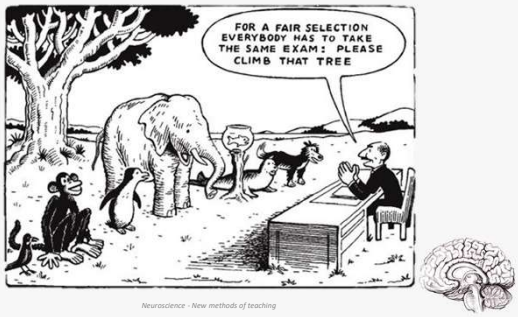
Neuroscience - New methods of teaching

supported by smart education

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"To be successful in life, we need to focus more on what we could do - not should do"

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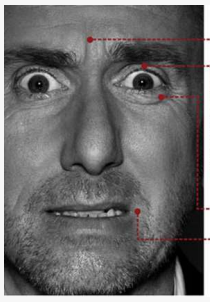
Heterogeneity

- Not all participants have the same knowledge
- Not all the participants have the same abilities
- Not all the participants have the same interests



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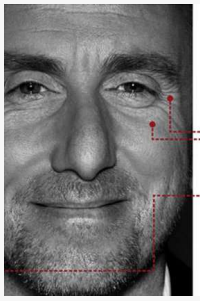
fear

1. eyebrows raised and pulled together
2. raised upper eyelids
3. tensed lower eyelids
4. lips slightly stretched horizontally back to ears



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happiness

A real smile always includes:

1. crow's feet wrinkles
2. pushed up cheeks
3. movement from muscle that orbits the eye



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„Fear and a lack of courage are the main reasons for ineffectiveness, inefficiency and perfectionism"



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„Closed“ Mindset

- A mindset that does not allow for thoughts to run free and only focusses on past experiences
- The resistance against change of perspective, new impressions and different alternatives



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„I know my birds - with their wings and feathers, always high up in the sky..“



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„..well - not all of them“





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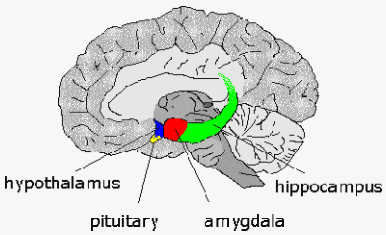
Table of contents

- Neuroscience
  - Evolution & biology
  - Cognitive brain
  - Latest findings
  - Limbic system
- Socialisation & Training
  - Creative Thinking
  - Communication
  - Groupdynamics & Teamwork
  - Errors/Mistakes
- Smart Education
  - Advantages/Disadvantages
  - Possibilities



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Biology





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Biological Predispositions

- Evolutionary basics for survival
  - cooperation
  - communication
  - creativity



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Basic cognitive functions

- Attention
- Short- & longterm memory
- Planning
- Perception of oneself and others
- Solution orientation



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„Actions are born from hope and anticipation“



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Reptile brain

- Controls the body's vital functions such as heart rate, breathing, body temperature and balance.
- Gets triggered when there is an imbalance

- Defense mechanisms
  - Flight or fight response



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Hippocampus & amygdala

- Mesolimbic pathway
  - „Reward pathway“
  - Dopaminergic pathway

- Neuromodulatory system
  - Distributor of neurotransmitters
  - Compliance



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Neurotransmitters

- Noradrenalin
  - Attention, Stress, Arousal
- Seratonin
  - Reassurance, Well-being
- Dopamin
  - Drive, Reward, Curiosity
- Acetylcholin
  - Will to learn, attention to detail



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Social brain

Dopamin

Neurotransmitter that sends signals to other nerve cells

- Motor control
- Motivation
- Arousal
- Reinforcement & Reward

Oxytocin

Released to blood stream als social bonding hormone

- Relationships
- Reproduction
- Cooperation



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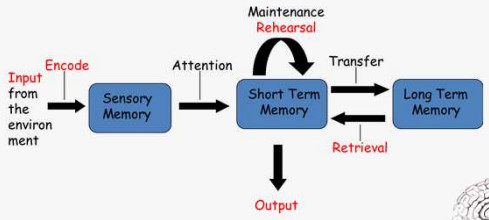
Hierachy of needs by Abraham Harold Maslow (1908 - 1970)



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Memory model





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„Closed“ Mindset

- A mindset that does not allow for thoughts to run free and only focusses on past experiences
- The resistance against change of perspective, new impressions and different alternatives



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„I know my birds - with their wings and feathers, always high up in the sky..“



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„..well - not all of them“





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Socialising & Training

"Do what you do best, then you'll enjoy doing it"



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Games - What do we need?

- Mental agility
- Active search for solutions
- Inspiration & courage
- Specific & general knowledge
- Sense of humor
- Selfconfidence & courage
- Freedom of thinking



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Categories

- Communicative games
- Roleplaying games
- Encouragement of intercultural compentencies



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Creative Thinking

- Being able to think in all directions
- Collecting ideas in various areas of interest
- Reframing from self criticism
- Reevaluation of old believes
- Allowing for unrealistic ideas to come to mind



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„ Creativity is the capacity of a person to produce compositions, products or ideas which are essentially new and previously unknown to the producer“



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Video: Peacock in the land of penguins
https://www.youtube.com/watch?v=hNeR4bBUj68



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„How real is reality?“

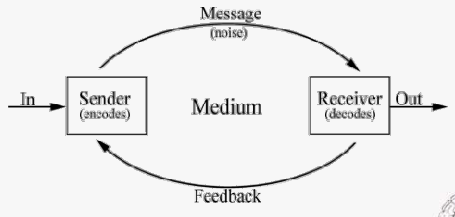
Paul Watzlawick



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Communication





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„You cannot NOT communicate“

Paul Watzlawick



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Association

- Sun
- Moon
- Lemon
- Citrusfruit
- ..



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„Real is not what is – but rather what is perceived by an individual“



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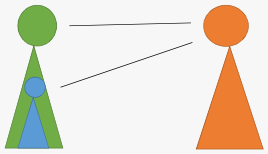
„Reality is everybody‘s private theatre“



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Base of communication





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Group dynamics

- Forming
- Norming
- Storming
- Performing



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„Don‘t spend time looking for obstacles, there might not be any “



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Teamwork

Effort	Personal gain
• Disciplin	• Common goal
• Willingness to learn	• Use of shared ressources
• Sensibility	• Effectiveness
• Ability to be critical	• Efficiency
• Open for compromise	• Sense of accomplishment



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What we need in a team

- Mental agility
- Active search for solutions
- Inspiration & courage
- Specific & general knowledge
- Sense of humor
- Selfconfidence & courage
- Freedom of thinking



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„There is no right or wrong – just a not suitable for the situation“



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Types of errors

- Lack of understanding - competency
- Unable to reproduce – performance
- Interference
- Attention deficit



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Making mistakes positive

- Participants need to salvage mistakes and learn from them
- High tolerance towards mistakes
- Knowing how to deal with mistakes
- Boost confidence
- Allowing own mistakes to be noticed



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Smart education

https://www.youtube.com/watch?v=jK4a5m7u_-Q

- Advantages & disadvantages
- List of possibilities
  - Dropbox
  - WhatsApp
  - Beluga
  - ...

https://www.youtube.com/watch?v=Oj5IovZxjz4



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List of possibilities using advanced technology as a learning support



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Performance supports

https://www.youtube.com/watch?v=Oj5IovZxjz4

- youtube tutorials
- e-books
- virtual classrooms
- Moocs and spocs
- web based trainings
- e-lectures
- translation programmes
- online dictionaries
- OER



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Further Apps

- WhatsApp: social learning group/peer group
- Beluga, Memrise: online games and skill training
- Microlearning for different professions



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Virtual simulations

- Simulation systems, e.g. welding:
  - https://www.youtube.com/watch?v=wYRymhZrFmk



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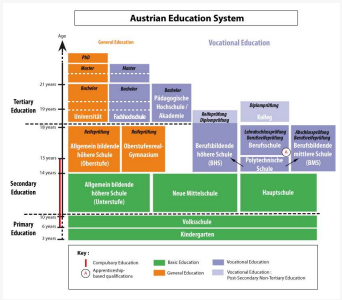
Other supportive programmes

- Voice control systems e.g. Alexa
  - https://www.youtube.com/watch?v=ev92jSphRB0
- Dropbox – organization programme
  - https://www.youtube.com/watch?v=w4eTR7tci6A



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Thank you for your attention!



