Teaching how the brain learns

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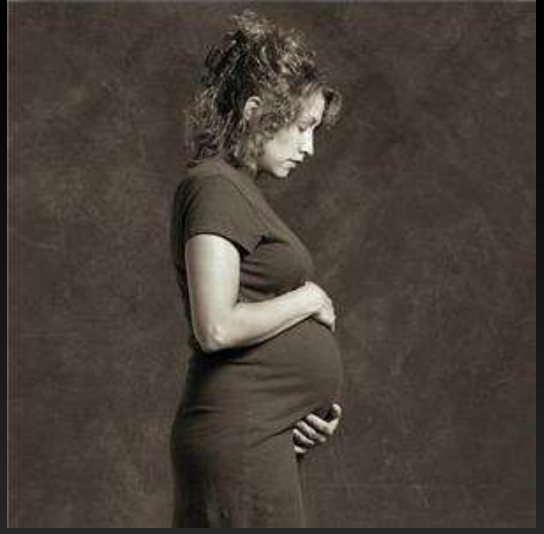
Type in: brain based learning

ADVANCES IN SCIENCE

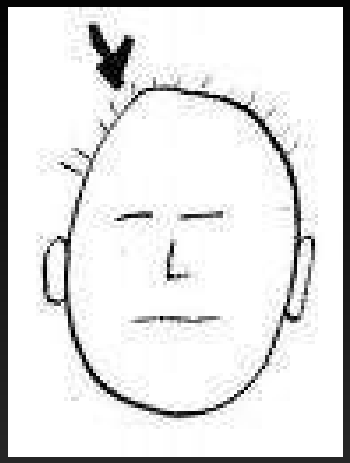


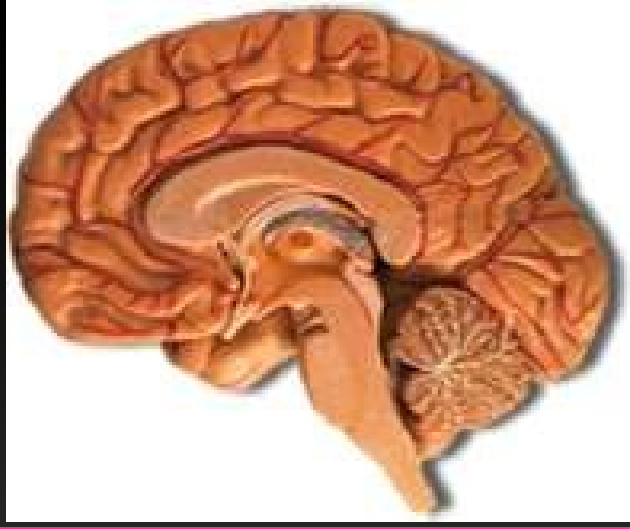
Before, we only knew there was a baby in the womb….

Now we can tell whether it's a boy or a girl!

Thanks to the invention of the ultrasound!

ADVANCES IN SCIENCE



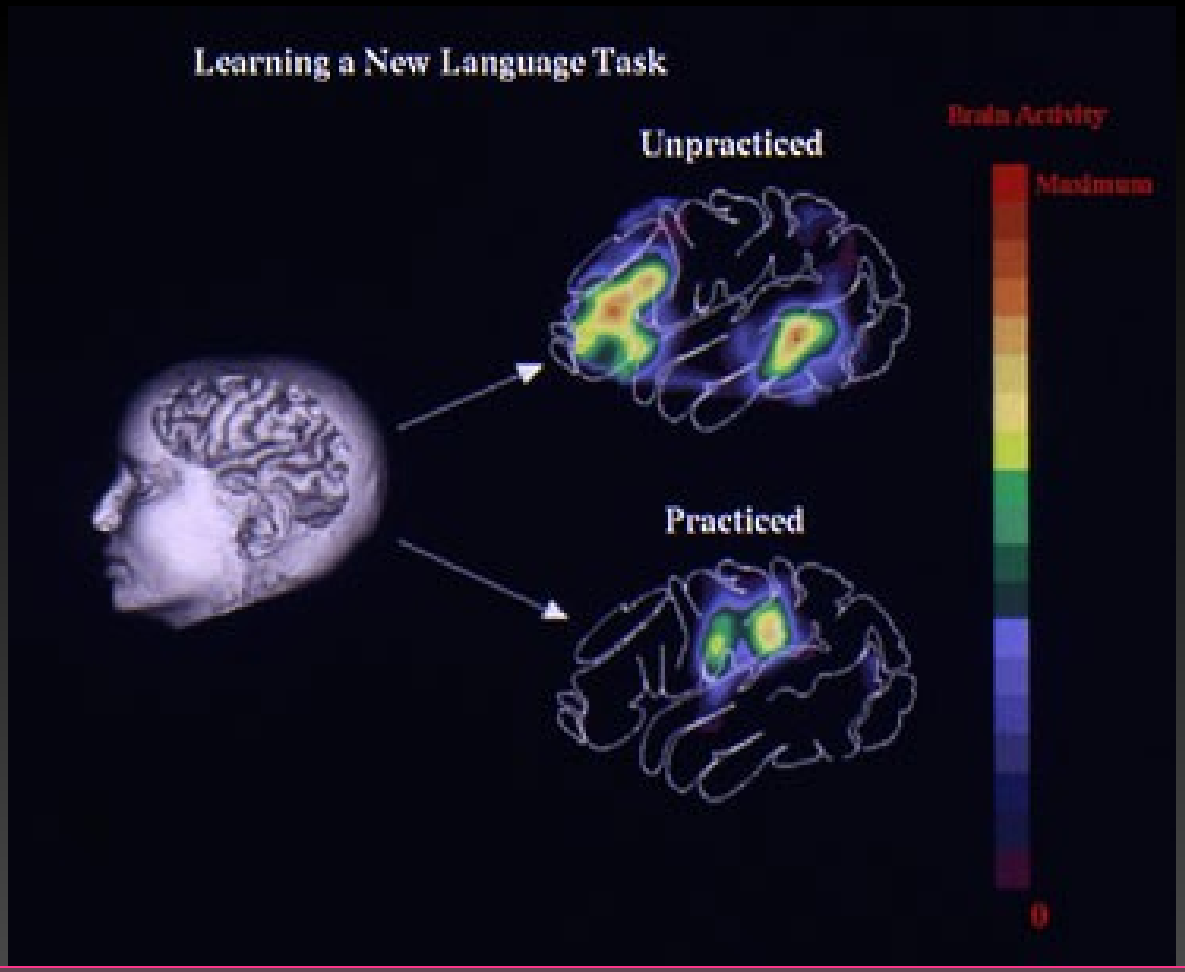


The same thing is happening in brain research

Now we can observe how parts of the brain light up during movement & thought

Thanks to the inventions of fMRI, PET y EEG

PET- NUCLEAR MEDICINE

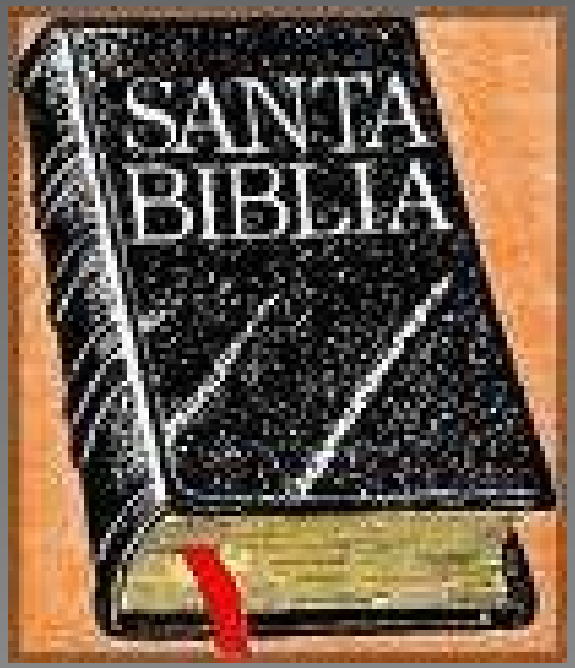


The patient drinks radioactive glucose & the PET machine shows the brain's activity while the patient is learning a new language (top image) & then where that learning is stored (lower image)

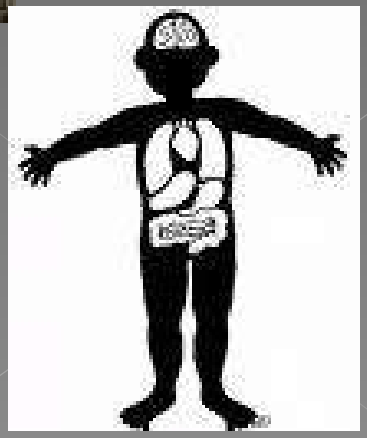
God's revelation

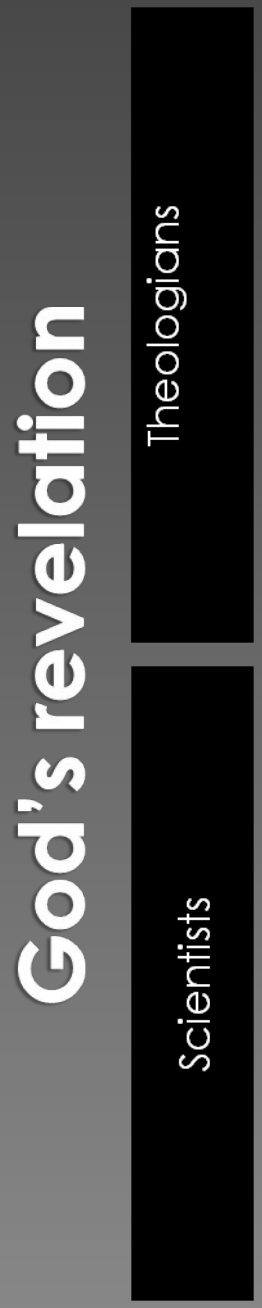
If we want to learn how to teach according to how God created the human brain, we need to understand that God reveals His truth to us through two sources.

- Special Revelation (2 Tim. 3:16-17)



- General Revelation (Rom. 1:20)





- Theologians and Christians study Scripture and discover God's truths.
- Scientists study the natural world & the human body & discover God's design & truths whether they recognize the Source or not.

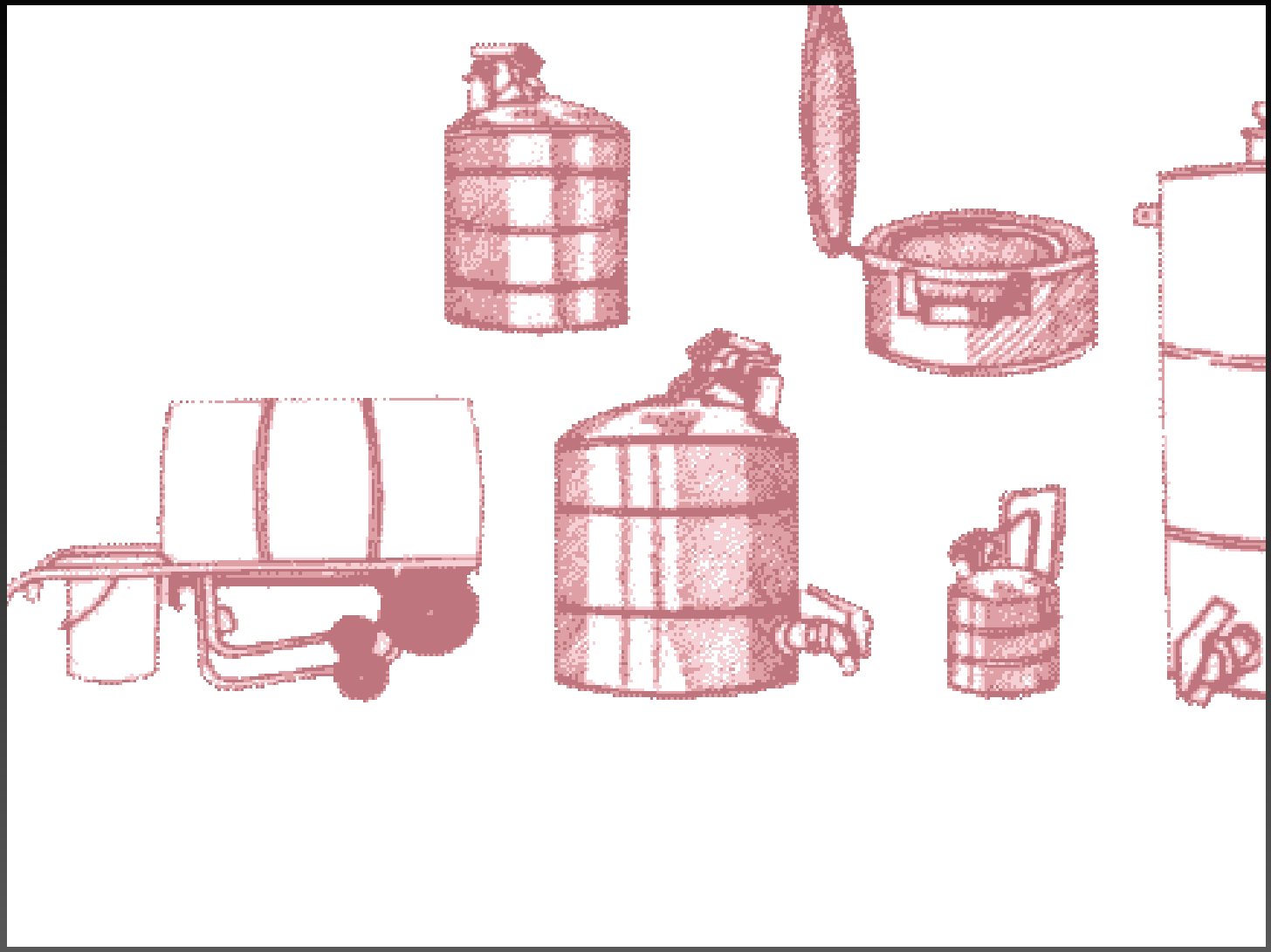
All truth is God's truth & with what the scientists have discovered about how God made the brain, we do well to heed their advice and teaching according to how the brain learns.

Good solid teaching is not a teacher's particular style or giftedness, we can all learn to abide by the inherent design God placed in the human brain.

With what do we compare the brain when we are teaching?

A sponge?

Clay?

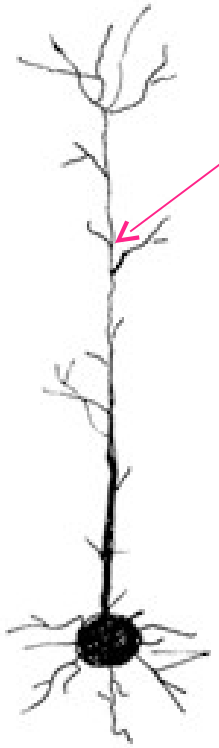


Empty vessels to be filled?

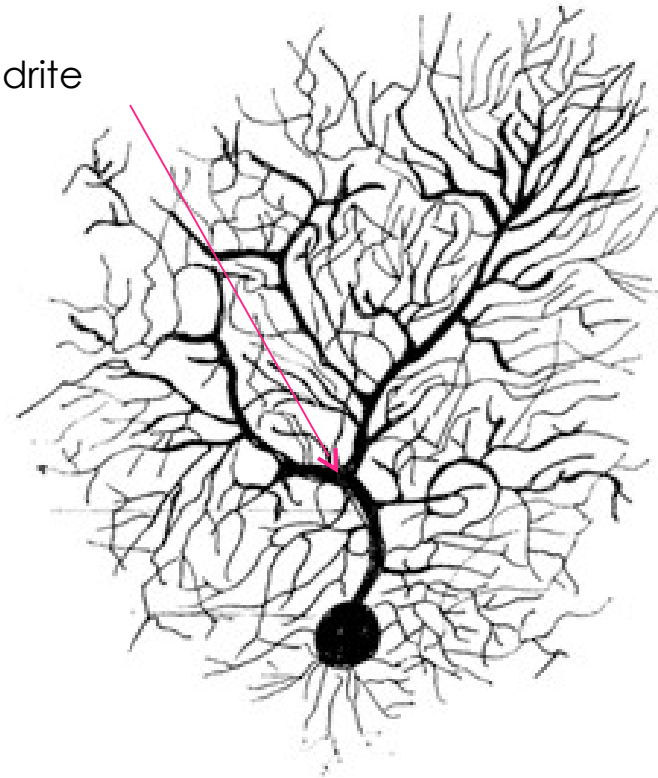
Then, what is the brain?

The brain is….

A living organism, its neurons (dendrites) change and grow in connections between one another as we learn.



Main dendrite



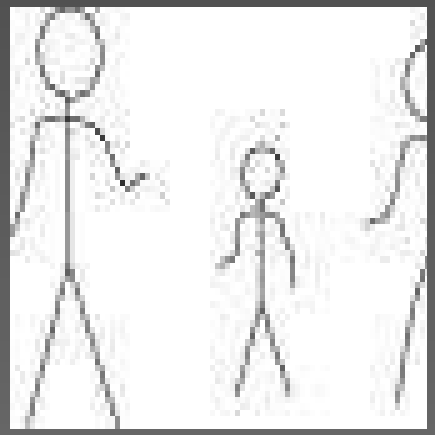
Sparse growth of dendrites in an aging, inactive brain.

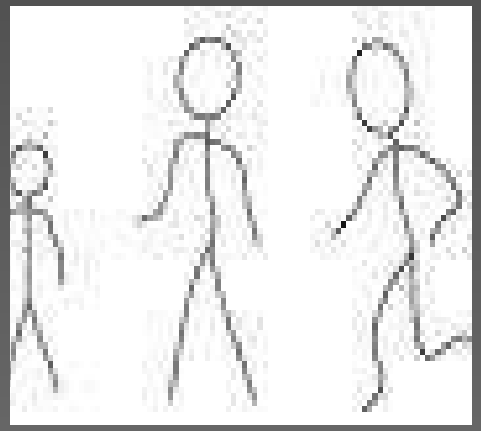
Typical dendritic growth in an active brain.

Processing of information

Move around & connect

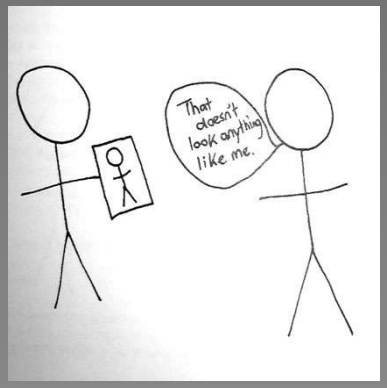
- Stand up & pair up with one other person nearby.



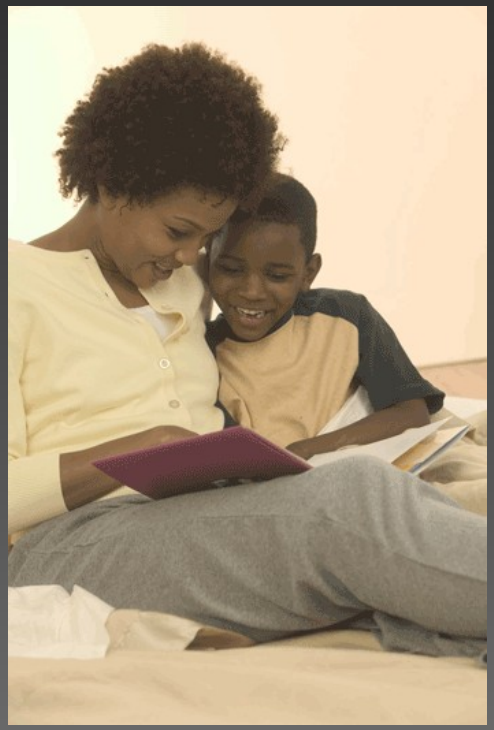


Share impressoins

- Comment on what has been most interesting to you thus far in this presentation.



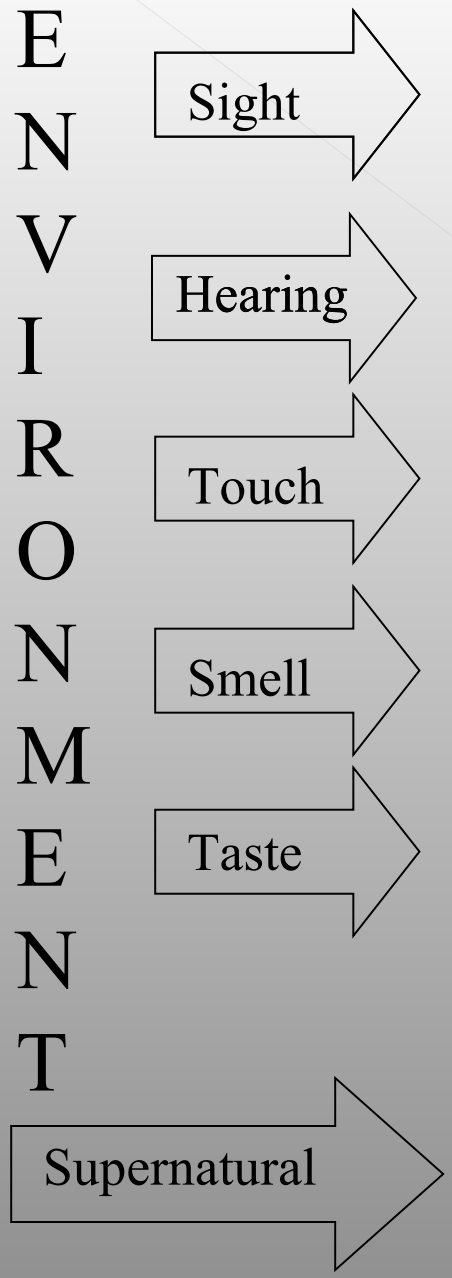
Educators (& parents) we are in the only profession whose job it is to change the human brain everyday!



Information processing model

In an attempt to explain how the brain works for those in teaching profession, David Sousa (2006) in his book, *How the brain learns*, created this model & is the first to admit its limitations. Nevertheless, even with its deficiencies (which I can enumerate later), it helps us visualize how the brain processes information.

El modelo CPU



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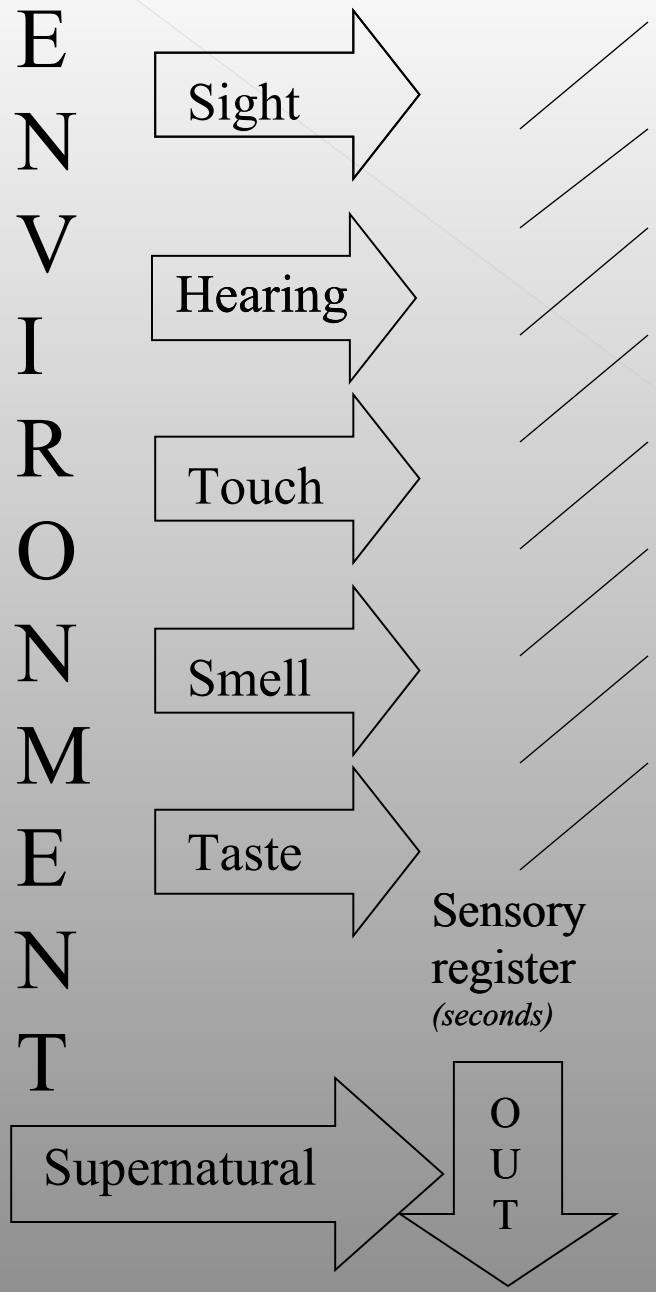

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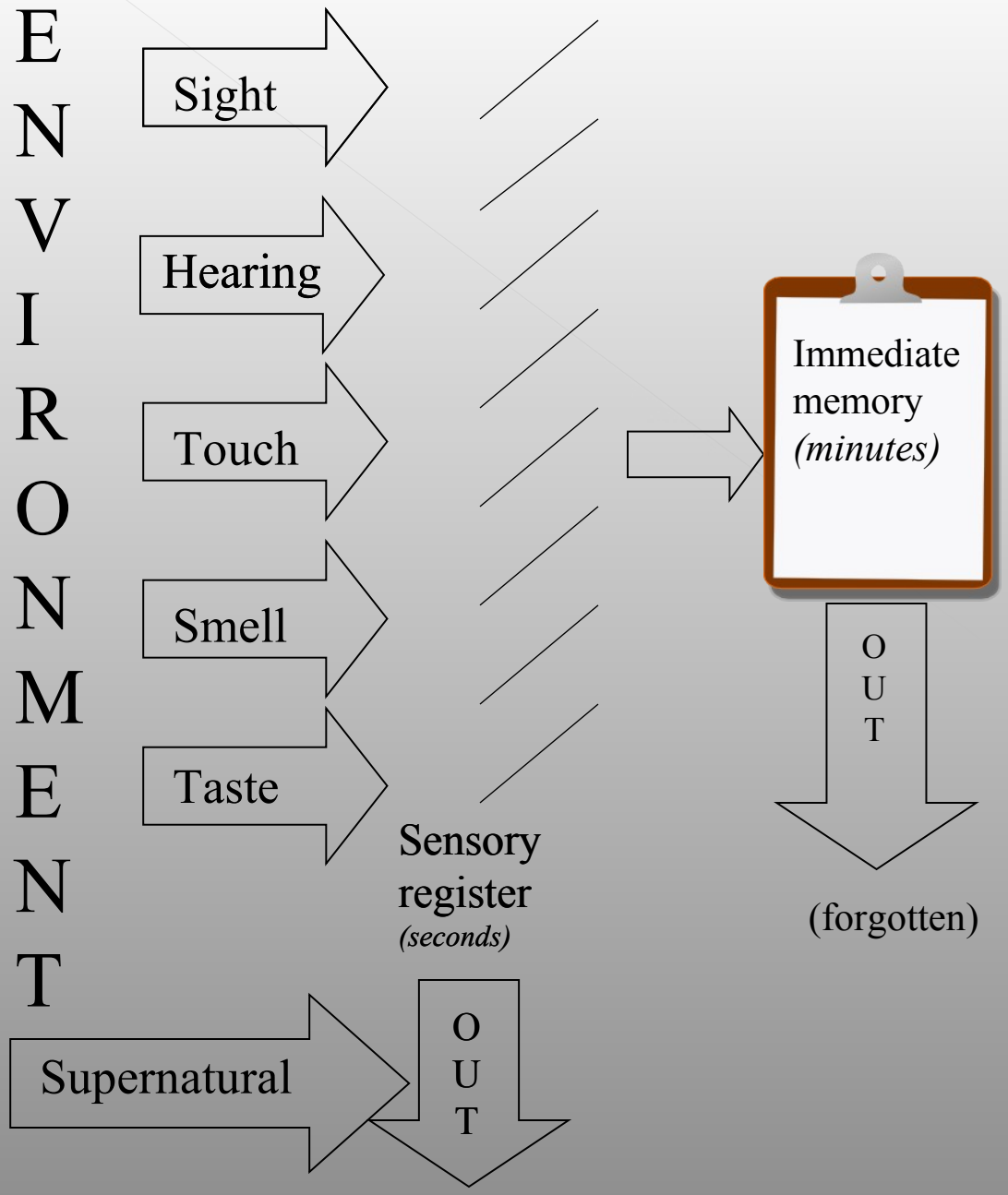

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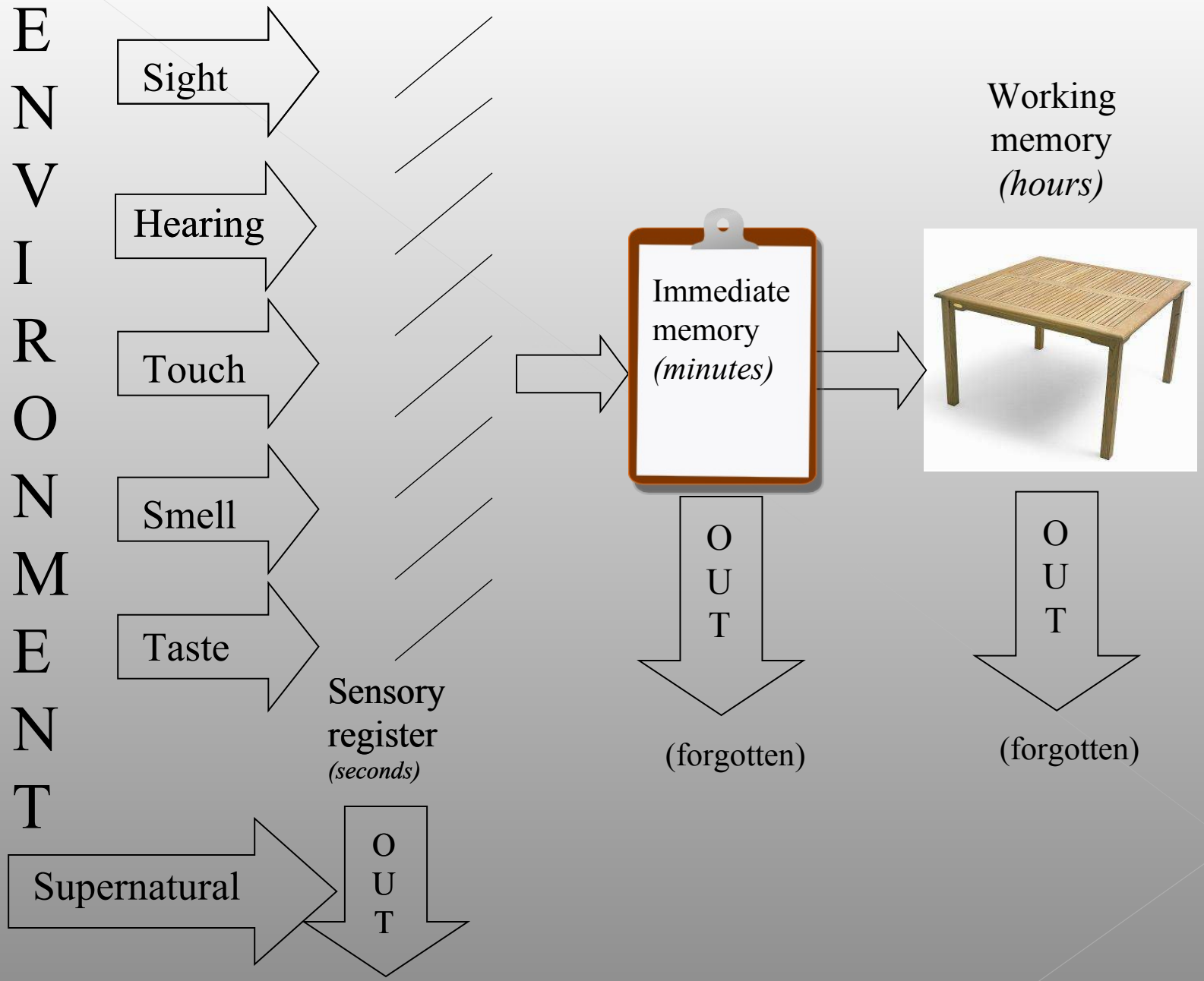
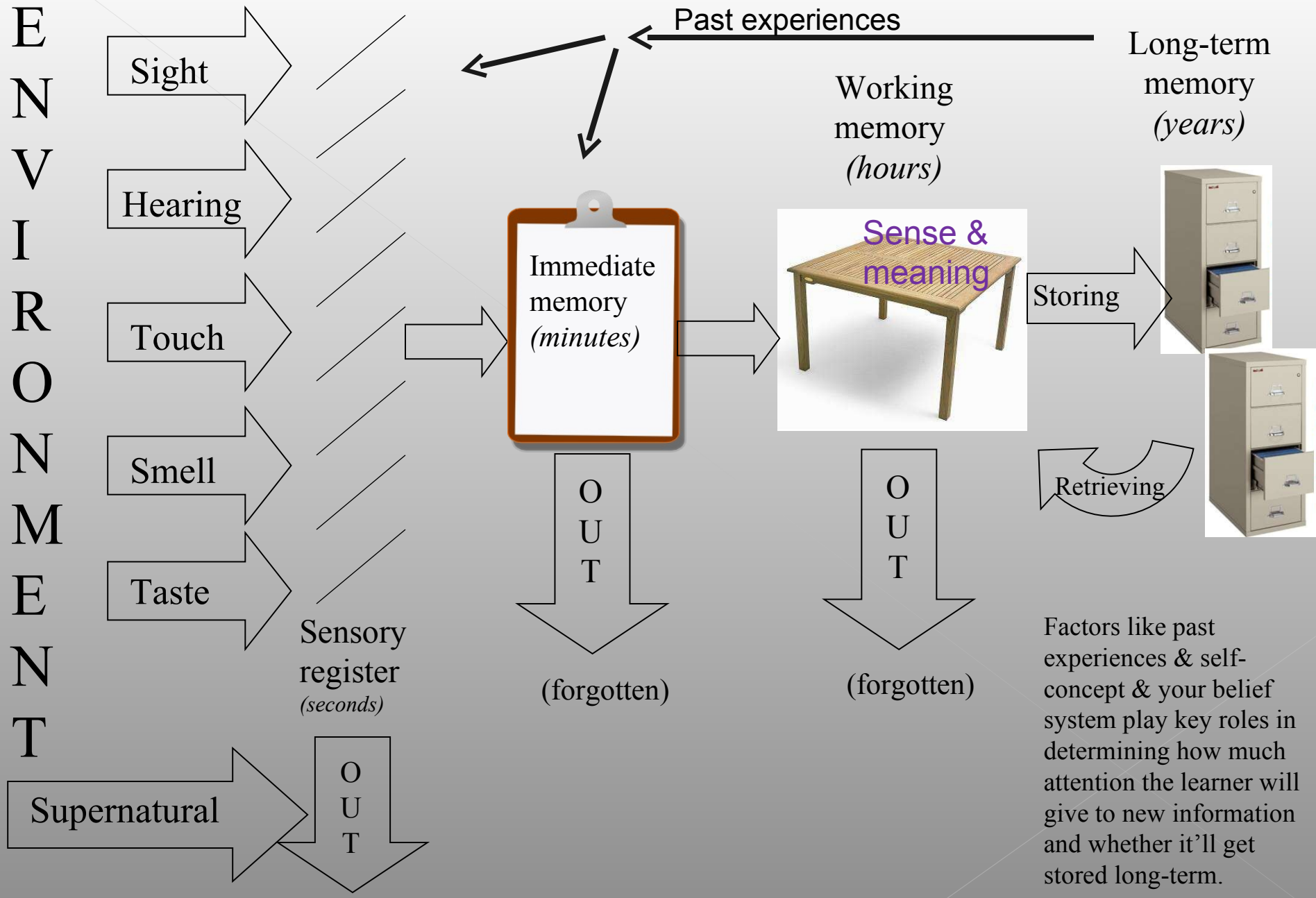


Information processing model



Factors like past experiences & self-concept & your belief system play key roles in determining how much attention the learner will give to new information and whether it'll get stored long-term.

CPU Model— Our focus will be on moving the information from the work table into long-term memory

What factors determine if a piece of information moves from the working memory into long-term storage?

Working memory *(hours)*

Sense

Does this make sense to me? Does it fit into what I know about how the world works? Is it clear and understandable?

Long-term storage *(years)*

Meaning

Does it have meaning? It is relevant to me? Why should I learn this? Is it of interest to me? Why do I have to know this? When would I ever use it?

O U T

(forgotten)

Here's one rule to help you gain sense and meaning to help the learner process the information from the "work table" to the "file cabinets."

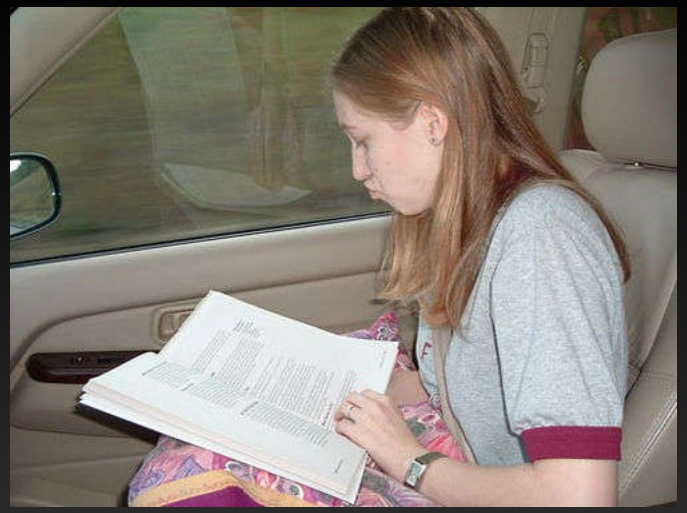
Brain Rules

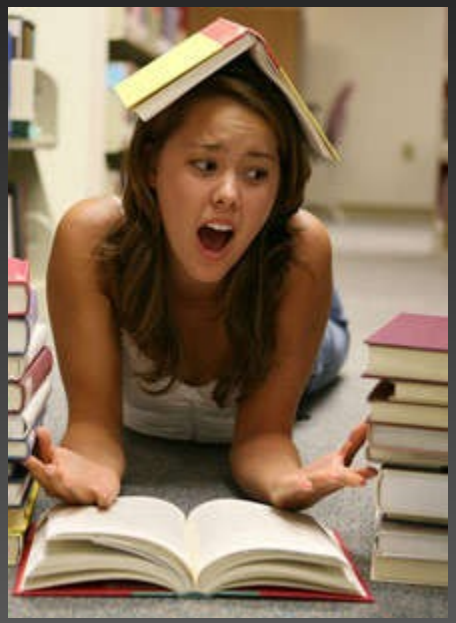
Don't stuff the geese!

MAKING PATÉ (GOOSE LIVER)

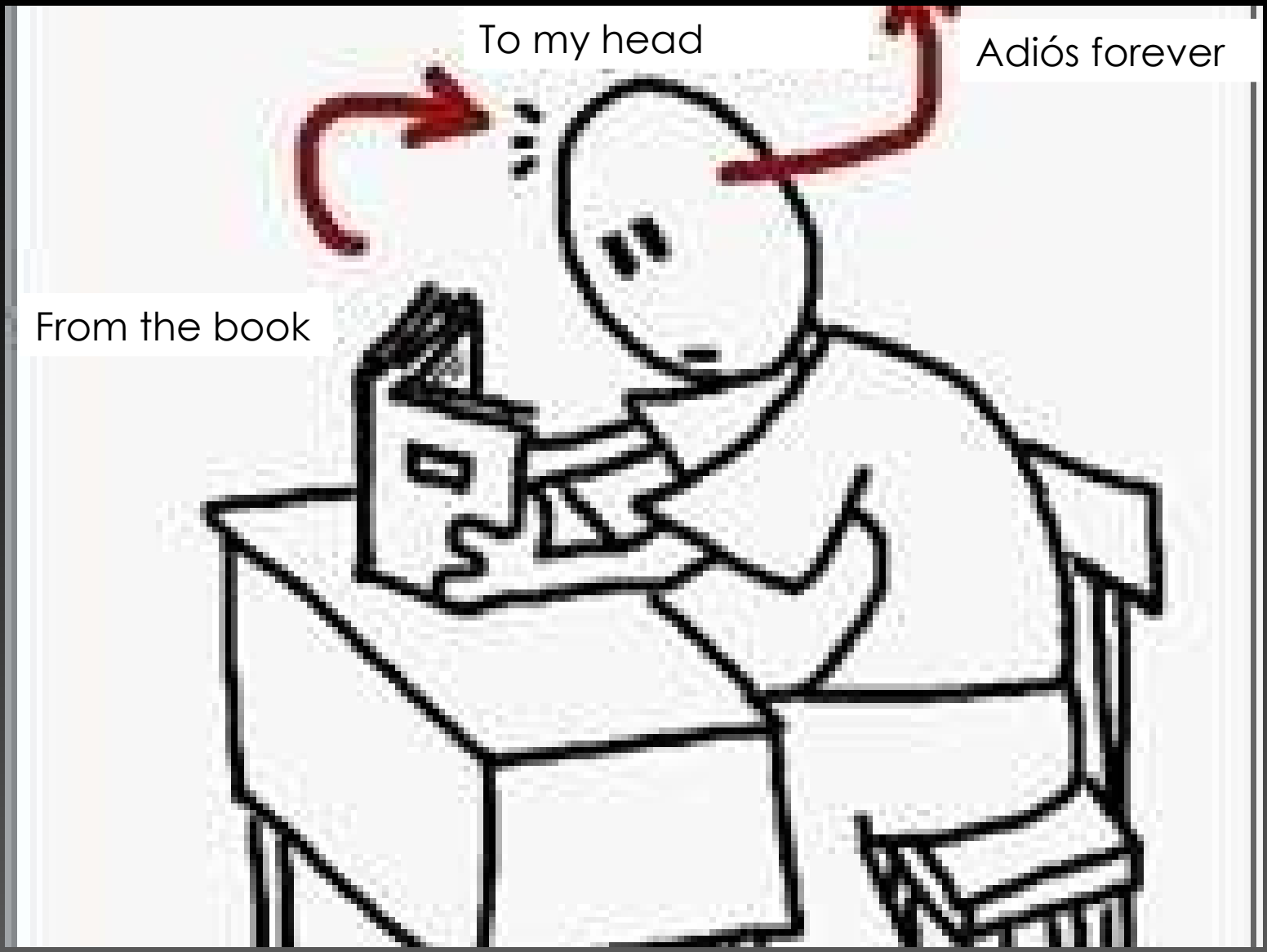
How exactly is paté made in order to understand this Brain Rule?

How does this compare with what happens in the classroom?





Do these images remind you of anything?



You cannot recall information that your brain does not retain.

Therefore, do not stuff the geese!

Teach less but teach it better.

The objective is not to cover the material but to prompt the students to "dis-cover" the material and it's relevance & application to their lives.

Dedicate the TIME and HELP to the students so they can make sense of the information and it can become meaningful to them.

Two pieces of advice

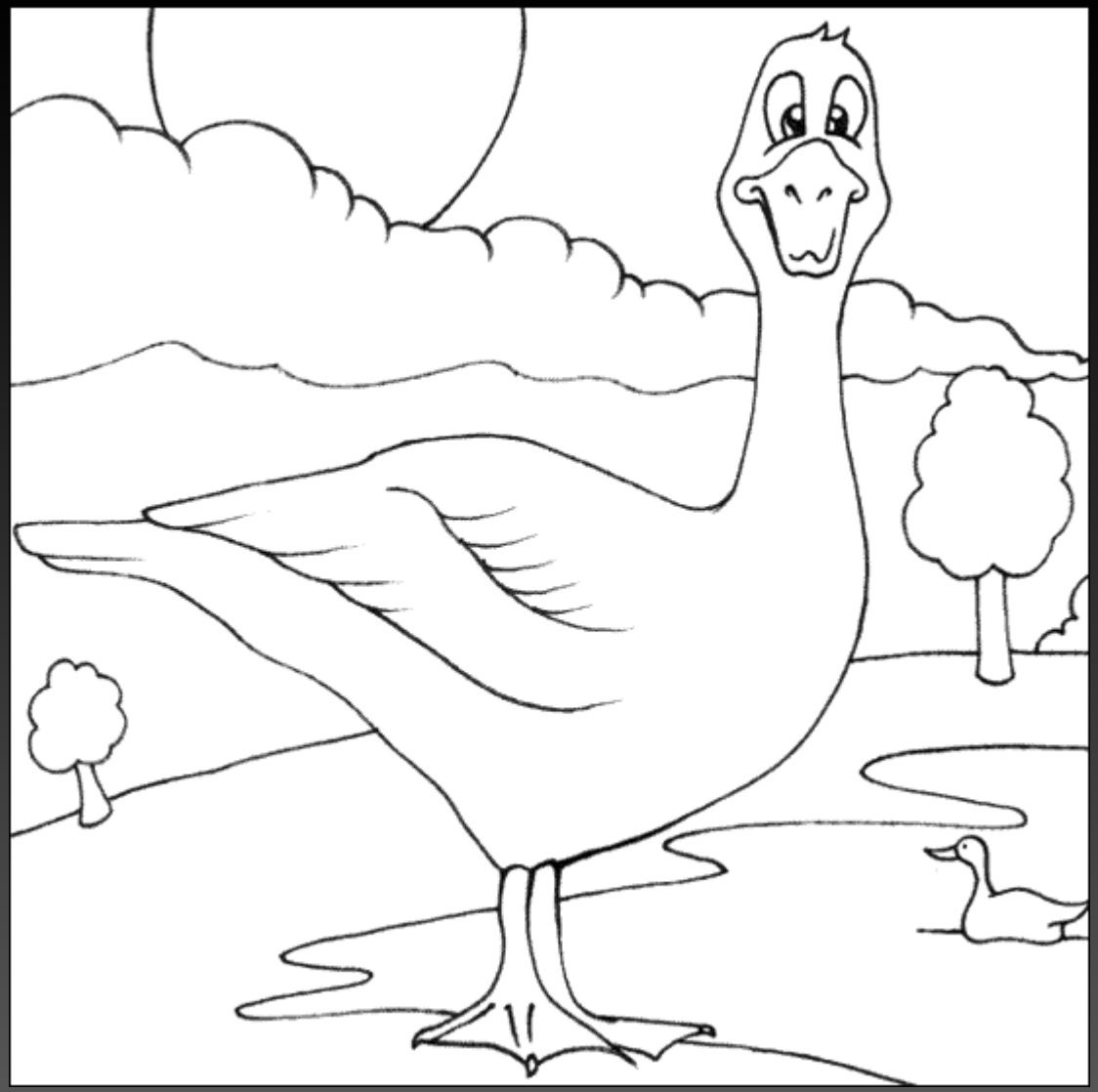
Distill the content

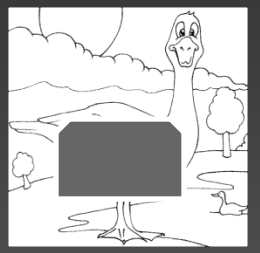
- **Teach less and teach it better.** (Whitehead 1929). Less is more!
- If your textbooks don't provide a summary of the most essential points, distill the content with the following criteria:
- (1) If my students could only remember two key concepts, what would they be?
- (2) What real life problem will your students be able to resolve if they learn this information?

Use closing activities

- The brain needs time to process new stimulus & information. Make ample use of closing activities & reflection activities that are designed to help the students summarize what they learned so it makes SENSE & assign it MEANING.

SELF- EVALUATION

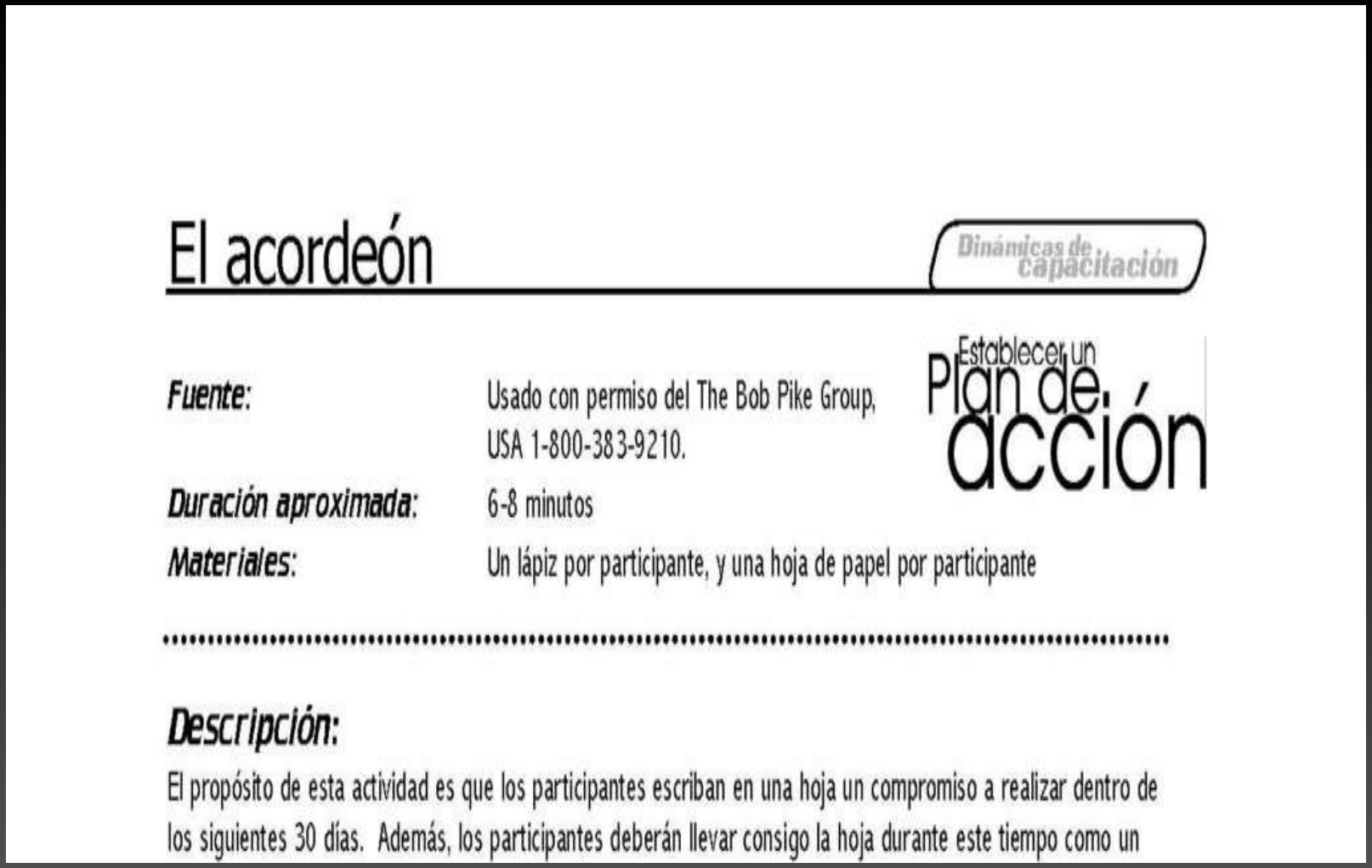




Ejemplo

Take a moment to pencil in this duck to according to your tendency to “stuff the geese” and fill them up with information.

OBEY THE BRAIN RULE



El acordeón

Dinámicas de capacitación

Establecer un Plan de acción

Fuente: Usado con permiso del The Bob Pike Group, USA 1-800-383-9210.

Duración aproximada: 6-8 minutos

Materiales: Un lápiz por participante, y una hoja de papel por participante

Descripción:

El propósito de esta actividad es que los participantes escriban en una hoja un compromiso a realizar dentro de los siguientes 30 días. Además, los participantes deberán llevar consigo la hoja durante este tiempo como un

Choose a closing activity and plan your next class. Choose another teacher with whom you can share your ideas and pray together, asking God to bless and guide your efforts.

Dinámicas de Capacitación

We have available a book of creative training techniques with opening, review and closing activities.

Cost: $20USD.