

Brain Based Learning

Learn smarter, not harder

Sp2 Drawsko Pomorskie i Tölgyesi Zsuzsa



Core values

- A defining moment
- What makes you sad
- What you couldn't live without
- Someone you look up to
- Why other people like you
- How you want to be remembered
- What annoys you
- What makes you laugh

Core values

Shared _____ values are a _____ reminder that no one _____ can achieve _____ on their own. In this way, core values foster _____ and _____ between team members.

Shared core values are a powerful reminder that no one person can achieve everything on their own. In this way, core values **foster connection and trust between team members.**

- | | | |
|-----------------|---------------------------|------------------|
| • Honesty | • Affection | •Fitness |
| • Adventure | • Cooperation | •Professionalism |
| • Kindness | • Love of Career | •Relationship |
| • Teamwork | • Friendship/Relationship | •Knowledge |
| • Career | • Encouragement | •Patience |
| • Communication | • Pride in Your Work | •Change |
| • Learning | • Clarity | •Prosperity |
| • Excellence | • Fun-Loving | •Wellness |
| • Innovation | • Charisma | •Finances |
| • Quality | • Humor | •Gratitude |
| • Commonality | • Leadership | •Grace |
| • Contributing | • Renewal | •Endurance |
| • Spiritualism | • Home | •Facilitation |
| • Strength | • Be True | •Effectiveness |
| • Entertain | • Contentment | |

- Focusing on your values reminds you of what's really important and puts the stressor into perspective.
- Boosts decision making and problem solving. A study by researcher David Creswell and his associates found that college students experiencing high stress were better able to figure out a creative problem-solving task under time pressure if they first wrote a few sentences about their most important values.
- Values can strengthen your willpower so you can persist at difficult tasks. To activate your willpower, you must remind yourself *why* it's important for you to do something.
- Values can help you communicate with more compassion. Reflecting on your deepest values can also "create an inner state of intense awareness and calm," according to Newburg and Waldman. This inner state can help you listen more intently to others and choose your words with tender loving care.
- Your values help you distinguish between what seems urgent and what is truly important.

Core values

Shared _____ values are a _____ reminder that no one _____ can achieve _____ on their own. In this way, core values foster _____ and _____ between team members.

Shared core values are a powerful reminder that no one person can achieve everything on their own. In this way, core values **foster connection and trust between team members.**

Our secret self

Write down sg that you think the others don't know about you.

A dream

A hope

An achievement

Sg you can do or (would) like to do

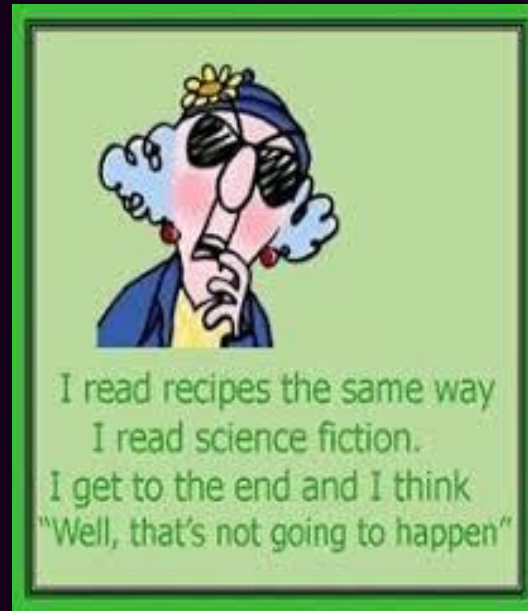
Sg you can't do or don't (wouldn't) like to do

Sg you have done

...

Brain Based Learning

NOT A RECIPE



HELPS DECISION MAKING



Neuromyths: false ideas about how the brain works



1.) We mostly only use 10% of our brain.

We use many different areas of our brain at the same time.

2.) Individuals learn better when they receive information in their preferred learning style (e.g. visual, auditory, kinaesthetic).

There is no evidence that they learn more.

3.) Differences in hemispheric dominance (left brain, right brain) can help explain individual differences amongst learners.

Relative lateralisation left: „details”, right: „big picture”

4.) Vigorous exercise can improve mental function.

Improved mood, memory and learning

5.) The more revision is included in the learning process the better retention is.

Let' test it!

Soon...

Pretesting is

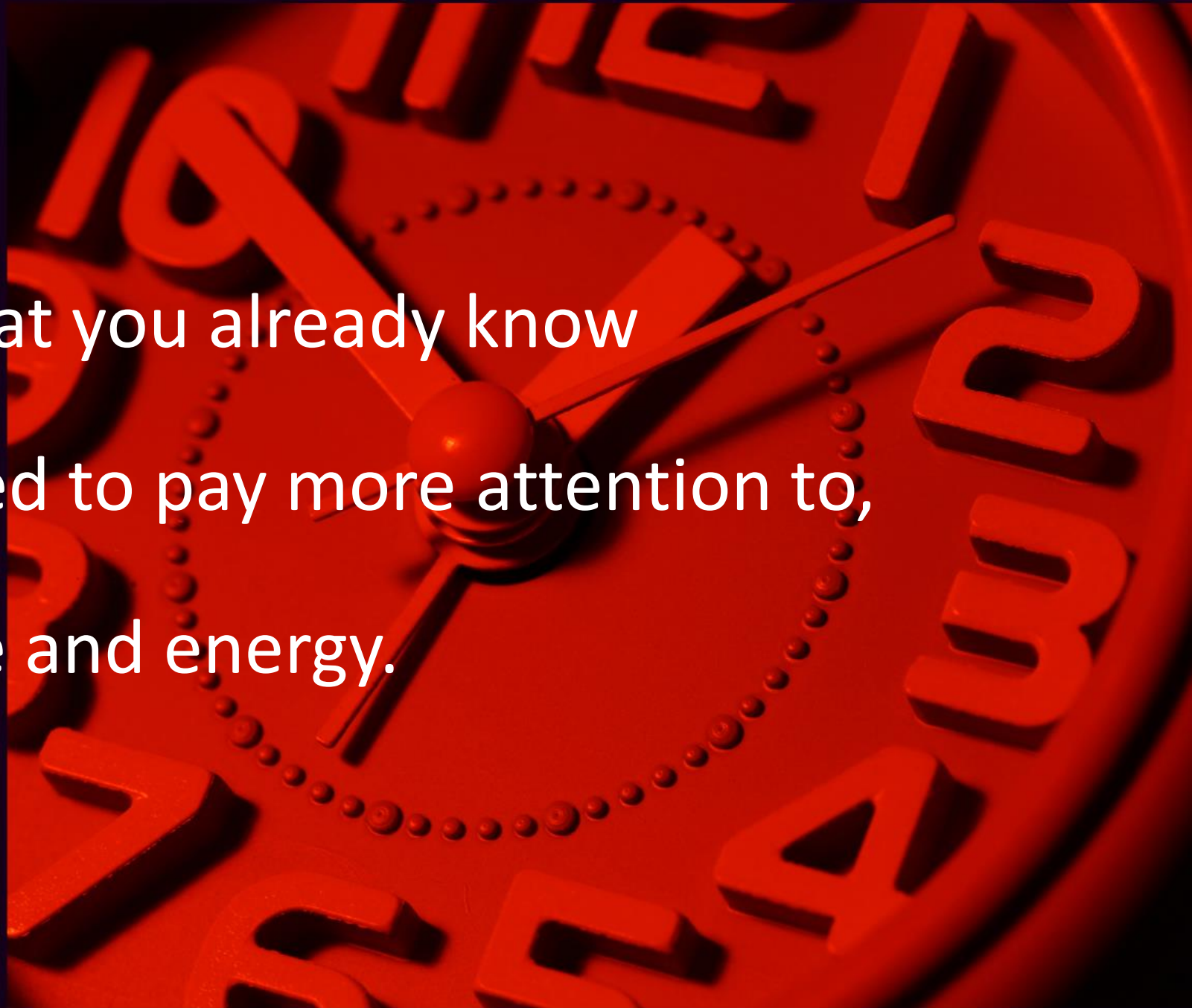
quizzing students on the material
that they are about to learn.

Crazy?



If you pretest...

you will know what you already know
and what you need to pay more attention to,
you can save time and energy.



Pretesting activates already existing information

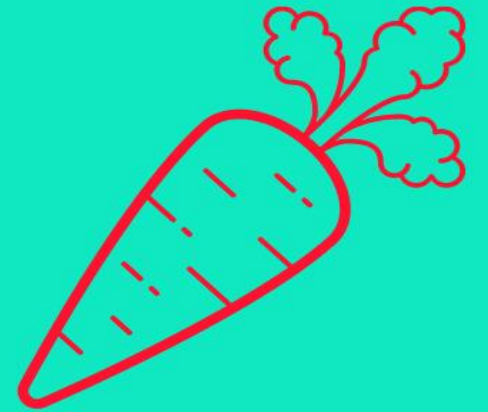


Pre-testing piques curiosity

The researchers found that when the participants' curiosity had been sparked, there was **not only increased activity in the hippocampus**, which is the region of the brain involved in the creation of memories, **but also in the brain circuit that is related to reward and pleasure**. This circuit is the same one that lights up when we get something we really like, such as candy or money, and it relies on dopamine, a "feel-good" chemical that relays messages between neurons and gives us a sort of high.

BUT THERE IS EVEN MORE TO IT THAN THAT!

Researchers found that, once the subjects' curiosity had been piqued, they were better at learning and remembering completely unrelated information.



Priming, the Florida experiment

Priming is a phenomenon whereby one stimulus activates a response to an other situation, without being conscious.

Group 1:

Random words

Group 2:

“Florida,” “forgetful,” “bald,” “gray,” and “wrinkle.”

<https://www.youtube.com/watch?v=FVoVJFW5lBA>



Priming is a phenomenon whereby one stimulus activates a response to an other situation, without being conscious.

Stimulus: what the teacher says

Response: attitude to learning in general, or learning a certain material

How would you change these sentences?

Today's topic is going to be very difficult.

I know you hate this and I am sorry, but here's your homework for next time.

This is a long reading task, but try to finish as quickly as possible.

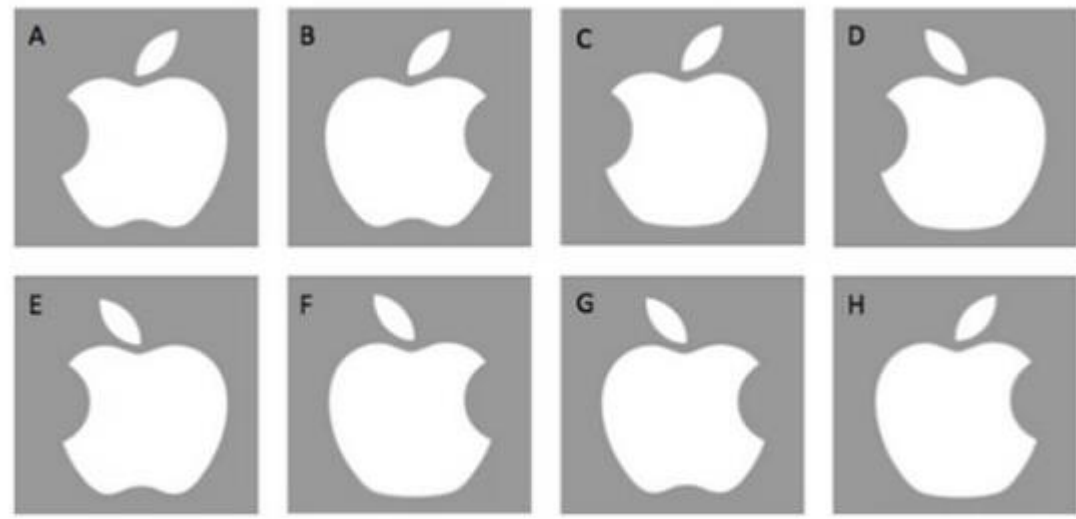
Attention

Quirkology Channel

THE COLOUR CHANGING CARD TRICK

www.RichardWiseman.com





Attent!on

Direct your attention

Keep your attention focused

Metacognitive therapy

Fixation of attention

<https://www.youtube.com/watch?v=2hIA-obDPxw>

<https://www.youtube.com/watch?v=2G8LAIHSCAs>

https://www.youtube.com/watch?v=h2zkV-l_TbY

<https://www.youtube.com/watch?v=dTBqPeASNW8>

Grounding techniques

Grounding techniques are coping strategies to help reconnect you with the present and refocus (often used to reduce stress and anxiety).

Stay Grounded Using Your 5 Senses

Relax Your Body, Take a Few Deep Breaths and Focus on the Following...

 5 Things You Can See 

 4 Things You Can Feel 

 3 Things You Can Hear 

 2 Things You Can Smell 

 1 Thing You Can Taste 

thepragmaticparent.com
© 2017 The Pragmatic Parent LLC

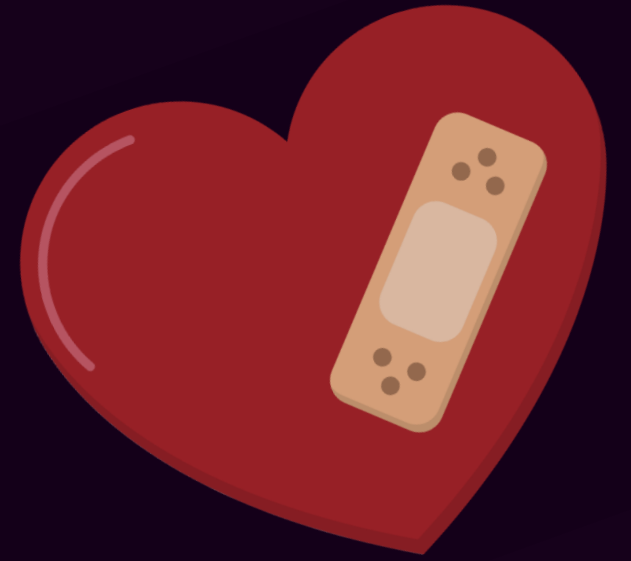


And....

- Colouring
- 1-2-3
- Memory game
- Group story telling
- Tongue twisters
- Dancing sequence
- ...

Emotional distractors

- Being worried
- Feeling threatened
- Feeling anxious
- Being stressed



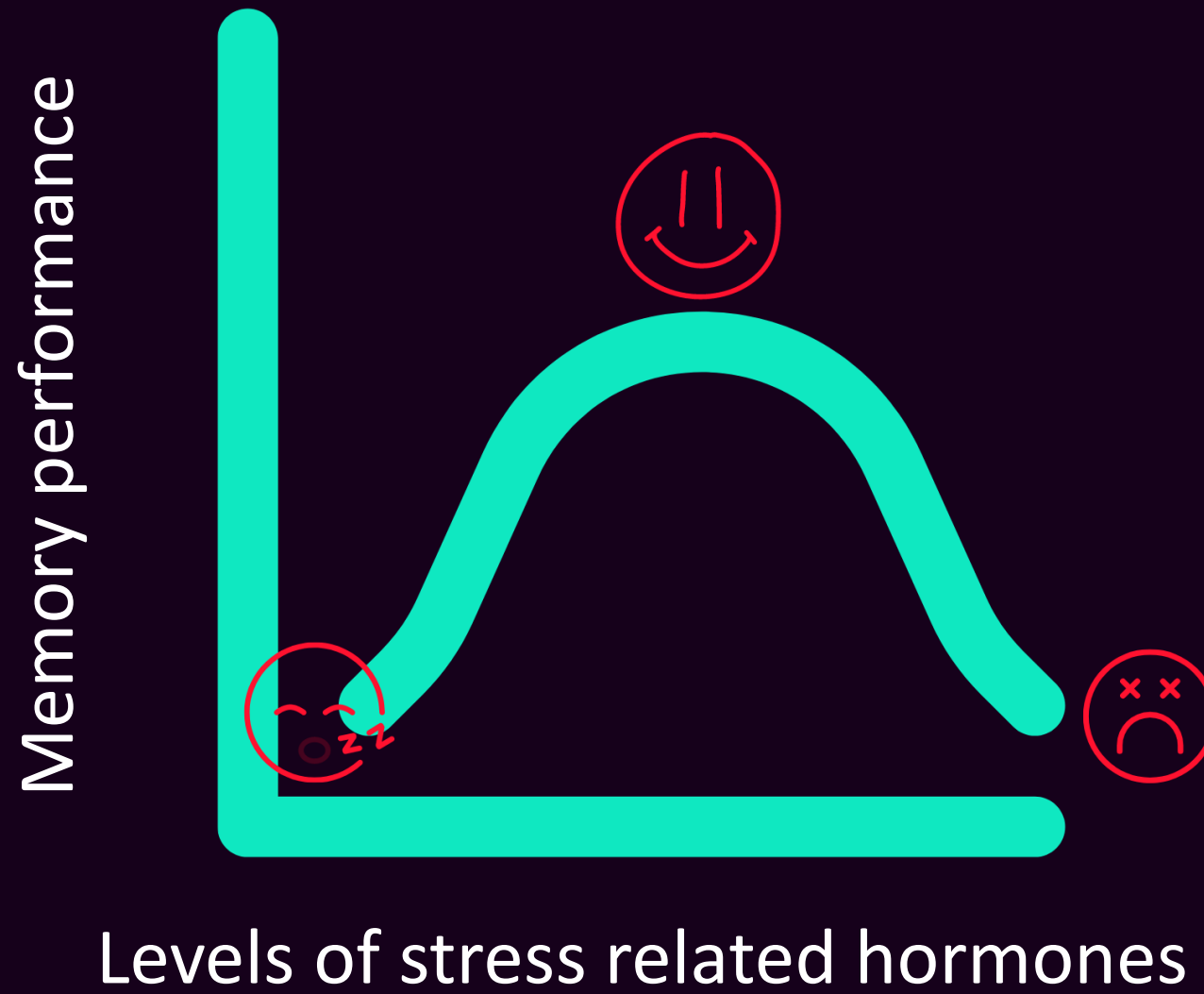
Stress is your reaction to a perception, not reality.



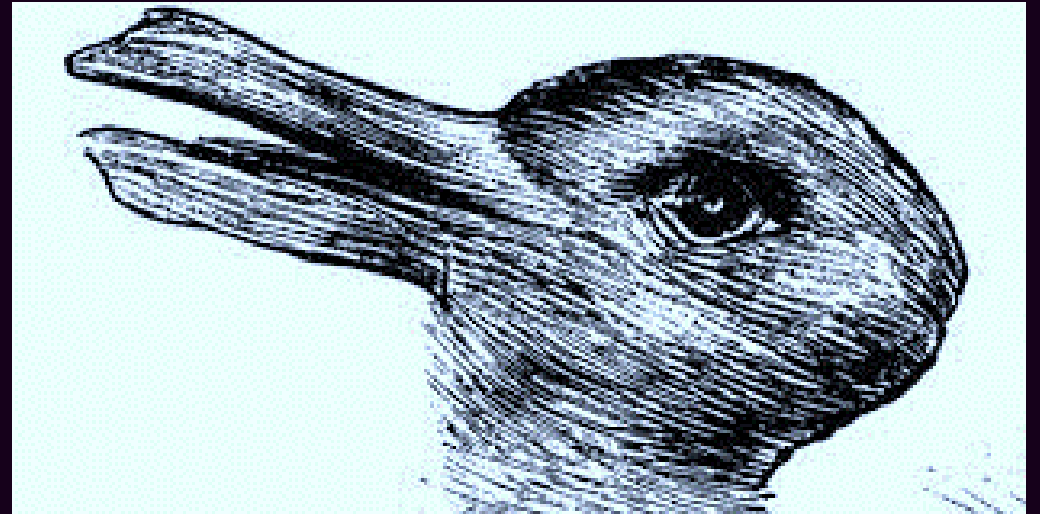
STRESS MINDSET MEASURE (ADULT VERSION)

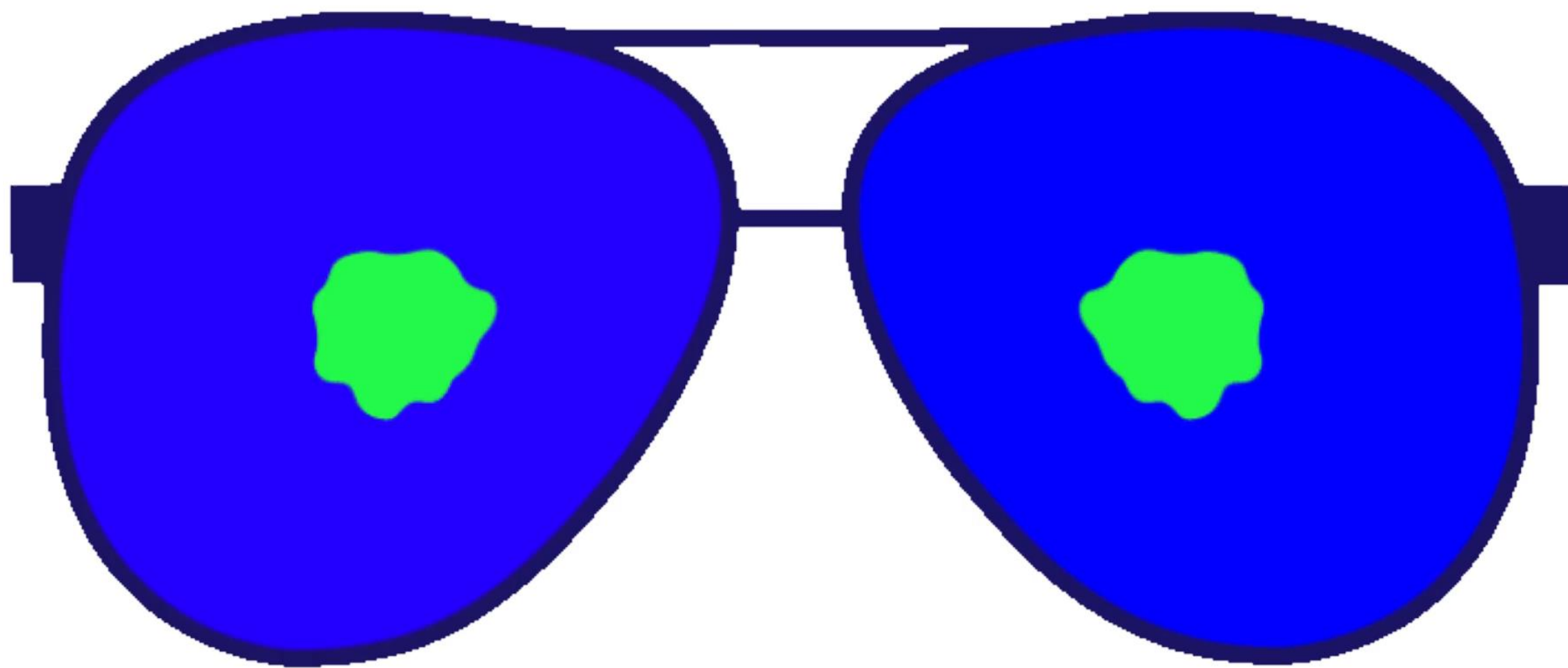
- Rate the extent to which you agree or disagree with the following questions:
- 0 = Strongly Disagree
- 1 = Disagree
- 2 = Neither Agree nor Disagree
- 3 = Agree
- 4 = Strongly Agree

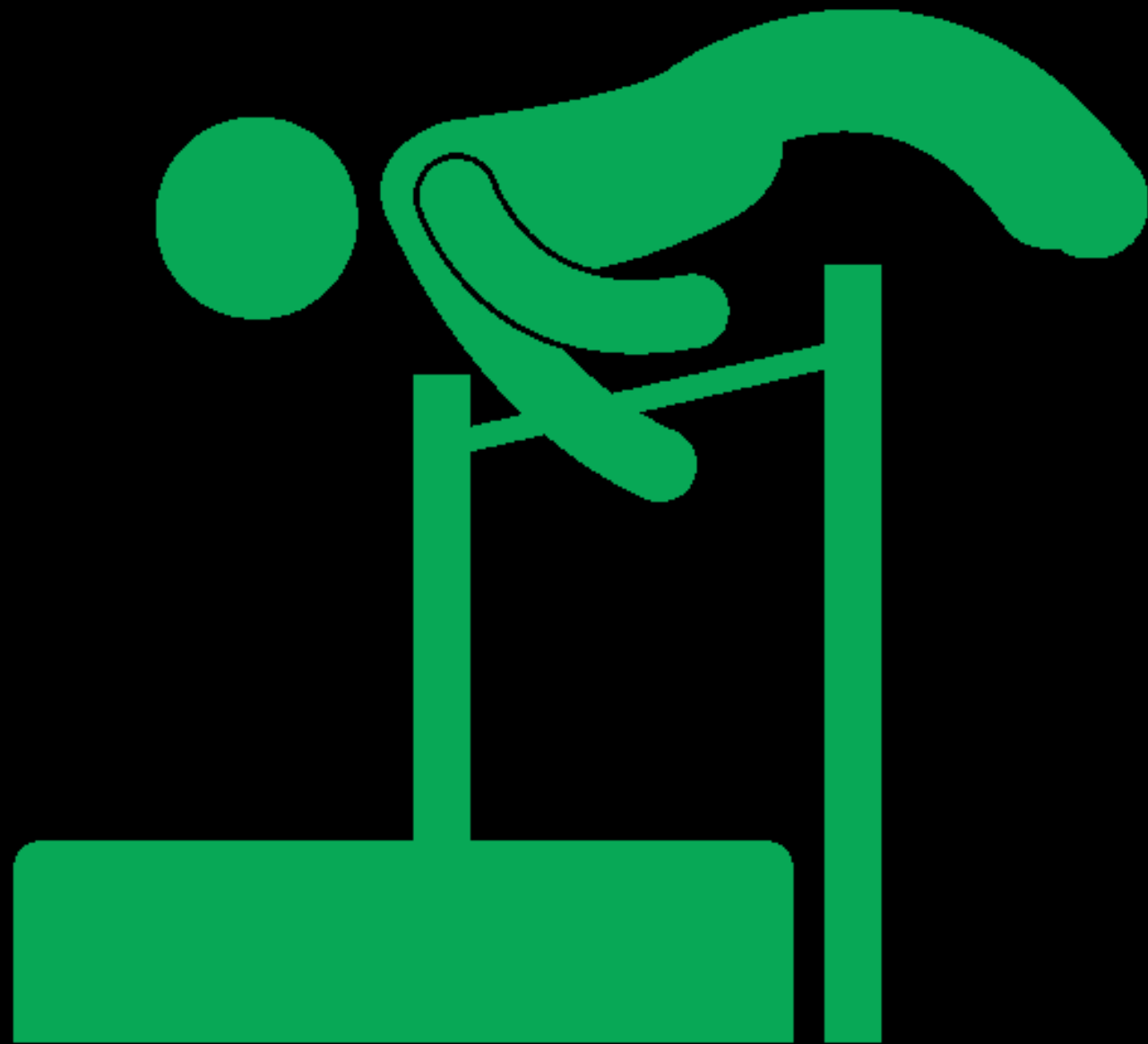
- 1.The effects of stress are negative and should be avoided.
- 2.Experiencing stress facilitates my learning and growth.
- 3.Experiencing stress depletes my health and vitality.
- 4.Experiencing stress enhances my performance and productivity.
- 5.Experiencing stress inhibits my learning and growth.
- 6.Experiencing stress improves my health and vitality.
- 7.Experiencing stress debilitates my performance and productivity.
- 8.The effects of stress are positive and should be utilized.



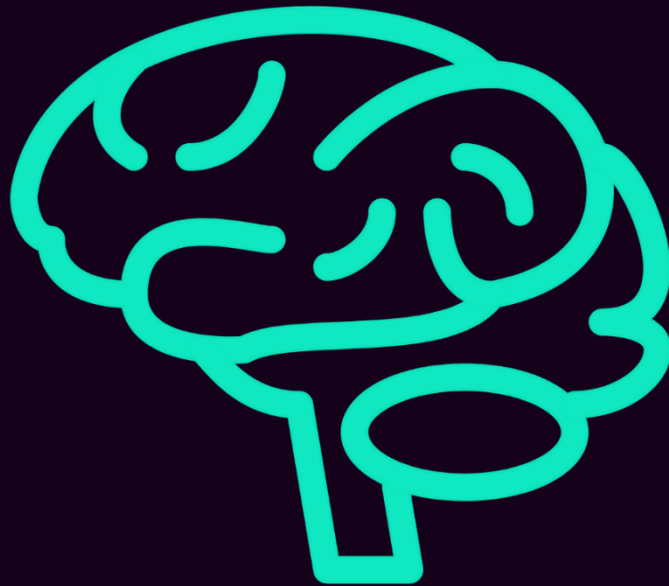
Stress is your reaction to a perception, not reality.







Where does stress show its face?





Fifty shades of crappy – emotional granularity

Emotional granularity is the ability to put feelings into words with a high degree of specificity and precision.

[Emotional Granularity Influences on Coping - RISE:2022](#)

- <https://www.northeastern.edu>

Emotional granularity

People who can construct finely-grained emotional experiences go to the doctor less frequently, use medication less frequently, and spend fewer days hospitalized for illness.

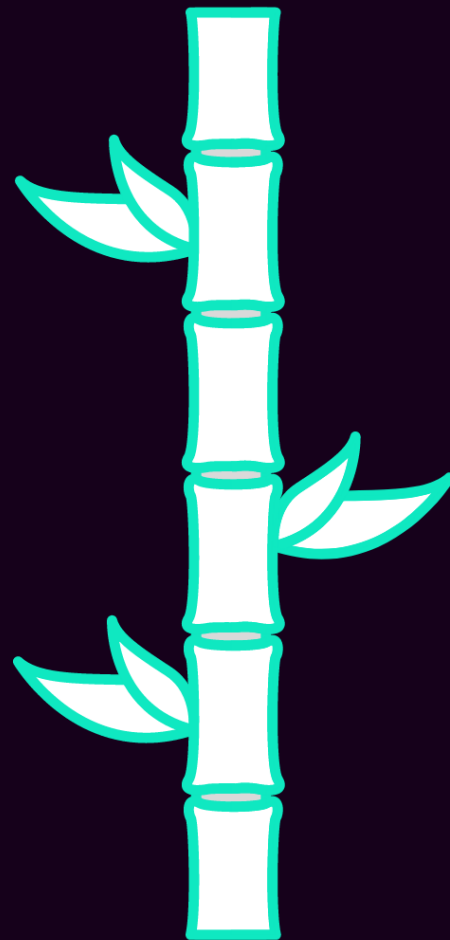
<https://www.hoffmaninstitute.org/wp-content/uploads/Practices-FeelingsSensations.pdf>



By coming up with your own emotion concepts, you'll be better calibrated to cope with different circumstances and potentially more empathic to others.











"High Power" body language (top row)

vs.

"Low Power" body language (bottom row)

(Images courtesy of Amy Cuddy, Harvard University)



- Several meta-analyses of the current scientific literature on adopting expansive postures, including 55 studies identified through a systematic review, reveal strong evidential value for power-posing effects and particularly robust evidential value for effects on emotional and affective states (e.g., mood, feelings, evaluations of the self).

- Share it with people, because the people who can use it the most are the ones with no resources and no technology and no status and no power. Give it to them because they can do it in private. They need their bodies, privacy and two minutes, and it can significantly change the outcomes of their life.



So far...

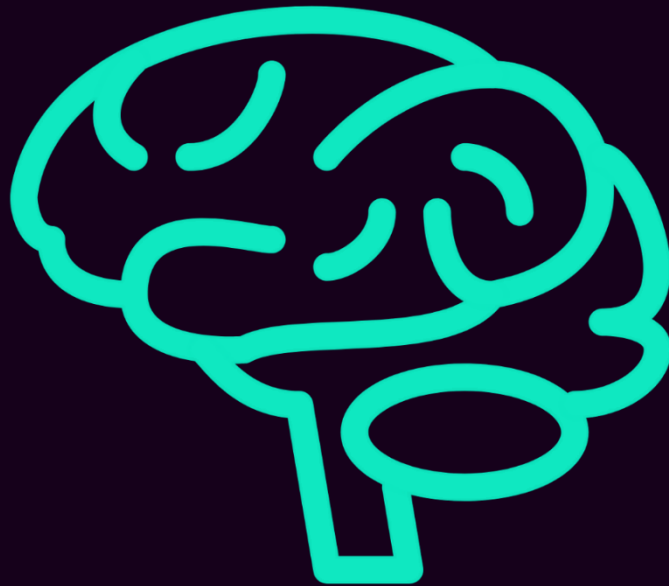
- Core values, trust, connection – psychological safety
- Pre testing – digging the garden
- Metacognition
- Priming: the power of words
- Fluency illusion
- Desirable difficulty
- Attention: we don't learn if we don't pay attention
- Repetition
- Grounding technique
- Different kinds of distractions – emotional distractions
- Stress is your reaction to a perception, not reality
- Emotional granularity
- Breathing techniques, powerpose, safe place

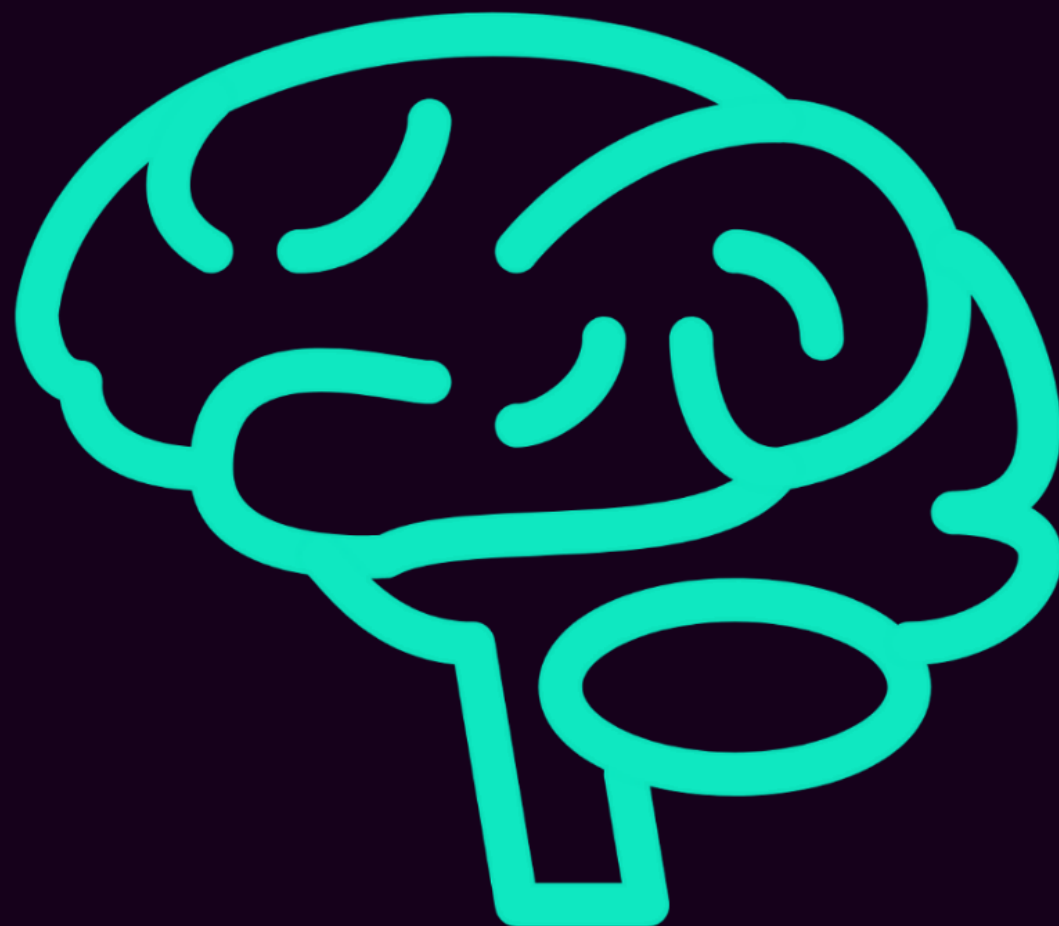


A place where you feel...

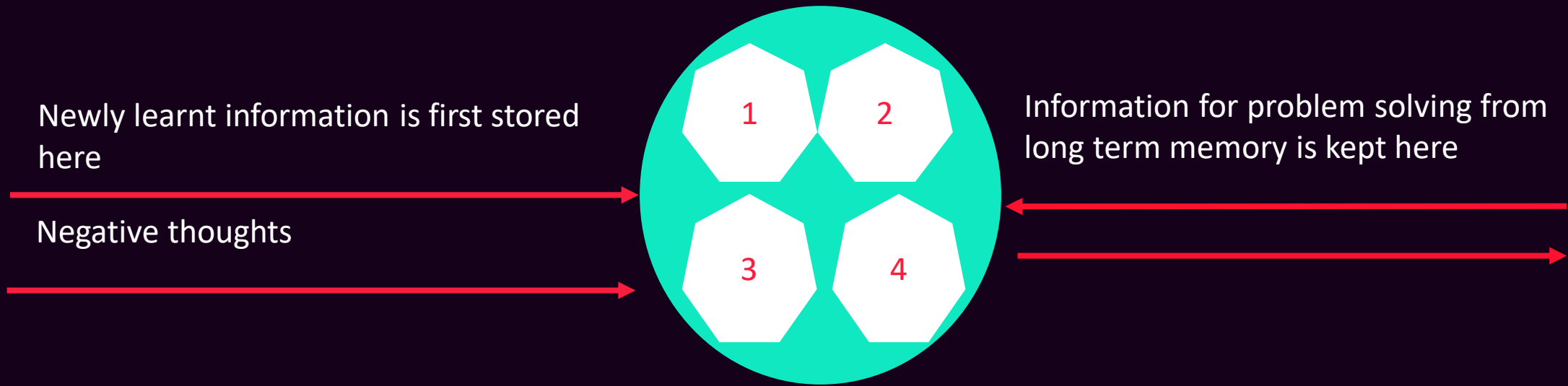
- Safe
- Powerful
- Creative
- Inspired
- Confident

Where does stress show its face?





Working memory



Cognitive distortions/traps

- Unrealistic
- Pessimistic
- Feel true at the moment

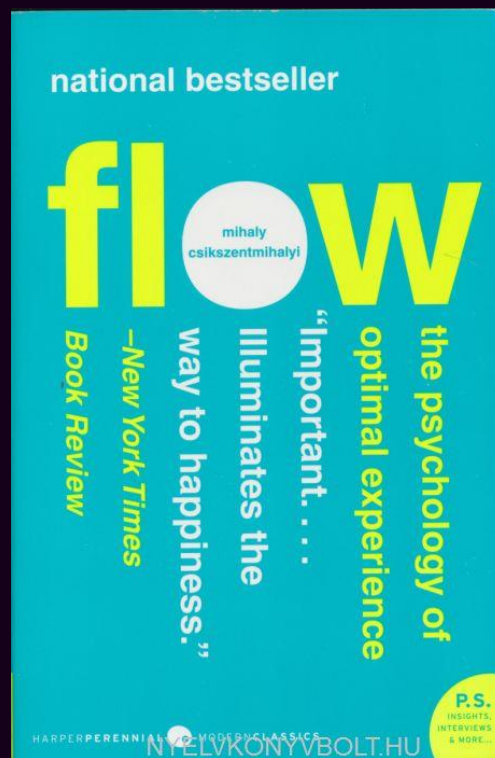
Catastrophising - If I get a bad mark, I will fail.

Implications for teaching?

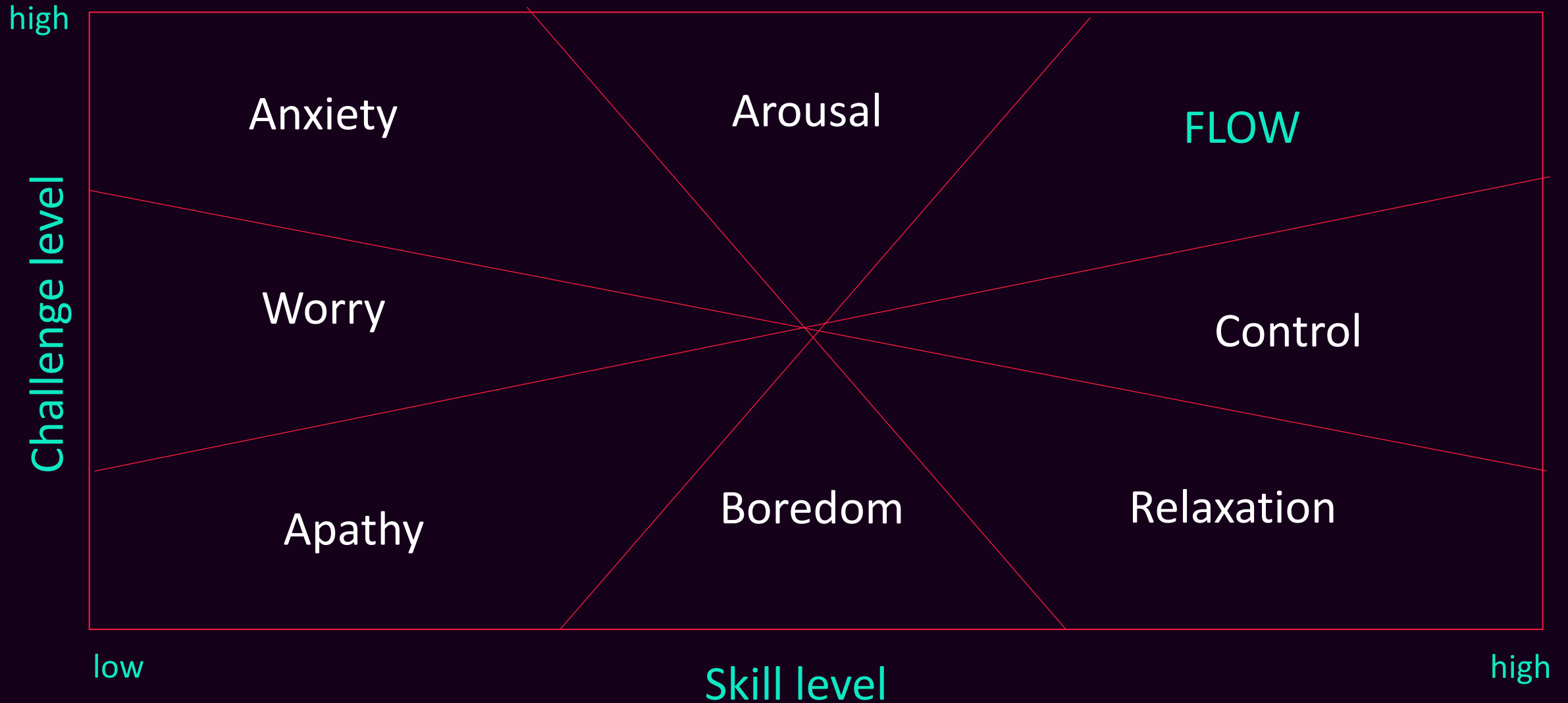
- get rid of negative thoughts
- get rid of distortions
- use visuals
- break down your directions
- make it simple
- provide instructions on the board
- easier/smaller movement to series of them
- Simplify – find synonyms, summarise, find metaphors
- Put some things on paper – note taking
- chunking (group pieces of information) from easier problem to more difficult, from some words to sentences

Attention

- People are happiest when they are in a state of BANANA.
- BANANA is a state in which people are so involved in an activity that nothing else seems to matter.
- The BANANA state is also known as being *in the zone*.
- BANANA is being completely involved in an activity for its own sake.
- When in BANANA the ego falls away. Time flies.
- To achieve a BANANA state, there must be a balance between the challenge of the task and the skill of the performer.
- If the task is too easy or too difficult, there is no BANANA.



Csíkszentmihályi Mihály - Flow



worry, boredom, control, apathy, anxiety, arousal, relaxation, FLOW

The three ingredients to achieve flow

1. Goal
2. Something that needs effort, but doable
3. Immediate feedback

Plan your goals - SMART

- Long term goals – the end of the road
- Milestone goals – steps on the road
- Process goals – actionable goals

S – specific

M – measurable

A – achievable, but not too easy!

R – realistic/relatable/relevant

T – timebound

Something that needs effort, but doable
Embrace difficulties

Desirable difficulty helps learning,
superficial repetition does not.

Feedback

- Praise the effort
- Use the magic word YET
- Feed forward

So far...

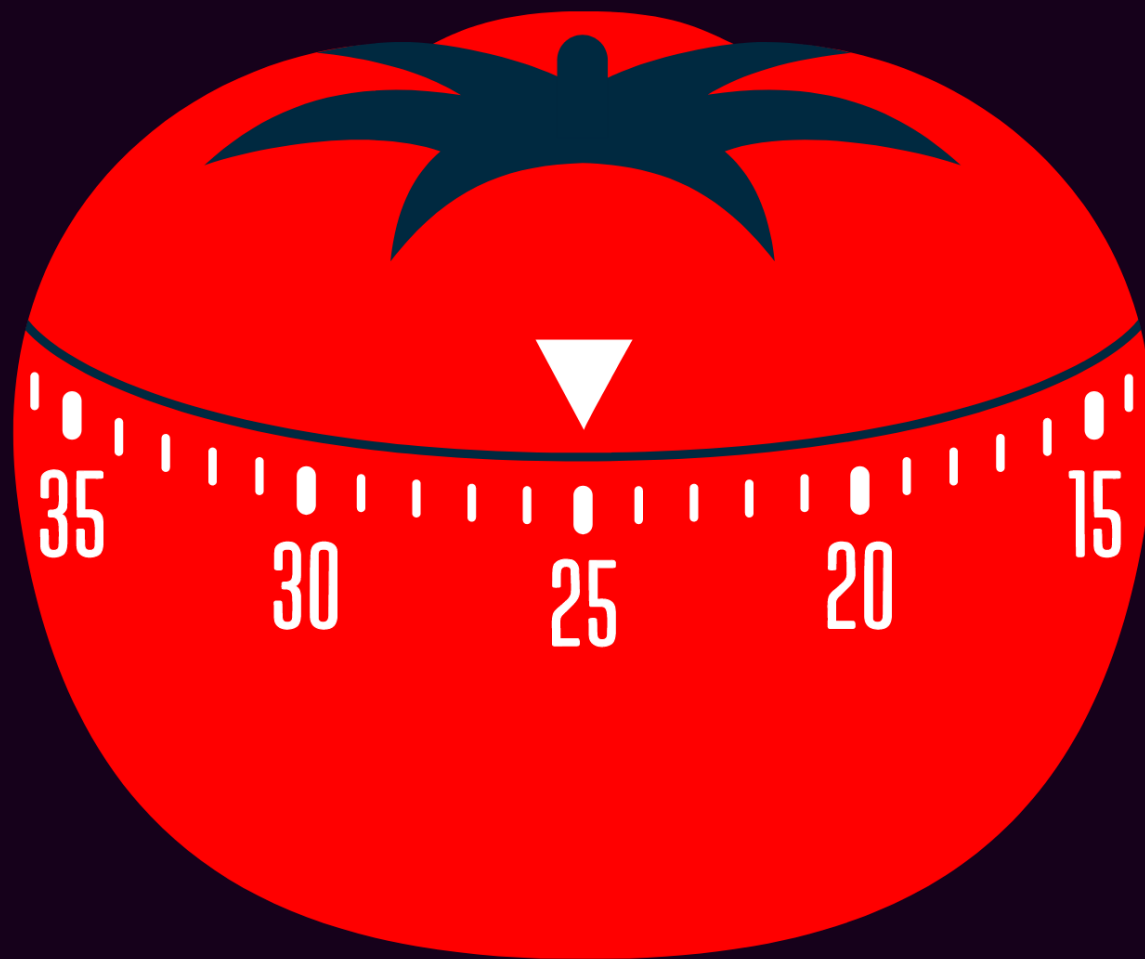
- Using metaphores
- Automatic negative thoughts
- Cognitive distortions
- Working memory
- Realistic optimism vs toxic positivity
- Flow – goal setting, desirable difficulty, feedforward

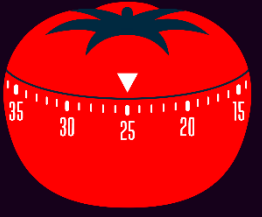
So far...

- Pomodoro
- Primacy- recency
- Focused mode
- Duffuse mode
- Visulas
- Environment
- Senses
- Emotions

Attention

The pomodoro technique





1. Get rid of distractors
2. Set a time for 25 minutes
3. Dive in
4. Reward yourself

If you get distracted you start from the beginning.



1. Focused mode
2. Includes short mental breaks - diffuse mode
3. Primacy and recency effect
4. Process rather than the goal
5. Timebound – mental pain disappears in 20 minutes
6. Flexible

People who are regularly bombarded with several streams of electronic information **do not pay attention, control their memory or switch from one job to another** as well as those who prefer to complete one task at a time, a group of Stanford researchers has found.

<https://news.stanford.edu/news/2009/august24/multitask-research-study-082409.html>

Research also shows that, in addition to slowing you down, **multitasking lowers your IQ**. A study at the University of London found that participants who multitasked during cognitive tasks experienced IQ score declines that were similar to what they'd expect if they had **smoked marijuana** or stayed up all night.

<https://discovery.ucl.ac.uk/id/eprint/1465496/>

Focused mode - concentration, dedication

- Memorizing (facts, new words)
- Solving a maths problem
- You are making an effort to initiate new neural connections
- You are aware of the focused mode

Diffuse mode

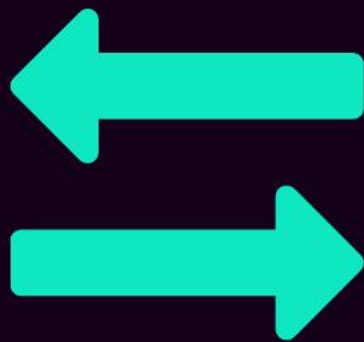
You make connections between parts of the brain that are not connected yet.

The diffuse mode allows you to create the beginnings of a new neural pathway of ability and understanding.

You are unaware of it, but you are aware of the „aha” moment.

How do you get into diffuse mode?

- Do something mindless – make some tea, have a shower
- Do some physical activity – go for a walk, do some exercise, ride your bike, stretch
- Do some mindfulness activities - The Three-Minute Breathing Space Practice
- Go to bed!



When learning difficult material

1. Focused mode
2. Work intensely
3. Realize when you start to struggle
4. Switch to diffuse mode
5. Start from the beginning

Different ways to use the diffuse mode

- Start the writing assignment before dinner
- Study something hard before bed
- Review a difficult problem before taking a shower
- Start something difficult before you take a break
- Move onto another topic

Interleaving

- Varying or mixing different concepts
- The opposite is called „blocked practice”

Mix up the practice of
different verb tenses
talking about different eras of history
maths problems
different aspects/skills of a sport

Hard start



V!sualisation

V!sualisation

It attracts and engages attention

It is an exceptional memory aid



7 hours

10 seconds

1 picture



Udvaros Dorottvát



Word as image

V!sualisation

- Bizarre
- Exciting
- Unusual
- Funny
- Creative





















Synesthes!a

...synesthetes are able to learn new languages, or lyrics or specific details very easily. This is due to the perception of colours, images and sounds being associated with specific letters, words or sounds.

Reading or hearing sentences enables such synesthetes to form a virtual movie, or series of vivid images in their brain that they can refer to in memory recall.

<https://www.news-medical.net/health/Do-Synesthetes-Have-Better-Memory.aspx>

We are all synesthetes

- What colour is Monday?
- What does green taste like?
- What personality does the letter B have?
- What sound does a ▲ make ?

Emot!ons

Which question can you answer?

How much did you pay when you last went shopping?

What did you have for lunch a week ago today?

What were you wearing three days ago?

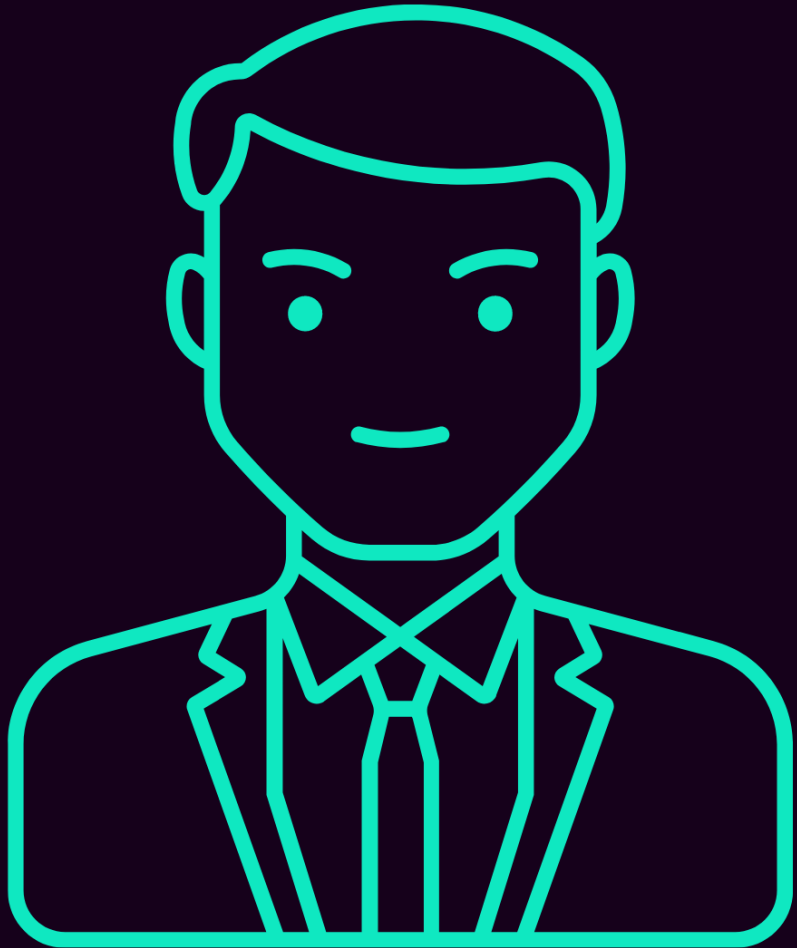
What was the name of your first love?

Env!ronment

Environmental context-dependent memory



Baker-baker paradox



So far...

- Core values, trust, connection – psychological safety
- Pre testing – digging the garden
- Metacognition
- Priming: the power of words
- Fluency illusion
- Desirable difficulty
- Attention: we don't learn if we don't pay attention
- Different kinds of distractions – emotional distractions
- Stress is your reaction to a perception, not reality
- Emotional granularity
- Powerpose

So far...

- Using metaphores
- Automatic negative thoughts
- Cognitive distortions
- Working memory
- Realistic optimism vs toxic positivity
- Flow – goal setting, desirable difficulty, feedforward

So far...

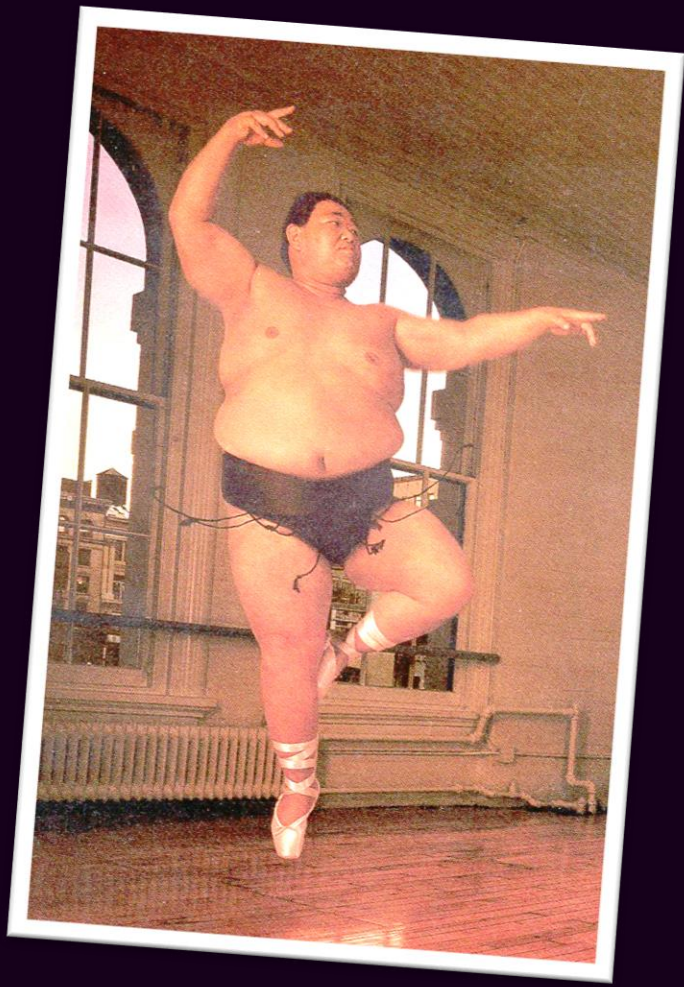
- Pomodoro
- Primacy- recency
- Focused mode
- Duffuse mode
- Visulas
- Environment
- Senses
- Emotions

Keyword method

sulo

Sumo

audionym



Szia!	Hello
Viszlát!	Bye
jó	good
okos	clever
szép	nice

The testing effect (retrieval practice, test-enhanced learning)

It is useful for people to test their knowledge of the to-be-remembered material during the learning process, instead of only reading or otherwise passively studying the material.

The testing effect (retrieval practice, test-enhanced learning)

Repeated testing condition

Recall rate: 61%

Passage read : 3.4 times



Repeated study condition

Recall rate: 40%

Passage read: 14.2 times



The testing effect (retrieval practice, test-enhanced learning)

It is spaced out

Recall when material is nearly forgotten

There is immediate feedback

	hello
	Bye
	good
	clever
	nice

Pre-testing

- Show a picture (picture dictation)
- What does the title/word/expression mean to you?
- What words do you expect to find in the reading/listening. (Betting game)
- Speculate by given pics, words, title – brainstorm
- Show the written material for a short time – how much do you remember, guess the rest
- Keyhole – cut out a keyhole from a sheet of paper, students place it on the text and see only small bits of the info
- Multiple choice/true or false test

Processing information

- Visuals
- Note taking, BUT not just copying
- Matching
- Mindmapping
- Using emotions
- Using senses
- Drama – acting out
- Keyword method
- Create a story
- Make a poem, a song, rewrite the lyrics of a song

Testing

- Retell
- Teach someone
- Summarise
- Complete
- Remember by clues
- Take a test
- Answer questions

Visuals

- Draw
- Picture dictation
- Pictionary
- Create a poster
- Create a montage
- Use different font types, letters
- Show a video, create a video
- Create a presentation
- Change the environment

Change the environment

- Rearrange the classroom
- Rearrange the students
- Go outside
- Go to a different part of the school
- Bring something interesting/colourful into the classroom (balloons :)
- Exchange classrooms with an other colleague
- Put up posters
- Get students to bring sg from home

1. Choose a place you know well
2. Define a specific route
3. Pick stops/features along the route
4. Visualise

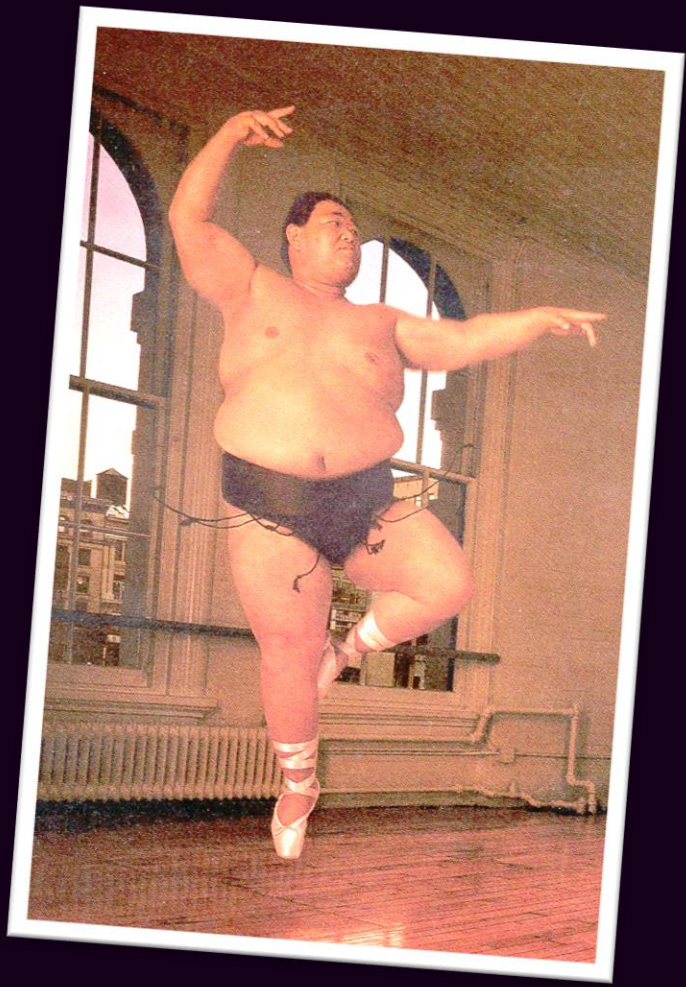


Keyword method

sulo

Sumo

audionym



Szia!	Hello
Viszlát!	Bye
jó	good
okos	clever
szép	nice

Fluency illusion

I studied hard, I spent a lot of time reviewing the material,
but now all I remember is that the info I need right now
was on the top right hand corner, but I can't remember what it was exactly.

The testing effect (retrieval practice, test-enhanced learning)

It is useful for people to test their knowledge of the to-be-remembered material during the learning process, instead of only reading or otherwise passively studying the material.

The testing effect (retrieval practice, test-enhanced learning)

Repeated testing condition

Recall rate: 61%

Passage read : 3.4 times



Repeated study condition

Recall rate: 40%

Passage read: 14.2 times



The testing effect (retrieval practice, test-enhanced learning)

It is spaced out

Recall when material is nearly forgotten

There is immediate feedback

1. Choose a place you know well
2. Define a specific route
3. Pick stops/features along the route
4. Visualise



V!sualisation

V!sualisation

It attracts and engages attention

It is an exceptional memory aid



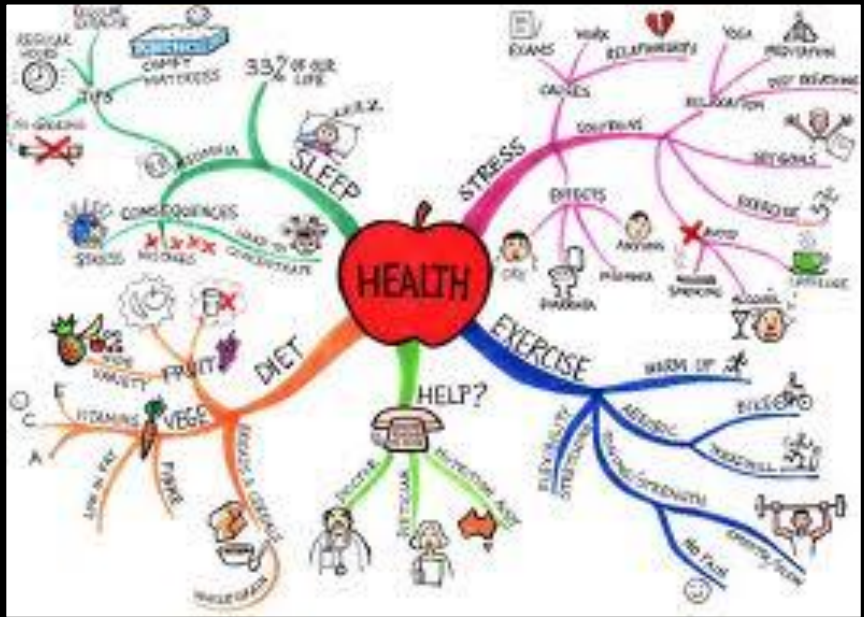
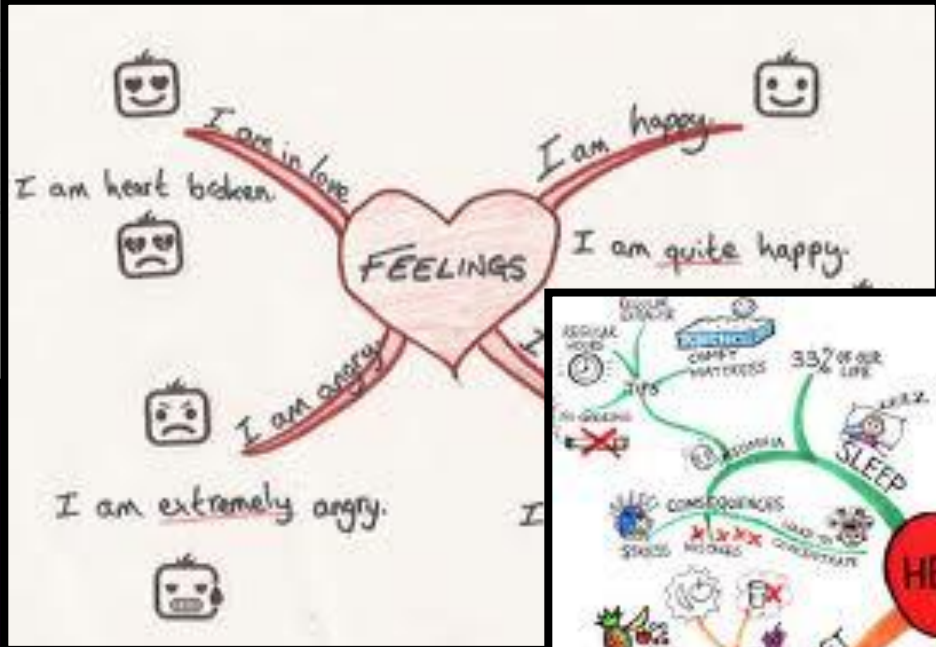
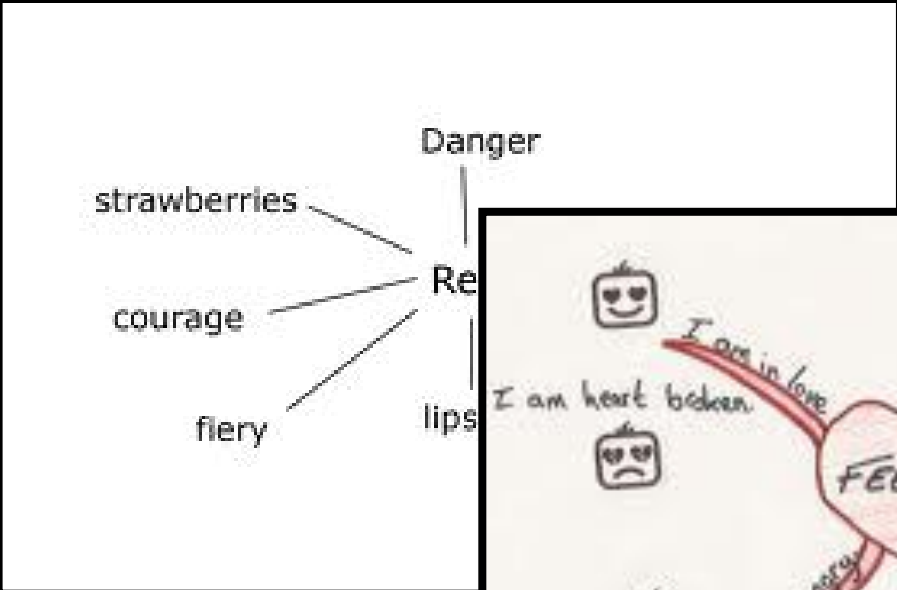
V!sualisation

- Bizarre
- Exciting
- Unusual
- Funny
- Creative









Synesthes!a

...synesthetes are able to learn new languages, or lyrics or specific details very easily. This is due to the perception of colours, images and sounds being associated with specific letters, words or sounds.

Reading or hearing sentences enables such synesthetes to form a virtual movie, or series of vivid images in their brain that they can refer to in memory recall.

<https://www.news-medical.net/health/Do-Synesthetes-Have-Better-Memory.aspx>

We are all synesthetes

- What colour is Monday?
- What does green taste like?
- What personality does the letter B have?
- What sound does a ▲ make ?

Emot!ons

Which question can you answer?

How much did you pay when you last went shopping?

What did you have for lunch a week ago today?

What were you wearing three days ago?

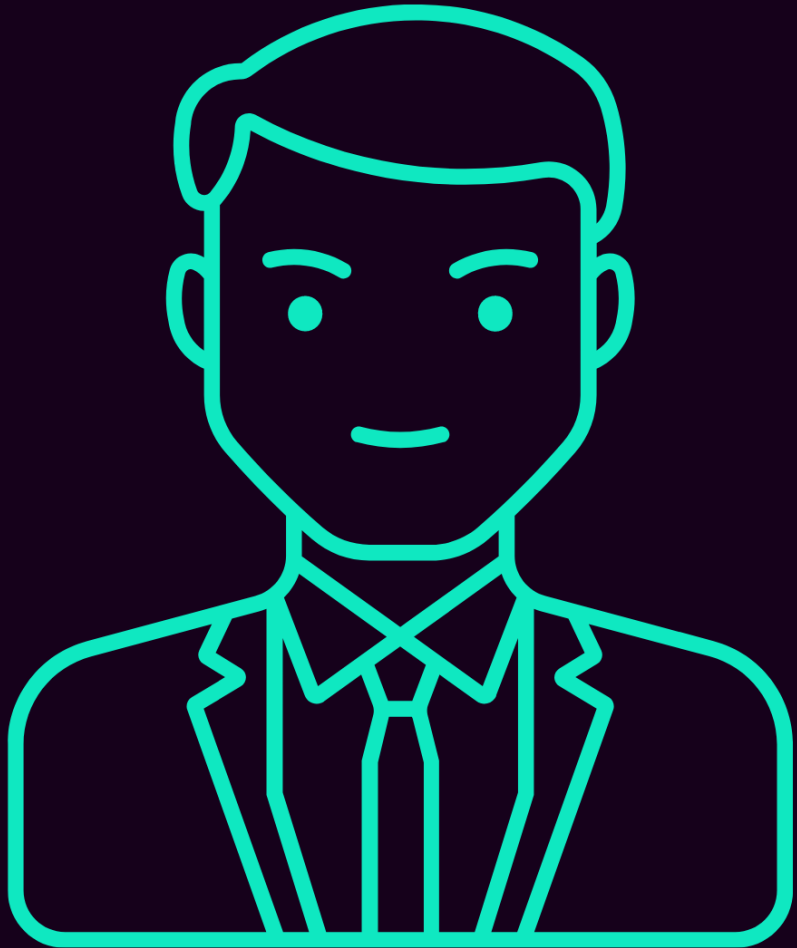
What was the name of your first love?

Env!ronment

Environmental context-dependent memory



Baker-baker paradox



Working memory is limited

