



# Executive Functioning

2017



# Broad Definitions of Executive Functioning

It describes a set of cognitive abilities that control and regulate other abilities and behaviours.

(Encyclopaedia of Mental Disorders)

A set of mental processes that helps connect past experience with present action.

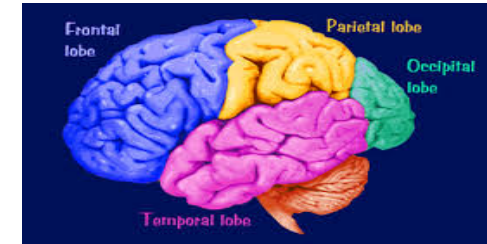
(Asperger's Association of New England)

The area of the brain that is responsible for responses to people and the environment.

(The ADHD Autism Connection)

Diane Kennedy 2002

# What are the Executive Functions?



- **Cognitive or mental flexibility** –the ability to adapt and revise plans when conditions change.
- **Inhibitory Control** – the capacity to think before you act. i.e. emotional control
- **Working Memory** – serves two different but related skills i.e. the ability to hold information in mind while performing complex tasks and the ability to draw on past learning and/or experience and apply it to the situation at hand.

Smart but Scattered Teens – Dr Richard Guare, Director of the Centre for Learning and Attention Disorders in Portsmouth, New Hampshire and Peg Dawson, Clinical Psychologist



# Executive Function Disorder (EFD)

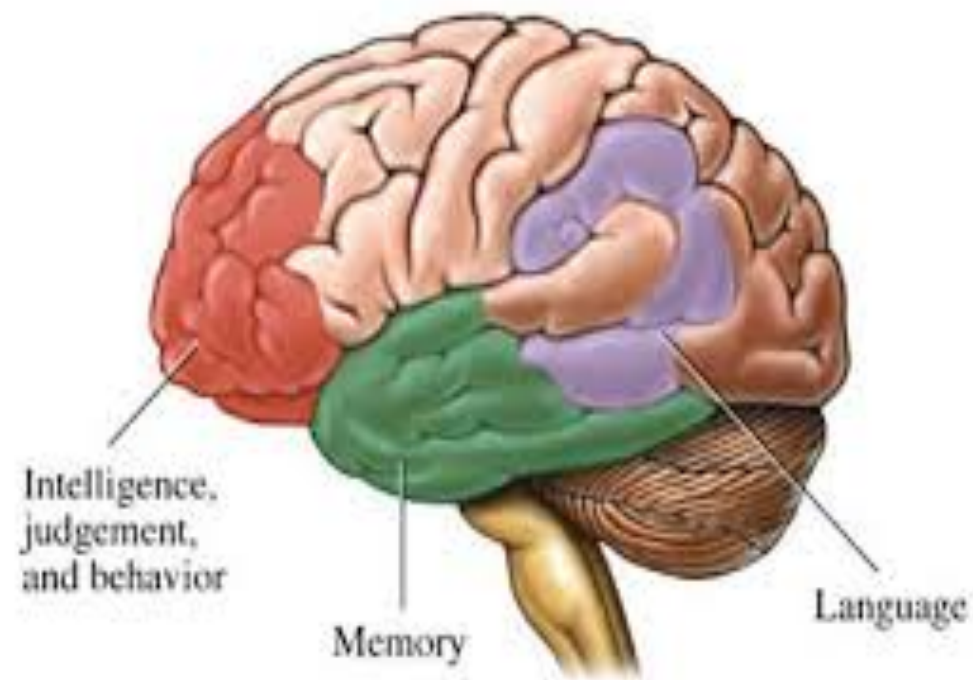
Can affect people of any degree or intelligence or capability

Common in students with a diagnosis of:

- ADHD/ADD (new paradigm – developmental impairment of the brain's self management system, its executive functions. )
- Specific Learning Disorders i.e. dyslexia, dyscalculia, dyspraxia etc.
- ASD
- Depression (one in three children with ASD develop clinical depression). (Attwood, Ghaziuddin et al)
- Tourette's Syndrome
- Sleep Disorders

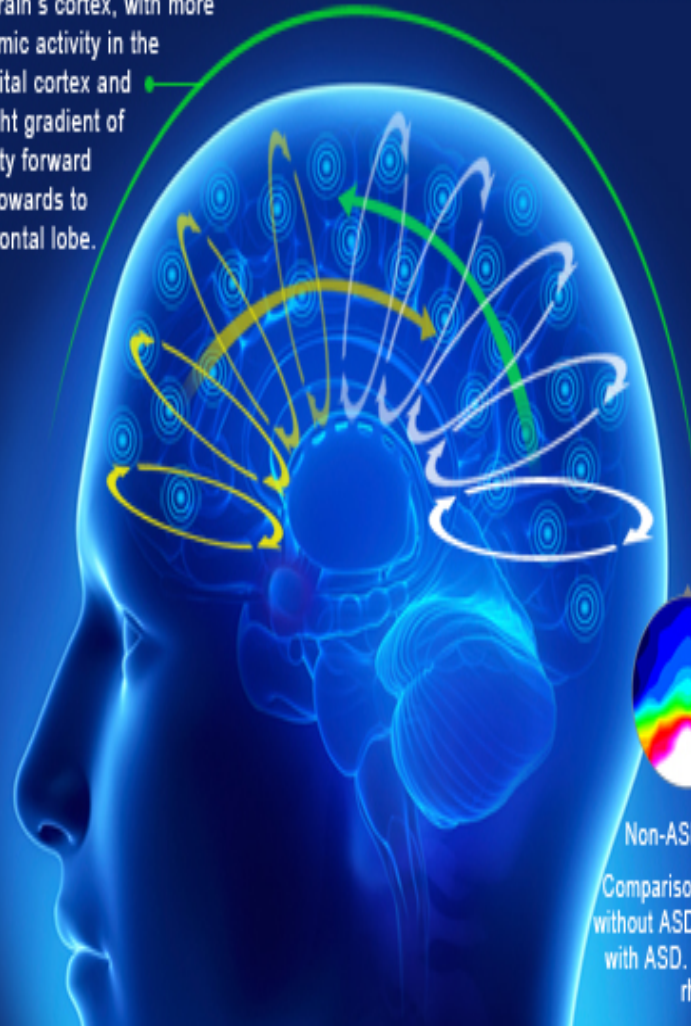
Also seen in students who have experienced early abuse and neglect

# Neurology of Executive Functioning



## Non-Autism vs Autism

In a normal state, rhythmic brainwave activity is relatively uniform across the brain's cortex, with more rhythmic activity in the occipital cortex and a slight gradient of activity forward and towards the frontal lobe.

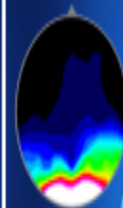


Non-ASD EEG

Comparison of EEG of an Individual without ASD and EEG of an Individual with ASD. Darker colors show less rhythmic Activity.

Neurons fire randomly in disorganized chaotic patterns.

This disorganization leads to sensory overload and contributes to high levels of anxiety.



ASD EEG

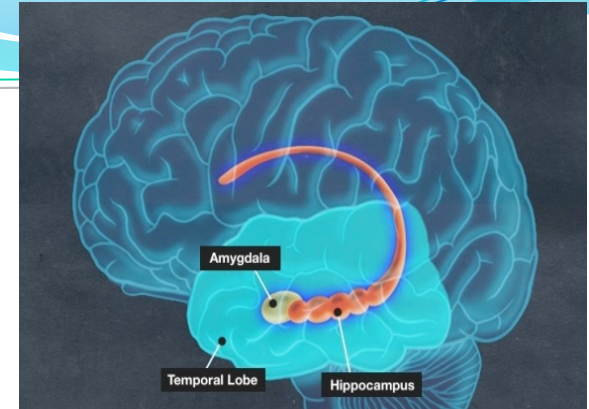
In autism, neural communication is inconsistent between the **FRONT** and **BACK** parts of the brain.



Neurons fire rhythmically and efficiently.



# Neurology



- Severe or long standing trauma creates toxic levels of stress that alters brain chemistry and rewires the brain.
- The hippocampus, a structure important to memory and learning shrinks.

“Under extremely stressful conditions, an excess of the neurotransmitter glutamate kills cells, making the brain less able to inhibit sensory input!”

Sharon Heller Pg. 9 - Too loud too bright too fast too tight

# How does it impact?

- Organisational, planning and prioritizing abilities (maintaining a coherent plan of action)
- Remembering a sequence of instructions
- Inhibition and impulse control
- Emotional regulation (separation of affect)
- Self reflection and self monitoring
- Time management
- Goal directed persistence
- Understanding complex or abstract concepts
- Generating alternative strategies to problems





# When does Executive Functioning Disorder become apparent?

- Symptoms of EFD frequently go undiagnosed or misdiagnosed, especially in early childhood.
- Once children reach upper primary /high school, organizational demands increase and symptoms of EFD significantly more apparent.
- **Students often misperceived as lazy, unmotivated, stubborn or uncooperative**

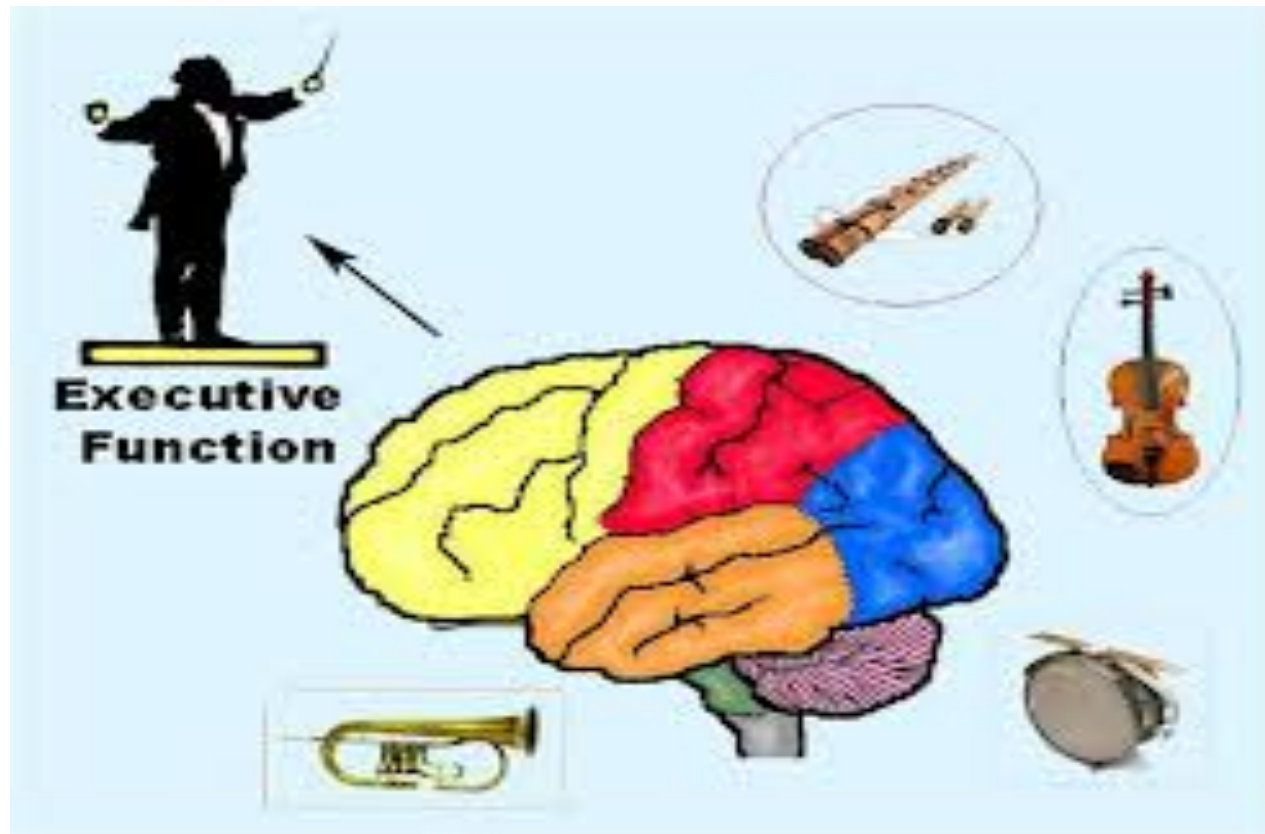




# Challenges of Executive Functioning Disorder

- Have difficulty keeping track of possessions
- Lose track of time and struggle to adhere to schedules
- Start tasks but unable to complete them
- Difficulties with working memory
- Feel challenged when attempting to organise information and relate it to previously acquired knowledge
- Meaningfully include past knowledge in discussions or become very attached to knowledge previously acquired (cognitive shifting)
- Struggle with transitions
- Find it difficult to shift attention from one task to another
- May not seek help if in difficulty (Can they organise thoughts to plan the speech?)
- Do not know how to use “inner conversation” to solve challenges

# Brain seeking a conductor of cognitive skills!



# How can we support students?



Without appropriate support, the student with Executive Functioning challenges may feel he/she is drowning in a million different sub-tasks.

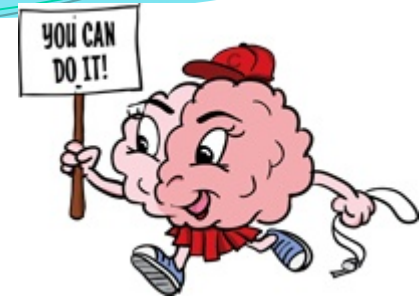
Teachers may complain the student can't seem to 'get his/her act together' and are critical of the person for being disorganised.

# Become an Executive Secretary!

- Provide guidance with organising and planning
- Provide time schedules
- Colour code subject books
- Support students to manage work spaces
- Discuss alternative strategies
- Provide “to do” checklists (written /visual)
- Establish a clear schedule of daily activities with a clear start and finish to each activity.
- Provide social interpretation
- Demonstrate and model appropriate responses to situations
- “Live out loud” – model your own internal thinking to demonstrate how you generate alternative solutions to problems .
- Create a culture of kindness. We are all neurodiverse.



# Cranium Coach!



- Encourage cognitive flexibility i.e. can “we” think of another way to solve this problem?
- Model use of cartoons/illustrations to help students memorise information
- Teach students how to use personalised checklists
- Teach students to highlight key words/concepts in a text
- Find alternative and creative ways to support students to stay focused particularly when repetition is required.
- Model for students how to create sustainable systems and identifying patterns within their work tasks.
- Define concepts, particularly abstract concepts.



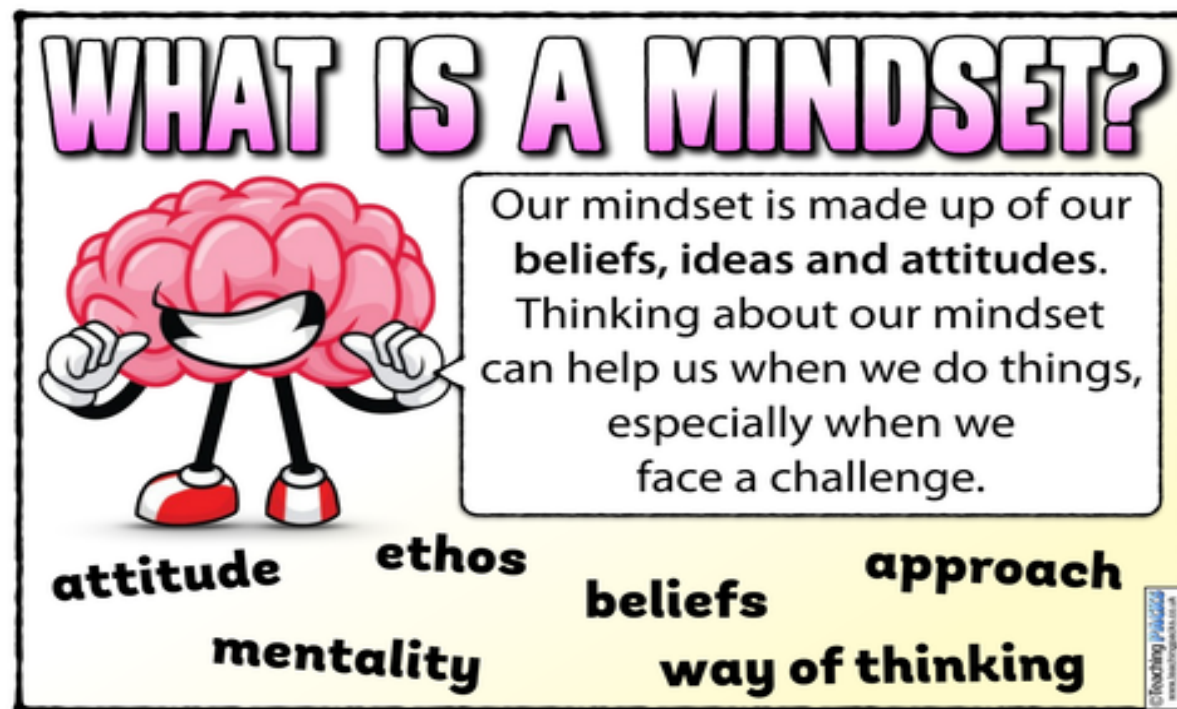


# Support to generate alternatives

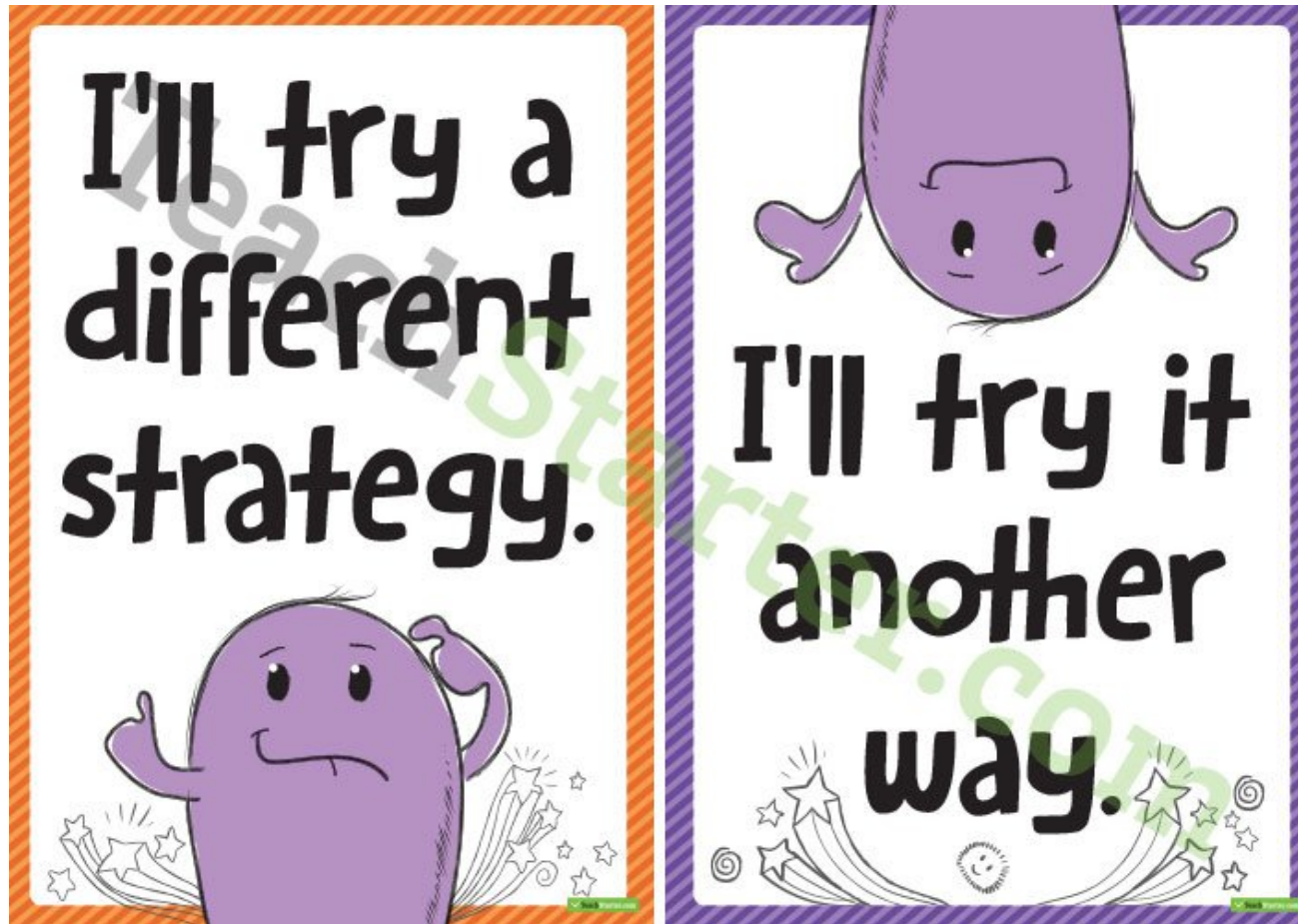




# Define the abstract



**“Yes I can!”**




# We need visuals!



# What will I do when my Executive Secretary goes to lunch?




- When you think of something you need to do, record a message on your iPhone/ ipad, call your voicemail and leave a message
- Send yourself a reminder email
- If lesson moves too quickly, ask your teacher if they are okay with having lessons recorded?
- If above dot point not a possibility, write down key words while listening (they can serve as prompts if you want to discuss the lesson later)
- If teacher/teacher assistant unavailable, or busy, check with your buddy/ friend for assistance or clarification of tasks, information etc.
- Refer to the visual timetables, schedules, checklists
- Use your “help” card for assistance (some teachers happy for you to knock on staffroom door if assistance is required)
- Is there an alternative space in the school I can retreat to if needed?




“Students with Asperger's and Executive Functioning Challenges often outside the box thinkers, adept at free association and unique problem solving. Class clowning often the result of boredom”

Smart but Scattered Kids  
Richard Guare and Peg Dawson, 2013



“Contrary to popular belief, learning to control impulses, pay attention and retain information actively in one’s memory does not happen automatically as children mature, and young children who have problems with these skills will not necessarily outgrow them”.

National Scientific Council on the Developing Child  
Building the Brain’s “Air Traffic Control” System  
Harvard University



Parents who provide appropriate supports for their children with executive weaknesses may be accused of trying to protect them from the realities of life.




If we do not provide [supports] even very bright, talented kids may come to view themselves as incompetent and ineffective.

Article adapted from publication  
“Late, Lost, and Unprepared” (2009)  
Joyce Cooper-Kahn and Laurie Dietzel (Clinical Psychologists)



# ROLL SOME BRAIN BREAKS

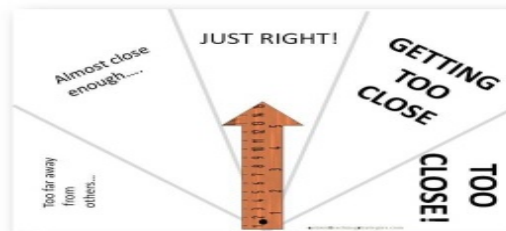
**Directions:** Roll one die for each of the columns. Perform the quick brain break that matches the number you rolled on the die. For example, if you roll a 1-2-4-3-6 you would perform the following brain breaks: 10 jumping jacks, 5 wall push ups, 10 Twists at the waist, 10 jumps over a pencil on the floor and take 10 deep breaths.

	Column #1	Column #2	Column #3	Column #4	Column #5
1 	10 jumping jacks	Wiggle your whole body for a count of 10.	Bring R elbow to L knee and L elbow to R knee 5 times	Jump in place 10 times.	Rub your entire R arm with your L hand
2 	Squeeze your R hand firmly with your L hand	5 wall push ups	Move the upper half of your body	Spin in a circle 3 times to the right	Touch L hand to bottom of R foot. Repeat 5x.
3 	Move the right side of your body	Spread legs apart and bend at waist looking between knees. Repeat 5x.	Make 10 small circles with your arms	10 jumps over a pencil on floor	Give yourself a big hug for 10 seconds
4 	Rub your entire L arm with your R hand	Touch R hand to bottom of L foot. Repeat 5x.	Twist at the waist 10 times with arms out to the side	Spin in a circle 3 times to the	Make 10 large circles with your arms
5 	Touch R hand to L shoulder. Touch L hand to R shoulder. Repeat 5x.	March in place with knees high for a count of 10	Squeeze your L hand firmly with your R hand	Move the left side of your body	Touch R hand to L foot and then L hand to R foot 5 times
6 	Run in place for a count of 15	Move the lower half of your body	Touch hands overhead and try to balance on one foot for 5 seconds.	Tap your feet on the floor while making small circles with fingers for 10 sec.	Take 10 deep breaths

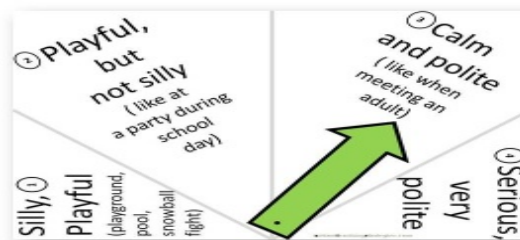
## Self-control meters



...for voice volume



...for personal space



...for levels of formality

~Free download~




# Environments that foster Executive Function skills

“Such environments neither expect children to have more advanced skills than are reasonable for their age [or learning challenge], nor do they treat them as if they had no executive capabilities.

Growth promoting environments provide substantial “scaffolds” [and coaching,] to help students practise emerging skills before they are expected to perform them on their own”.

National scientific Council on the Developing Child  
Building the Brain’s “Air Traffic Control” System  
Harvard University



Deficits in executive functioning skills can render daily life, in school and out, confusing, exhausting, and at times humiliating.

If a child can't  
learn the way we  
teach, maybe we  
should teach the  
way they learn.

Ignacio Estrada