. Some examples might include work, school, family, or activities.



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here:

<https://minnstate.pressbooks.pub/learnmethod/?p=894#h5p-48>

Now that you have come up with some areas of focus, consider distractions or things that get in the way of these priorities. For example, I might have exercise as one of my priorities for being my best; however, during certain weeks exercise may be the activity I push aside to accommodate something else. If I plan to exercise before work or class each day but I find that I am using that time to catch up on sleep, I end up not completing something that is valuable to me. Overtime, this can shift not just my priorities but my outlook on life and what I value (not to mention in this case my overall well-being).

Which of these distractions often get in the way of your 5 most important areas of focus each week?





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learnmethod/?p=894#h5p-47](https://minnstate.pressbooks.pub/learnmethod/?p=894#h5p-47)

35. Night Activity 2



Activity #N2: Time Management School Focus

Now that you have taken a close look at your main priorities each week, you will focus on what you do regarding coursework. Consider the classes you have currently. For most students, that would be between 4 and 5 separate courses. If you have more or less that is okay too.

In this activity you will list the classes or school work that you prioritize each week. It might be easy to think of these as classes, but depending on what you are studying it may be activities related to courses (e.g., research or artwork). Most of you can label the top priorities as your classes but it is okay to be flexible. If you are an artist or an athlete or you have a leadership activity during school hours, you might be adding that in as one of your most important priorities.



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Click on the School Priorities tab for this activity.



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Now that you have come up with your school priorities, consider distractions or things that get in the way of these priorities. Think back to activity 1. It is possible that some of your priorities in activities 1 and 2, at times, distract or conflict with one another. This is probably not ideal or what you intend; however, it can be normal in a busy life.

Identify your distractions or the things that often get in the way of your 5 most important areas of focus each week in school:



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learnmethod/?p=900#h5p-47](https://minnstate.pressbooks.pub/learnmethod/?p=900#h5p-47)

36. Night Activity 3



Activity #N3: Time Budget and Priorities

Of course you understand we only have 24 hours in a day! With 7-days in a week this give us 168 hours to live our lives. If life is going very well, chances are you will be meeting the needs of your priorities listed in both activities 1 and 2. Because they interact with one another in sharing your precious time, we will now consider them together.

Download the spreadsheet below by clicking the File menu > Download > Microsoft Excel (.xlsx) or by saving it to your own Google Drive and list all 10 of your priorities (5 from activity 1 and 5 from activity 2) in the boxes provided in the spreadsheet.

Once you have them listed, consider how much time you need to commit to each priority each week. This requires some additional thinking and a little quick math. If you put exercise as one of your life priorities in

activity 1, next to it you would indicate the number of hours you dedicate (in an ideal week) to doing exercise. Maybe that is 4 hours!

At the end, you should see the total number of hours your priorities require each week. Below that you should see the time you have left in your week for other activities.



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For many of us, there are priority tasks not included in our top 10. For example, I'll bet some of you put sleep as one of your priorities...good for you! If you didn't, you still need to sleep and will want to consider it within the 168 hours you have each week.

Use the remaining lines on the spreadsheet to type all the other activities you MUST do each week that you do NOT already have as one of your 10 priorities.

Next to each activity, consider the number of hours it takes up. How many hours do all these essential, but not "your priority" activities need each week? Take that total and subtract it from

the number of hours you reported having left in your week from the “Time left in your week” box on the spreadsheet.



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Many people are surprised at this number. It could be that you have drained all your hours and have nothing left. Or, perhaps you have too many hours. Either way the number can be an indication of your ability to plan and focus on what is important.

The hours you have left can be considered free time. Many of us have hobbies that take up some of this time. Many of us though swallow up too much free time scrolling through social media or mindlessly watching videos.

We tend to underestimate the amount of time we use our phones and devices. For android phone users you can check your device time and app use by going to your settings and a setting called Digital well-being. If you have an i-phone you can find a “screen time” button in the settings app.

This video by Allan Northern summarizes 8 helpful tips on time management. Don’t worry about taking them all on at the same time. Watch and consider what one or two strategies you can pick up today. Behavior change is hard but the payoff can be worth it!



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37. Night Activity 4

Activity #N4: Sleep Superpowers

Scientists still have much to learn about sleep; however, sleep is important for brain and body health and overall wellbeing. Adults need between 7 and 9 hours nightly. My college students tell me they generally would like to get more sleep. A common complaint is their inability to get things done or balance all their priorities without staying on a regular sleep schedule.

Now that you have put some work into how to best use your time in activities 1 and 2, you can commit the necessary time to getting good-quality sleep. In our busy society many working people pride themselves on “needing little” sleep. This is a false belief and a preference created through our success driven culture. Less than 5% of the population have genetic variations allowing them to function on little sleep.

Priding yourself on getting little sleep is one thing, but can you imagine the effects of going for days without sleep? The video below describes what happened when a teenager attempted to go several days without sleep:



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The effects of getting no sleep are so bad that research on sleep deprivation is considered dangerous and cannot be conducted on humans. This audio file from the Sleep Foundation describes what happens to people as they go from several hours to several days without sleep: [How Long Can You Go Without Sleep?](#)

Sort the activities below into things you do and things you do not do before sleep by dragging and dropping them into the correct box for your habits.



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Here are some common tips to improve the quality and quantity of your sleep:

Tips to Improve Sleep



These tips involve activities that you can do or change to make sure your environment is ready for sleep. You may not be able

to change everything about where you sleep (like if your room is much hotter than you would like). But you can remove a television or other screen from the bed area to put your focus on sleep. Try focusing on at least one thing you can change to help improve your future sleep.

38. Night Activity 5

Activity #N5: Sleep Tracking

You've had some time to think about how important sleep is, so you have likely considered your sleep. Let's dig deeper into your daily and nightly habits that influence sleep.

The following questions are going to be broken down into day-time sleeping activities. When responding, think about what you did **YESTERDAY**. Respond based on what occurred that day and not today. If you want to take a deeper dive into your behaviors, go back and respond to the questions a second time with the **DAY BEFORE YESTERDAY** in mind.



If you feel like the details are fuzzy, another way to complete the activity would be to come back to this in a few days, while focusing on remembering what you do regarding these day and night activities.

The following questions are for you to consider your activities

just before sleeping and during the night into the morning. When responding, think about what you did YESTERDAY. Respond based on what occurred that day and not today. If you want to take a deeper dive into your sleep, come back and respond to the questions a second time with the DAY BEFORE YESTERDAY in mind.



An interactive H5P element has been excluded from this version of the text. You can view it online here:
<https://minnstate.pressbooks.pub/learnmethod/?p=917#h5p-53>



Use the blue arrow on the right side to move through the questions.

QUESTIONS ABOUT NIGHTTIME

1. What time did you turn off the lights to go to sleep?
2. What time did you wake up to get out of bed?
3. How many total hours of sleep did you receive?
4. How many times did you remember waking up in the night?
5. Rate the quality of your sleep 1 = poor to 5 = excellent
6. Was this a typical night's sleep, explain?



Now that you have thought about your sleep more, you should think about whether you are getting the most out of your ability to rest well. If you marked off the day-time behaviors like having caffeine or exercising too close to bed, these are behaviors you can change. Pick an outcome you want to focus on from the day-time or night-time questions and work on how you can change or influence the outcome.

If you work on documenting your quantity and quality of sleep, you will notice patterns that you can change. If you are really suffering from lack of good sleep, it certainly is something to talk about with a doctor. The [National Sleep Foundation](#) is also a great resource for more information.



39. Night Activity 6

Activity #N6: Sleep Process Basics

Sleep is one of the more mysterious human behaviors as there is still much to learn about how the brain and body reacts to sleep. We all have experienced how our body feels on little or no sleep. We feel tired, may suffer from headaches, and can even become sick when sleep is sacrificed. As bad as our bodies may feel, our minds may equally suffer. It is difficult to concentrate when you have had little sleep and as a student you could have trouble staying awake during class!

During sleep your body is relaxed but your mind is active. Many people know about the cycle of sleep stages a person encounters during the night. These stages take your body through light and then deeper sleep. During one stage, called Rapid Eye Movement or REM, your eyes move and your brain is very active; you dream! In this REM stage most interesting perhaps is that your brain is extremely active while your body is in a nearly paralyzed (temporarily) state.



Probably most surprising are the memory benefits that come with the 7-9 recommended hours of quality sleep. Sleep is crucial for learning and memory. This is because during sleep a memory process called consolidation occurs. Consolidation is like a cementing process for memory. While sleeping, your brain strengthens memory and connections between neurons (brain cells). The strengthening makes it more likely that new short-term memories (things you have just learned about in a class) get connected with other neurons so there is a greater change these new memories will become long-term ones. Students who sleep after studying for an exam or learning a new skill are more likely to remember that information. Next time when you consider staying up all night to study and forgo sleep, think about this. Not only will you be able to focus less but you will not get the benefits of memory consolidation during sleep.

You can find out more about the fascinating connections between memory and sleep here:



One or more interactive elements has been excluded from this version of the text. You can view them online here: <https://minnstate.pressbooks.pub/learnmethod/?p=922#oembed-1>

Summary of sleep and brain benefits:

- SLEEP leads to memory consolidation
- SLEEP improves attention and other cognitive function
- SLEEP improves “next-day” learning tasks
- SLEEP improves/protects overall brain health

40. Night Activity 7

Activity #N7: Sleep Superpowers

You should have so many reasons why you want to sleep and sleep well now! As a society we seem to resist sleep when we need it and continue to engage in distracting behaviors when we should learn about to be more restful. See all of the sleep benefits and consider how you can you sleep as your superpower.

Sleep Benefits



**MEMORY
CONSOLIDATION**

CLEARED TOXINS

IMPROVED FOCUS



**STRONG IMMUNE
SYSTEM**

**APPETITE
REGULATION**

**REDUCED RISK OF
HEART DISEASE**



REGULATED MOOD

REDUCED STRESS

**IMPROVED
EFFICIENCY**

WELLNESS BODY BRAIN

41. Night Activity 8

Activity #N8: Resource Use

Did you know that your school has resources dedicated to help you learn? Students have access to and if they are taking college classes, pay for many IMPORTANT RESOURCES. When asked, many students are either unaware of or do not take advantage of what is available.

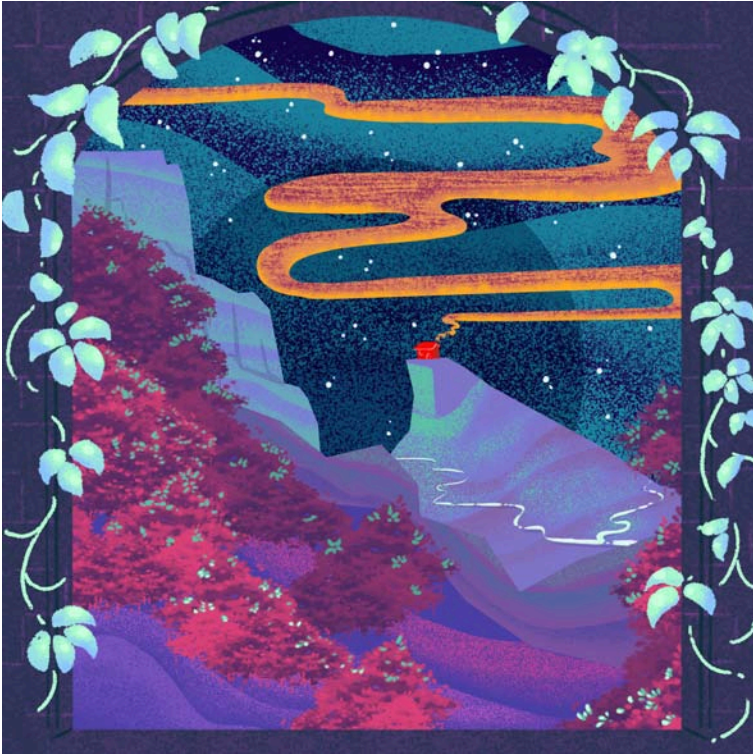
Typically, you will find resources related to: Academic success, mental and physical health, and overall well-being. Many schools also have career resource offices to prepare them for life after graduation. My top advice for any student is to ask questions of their instructors and talk to their classmates. Building relationships while you learn is an important tool for success.

The final advice for NIGHT is that time outside of class matters.

- Time outside of class matters
- Know your resources and how they can help
- Track time in activities and set priorities often
- Track time sleeping and keep working on behaviors that

promote high-quality sleep

- Find time to think and LEARN.



Conclusion



**I began by asking if anyone ever taught you how to learn?
I am hopeful you can now confidently say “yes.”**

Keep in mind you should consider yourself a life-long learner. There is always more we can learn.

Remember too that learning is a science of trial and error. New information from the area of Cognitive Psychology will continue to influence best practices for learning and remembering. One of the best learning skills you can develop is a critical thinking mindset. Be open to how knowledge changes and be flexible. I certainly will be as I continue to refine this e-book.

For comments or suggestions on what you liked and/or how I can continue to improve, contact me at:

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THANK YOU!

Facilitator's Guide

[Learn Facilitator's Guide](#)