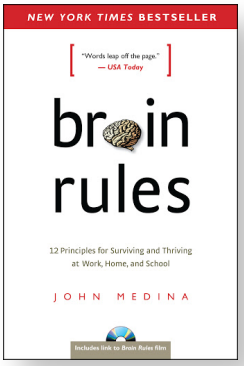
THE HOPEFULL INSTITUTE

BRAIN RULES

THE HOPEFULL INSTITUTE

THE BOOK



Brain Rules

By John Medina

INTRODUCTION

The brain is one of the most complex organs in the human body. In his book Brain Rules, Molecular Biologist Dr John Medina shares some of the most fascinating facts that rule our behaviour and the way we learn.

While every person's brain is wired differently and we all process information in individual ways, there are a number of factors which have an impact on our mental capability and performance.

Things like sleep, stress and even music have a powerful effect on our brain's ability to understand and store information.

In Brain Rules, Dr Medina breaks down 12 important elements that influence the way we work, communicate and learn.

The insights in this book are especially enlightening for teachers and students. As a teacher himself, Dr Medina shares how his research has shown him ways to make lessons more engaging and memorable. He has also included some of the secrets to retain more information when you're studying.

5 BEST QUOTES

"The brain acts like a muscle: The more activity you do, the larger and more complex it can become."

"If you wanted to create an education environment that was directly opposed to what the brain was good at doing, you probably would design something like a classroom. If you wanted to create a business environment that was directly opposed to what the brain was good at doing, you probably would design something like a cubicle. And if you wanted to change things, you might have to tear down both and start over."

"A lifetime of exercise can result in a sometimes astonishing elevation in cognitive performance, compared with those who are sedentary."

"If you want people to be able to pay attention, don't start with details. Start with the key ideas and, in a hierarchical fashion, form the details around these larger notions. Meaning before details."

"WE DO NOT SEE with our eyes. We see with our brains."

12 BIG IDEAS

Take a look at 12 factors which influence the way your brain thinks and performs

1. SURVIVAL

The human brain has evolved. While changes in our environment forced us to start walking on two legs many hundreds of years ago, they also triggered new ways for our brains to behave. One evolutionary change that is unique to humans is symbolic reasoning. This means we can look at one thing and interpret it to mean something else. A stop sign by the side of the road is a basic example. Symbolic reasoning allows us to understand each other's intentions and motivations. It has allowed us to coordinate as a group, and therefore take over the world.

2. EXERCISE

According to Dr Medina, research has found that exercise boosts brain power. Our early ancestors were used to walking for miles each day and the need to do this still remains. If you want to improve your thinking skills, Dr Medina recommends you get moving. This stimulates blood flow to the brain, bringing it glucose for energy and oxygen to soak up any toxic electrons that are left over. Dr Medina is also an advocate of exercise for school children, saying it helps their brains work better. As he writes, "Cutting off physical exercise—the very activity most likely to promote cognitive performance—to do better on a test score is like trying to gain weight by starving yourself."

3. SLEEP

Sleep well, think well. Your brain is constantly fighting between staying awake and falling asleep (you probably notice the fight going on at around the same times each day). There is a strong argument for an afternoon nap—it is a biological drive that is almost universal and some executives even incorporate it into their work day. When you sleep, your brain is not resting. In fact, it is highly active, replaying what you experienced that day and helping you commit it to memory. Your brain is also taking the time to figure out the solutions to your problems, hence the term 'Sleep on it'. While everybody needs a different amount of sleep and there is a wide spectrum of 'owls' and 'larks' who prefer to sleep at different times of day, lack of sleep is universally detrimental. Go without sleep and you'll soon notice you are having problems with attention span and logical reasoning.

12 BIG IDEAS

4. STRESS

Stressed brains don't learn the same way. There are exceptions to every rule but generally speaking, when we're stressed our brains stop performing as well. Consider a child who is going through a difficult time at home, perhaps because of a divorce or unstable family situation. Often, their grades will suffer. The stress impacts their ability to learn and their productivity at school. This experience isn't limited to children and can be just as detrimental to adults in the workplace. Toxic, prolonged stress leads to feelings of helplessness as your brain and body fail to cope with the adrenaline and cortisol released by your body's inbuilt defense system.

5. WIRING

Every brain is wired differently. Sit down next to someone, watch the same TV program and both your brains will respond to and remember it in different ways. But as you watch, your brain is literally rewiring itself as what you see is recorded and stored. This rewiring is constant but happens differently for everyone—and there isn't really a clear rule for where information is stored in your brain. As a teacher, it is important to remember this. Different students have different strengths because their brains are wired in different ways.

6. ATTENTION

We don't pay attention to boring things. According to Dr Medina, multitasking is definitely not a thing! Studies have shown it is impossible to do two things at once and being constantly interrupted causes us to take far longer to complete a task. As a teacher, it may disappoint you to learn that the brain's attention span is only ten minutes long! After this, audiences begin to check out. To hold their attention, take a break, tell a story or place emotional 'hooks' in your lectures which make it easier for students to pay attention and learn.

7. MEMORY

Repeat to remember. When new information comes into your brain, it is immediately fragmented and sent to different regions. As Dr Medina writes, 'The more elaborately we encode a memory during its initial moments, the stronger it will be.' If you want to improve your chances of remembering, reproduce the environment where something happened. And repeat, repeat, repeat. Information will disappear if you only look at or practice it once. One interesting note in this chapter is that our memories are mixed in with all the other information that's stored in our brains. This is why they are not always reliable.

12 BIG IDEAS

8. SENSORY INTEGRATION

Stimulating the senses helps us to learn and remember. Our senses have evolved to work together. This means we learn best if we stimulate several at once. It's why a visual presentation accompanied by the spoken word can be more memorable than simply sitting still and listening to someone explain a concept. Dr Medina tested a group and also found that spraying a scent into a room while he taught a lesson gave students better retention of subject matter. He suggests smelling something as you learn, then spraying or finding more of that same scent later to retrieve the information from your brain with more success.

9. VISION

Vision trumps all other senses. Speaking of your senses, vision wins every time when it comes to learning and remembering. This is why video is playing an increasingly prevalent role in advertising and teaching. We do not see with our eyes—we see with our brains. Our eyes merely convey the pictures for the brain to interpret. And we only see what our brain tells us to see! Sometimes the message our brains store isn't what's actually in front of our faces. To engage your students, consider animating presentations to leverage the power of colour, placement and motion.

10. MUSIC

Study or listen to boost cognition. Music has a profound and special effect on the human brain and scientists aren't really able to explain why. There isn't even a universal consensus about what music is or why it exists. It is known that formal musical training improves intellectual skills in several cognitive domains. According to Brain Rules, "Music boosts spatiotemporal skills, vocabulary, the ability to pick out sounds in a noisy environment, working memory and sensory-motor skills." Interestingly, people with formal music training also have better social cognition. Those who are trained are better able to detect the emotional information conveyed by speech. Dr Medina recommends you should study or listen to music if you want to have better overall cognition.

12 BIG IDEAS

11. GENDER

Male and female brains are different. Dr Medina hastens to point out that characterising gender-specific behaviours has a long and troubled history. He also clarifies that gender isn't necessarily set into the concrete of someone's DNA. However, generally speaking, there are differences between those of us with two X chromosomes (females) and those who have an X and a Y (males). Brain Rules explains that the frontal and prefrontal cortex control much of our decision-making ability. Some labs have found that certain parts of this cortex are 'fatter' in women than in men. And each gender trends towards responding differently to acute stress. Women tend to activate the amygdala of the left hemisphere to remember the emotional details. Men activate the amygdala on the opposite side of their brain to get the gist of what has happened.

12. EXPLORATION

We are powerful and natural explorers. In the final chapter of Brain Rules, Dr Medina reminds us that humans are natural and powerful explorers. We learn, not by passively reacting to our environments but by actively and continually testing through observation, hypothesis, experimentation and conclusions. There are specific parts of our brains which allow this approach. And throughout our lives, our brains are open to the idea of learning. We can always create new pathways and rewire our brains to understand and store information throughout our lives.

3 ACTION STEPS

Brain Rules shares a lot of information but there are some clear action steps for those who have a focus on learning.

1. REST + EXERCISE

Your brain performs at its peak when you have had enough sleep and you exercise regularly.

2. STIMULATE THE SENSES

A multi-sensory approach helps stimulate learning, as does an emotional 'hook'. Use images, video and stories to make it easier to form lasting memories.

3. REMEMBER EVERYONE IS DIFFERENT

No two brains are the same and everyone has their own set of talents. School doesn't always accommodate this but it is important to be aware of all the same.

1 KEY TAKEAWAY

Your brain is fascinating and ever-changing. While everybody has natural talents, there are ways to strengthen learning and cognition.

If you're a teacher, consider stimulating more of your students' senses, giving them breaks to exercise and using 'hooks' to keep them engaged.

If you're a student, get plenty of sleep and exercise! Remember that practice and repetition will always help you learn but consider using images or even smells to make it easier to recall facts.

want more?

visit thehopefullinstitute.com
email hello@thehopefullinstitute.com
call +61 2 9943 0350