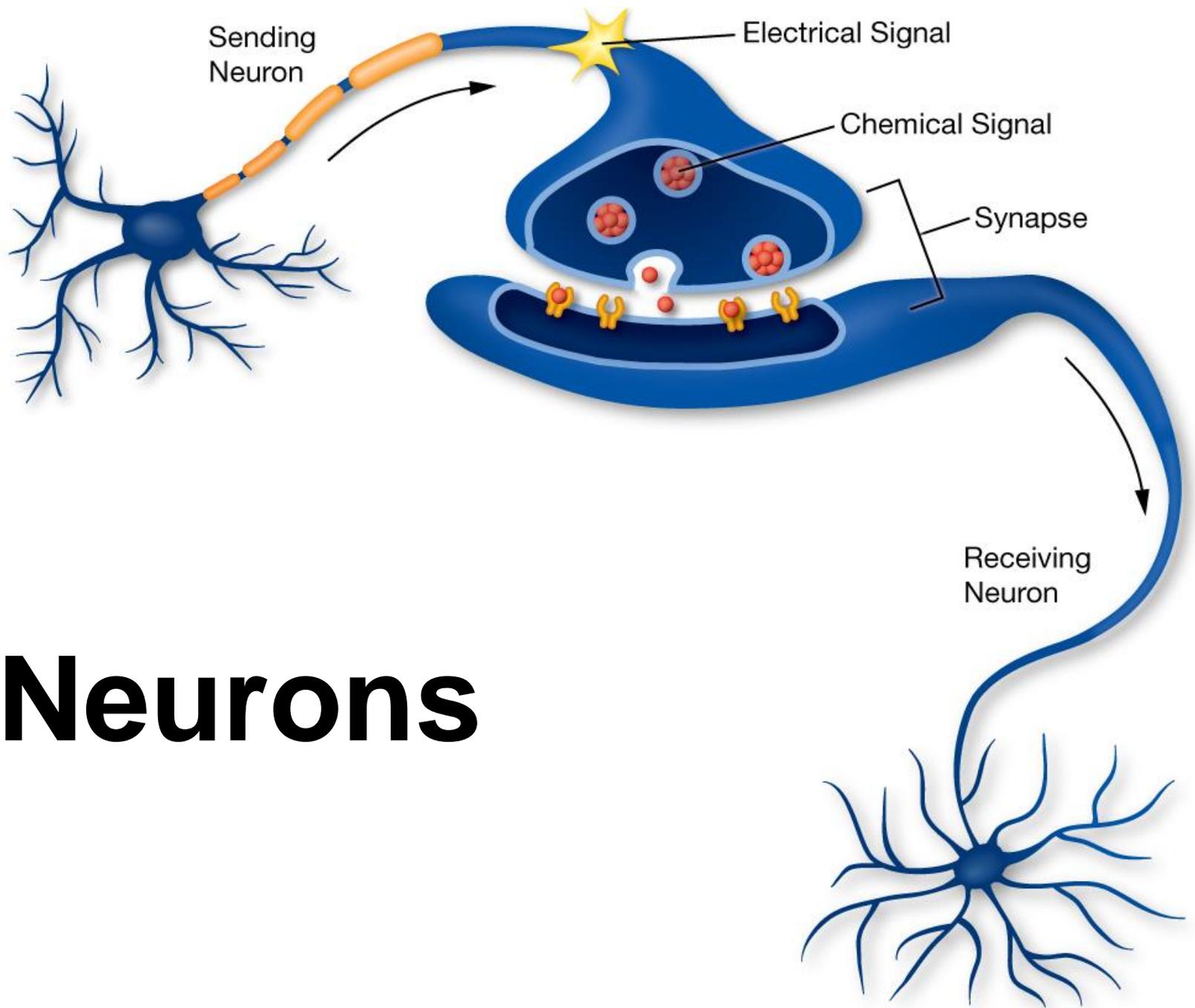


Using Your Head



How your **brain** works and how you can use that to **learn better**



Neurons



**Neurons that fire together
wire together**

How info is stored



vs.



The Old Theory of Disuse:



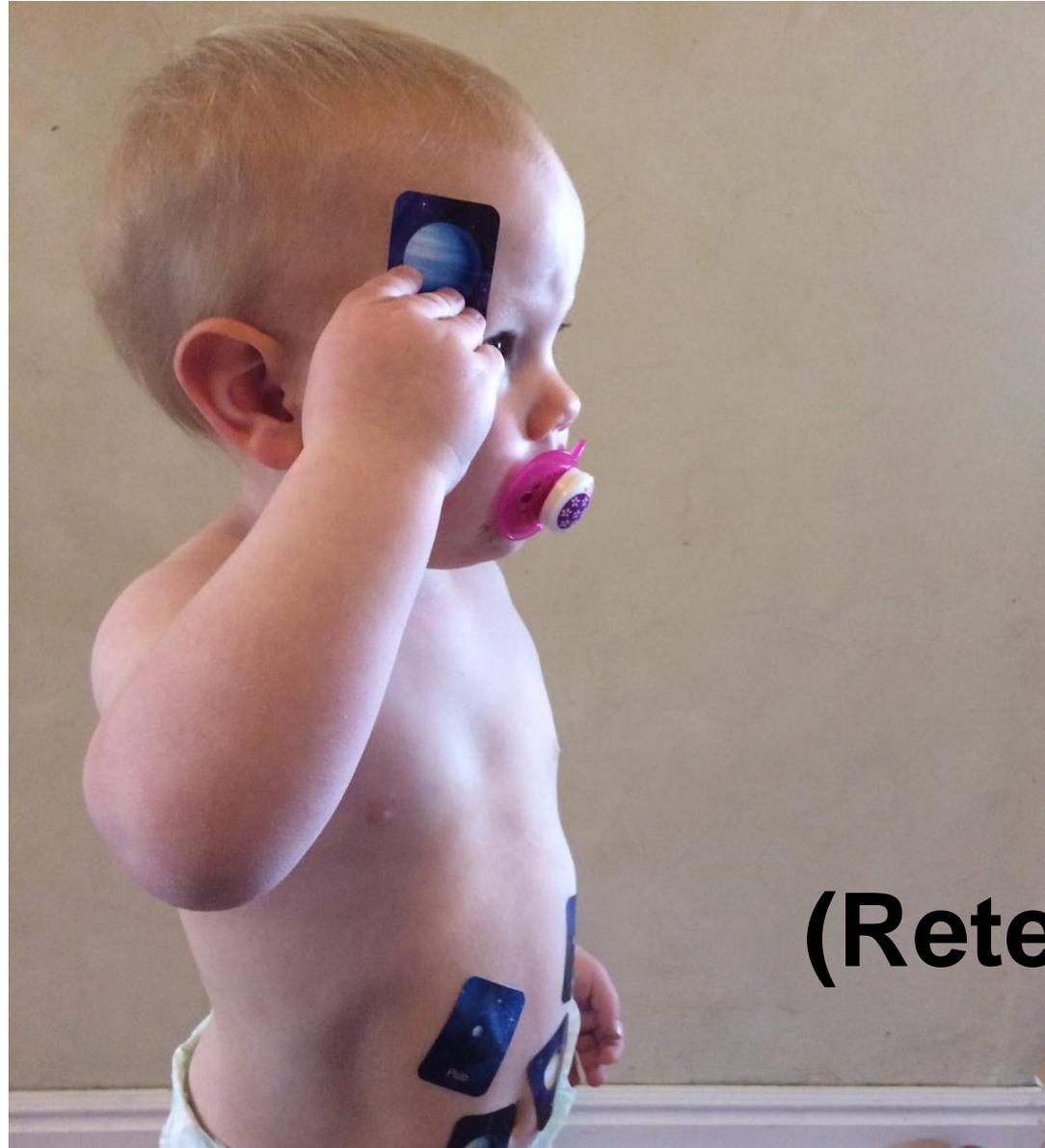
Use it or lose it

The New Theory of Disuse:

It's there— you just can't find it



How do we make things **stick**?



(Retention)

We want to increase **Fluency:**

How quickly
we can
retrieve
information



Learning Tools





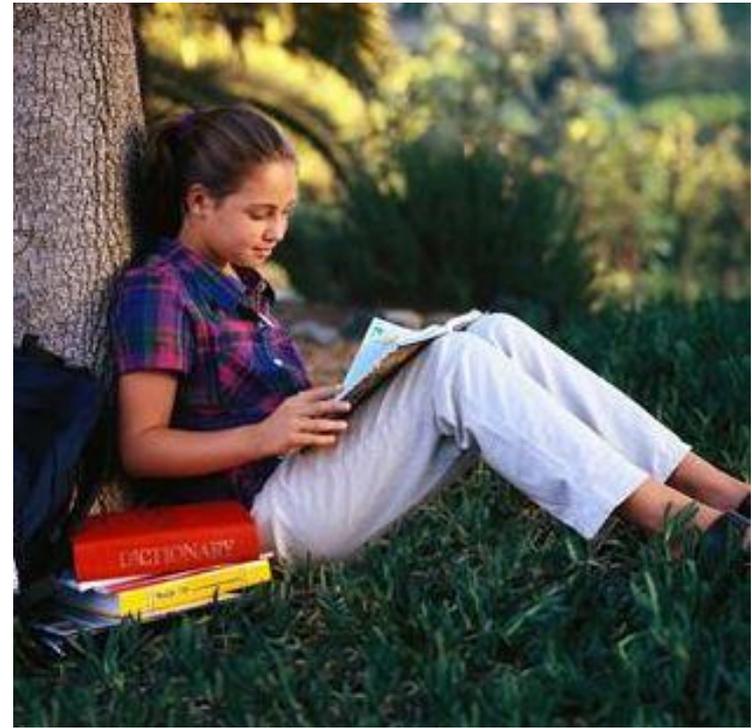
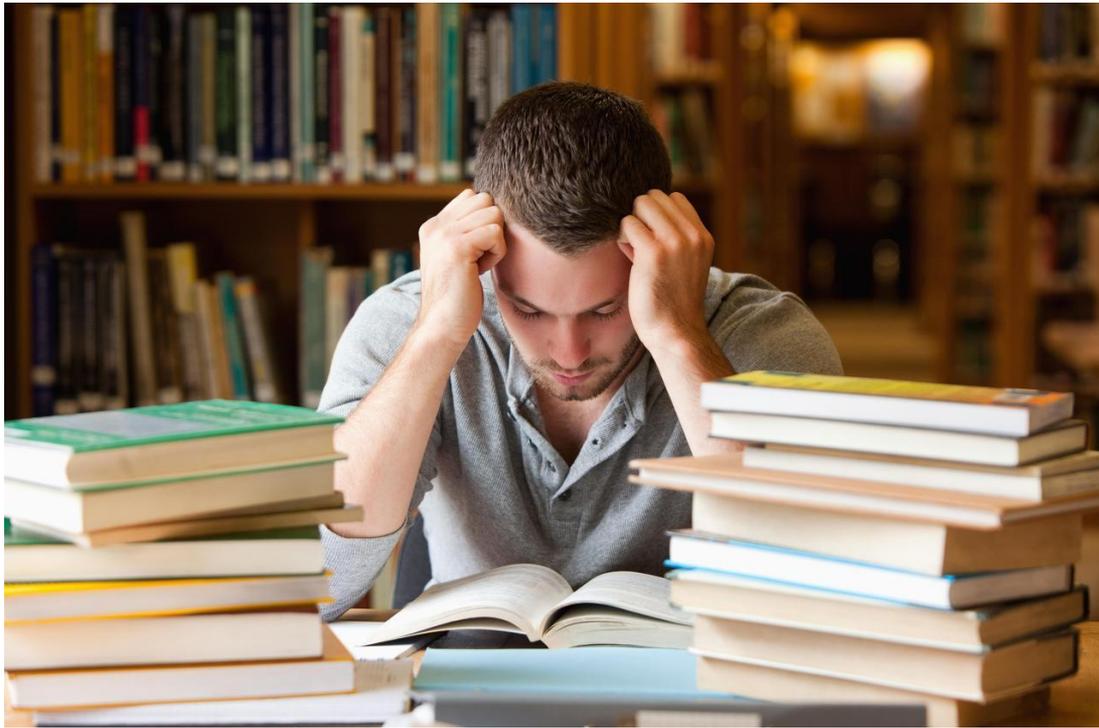
Hooks



- **Relevance**
- **Emotional Connections**
- **Stories**



Power of Stories



Context

Spacing Out...

More efficient to study a **little bit every day** than one long study session right before test.

In fact, here's a chart:

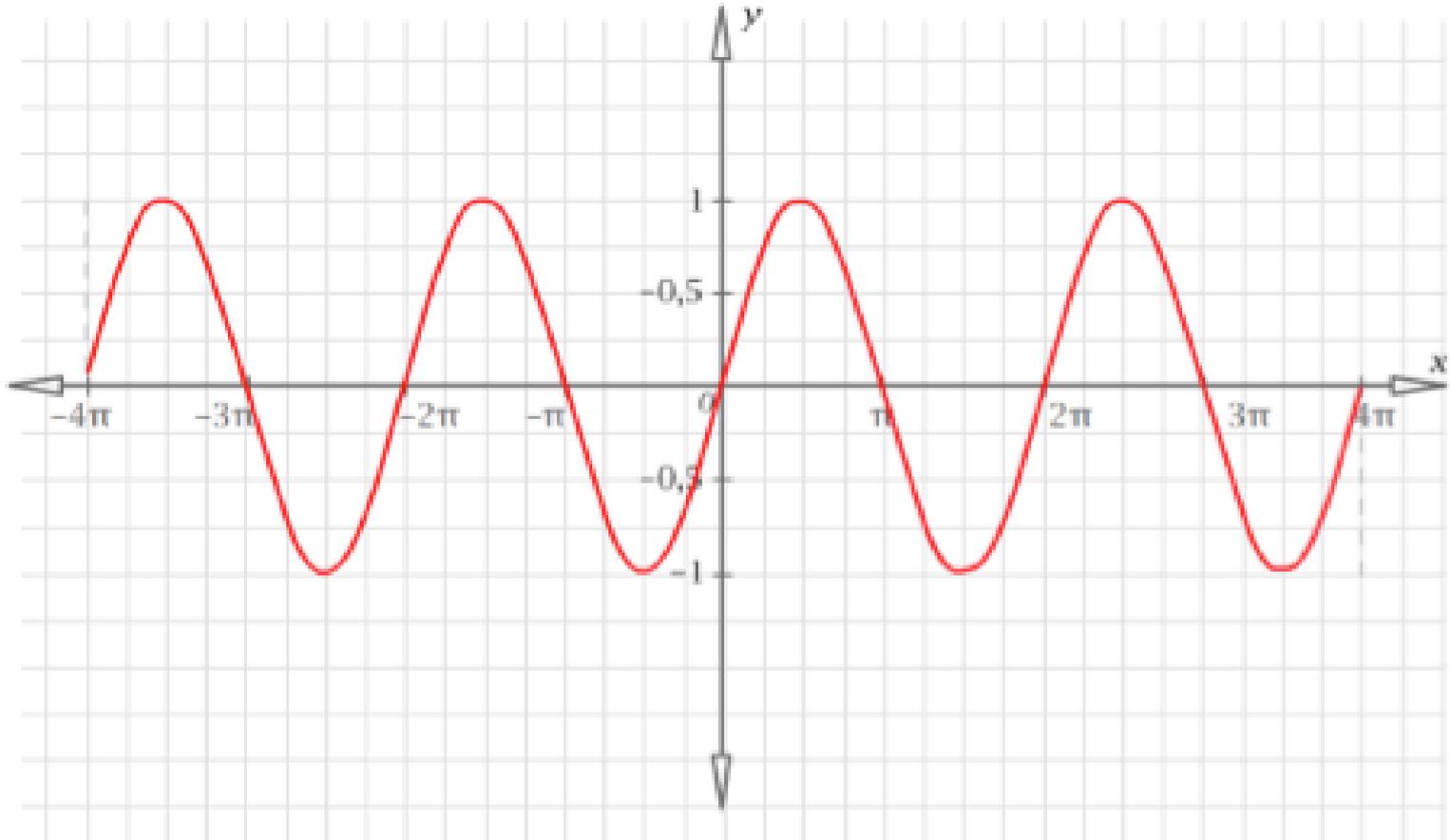
Test is in...	Study Session 1	Study Session 2	Study Session 3
1 week	Today	Tomorrow	Day before test
1 month	Today	Week from today	Day before test
1 year	Today	Month from today	Day before test

An **app** to help...



- **Based on latest science**
- **Best for memorization of facts**

I want to keep it **forever!**



Periodic Repetition

Repetition Repetition Re
petition Repetition Repe
tition Repetition Repetiti
on Repetition **Repetition**
Repetition Repetition Re
Repeat to Remember.
Remember to Repeat.

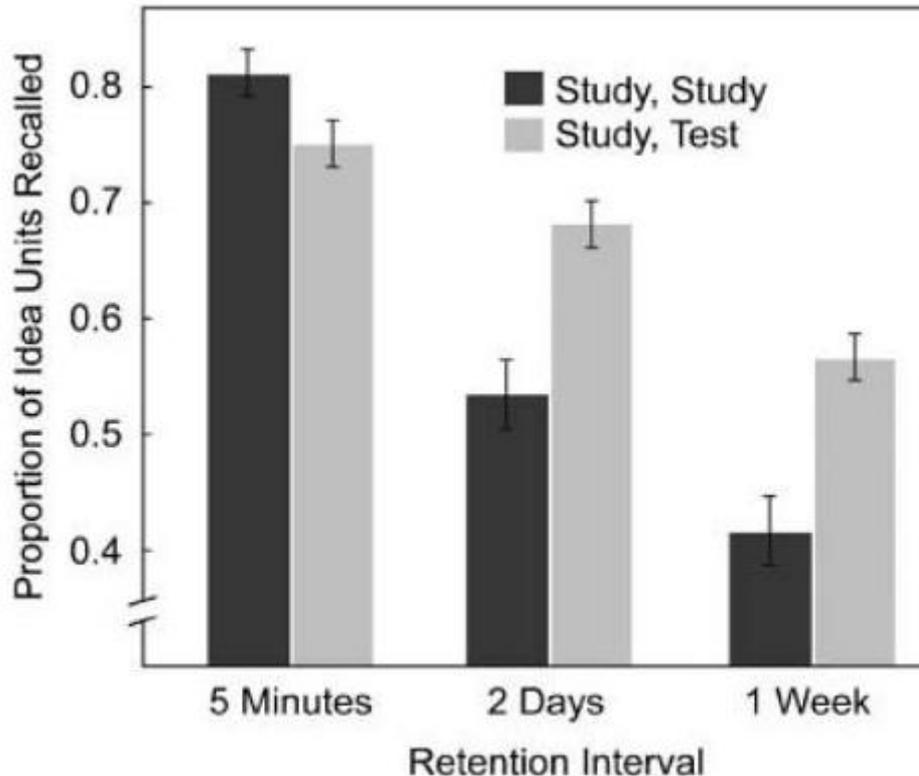


TESTING

Power of Forgetting



Karpicke & Roediger

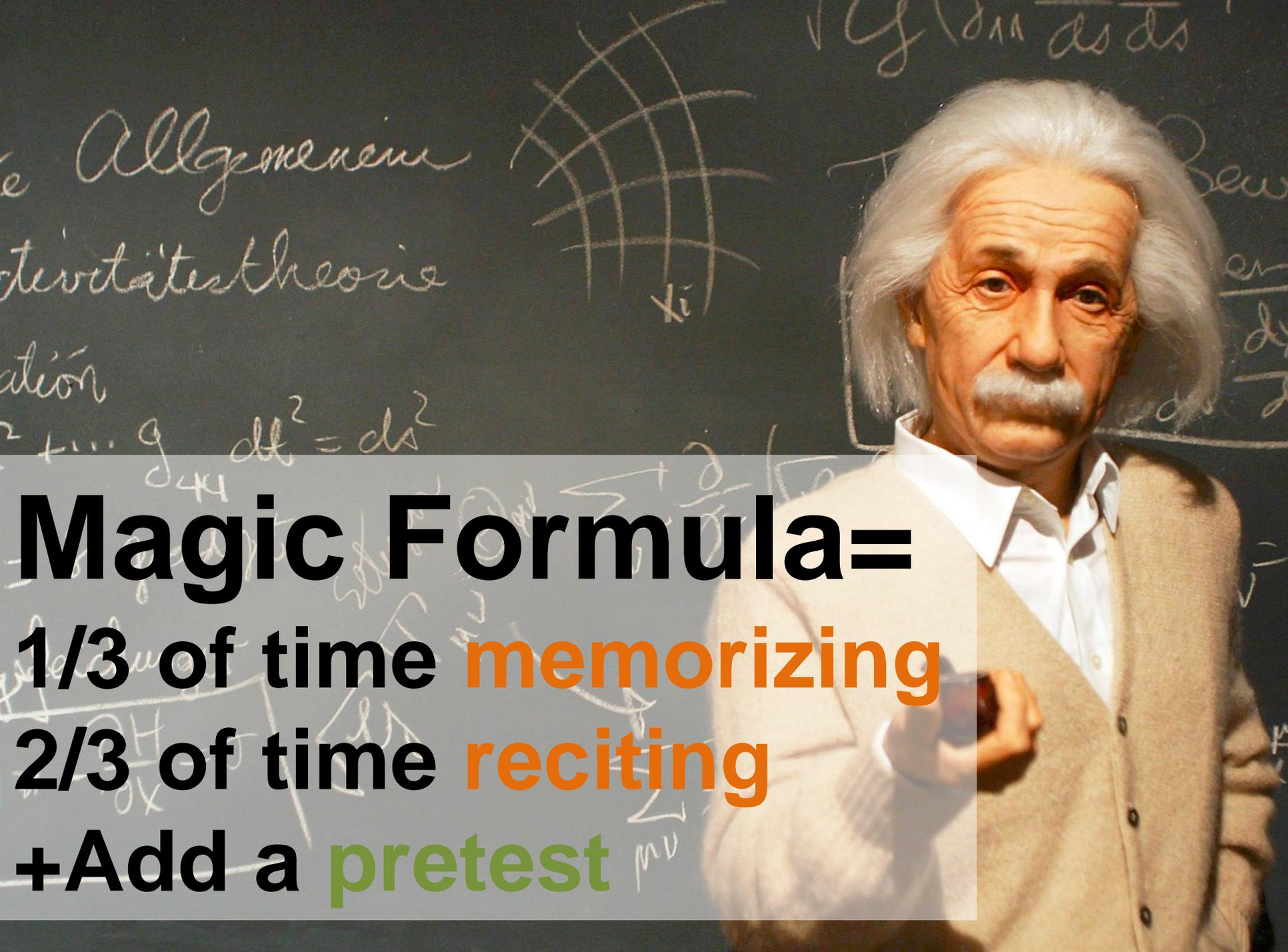


Dark gray:

- Study 7 minutes
- Take break
- Study 7 more minutes

Light gray:

- Study 7 minutes
- Take break
- Write down as much as you can recall



Magic Formula=

1/3 of time memorizing

2/3 of time reciting

+Add a pretest



Interleaving (Mixed Practice vs. Blocked Practice)

Perceptual Learning

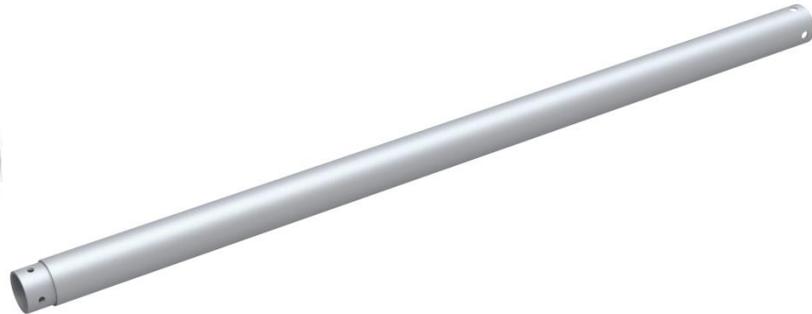


Futsal & Soccer to Airplanes & Safety

Problem Solving

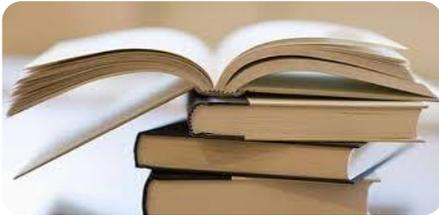


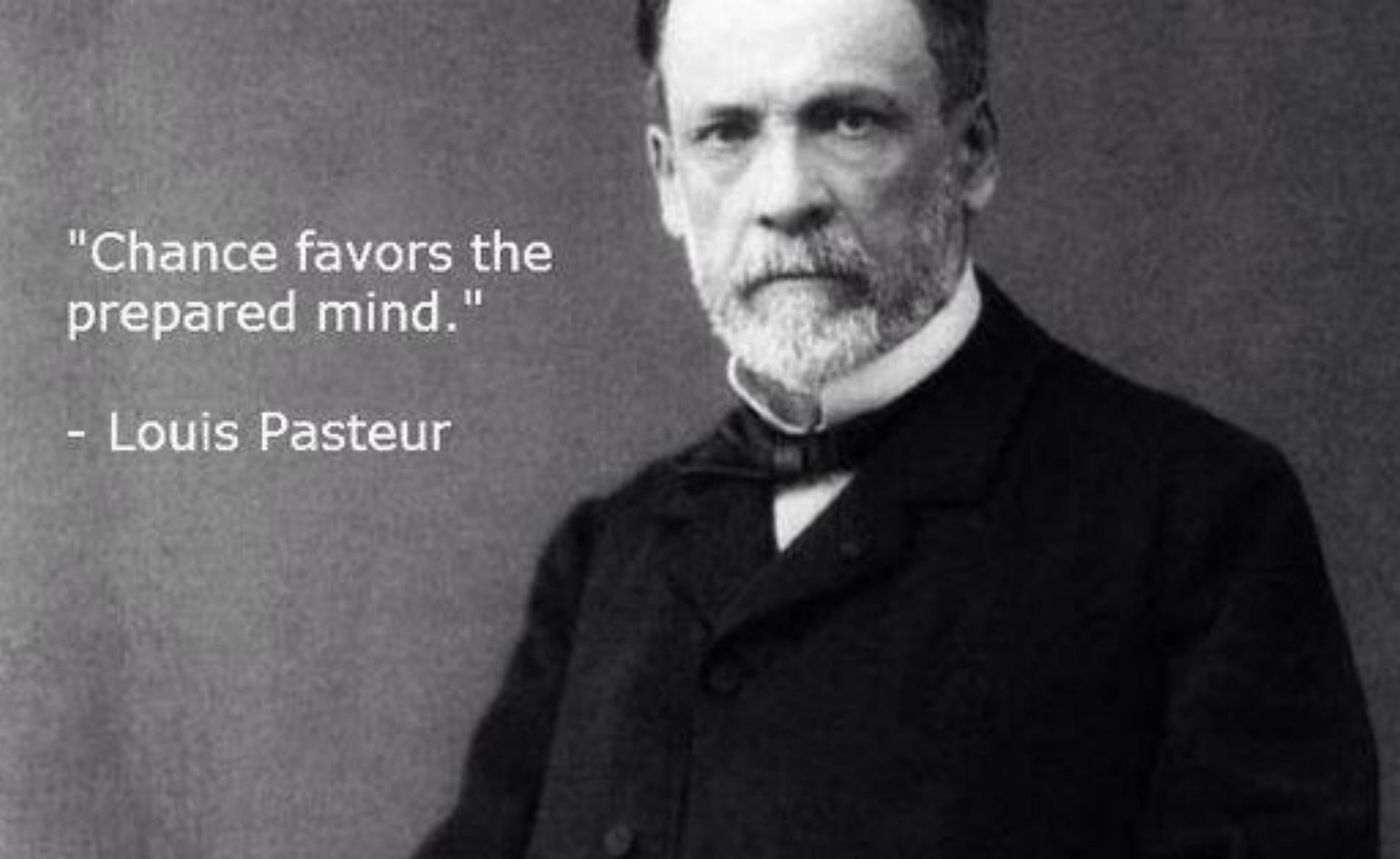
The Rope Experiment



The Well-Tuned Mind

*Incubation

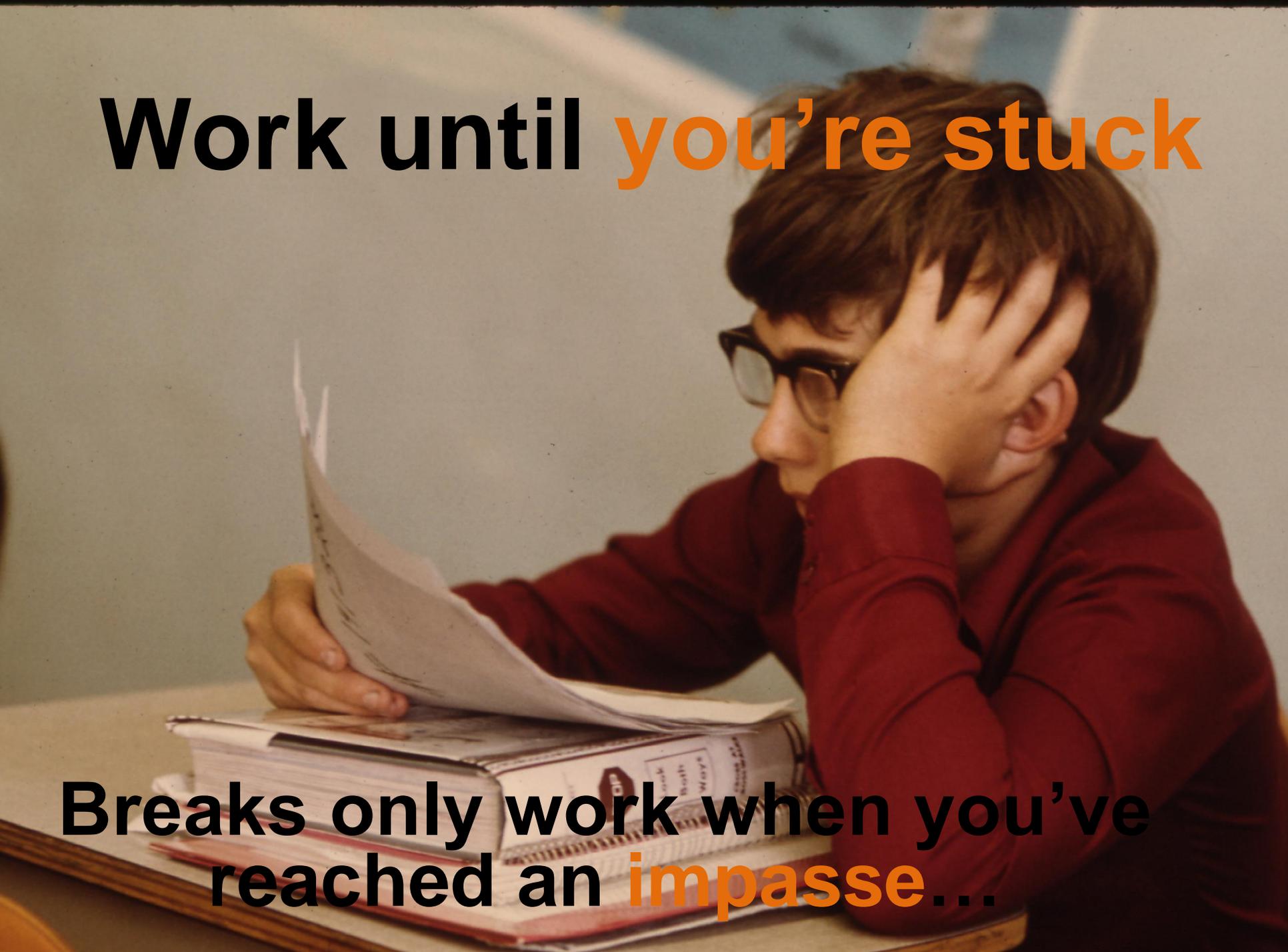


A black and white portrait of Louis Pasteur, a middle-aged man with a full, graying beard and mustache. He is wearing a dark, high-collared coat over a white shirt and a dark bow tie. He is looking slightly to the right of the camera with a serious expression.

"Chance favors the prepared mind."

- Louis Pasteur

Assimilating information around us.



Work until you're stuck

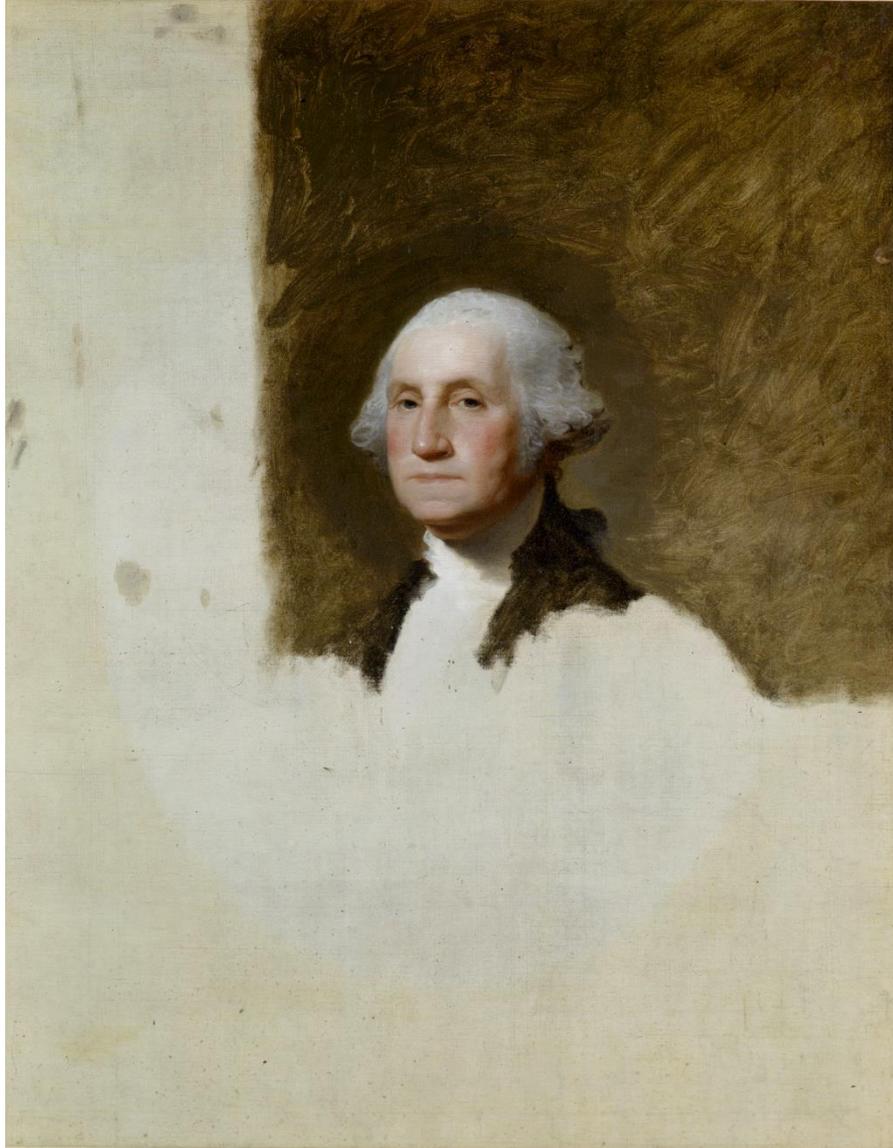
Breaks only work when you've reached an impasse...

Taking a break



**Helps remove “functional fixes”
(Get out of the box!)**

Quit to get ahead

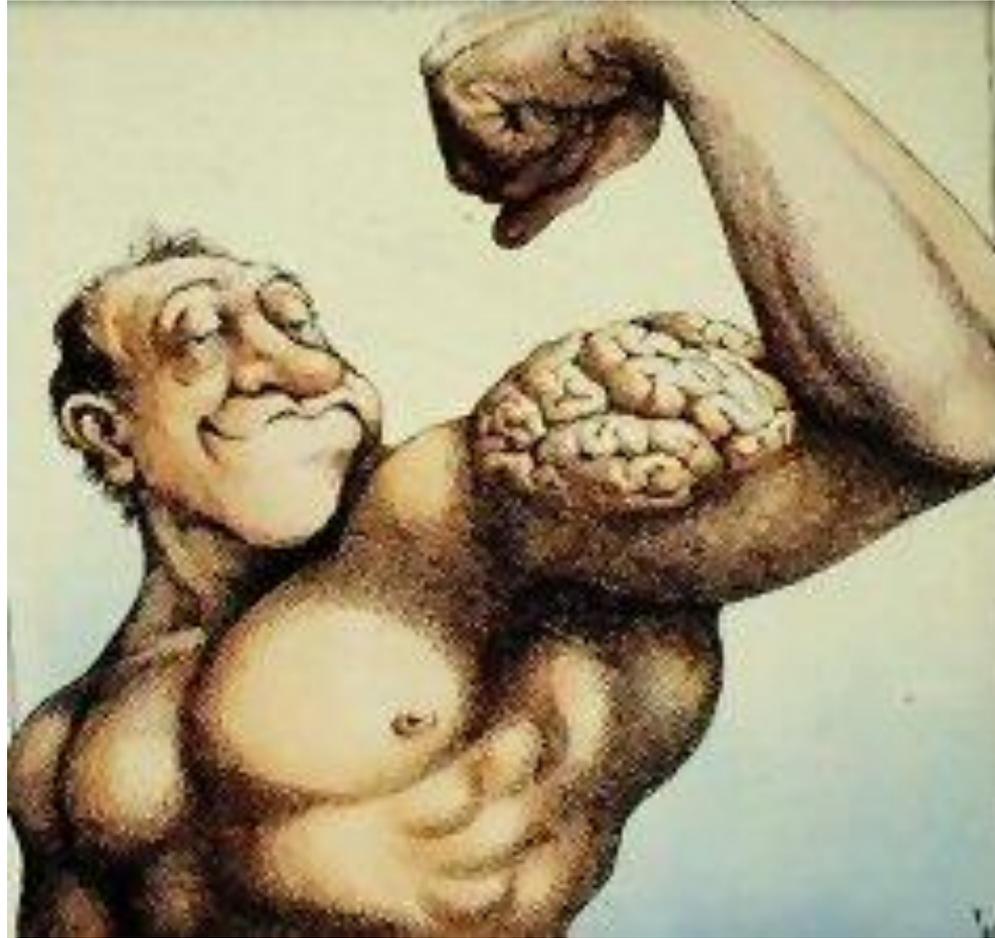


**Your brain hates it
when things aren't
fini**

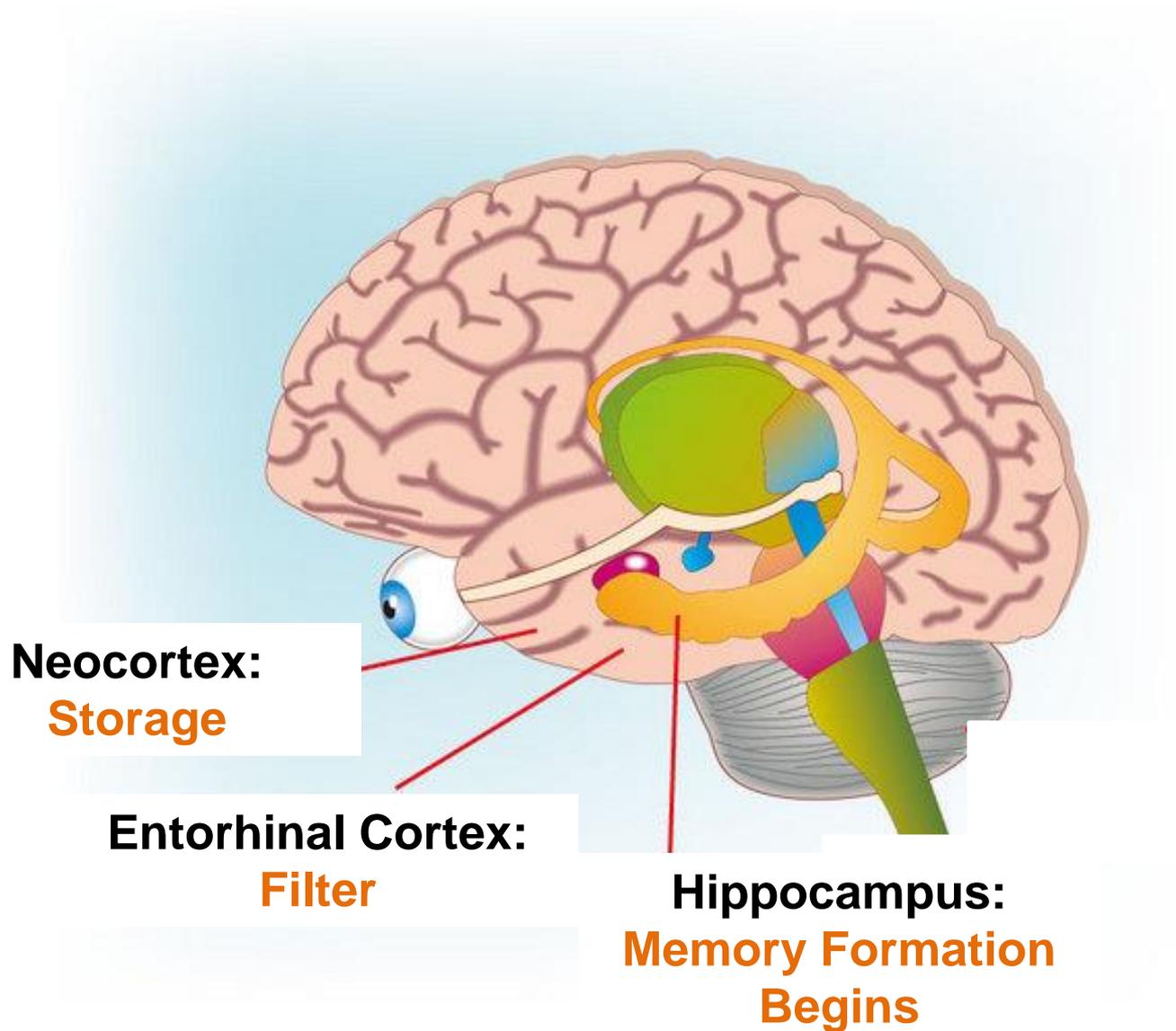
Let's Review



Brain as muscle



Your Brain



100,000,000,000

number of neurons in brain



1,000,000 gigabytes

357,000,000 iphone pics or 250,000 HD movies

Storage & Retrieval



Help out your brain by giving it a **story**

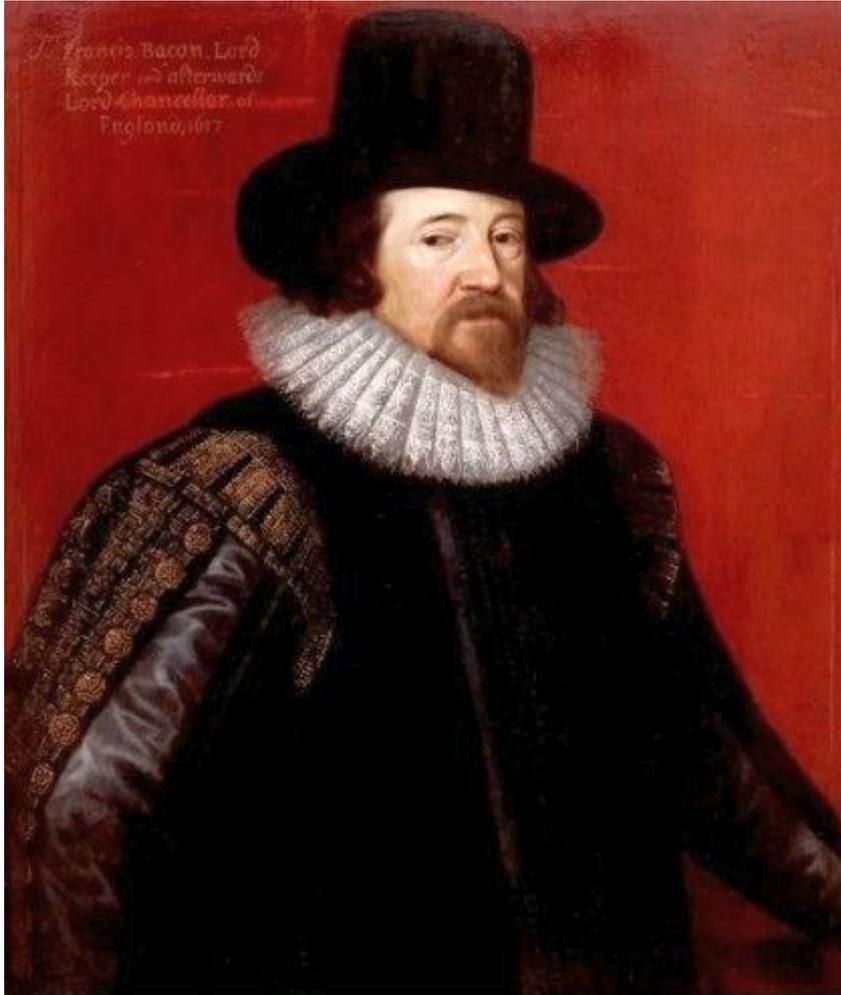
Once upon a time, there was a nice peaceful bacterium living his life decomposing things like leaves and bug corpses. Suddenly, he felt a little poke and he didn't think very much of it. Several days later he rips open and viruses come pouring out. That poke was a virus injecting its DNA into the bacteria and hijacking the bacteria's insides to make copies of itself. It made so many copies that they couldn't stay inside and they burst out. This is called the "Lytic Cycle."

Once upon a time in a small, small land under your feet, there lived a virus named Paco. Paco was a Virus Special Agent in charge of keeping his kind. He runs into a leaf and finds a bacterium. He runs over, and secretly injects his DNA into the bacterium. He runs away. His job is done. Meanwhile, his DNA is incorporated into the bacterium's DNA. The bacterium reproduces, including the virus DNA with its own DNA. This happens over and over until there are millions of bacteria with the secret agent DNA. Suddenly, Paco presses his signal beeper and all of the viruses pop out of the bacteria. They have taken over the world. This is called the "Lysogenic Cycle."

“The more elaborately we encode the information at the moment of learning, the stronger the memory.”

John Medina, Brain Rules

Francis Bacon (1620)



“If you read a piece of text through 20 times, you will not learn it by heart so easily as if you read it ten times while **attempting to recite it from time to time and consulting the text when your memory fails.”**



**Expectation
failure**