

How to foster  
learning agility in  
students:

what to say as a  
student teaching  
assistant?

Margreet Docter, teacher nanobiology



slides



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# One syllable word game

We play the one syllable word game in teams of 4-6.

- Pick a card
- Describe the word to your team members
- You can use only one syllable words (and not part of the word on the card)
- Pick a new card, when the word is guessed
- After 1 minute, switch roles.

# Reflect on the one syllable word game

Why did we do this?

# How to facilitate learning through optimal communication

- Hidden agenda awareness  
Expectation management (student &TA)
- Self-Determination Theory
- Learning Agility

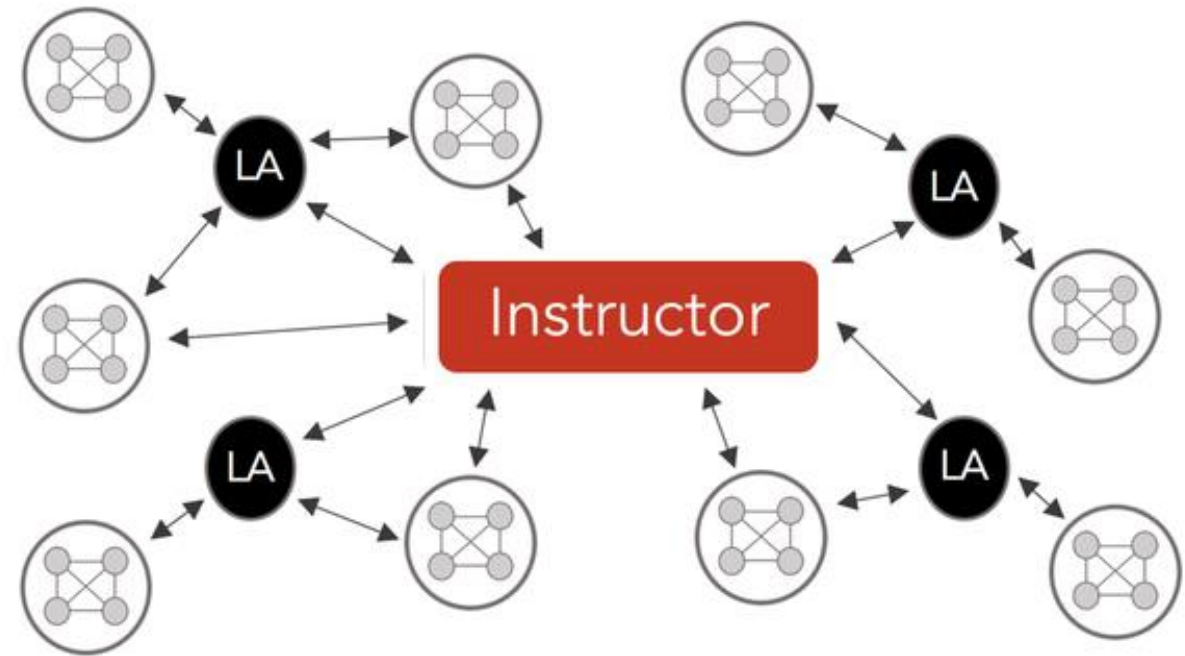
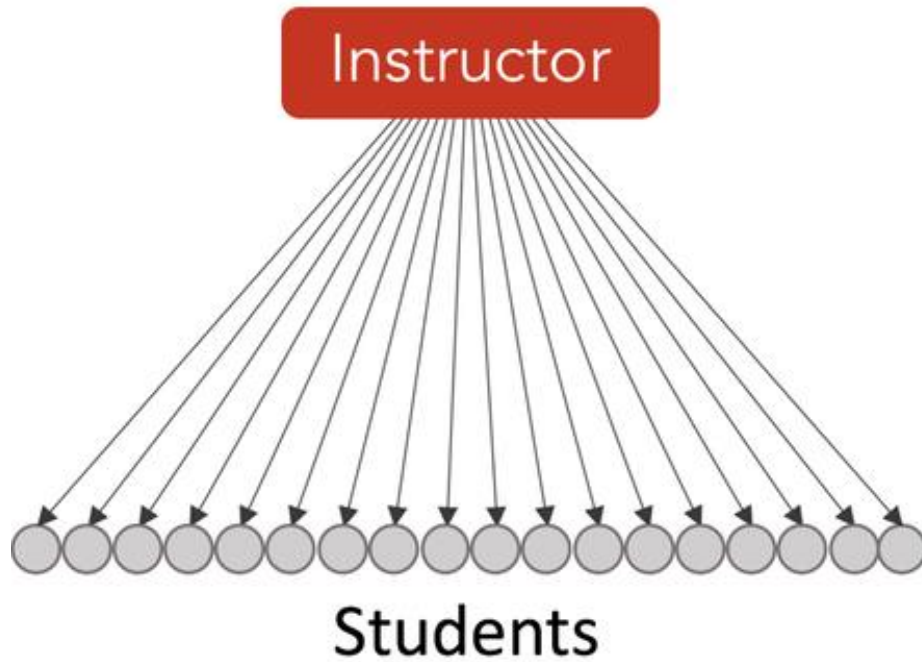
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**Hidden agenda**

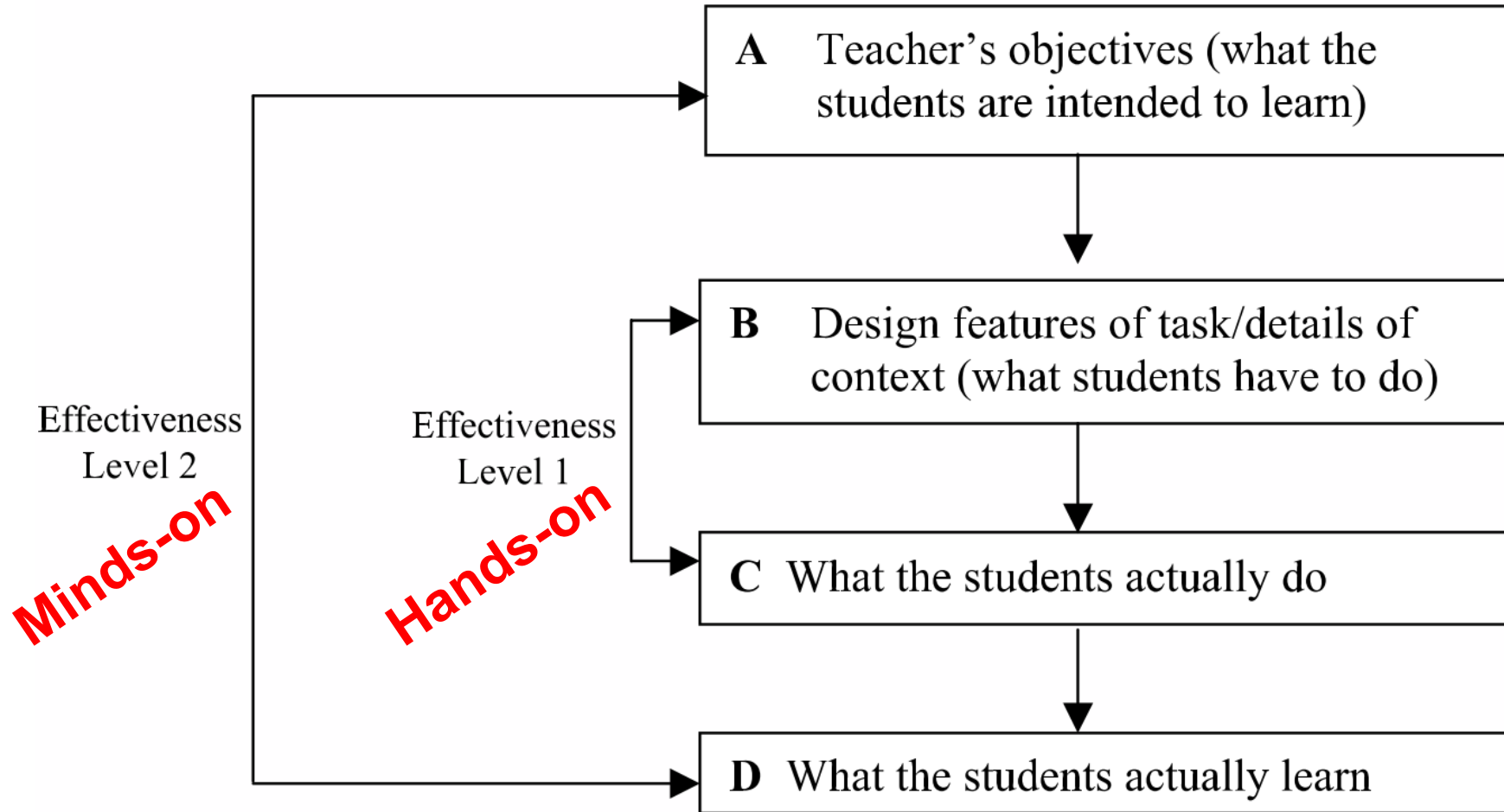
**Expectation management**

# Teaching assistant model



<https://web.physics.utah.edu/~gertonlab/education-projects/learning-assistant-program.html>

# Teacher's and students' expectations



## Expectation management

Group 1: What do TAs expect from students?

Group 2: What do students expect from TAs?



## Wrong expectations lead to critique

Students find TA's **helpful** and **easy approachable**.

Students perceive **their TA will not answer questions**.

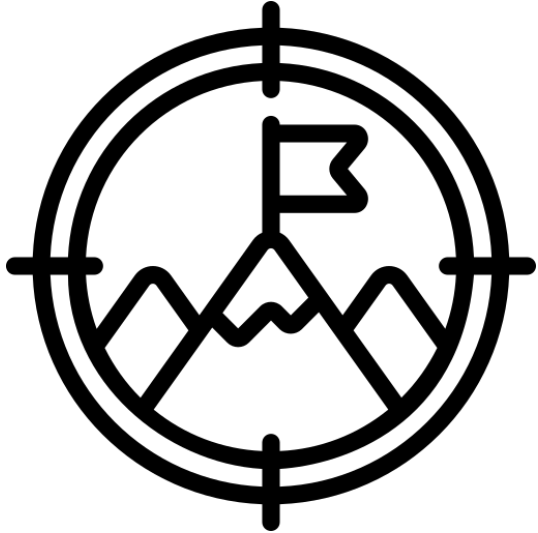
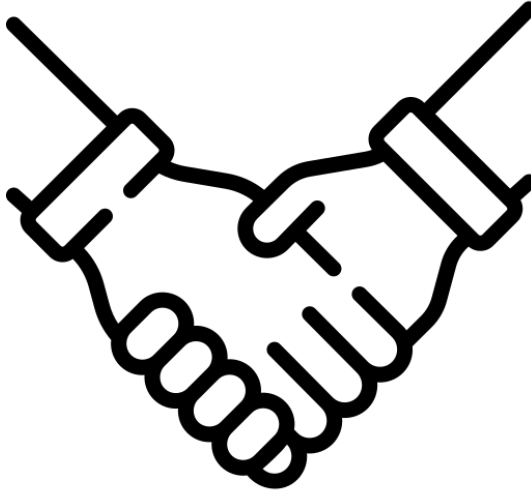
The student often **expects** the TA to guide them in a **straight line to the right answer**.

The **group's expectations of the TA are incorrect**.

# Self-Determination theory

## Self-determination theory

All icons in this presentation come from:  
<https://www.flaticon.com/free-icons/>



Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions [R.M. Ryan, E.L. Deci, 2020]

Motivation of Young Project Professionals: Their Needs for Autonomy, Competence, Relatedness, and Purpose. [Lechler, R.C. and M. Huemann, 2023]

## Practical side of Self-determination theory

**Autonomy** = feel in control

- Scaffold and offer choices
- Listen to and accept students



## Practical side of Self-determination theory

**Competence** = act in an effective manner

- Build on what the student knows
- Discuss the next step



## Practical side of Self-determination theory

**Relatedness** = being part of a community.

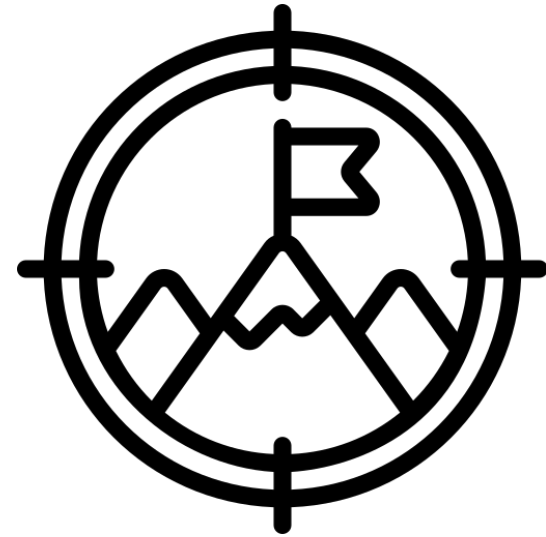
- Let the work be a team-effort.
- Relate the activity to the content, and future



# Practical side of Self-determination theory

**Purpose!** = why do something

- Achievable project outcomes
- Create something meaningful

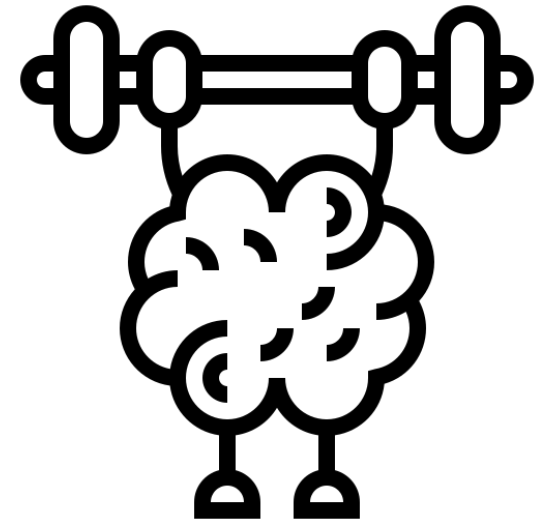
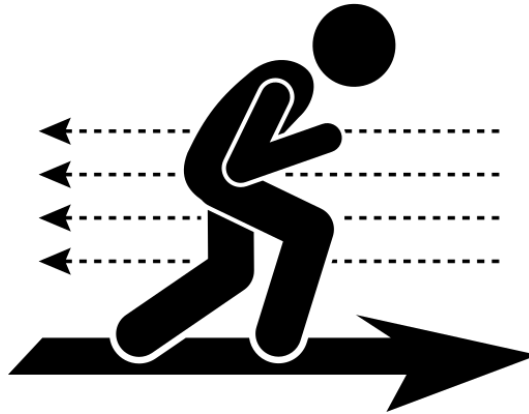


# Language of learning agility:


- **Growth Mindset**
- **Habits of Mind**
- **Deliberate Practice**



# Intrinsic motivation



## Growth mindset: what to say or not

Say	Don't say
 <p>Incorporate 'yet'</p>	I can't do it
	I made a mistake
	I'm bad at this
	I'm not smart enough
	I can't
	I should
	I am already good at this
	I don't know
	This is a problem
	Hand raise

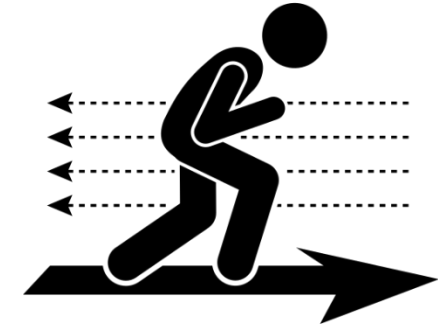
## Growth mindset: Incorporate 'yet'

Say	Don't say
I'll figure it out	I can't do it
I learned something	I made a mistake
I'm working on this	I'm bad at this
This will take some time	I'm not smart enough
I don't	I can't
I will	I should
How can I keep improving	I am already good at this
I'll find out	I don't know
This is a challenging opportunity	This is a problem

## Habits of mind and deliberate practice

What is the most intelligent thing to do?

- How can I learn from this?
- How can I approach this problem differently?



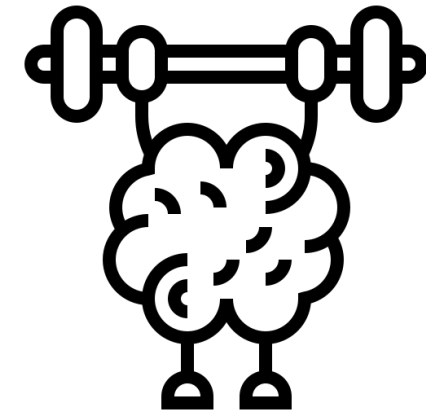
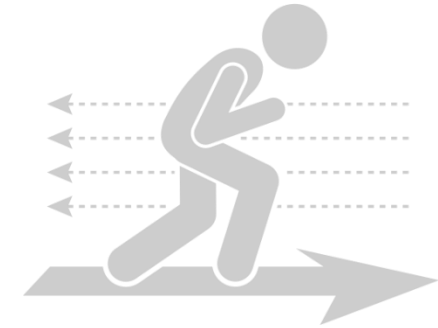
# Habits of mind and deliberate practice

What is the most intelligent thing to do?

- How can I learn from this?
- How can I approach this problem differently?

What is the best practice?

- Evaluate: what happened, what worked, and why?
- How can you improve further?



# Don't get stuck, look and take opportunities!

When one door closes another door opens;

but we so often look so long and so regretfully upon the closed door,  
that we do not see the ones which open for us.

Alexander Graham Bell



## How would you respond + promote learning agility ...

...to a student who:

- Comes to class unprepared?
- Asks for info given in the manual?
- Reports “ I don’t understand”
- Forgets the basics, from previous sessions
- Does well and seems to not need help
- Has nice results, without any comprehension
- Works quietly, looks troubled.
- Has red Python error code, but no question

Pick 2 questions  
Think-Pair-Share:

Join at:  
**vevox.app**

ID:  
**177-891-977**





# Additional Information

# Reference list -workshop

<https://web.physics.utah.edu/~gertonlab/education-projects/learning-assistant-program.html>

The Use of Teaching Assistants in Project Based Learning at Aerospace Engineering, T. Andernach, G.N. Saunders, 2006

<https://www.health.state.mn.us/communities/practice/resources/phqitoolbox/images/SMARTwithtext.png>

Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions, R.M. Ryan, E.L. Deci, 2020

Motivation of Young Project Professionals: Their Needs for Autonomy, Competence, Relatedness, and Purpos, Lechler, R.C. and M. Huemann, 2023

Self-Regulated Learning: Theories, Measures, and Outcomes, B.J. Zimmerman, 2015

The Agile Learner, J. Anderson, 2021

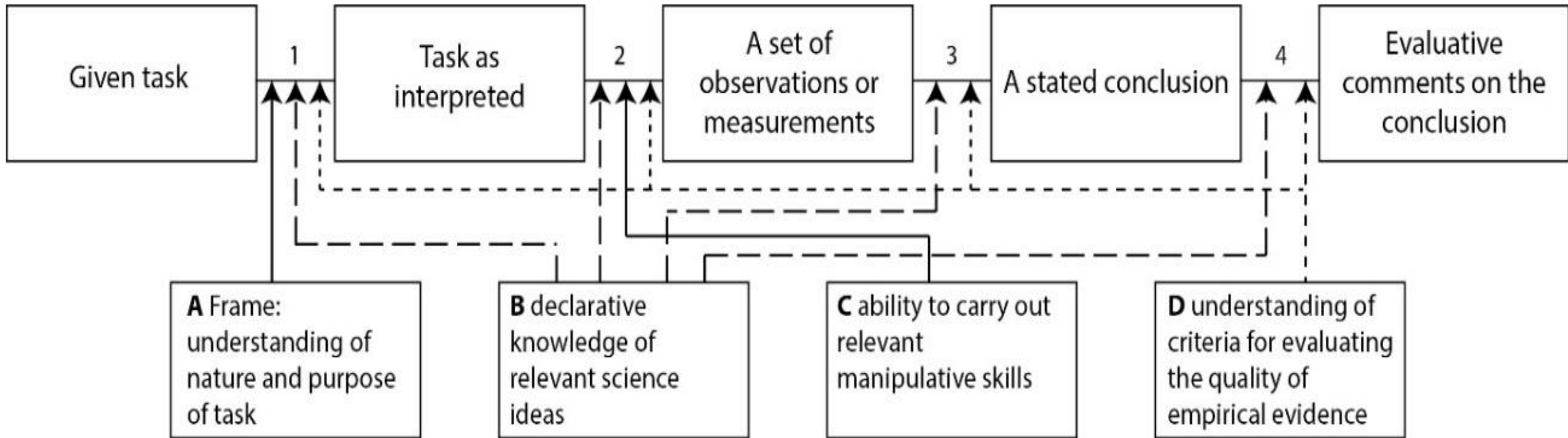
<https://www.daniel-wong.com/2019/11/18/phrases-successful-resilient-students-use/>

The Efficacy of Habits of Mind in the Inculcation of Self-Directed Learning Skills in Pre-Service Teachers, G.P. Van Tonder\*, et. al., 2021

Fostering meaning-oriented learning and deliberate practice in teacher education, L.H.Bronkhorst, 2011

## Hidden agenda – minds on work

PACKS= procedural and conceptual knowledge in science



S.M.A.R.T

**SPECIFIC**

Who and what?

**MEASURABLE**

By how much?

**ACHIEVABLE**

How?

**RELEVANT**

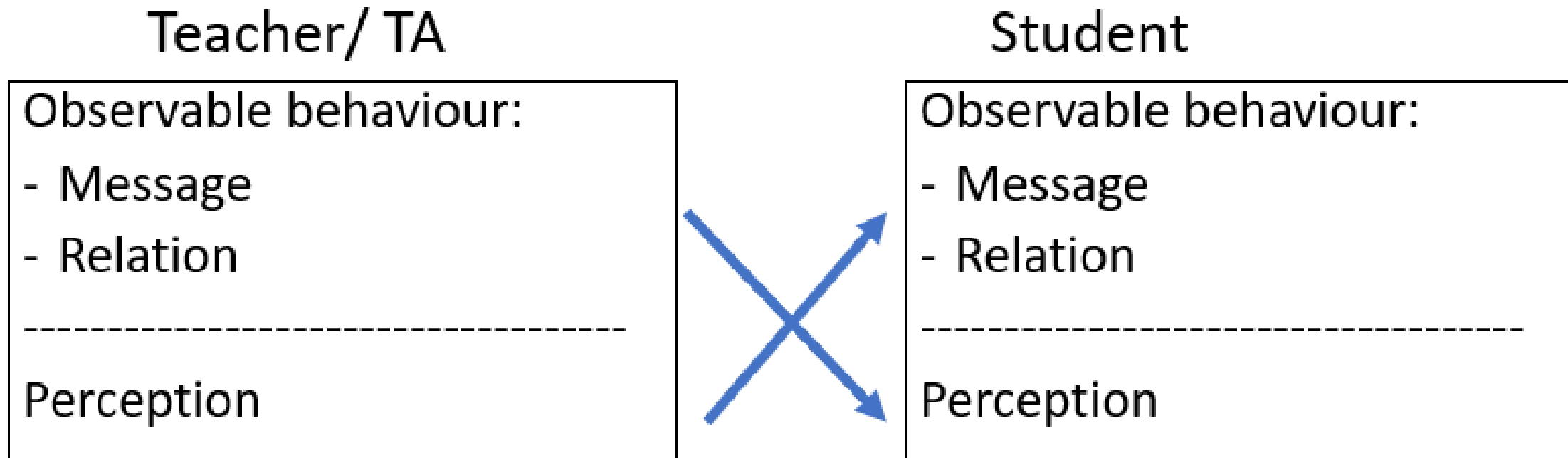
Why?

**TIME-BOUND**

When?

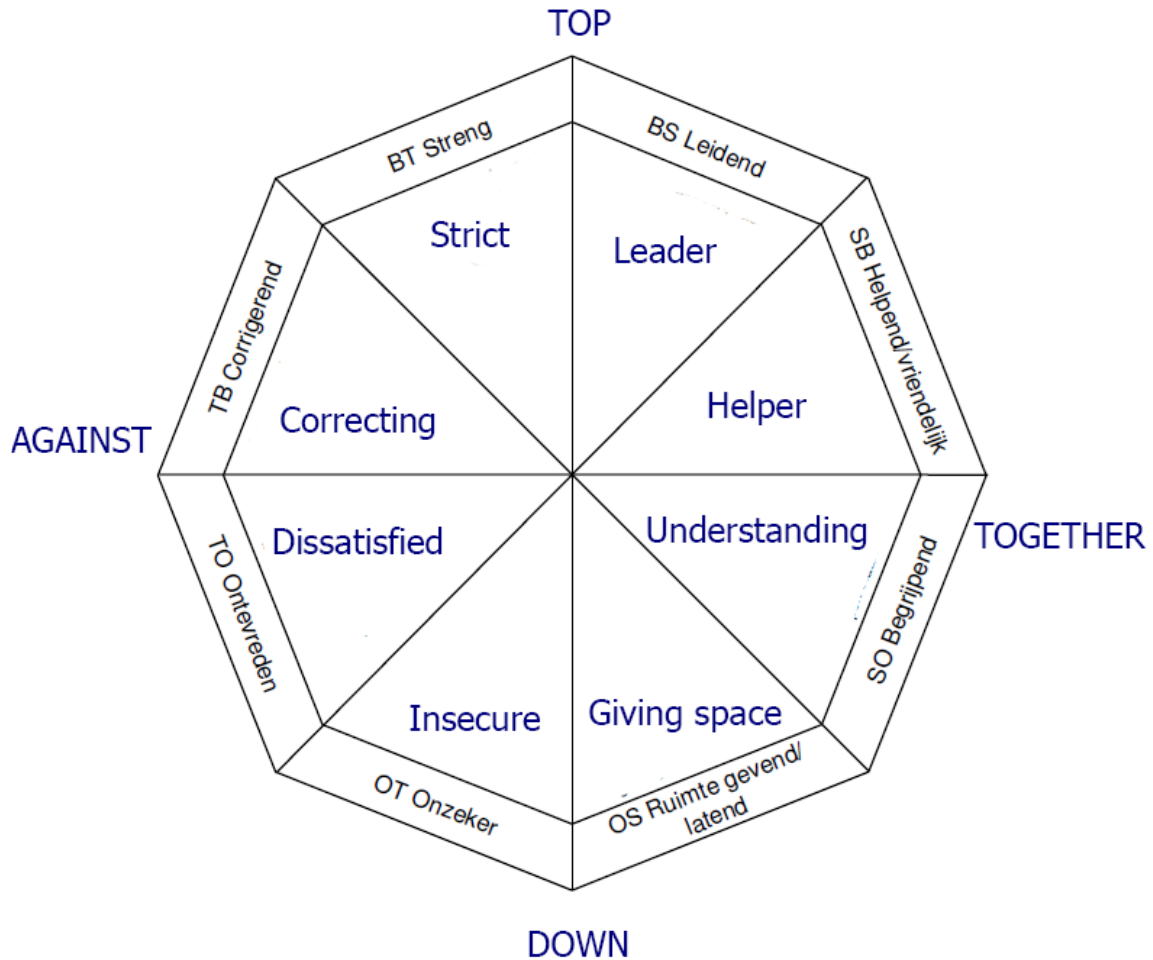
<https://www.health.state.mn.us/communities/practice/resources/phqitoolbox/images/SMARTwithtext.png>

# Interpersonal behavior



- A message can be verbal and non-verbal!

# Interpersonal behavior



How you behave determines the student's reaction:

- Together → together  
Against → against
- Top → down  
Down → top

# State diagrams affective learning

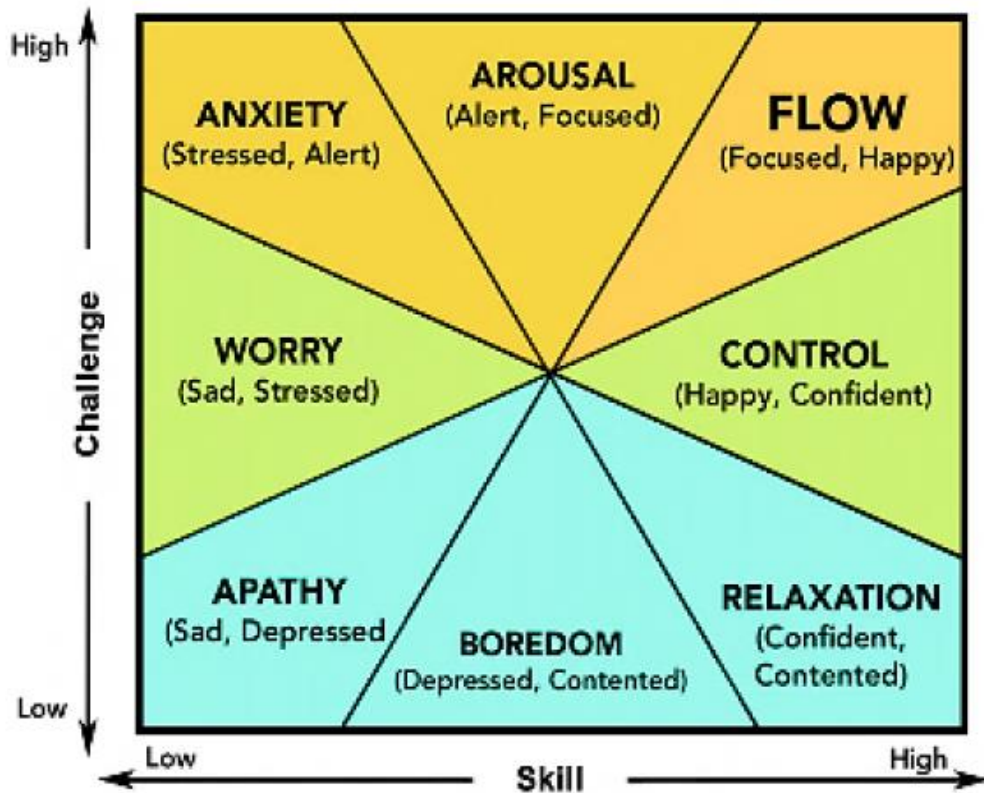


Figure 2: Csikszentmihalyi's theory of flow states

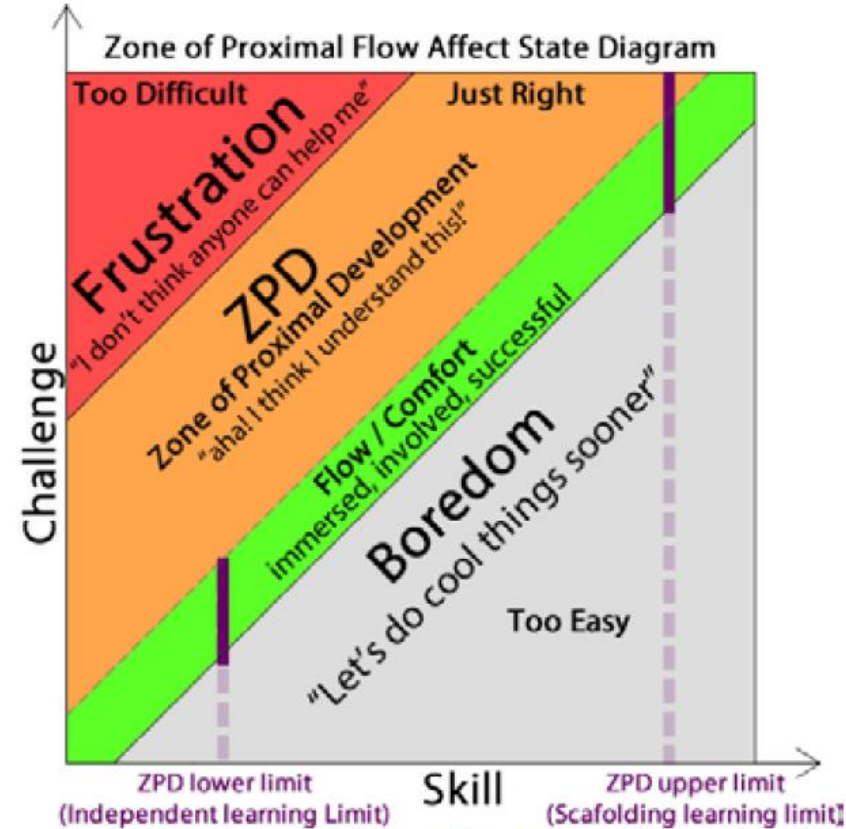


Figure 4: State diagram from the Zone of Proximal Flow theory adapted from Basawapatna et al (Basawapatna et al., 2013) to include both the ZPD lower independent and upper scaffolding learning limits.

## Growth mindset

[Carol Dweck: The power of believing that you can improve | TED Talk](#)

**Messages about success:** challenge is ok, you'll succeed when working hard

**Provide opportunities** for practice and feedback

**Supportive Response to struggle**

















**Value placement** on learning process



## Growth mindset: what to say or not

Say	Don't say
I'll figure it out	I can't do it
I learned something	I made a mistake
I'm working on this	I'm bad at this
This will take some time	I'm not smart enough
I don't	I can't
I will	I should
How can I keep improving	I am already good at this
I'll find out	I don't know
This is a challenging opportunity	This is a problem

## Habits of Mind

	Persistence		Manage impulse		Be clear & precise		Use all senses
	Empathy		Think flexibly		Innovate		Be intrigued
	Metacognition		Be accurate		Take responsible risks		Find humor
	Questioning		Apply old to new		Work together		Continu learning

## Habits of mind: what to say or not

What is the most intelligent thing to do?

- How can I learn from this?
- How can I approach this problem flexibly?
- How can I make the problem cleaner, more precise?
- What do I know or not know?
- How can we solve it together?

# Deliberate practice

After 10000 hours of practice you are an expert

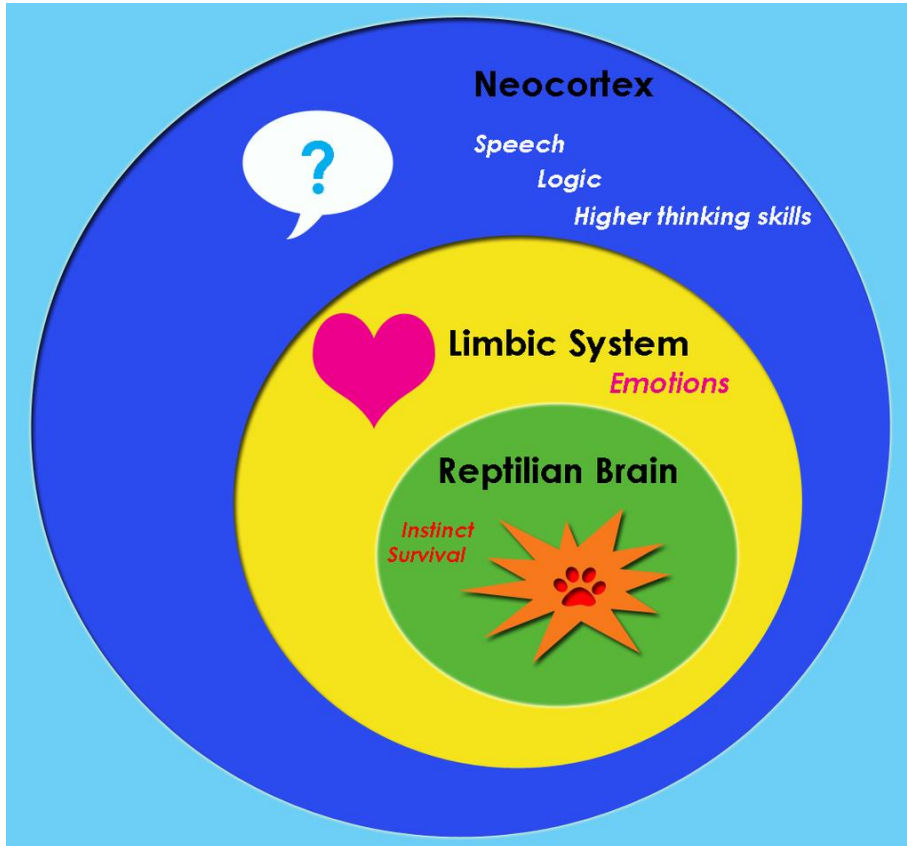
3 criteria:

- Individualized training, well-qualified teacher
- Teacher communicates the goal, student internalizes the goal
- Teacher's practice drives to the goal, student gets immediate feedback

## Deliberate practice: what to say or not

- Why do you do what you do?
- What is its purpose?
- Analyze the practice: what happened, what worked, and why?
- Include diverging perspectives: what if you look at it differently?
  
- Include evaluations.

# The emotion on education



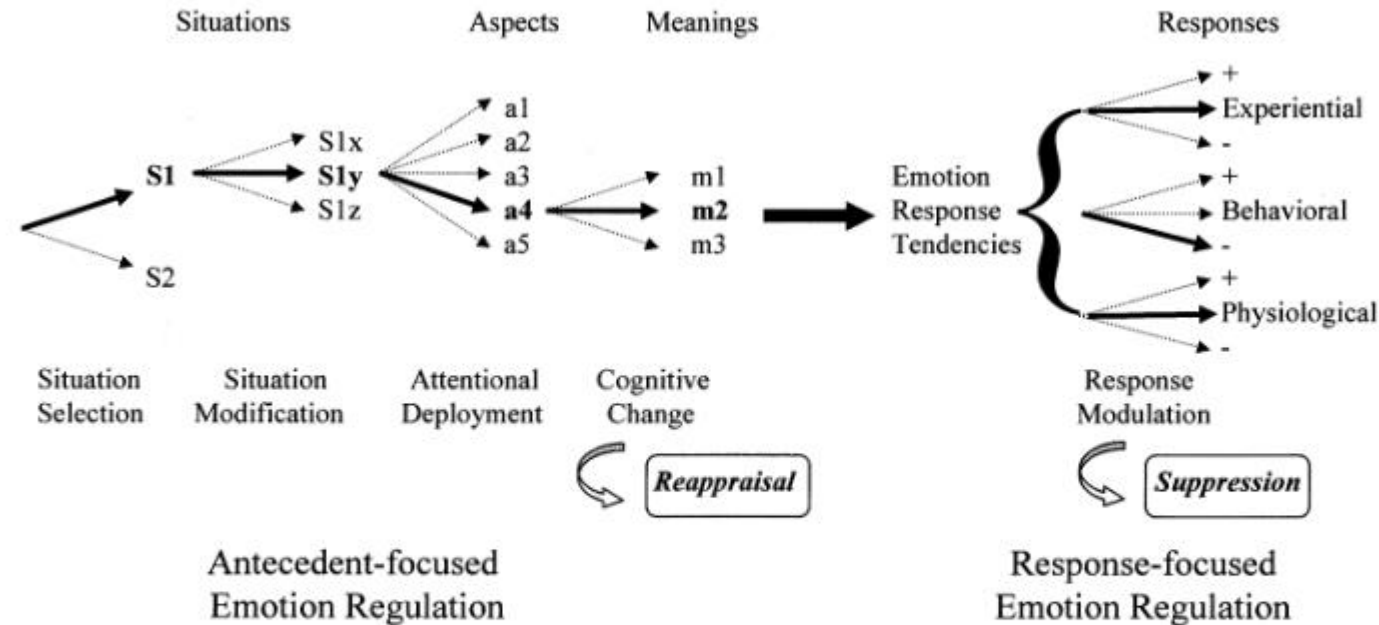
[Triune brain - Triune brain - Wikipedia](#)

Steffen's adaptive brain:

- quick emotional responses,
- slower cognitive responses,
- seeking others' help to cooperatively respond to the stressor

The Brain Is Adaptive Not Triune: How the Brain Responds to Threat, Challenge, and Change, [P.R. Steffen, D. Hedges, R. Matheson, 2022]

# How to get past the (quick) emotional response?



5 step process:

- Select the situation
- Modify the situation
- Redirect Attention
- Change cognition
- Modulate response

**Figure 1.** A process model of emotion regulation. According to this model, emotion may be regulated at five points in the emotion generative process: (1) selection of the situation; (2) modification of the situation; (3) deployment of attention; (4) change of cognitions; and (5) modulation of experiential, behavioral, or physiological responses. The first four of these are antecedent focused, the fifth is response focused. The number of response options shown at each of these five points is arbitrary, and the heavy line indicates the particular option selected in the example given in the text. Two specific emotion regulation strategies—reappraisal and suppression—are the primary focus of this review. Adapted from Gross (2001).

# Nonviolent communication

“Nonviolent communication include four basic steps to gain empathy:

- 1. Observations without evaluation  
(when I see/hear ... / when you see/hear ...)
- 2. Feelings separated from thoughts  
(I feel ... / are you feeling ...)
- 3. Needs and values separated from strategies  
(I need ... / are you needing ...)
- 4. Requests instead of demands  
(Please, could you .../ Would you like ...)