

LEARNING HOW  
TO LEARN: HOW  
TO SUCCEED IN  
SCHOOL WITHOUT  
SPENDING ALL YOUR  
TIME STUDYING;  
A GUIDE FOR KIDS  
AND TEENS

*by Barbara Oakley, Terrence J.  
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## ABOUT:

This is a comprehensive summary of the book *Learning How to Learn: How to Succeed in School Without Spending All Your Time Studying; A Guide for Kids and Teens* by Barbara Oakley, Terrence J. Sejnowski, Alistair McConville. Covering the key ideas and proposing practical ways for achieving what's mentioned in the text. Written by book fanatic and online librarian Ivaylo Durmonski. (Printable available only for supporting members.)

## HIGHLIGHTS:

- If you are only following your passion, you are missing out. There are so many other things you might be passionate about. Learning will help you find them.
- To get the job done, use focused mode. To generate new, original ideas, use diffuse mode.
- In the brain, learning happens by neurons talking to each other. The more we learn and practice something, the more neurons connect. But if we stop practicing, the created paths start to weaken.

## ABSTRACT:

Essentially written for kids, but it's of great value for people of all ages. Learning How to Learn is the missing handbook schools had to create to improve our ability to learn. Using clever metaphors and easy-to-get language, the authors explain how the brain works. What happens in the background which allows us to better engage with incoming information – learn faster, improve our memory, distill key components, stuff like that. Don't get fooled by the funny concepts and the silly illustration. This book is not only for kids. It's for adults, too. Adults who want to upgrade their learning skills and master subjects faster.

## THE CORE IDEA:

Our brains are capable of so much more. We simply need to know how to turn on that power. The research-based learning strategies the authors share in this insightful book will open your eyes and your mind. Show you that by acquiring a couple of learning strategies, you can learn pretty much everything – even if it feels impossible at the moment. The book is full of stories of people who did badly in school but later in life discovered that learning can be improved. Learning How to Learn will allow you to learn anything. Thus, improve the quality of your life exponentially.

## KEY LESSONS FROM LEARNING HOW TO LEARN:

- LESSON #1: THE PROBLEM WHEN YOU FOLLOW YOUR PASSION
- LESSON #2: WE'VE GOT TWO WAYS OF THINKING
- LESSON #3: NEURONS ARE THE BUILDING BLOCKS OF YOUR BRAIN
- LESSON #4: YOUR BRAIN HAS TWO DIFFERENT MEMORIES
- LESSON #5: CONVERT FACTS INTO PICTURES TO REMEMBER THEM
- LESSON #6: DON'T JUST LEARN, DO
- LESSON #7: OBSERVE HOW YOU LEARN

LESSON #1:

# THE PROBLEM WHEN YOU FOLLOW YOUR PASSION

Follow your passion, they say.

Do only things you like, and there will be no resistance in your path in life.

It makes sense, of course. When we do things we like, we feel better. Work harder. Improve faster.

But we do all of these improvements in one field. And being good at only one thing is rarely enough.

Or as mentioned by one of the authors in the book:

*“I realized that by only following my passion, I didn’t have many choices.” Barbara Oakley*

Learning How to Learn opens with the story of the author,

Barbara Oakley. She makes a confession about how she sucked at math. She was so bad, that she stopped learning and focused solely on the subjects she enjoyed. Fast-forward a couple of years in the future, and she got a degree in computer science – and you need a lot of math to get such a degree.

If we only concentrate on subjects we like. We do get better, yes. But if we go a bit off track. If we go outside our comfort zone. We can improve much faster. Broaden our passions and open ourselves to many other wonderful opportunities.

The main thing that stands in your way. The main hurdle that prevents you from understanding hard subjects. Is your ability to learn.

If you improve your learning skills, you can greatly improve your life.

Commonly, we convince ourselves that we can't learn something. "It's not our thing," we say. "It's too hard for me."

But not the subject is hard, we simply don't know how to learn. We don't know how to approach different and difficult subjects.

When you acquire new mental learning tools. Understand how to approach a subject. You can learn anything, even if you failed at it many times before.

That's exactly what the book teaches us. How to get better at learning, so we can conquer new territories and expand our



knowledge map.

*“It’s easy to believe that you should only concentrate on subjects that come easily for you. But my story reveals that you can do well in subjects you don’t even like. The truth is, it’s okay to follow your passions. But I also found that broadening my passions opened many wonderful opportunities. Learning new subjects I didn’t think I could do turned out to be an adventure!” Barbara Oakley*

LESSON #2:

# WE'VE GOT TWO WAYS OF THINKING

After many brain scans, neuroscientists have discovered that our brain works in two different ways.

The authors label them as focused mode and diffuse mode.

These two thinking modes are essential for coming up with fresh ideas and, more generally, improving your thinking.

Let's look at them one by one:

## FOCUS MODE

Focus mode is essentially paying close attention to something. You are fixated on a particular topic and nothing else seems to matter. When you are learning something, you are in focus mode.

The author relate the concept to a pinball machine. You know, the

ones you'll see in game rooms. So, when you are in focus mode, imagine the ball bouncing between just a couple of bumpers in one small area. While hitting these bumpers, the ball creates trails. Similar trails are created in your brain. When you learn something, you create internal pathways. The more you focus while you learn, the stronger the pathways.

## DIFFUSE MODE

Diffuse mode is practically daydreaming. Your mind is not focused on anything particular. You just let it wander.

“What’s the benefit in that?” you might ask.

Let me explain...

While in diffuse mode, different paths of the brain are activated. When you let go of the flippers, if we return to the pinball example. The ball falls into a different table with fewer bumpers – another metaphor the authors use. The bumpers are much farther apart. So, your thinking is much broader. You think about different things that initially might not seem related to a problem you are facing, but they do help. Help you to see the broader picture.

## FOCUSED AND DIFFUSE MODE

The best way to solve problems is to switch between focused and diffuse mode.

We can't see the big picture when we are focused on the problem. We ignite only the pathways that we previously created. However, these are rarely enough to solve a difficult problem. We need to invite different concepts from other domains.

When you enter diffuse mode, you give your mind a break from the problem. But you also do something else, you let it see how the problem you are solving relates to other things you know. That's how you solve complex problems.

That's why the famous Pomodoro technique is so, well, famous.

For those who don't know, the concept is the following: You set a time to work for 25 minutes on a particular task. After the 25 minutes, you take 5 minutes break.

This technique works not only because you take regular breaks. But because it allows you to switch between thinking modes. 25 minutes of focused work and then 5 minutes of daydreaming. Both of which essential to help you come up with original ideas to solve the problems you are facing.

*“This is why, when you're stuck on a math problem, you can instead switch your focus to studying geography for a while. Then you can make a breakthrough when you return to the math. But it seems that the best ways to give your diffuse mode a chance to work out a difficult problem are through activities like sleeping, exercising, or going for a ride in a vehicle.” Barbara Oakley*

## LESSON #3:

# NEURONS ARE THE BUILDING BLOCKS OF YOUR BRAIN

How do we remember to do our job?

To perform complicated tasks without having to look at the manual every time?

There are particles in our brains called neurons. These tiny “creatures” are the building blocks of our brain. And we have literally millions of neurons inside our skull.

They have one head, legs with a bunch of tiny spines on them, and one arm that is coming out of their head.

The scientific names of these components are:

- For the arm: Axon.
- For the legs: Dendrites.
- For the spines: Dendritic spines.

To return to the main question, how do we remember to do our job?

Based on the conversation between neurons.

Neurons send signals to other neurons by giving them a little shock.

One neuron reaches his arm and gives a tiny shock to the toe of the nearest neuron. The shock-giving action is called synapse. The authors of the book call it “spark”.

But here’s the most interesting part:

The more neurons shock each other – talk to each other. The bigger the shock and the greater the connection.

As noted in the book:

*“The neuron-aliens are like friends who become better friends because they talk a lot... Researchers often use the phrase “Neurons that fire together, wire together.” You can think of the “wiring together” as creating a set of brain-links. Learning something new means creating new or stronger links in your brain. A new set of brain-links!” Barbara Oakley*

In this sense, understanding how to perform a complicated task means that you created enough strong brain links in your head.

When you are first introduced to a new task, you feel puzzled

or overwhelmed – or both. You don't know what to do because there are no brain links in your head. No pathways that hold the information you need to perform the task – or your brain links are still weak.

With practice, though, your neurons build connections with other neurons. And with more practice, these connections get stronger and stronger. More neurons join the party and the synaptic links between them get bigger sparks. Eventually, the knowledge looks something like a steel chain. Or, even, like a well-paved path.

For instance, if you learn to speak Spanish. You'll create dozens of neurons. The connection between them can look like a highway. When someone speaks Spanish, the pathways are activated, allowing you to reply smoothly in Spanish.

Unfortunately, even if you've built a strong matrix of connections between neurons. If you stop practicing a particular activity, the neurons will stop talking. With less talk, what you've previously learned will begin to crumble. That's why we forget. If we don't practice a particular skill or activity. The neurons that were previously bonded will go do something else, and you'll find yourself puzzled the next time you encounter this particular task.

The good thing is that we can always build connections or rebuild them – in case we stop practicing an activity.

Our brains are mighty powerful. We can learn anything we want. We simply have to practice long enough to build connections between the tiny creatures living in our heads.

*“The fact that trails in your brain can change and grow is called neuroplasticity. (It’s pronounced “new-row-plas-TI-sity.”) This fancy word just means that your neurons are like clay you can mold. That is, your neurons can change. This is why you can change!” Barbara Oakley*



## LESSON #4:

# YOUR BRAIN HAS TWO DIFFERENT MEMORIES

You probably know about it. Or you've heard it before. But we have two types of memories: Working memory and long-term memory.

In the book, these two are presented as a school bag and as a school locker.

In a moment, you'll see why.

## WORKING MEMORY

Your "school bag" memory – a.k.a. your working memory – is exactly like an actual bag. You can put stuff inside and carry it around. The downside, as you can sense, is that you can't put a lot of things inside. There are limits. Place a couple of textbooks, and you will be out of space.

Besides, there is this thing the attention octopus inside.

What's that?

Well, the authors explain that the way we handle incoming information can be visualized as an octopus – attention octopus.

Depending on your age and how your brain functions, your octopus can have four, five, eight – or more – arms. Or basically, the number of arms your octopus has resembles the number of ideas you can hold in your brain *right now*.

If you are to meet three people at this moment. You tell them your name, and they say theirs, there is a chance that you won't "hold" all of the three names. One of them – or all of them – might slip. The arms of your octopus are a bit slippery. This happens because you are not focusing on hearing and remembering their names. Your octopus is busy doing other things – thinking about what to say to these new folks, thinking about other things that happened during your day, thinking about food, etc.

To ensure that you will not forget things immediately when you hear them, you should simply focus. Concentrate on the task and put aside other thoughts. For this to happen, tell your octopus to drop certain thoughts, so it can have a spare hand.

## LONG-TERM MEMORY

Thankfully, you don't have to ask – at least I hope – the people you already met about their names. Their names are stored inside

your second type of memory – your long-term memory.

In the book, this is described as your “locker” memory.

You can store more information inside. Like, a lot. But there is a downside. Two to be exact.

Firstly, most of the things you know, are scattered around your brain. It’s not like your brain hires a librarian to put everything under the proper category. You have a little bit of info here, a little bit of there, and so on. This makes it harder to recall stuff you need at this moment.

And the second thing is that you have to “reach” for the memories inside your locker memory. This means that you need time to remember things. Remembering faster, happens through practice.

*“In any case, your octopus can get tired. It can hold on to information for just a little while—maybe ten to fifteen seconds. Then the information begins to slip away unless you concentrate or repeat it to hold it in mind.” Barbara Oakley*

LESSON #5:

# CONVERT FACTS INTO PICTURES TO REMEMBER THEM

Ever tried to remember a fact? By fact, I mean something important that happen in the past and the exact date it happened?

In school, we are constantly interrogated by teachers about years and names. Sadly, no one ever taught us how to remember all of these things easier. Teachers only focus on the importance of remembering facts, not how to remember them.

But the first thing – learning how to better remember things – is much more valuable.

To show us how we can do it, the authors interview Nelson Dellis. The US Memory Champion. He won the award by memorizing two decks of cards in perfect order.

You might think, that's impossible! He must be born brilliant.

But in the book, the authors assure us that Nelson was perfectly normal when he was young. As mentioned inside, “If it was forgettable, he forgot it.”

So, how did he remember a train of 104 cards?

Nelson shares a few tips:

- 1. Focus:** When you are interacting with the thing you want to remember, tell yourself to focus. Concentration during the info-capturing phase is vital. It sounds obvious, but often our mind slips in other directions. The more you practice concentration, the better you’ll become.
- 2. Practice:** You can’t get good at remembering if you don’t practice. Start small. Remember the phone number of your best friend. Or your spouse. Or something more complex, a complicated theory, for example. The point is to do it regularly.
- 3. Picture things:** Storing a fact inside your long-term memory is extremely tough. What Nelson does is convert the fact into a picture. Pictures easily “stick” on the walls of your locker. And as an extra, add movement to the picture. For instance, if you want to remember the French word for grapefruit – pamplemousse. You can imagine: “An image of a moose pumping up an inflatable grapefruit – pumper-moose.”
- 4. Store it:** Store information better by relating it to things you already know. Find an anchor that helps you retrieve new information quickly. For instance, when you meet someone new, related his name to someone you already know. If you meet Sally, quickly find a Sally you already know. If you know zero Sallies in real life, think about a famous Sally.

**5. Recall:** The last step is to actively recall the information you've gathered. If you don't schedule time to bring the new information to the top of your mind, this info gets lost in the endless sea of your memory. When you learn something new, you need to recall it more frequently. With time, it will require less and less repetition.

*“Basically, Nelson tells himself corny visual jokes that help him remember. You’ll be amazed by how easy it is to remember things when you have a goofy way of remembering them. And it’s fun making them up!” Barbara Oakley*

## LESSON #6:

# DON'T JUST LEARN, DO

Opposed to what we might think. The key to learning is not more learning. It's more doing.

We now know how we learn. When we acquire new information, we create brain links that get stronger with time. That is, of course, if we continue gathering info on this particular subject.

But the main thing that makes the brain links, extra muscular, is not the acquisition of more learning material. Is actively practicing what you've just read or watched.

In the book, the authors explain that we frequently get stuck and don't move forward because we get used to what we know. Get used to what we can do and don't try new stuff.

For instance, if you know how to play a couple of songs on the piano. This can mean that you are a good musician. But you are

far from being the best.

The goal should be to continuously push yourself. Learn something new and then try that new piece. Practice it till you know it. The next week? Try something completely different.

As noted, “Watching other people, looking at a solution, or reading a page can help you get started. But it won’t do much to build your own neural structures of learning.”

Key psychological factors that will positively contribute to becoming a great learner and overall master in a specific field are:

- **Actively learning:** Active learning means learning something new and then trying it. Not just consuming information. But proactively applying it.
- **Active recall:** Active recall is about bringing back something you’ve learned without looking at your notes. For instance, after you’re done with this summary. Note down the key takeaways without looking at the text. This strengthens the created brain links.
- **Cognitive load:** If you are presented with a ton of new info at once, your mind will malfunction and won’t learn anything. In this sense, you need to reduce the information flow.
- **Deliberate practice:** The core component of deliberate practice is focusing on difficult material and not on practicing what’s easy to you.
- **Interleaving:** The term interleaving is used to explain that if we try completely different techniques to solve a problem. Or, learn about another point of view. We will further improve our



understanding of the problem.

*“You create and strengthen sets of brain-links through deliberate practice. That’s focused, repeated work on the more difficult parts of a concept. Don’t waste much time on the easy stuff that you already know.” Barbara Oakley*

## LESSON #7:

# OBSERVE HOW YOU LEARN

Another key component of getting better is getting better at watching yourself how you study.

It's one thing to read a book. Try a couple of techniques from the book and call it a day.

It's quite another to do the above and sit down at the end of the same day to observe what you did best and what can be further improved.

An adventurous idea from the book is to get comfortable at the end of the day. Grab a notebook, and try to answer a couple of questions. These for example:

- What new did you learn today?
- How did your learning go?
- Was there something you did especially well?

- Anything you might have done better?
- What made a difference in your learning that day?
- At what time did I stop learning?

Even if you no longer consider yourself a student. You can change the questions a bit.

Analyze your working day... What went well? What didn't? What can you improve? What do you have control over?

The main idea is to regularly reflect on your days. Try to spot patterns. With these insights, make some changes and start observing again.

Few ideas from the authors that can help you further improve:

- **Study in different places:** It might seem odd, but studying in one particular place can interfere with your memory. If you always study in, say, the library, your attentional octopus gets used to this. So, the material you've learned in the library can "come out" only if you visit the library. If you acquire new information in a variety of places, your attentional octopus, as said in the book, "ends up getting used to finding things in your long-term memory locker regardless of where you're studying."
- **Try different materials:** Some people prefer to learn by watching videos, others by reading text. Third, for example, might want to attend seminars. We all have our preferred learning style. However, according to studies mentioned in the book, relying on one medium to learn is not the best way to

learn. It's much better to mix sources. Watch a video, yes, but also read.

- **Set quitting time:** Scheduling time to stop studying or stop working – depending on your stage in life. Is the best thing you can do for yourself. When you have a firm schedule, you know that you have from here to here to study, you will better concentrate.

*“Everybody’s different. That’s why it’s important to become your own personal learning scientist. You can see what works best in your learning. Think like a scientist and start looking for patterns in what works and what doesn’t work for you.” Barbara Oakley*

## ACTIONABLE NOTES:

- **Use metaphors:** When you are learning something new. Or when you are trying to explain something you know to others, use metaphors. Metaphors help you get new things faster. You connect the new information to something you already know. This way, you reuse previously created paths in your brain. By doing so, you learn faster and you remember for longer. So, when you are confronted with a complex idea, try to find something similar you already know. Something to relate the new concept to. And if a metaphor is no longer useful, replace it with a new one.
- **Active recall:** Good learning requires three main components: learning, practice, and sleep. The more you do these three, the stronger the connections between the neurons inside your brain will become. But usually, we try to cheat. We try to learn everything in one day and think that this will be enough for strong foundations. The best way to ensure that your building blocks remain in your head, is by doing an active recall. If you study for a test, or if you simply want to ensure that your current knowledge will remain intact, you need to schedule active recall sessions. For instance, you learn a new concept on Monday. On Tuesday, review your main points. On Wednesday, recite or write down the main components of the new idea without looking at your notes. On Friday, try to do the same. The more you practice, the less you'll have to look at your notes. Thus, the stronger the foundations.
- **Memory palace technique:** The memory palace is probably the oldest technique for remembering things. Used by the famous

Roman writer Cicero for his speeches, the memory palace will help you recall long complicated subjects more easily. The basics of this tool are the following: You imagine a place you know well. For example, your house. Once you have a mental picture of your house, take the information you want to remember and place it in objects around your house. The goal is to cut the big piece of info into chunks and place these smaller chunks in different things. A piece of info on a picture. Another piece on your shelf. One more on the dining table. Then, imagine silly situations. Once the setting is complete, picture yourself walking around your house and interacting with the objects you put information inside in some sort of order. If you want to remember a grocery list, you can imagine the bottle of milk as a 6-foot-tall bottle that talks, and the carton of eggs as 6 children that are holding hands.

- **Avoid rut think:** A counterintuitive way to improve in one field is learning about a completely different field. Not an adjacent field, but something in a far away spectrum. Why is that? Well, as we get better in one field, our internal pathways cement. We get better at doing a particular task, but if there is a slight deviation, we'll be clueless about what to do. Our thinking becomes less flexible. To mix things up, to get better at what you're passionate about. It's much wiser to learn a bit about something completely different. This will introduce new ideas and help you avoid what is called "rut think".
- **Thinking fast and slow:** If your attention octopus hasn't grown many hands. You'll have a hard time quickly remembering things. You'll have to "run" to the locker every time you need to remember something. All of this makes you a slow thinker. But slow doesn't equal bad. Actually, the authors mentioned that slow thinkers can come up with some original ideas. Here's why: When you

think fast, you rush to the solution without thinking a lot about the details. And while you do (probably) give a correct answer, you prevent yourself from coming up with a better answer. Conversely, slow thinkers “hike” towards the solution. By doing so, they see all the possible options and can come up with quite better solutions. So, don’t feel bad if you think kind of slowly. Use it to your advantage.

## COMMENTARY

If you were lucky enough to attend school – because there are still millions of people who don’t have that privilege.

If you were even capable of graduating from school – hey, not everyone does.

Chances are, you’ve spent roughly around 15 years in the “school system”.

Based on this, there are two things that are probably true about you:

- You were probably a poor student.
- You probably don’t consider yourself a learner anymore.

OK, OK, you probably did fine. You got As and stuff. But how much of the things you learned in school do you still remember?

If you were to happen and read Learning How to Learn by Barbara Oakley and company, you’ll see how much better our learning could

have been if we had the book handed to us in 1st grade.

Besides, the authors will (hopefully) convince you that learning is not something you stop doing. It is something we should all enthusiastically pursue for the rest of our lives.

I highly recommend reading this book. You will see how learning happens and how learning can be improved.

The authors did a great job with the information. They discuss complicated subjects with grace and with funny metaphors.

It's not only necessary for kids to get and read. But awesome for grown-up kids playing adults.

Key takeaway:

Jumping into the infinitive information pool – e.g., watching every published YouTube video. Won't help a lot with your progress. The key to learning is doing. Learn something new and then practice it. That's how you get better.



## NOTABLE QUOTES:

*“Learning makes us smarter. And learning how to learn is one of the best things you can do to get the ball rolling and make learning more successful. This is the most important idea in this book! So keep reading!” Barbara Oakley*

*“Your cerebral cortex is the home of your long-term memory (locker). So sleep not only helps build new synaptic connections, it also clears out the hippocampus to make room for new learning.”  
Barbara Oakley*

*“It really helps to work on difficult problems with other people. Find people who let you sparkle. Hanging around with people who have good ideas can boost good ideas of your own!” Barbara Oakley*

# WORKSHEET

Reading alone won't help you understand the actionable notes. You need to engage with the content. Answer the question below to plan your next steps:

*1/ Pick something difficult you know. How would you explain it to a child?*

*2/ How do you learn and remember best? What can you do to improve?*

*3/ How you'd approach learning something using the memory palace technique?*

*4/ What else can you start learning to avoid rut think?*

*5/ Are you a fast or a slow thinker? Elaborate below:*

# THANKS FOR READING!

*Ivaylo Durmonski*

