

CHAPTER 6

Improve Your Memory

You should read this chapter if you need to review or learn about



- ➔ How memory works
- ➔ Ways to improve your memory so you recall what you studied
- ➔ Using mnemonics as a memory aid

In Chapter 5, you learned how to take useful notes and make good outlines. Now you will learn how to sharpen your memory so you remember what you studied.

Get Started



Many people find they can't remember information they need for tests. However, even students with good memories can benefit from learning how to remember more of what they studied. A good memory is an invaluable tool for study and test success.

How Memory Works

Have any of the following memory glitches ever happened to you?

- You try to memorize information but find your mind wandering. You spend hours staring at the book, but few facts stick.
- You memorize information but garble it on the test.
- You can remember some types of information but not other types.
- You study something, think you've got it down pat, but go blank when you take the test.
- You learn what you need for the test, but you forget it right after the test. Then you have to memorize it all over again for the midterm or final exam.

If so, you're not alone! Memorization is a vital part of the study process. Every successful student has figured out ways to retain more of what they learn. "Not me," you say. "I have always had a bad memory." There's nothing wrong with your memory! A memory is not a physical trait like flatfeet or weak ankles. Memorization is a skill, like hitting a home run or riding a bicycle. You can improve your memory, just as you can improve any other skill. Start by learning about memory.

The memory process has three steps:

1. Learning
2. Storing
3. Recalling

Most people find that their memories work this way:

Easiest to remember	Pictures
↓	Words
Most difficult to remember	Numbers

To remember a fact, it's not enough to learn it; you must be able to store it in your brain so that you can recall it at will. You have to be able to retrieve the memory when you need it for a test or other assessment.

There are two basic types of memory:

- *Short-term memory*, which lasts about half a minute
- *Long-term memory*, which lasts for a long period of time, as long as decades

New information automatically goes into the short-term memory buffer without any effort on your part. For example, if you decide to take four items out of the refrigerator, you'll remember what you need just until the chore is done. Then the memory gets erased because you no longer need it. Your brain has made a conscious choice to dump the information.

When you study, however, you want to lock information into your long-term memory. To do so, you have to make a deliberate effort to remember it. That's where memory techniques come into play.

Psych Yourself into Success

Just as you can psych yourself into failure, you can psych yourself into success. It's especially important to take a positive attitude when it comes to memory. *Believe* that you have an excellent memory and that you can succeed by using the memory techniques explained in the rest of this chapter.

Because most so-called memory problems are a result of distraction, lack of interest, lack of attention, and poor organization, follow these steps to improve your retention immediately:

- *Minimize distraction.* Memorize material in a quiet place, such as your bedroom, an unused corner of the house, or a very quiet section of the library. Close the door. Turn off the stereo and the television. Switch off your beeper. Don't answer the phone. You may be able to study while listening to music, but it is far more difficult to memorize in a noisy setting.
- *Get interested in the text.* Many things you have to memorize are boring. That's the truth. Don't lie to yourself, but don't fight it. You know that you have to memorize the material even if it is boring. Focus on some aspect that you find interesting and let yourself enjoy it. The more you fight the material, the harder it will be to memorize and retain.
- *Stay focused on the text.* The average adult has an attention span of 10 to 30 minutes; therefore, break the time you spend memorizing into chunks of no more than half an hour each. If you find sitting that long a chore, bribe yourself with little treats. For example, promise yourself a 10-minute break after each half hour of memorization.
- *Beef up your organizational skills.* Be sure that you have all the material you need to memorize the facts at hand: your textbooks, articles, printouts, and so forth. Set aside enough time to really memorize the facts you need so you're not trying to cram in a lot of information at the last minute. Cramming while you memorize is a recipe for disaster.

Memorize the most difficult or most important information during your "prime" time. For example, if you are a morning person, tackle memorization right after breakfast (always eat breakfast!). If you find your attention span is longer and sharper at night, save memorization for then. If you're not sure when you're at your peak, spread your reading and memorizing throughout the day. No matter when you are most alert, you are always better off breaking your memorizing into short periods to increase your recall.

Six Simple Steps to a Better Memory

The true art of memory is the art of attention.

—Samuel Johnson

You've just learned that good memory skills require a desire to improve. Now we'll turn to proven memory tactics. You won't be able to use every strategy in this chapter, but you don't

have to. Instead, discover which strategies you like and understand. Use these strategies as often as possible. When it comes to memory, practice *does* make perfect.

Quick Tip



The two biggest inhibitors of memory are stress and attitude, so minimize physical and mental stress as much as possible. You've already learned the importance of adopting a positive attitude.

Following are my six simple steps to a better memory. I'll introduce the steps here and explain them in subsequent sections.

1. Understand it.
2. Associate it.
3. Visualize it.
4. Use mnemonics.
5. Review it.
6. Use it or lose it.

Understand What You're Memorizing

Don't confuse *memorizing* information with *learning* it. Study these equations:

$$\begin{aligned}\text{Memorizing information} &\neq \text{understanding information} \\ \text{Understanding information} &= \text{remembering information} \\ &+ \text{knowing what it means} + \text{knowing how to use it}\end{aligned}$$

You can memorize great piles of information and not have a clue how it applies in context. Obviously, this isn't going to do you any good when test time comes. Merely spouting back reams of facts isn't going to get you the grade you want. Nor will it help you understand what you are supposed to be learning.

There is a common fallacy that memory is a mechanical process. It's often called *rote learning*, or learning by heart. But fixing something firmly in your mind is only one part of memory. Memory is also recalling and connecting meaningful ideas in a meaningful way. When you memorize, you remember material that you understand and have thought about. You can never memorize a lesson that you don't truly understand.

Always begin by understanding the material. To get the most understanding from a text, follow these three steps:

1. *Organize the material in a logical way.* Information that is arranged in a sensible way is *always* easier to memorize than material that is disorganized. Never assume that a text is

clear or that a teacher has given well-organized notes. Even if you're lucky and the material is already logically arranged, you can rearrange it in another format that makes more sense to you. Always be sure that you have retained the original meaning, however. Here are some logical ways to organize material:

- Alphabetical order
- Cause and effect
- Grouping similar items
- Least to most important
- Most to least important
- Numerical order
- Order of importance
- Problem-solution format
- Time order

Select the method that makes the most sense to you and best fits the context. For example, if you're memorizing information about the Vietnam War, consider time order; if you're memorizing math theorems, try the problem-solution format.

2. *Restate what you read in your own words.* Paraphrase or summarize it. Say your paraphrase or summary aloud or write it down.

3. *Get help.* Clarify any problems instead of soldiering on. Check a reference text such as an encyclopedia, almanac, or dictionary. Contact a classmate for an explanation. Ask the teacher or professor for further information.

Quick Tip



Always memorize information in small pieces, because your brain can retain only about a half dozen pieces of information at one time. If you try to learn more than seven pieces of information at a time, some will get forgotten before you can lock it in your long-term memory.

Associate Information to Memorize It

Tying new information to what you already know can help you make information stick. You can do this using *association*.

Association helps you link something you are trying to remember to an image or situation you already know and can easily picture. You make associations all the time without thinking about them. For example, the locker combination 369 is easy to remember because you associate it with multiples of 3. By connecting new ideas to what you already know, you're giving your brain a way to retain the information. For example, if you know that *either* is spelled *ei* rather than *ie*, you can use this to learn that *neither* follows the same pattern.

Objects can be associated in many different ways. Here are some examples:

- Having the same smell, shape, or feeling
- Having a similar smell, shape, or feeling
- Being placed on top of each other
- Crashing into each other
- Merging together
- Wrapping around each other
- Rotating around each other or dancing together

For instance, children are taught new letters and words by linking them with information they already know. The teacher shows children an A and an apple. The children associate the two, which helps them remember that *apple* begins with the letter *a*.

Quick Tip



What happens if you can't come up with a logical association? Don't worry. Any association at all will work. In fact, the more absurd an association, the easier it usually is to remember.

There are several different ways to associate objects and ideas to improve your memory. Here are two of the most useful techniques built on association.

1. *The peg system.* This method is best used for remembering ordered lists of terms. To use this technique, peg, or associate, a new idea with a word. Then link the pegged words together in a chain of events to help you remember the items in the list.

For example, say you have to memorize the following list of countries: Afghanistan-Cuba-China-Argentina. To memorize them, you might imagine an afghan (Afghanistan) on the bed that Castro (Cuba) naps on; then Castro picks up a china plate (China) and sings a song from *Evita* (Argentina). Associating these ideas can help you remember the new information.

2. *The room system.* Also known as the loci (Latin for “place”) method, the room system was developed by Roman orators who needed to memorize long speeches. These toastmasters would select a familiar building or forum and set aside a number of spots, or loci, to remind them of parts of their speech. These speakers realized that people tend to remember more when they can key the study context (the physical location) to the text.

Say that you have to remember quotes from a Shakespearean play. You are going to be asked not only to explain the quotes but also to identify the act in which they appear. To remember the information in each act of a play, read each act in a different room, or just imagine that you are doing so. For example, read act 1 in the cafeteria, act 2 on the bus, act 3

in the kitchen, act 4 in the park, and act 5 in the common room. On the exam, when you see each quote, you'll remember where you were sitting when you first read it. This will help you remember in which act each quote appears.

Use Visualization to Improve Your Memory

As you memorize new information, form a mental picture of a person, place, thing, or idea. Do this by imagining how it looks, smells, sounds, tastes, or feels. The more vividly you can create that mental image and the more personal you make it, the more likely you will be to recall what you need to know.

Preparing for a standardized test, for example, you might need to remember as many word definitions as possible. To remember that *phobia* means “fear of,” you might visualize Frankenstein. Add an association to this: the *F* in *Frankenstein* links to the *f* sound in *phobia*.

Create pictures, maps, diagrams, cartoons, and charts. Draw pictures or cartoon characters, graphs, tables, charts, timelines, and so on to aid memory. Even simple stick figures and drawings are useful if you are a visual learner. Pay attention to pictures and charts in textbooks.

As you visualize, use all your senses. Use your body, too. You'll remember 90 percent of what you do, 75 percent of what you see, and 20 percent of what you hear if you tap kinesthetic memory. Make it physical. Adding a physical activity such as pacing, jumping, throwing a ball, or writing enhances the specific memory for many people. Singing works great, too. Songs stick in our minds because of their strong rhythm. Set important facts such as state capitals, presidents, and science facts to songs to help fix them in your mind.

Quick Tip



Are there any shortcuts to a good memory? Some people claim that the herbal extract Ginkgo biloba is a memory booster. Others claim that bananas and vitamins E, C, and choline can increase your memory. I suggest sticking with the tried-and-true memory-boosting techniques in this chapter rather than relying on unproven shortcuts.

Improve Your Memory with Mnemonics

Mnemonics (neh-mon-iks) are memory tricks that help you by using cues that are visual, linear, or auditory. It's a big word but an easy and effective concept. Mnemonics are little devices that jog your mind, including the following:

- Acronyms
- Acrostics
- Jingles
- Mind maps
- Sayings
- Songs

You're already using mnemonics in your daily life. To adjust your clock for daylight saving time, you use the mnemonic "spring ahead, fall back" to remember to set the clock ahead an hour in the spring and back an hour in the fall. To remember how to identify poison ivy, you use this mnemonic: "Leaves of three, let it be; berries white, take flight!" To remember how many days in each month, you repeat this mnemonic: "Thirty days hath September, April, June, and November. All the rest have 31 (except for February which has 28)." And everyone knows this famous mnemonic used to spell words that contain *ie* and *ei*:

I before *E*, except after *C*
or when sounded like *A*
as in *neighbor* and *weigh*

Figure 6-1 lists some common and useful words that fit this rule.

<i>I</i> before <i>e</i>	Except after <i>c</i>	Sounded as <i>a</i>
Achieve	Ceiling	Freight
Believe	Conceit	Neighbor
Chief	Conceive	Reign
Fierce	Deceit	Sleigh
Fiend	Deceive	Vein
Grief	Perceive	Weigh
Piece	Receipt	Weight
Relief	Receive	
Siege		
Shriek		

Fig. 6-1 Words that contain *ie* and *ei*.

Now let's explore the different types of mnemonics in greater detail. Study Figure 6-2.

As you memorize information, choose and create the mnemonics that best stick in your mind. Here are some factors to consider as you use mnemonics:

- *The specific information you are memorizing.* Some information lends itself better to certain types of mnemonics. For example, consider using acronyms for only a few facts (such

Mnemonic	Definition	Example
Acronyms	Each letter in the word represents the first letter of a fact you need to memorize	FACE (spaces on the musical scale: FACE)
Acrostics	Create a sentence using the first letter of each word	<i>Every Good Boy Does Fine</i> (lines on the musical scale: EGBDF)
Jingles	Set information to a quick song	In 1492, Columbus sailed the ocean blue
Mind maps	Visuals such as webs or diagrams	Rosetta stone's languages Demotic→Greek→hieroglyphics
Sayings	Create a saying or adapt an existing one	"What's up, DOC?" denotes the order of the phases of the moon by the shape of the letters: D Waxing half-moon with the curve on the right O Full moon C Waning crescent moon with the curve on the left, heading toward a new moon
Songs	Set information to a tune	"The Alphabet Song"

Fig. 6-2 Types of mnemonics.

as the continents or the Great Lakes), but use songs for a great deal of information (such as all the kings and queens of England).

- *Your level of prior knowledge.* The more you know, the easier the mnemonic can be, since it will be easier for you to link the information with what you already know.

Figures 6-3 and 6-4 list additional academic mnemonics. See how many of these common, useful academic mnemonics you know.

Quick Tip



Pluto is technically slightly closer to the sun than Neptune, but for 238 years of Pluto's 248-year orbit, little Pluto is the ninth planet.

Mnemonic	Stands For
Please Excuse My Dear Aunt Sally	Order of operations in solving a math equation: parentheses, exponents, multiplication, division, addition, subtraction
Sohcahtoa	Order in which to divide the legs of triangles: soh = sine cah = cosine toa = tangent
Lucy Can't Drink Milk	Roman numerals: LCDM (50, 100, 500, 1000)
Toronto Girls Can Flirt And Only Quit To Chase Dwarves	Hardness scale for minerals: talc, gypsum, calcite, fluorite, apatite, orthoclase, quartz, topaz, corundum, diamond
Camels Often Sit Down Carefully; Perhaps Their Joints Creak; Persistent Early Oiling Might Prevent Permanent Rheumatism	Geological time periods, oldest to present: Cambrian, Ordovician, Silurian, Devonian, Carboniferous, Permian, Triassic, Jurassic, Cretaceous, Paleocene, Eocene, Oligocene, Miocene, Pliocene, Pleistocene, and Recent
King David Come Out For God's Sake	The taxonomic hierarchy in botany: kingdom, division, class, order, family, genus, species
My Very Educated Mother Just Served Us Nine Pizzas	Order of the Planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto
Roy G. Biv	The order of colors in the spectrum: red, orange, yellow, green, blue, indigo, violet

Fig. 6-3 Science and math mnemonics.

Acronyms, or acrostics, use the first letter of each word you're trying to remember to build a mnemonic. Some acronyms have become common words themselves. How many of these acronyms do you use to remember common devices?

- Laser (light amplification by stimulated emission of radiation)
- Radar (radio detecting and ranging)
- Scuba (self-contained underwater breathing apparatus)
- Snafu (situation normal, all fouled up)

As you memorize new information, create your own mnemonics. These can be rhymes, jingles, acronyms, or any other memory pegs. For example, remember a checklist of things to bring to work each day by putting the items in an order that has a beat to it: *briefcase, keys, train ticket, newspaper, lunch money*. Say it as you leave your home each day, and you'll be prepared.

Mnemonic	Stands For
I Am A Person	The oceans: Indian, Arctic, Atlantic, Pacific
Eat An Aspirin After A Nighttime Snack	The continents: Europe, Antarctica, Asia Africa, Australia, North America, South America (the second letter in the first three A words helps you to remember the A continents)
HOMES	The Great Lakes: Huron, Ontario, Michigan, Erie, Superior
Sam's Horse Must Eat Oats	The Great Lakes, in order from west to east
See Mr. Huron Eating Oranges	The Great Lakes in order of size: Superior, Michigan, Huron, Erie, Ontario
Divorced, Beheaded, Died; Divorced, Beheaded, Survived	The fate of Henry VIII's wives

Fig. 6-4 History and geography mnemonics.

Review Information to Memorize It

- The average adult cannot remember 50 percent of what he or she has just read.
- A day later, recall drops to 20 percent.

Quick and constant review can help you fix the facts in your memory. It takes 15 to 25 minutes of practice over several days to memorize and retain information successfully. Figure on spending about 40 percent of your learning time reviewing new information that you are trying to memorize. Follow the timetable shown in Figure 6-5.

Time to Review	Reason
Directly after class	To reinforce short-term memory
Right before going to sleep	To use the subconscious to continue processing information
Within 24 hours	To help fix long-term memory
Each day, for about 10 minutes	To help fix long-term memory
In a month	To help fix long-term memory

Fig. 6-5 When to review material you are memorizing.

- To make the most of your review, recite facts aloud or write them down. You might have used this technique by writing spelling words over and over to help memorize them. Try it now with these tricky spelling words: *chocolate*, *laboratory*, *February*, *spaghetti*, *forty*.
- Because verbal rehearsal is such an effective memory tool, study with someone or use a tape recorder to say aloud what needs to be memorized.
- Write information that you have memorized on index cards. Use these flash cards often to help you remember historic dates, definitions, foreign language vocabulary, math formulas, and other facts and ideas.
- Finally, typing or rewriting notes is a very effective memory device if you learn best kinesthetically, by using your body.

Use It or Lose It

To retain what you memorize, use it. But using it doesn't mean repeating it like a mantra. To fix a memory in your mind, follow these suggestions:



Quick Tip

Memorizing new information the same day you heard or read it will improve your memory significantly.

- Review the information every day. This is especially helpful with important information that you've memorized for midterms, finals, standardized assessments, licensing exams, entrance exams, and certification tests.
- Think about what you memorized. Apply the facts to new situations and link them to new facts that you must memorize. Make them a part of your life.
- A few days after you memorize new facts, quiz yourself on what you memorized. (Don't quiz yourself immediately after you memorize the information because that tests only short-term recall, not long-term memory.) The quiz can be oral or written, as long as it helps you use the information.

Don't get upset if it takes you a few seconds to recall the information. If you hit a blank, think back to your associations, visualizations, or mnemonics. Wait a few seconds for the information to

be retrieved. If it still doesn't come to mind, try a new approach. For example, if you associated it the first time, try creating a new mnemonic.



It's a Wrap



Memorization is a skill. You can improve your memory, just as you can improve any other skill.



The memory process has three steps: learning, storing, and recalling.



There are two basic types of memory: *short-term memory*, lasts about half a minute, and *long-term memory*, which lasts for a long period of time.

- ✓ Improve your memory by minimizing distraction, getting interested in the text, staying focused on the text, and beefing up your organizational skills.
- ✓ Follow these six steps to memorize more effectively: *understand it, associate it, visualize it, use mnemonics, repeat it, and use it.*



Questions

True-False Questions

1. Memorization is a vital part of the study process.
2. People are born with a good memory; a good memory is not something you can develop much beyond your natural capacity.
3. The memory process has three steps: learning, storing, memorizing.
4. Nearly all people find it easier to remember pictures than words and numbers.
5. There are two basic types of memory: short-term memory and long-term memory.
6. To improve your memory, study with music in the background. This helps reduce distractions and thus helps you concentrate.
7. Memorizing information is not the same as learning it.
8. To get the most understanding from a text, organize the material in a logical way.
9. *Mnemonics* is the technique of using mechanical devices to help you memorize more effectively.
10. The average adult cannot remember 50 percent of what he or she has just read. A day later, recall drops to 20 percent.

Completion Questions

1. Short term memory lasts about _____.
2. The two biggest inhibitors of memory are _____ and _____.
3. The average person can memorize no more than _____ pieces of information at a time.
4. Tying new information to what you already know can help you make information stick. You can do this by using _____.
5. When you form a mental picture of a piece of information, you are using _____ to remember the information.
6. Memory techniques that help you by using cues that are visual, linear, or auditory are called _____.
7. To make the most of your review, _____.

8. To keep the information that you memorized, it is important to _____ it.
9. A few days after your memorize new facts, _____ yourself on what you memorized.
10. If you can't remember something using one memory technique, you should _____.

Multiple-Choice Questions

1. Without any effort on your part, new information automatically goes into your
 - (a) General memory zone
 - (b) Long-term memory
 - (c) Short-term memory
 - (d) Memory buffer
2. When you study, however, you want to lock the information into
 - (a) The test center of your brain
 - (b) The memory buffer
 - (c) Your short-term memory
 - (d) Your long-term memory
3. Most so-called memory problems are a result of all of the following *except*
 - (a) A poor memory that you were born with
 - (b) Distractions
 - (c) Lack of attention
 - (d) Poor organization
4. Memorize the most difficult or most important information
 - (a) In the morning
 - (b) At your "prime" time
 - (c) In the evening
 - (d) In the afternoon
5. Always begin memorizing new information by
 - (a) Repeating the material several times
 - (b) Understanding the material
 - (c) Doing something to distract yourself
 - (d) Writing the information over and over
6. Two of the most useful association methods for improving memory are
 - (a) Visualization and recall
 - (b) Sleep and mnemonics
 - (c) Memorization and rest
 - (d) The peg system and the room system

7. All of the following are types of mnemonics *except*
 - (a) Writing the information over and over
 - (b) Acronyms and sayings
 - (c) Acrostics and jingles
 - (d) Mind maps and songs
8. It takes _____ minutes of practice over several days to successfully memorize and retain information.
 - (a) 1 to 5
 - (b) 5 to 10
 - (c) 15 to 25
 - (d) 30 to 75
9. To fix a memory in your mind,
 - (a) Let the information sit undisturbed for a few weeks
 - (b) Don't think about it
 - (c) Review the information every day
 - (d) Avoid quizzing yourself so you don't displace the memory
10. Memorizing new information _____ you heard or read it will improve your memory significantly.
 - (a) A day after
 - (b) The same day
 - (c) A week after
 - (d) A month after

ANSWER KEY

True-False Questions

1. T 2. F 3. F 4. T 5. T 6. F 7. T 8. T 9. F 10. T

Completion Questions

1. half a minute 2. stress and attitude 3. seven 4. association 5. visualization
6. mnemonics 7. recite facts aloud or write them down 8. use 9. quiz or test
10. try another technique

Multiple-Choice Questions

1. c 2. d 3. a 4. b 5. b 6. d 7. a 8. c 9. c 10. b

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