

**ASK Dr. Judy: *ASCD Webinar***  
**How To Promote a Learning-Receptive Emotional State**

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[www.RADTeach.com](http://www.RADTeach.com)



ASK Dr. Judy: *ASCD Webinar*  
Feb 2, 2011 3pm Eastern, Noon Pacific

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Helping Students Build  
Emotional Bridges to Learning



**What neuroscience research suggests**

Promoting optimism, kindness, gratitude, and tolerance increase executive functions and long-term memory

Interventions can promote input and output from the brain's networks of reflective versus reactive learning and behavior

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**Reflective**  
versus  
**Reactive Brain**  
neural processing

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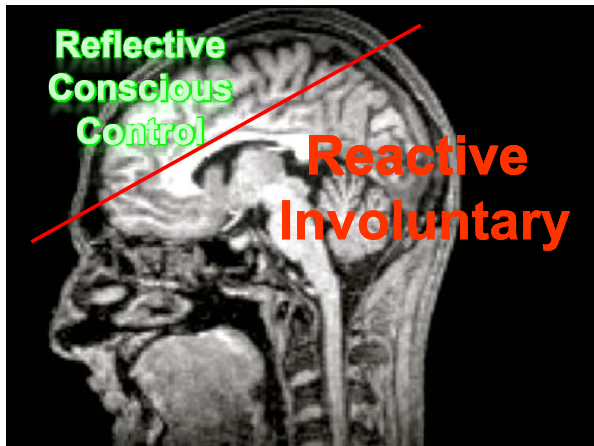
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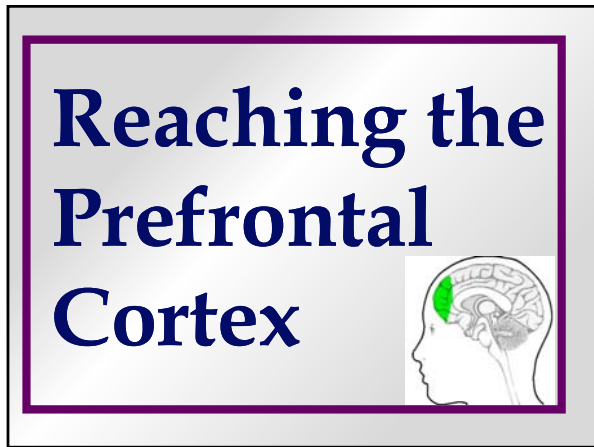
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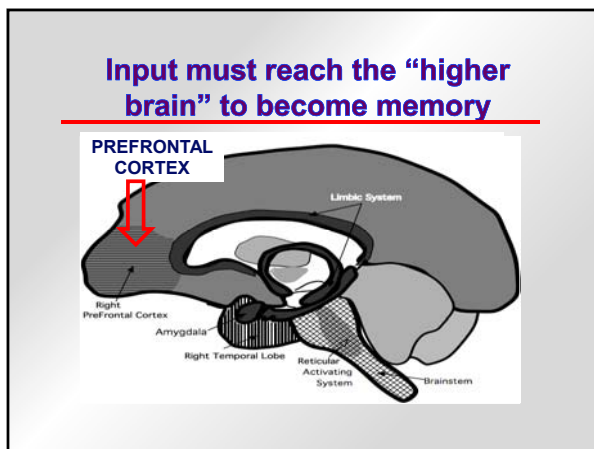
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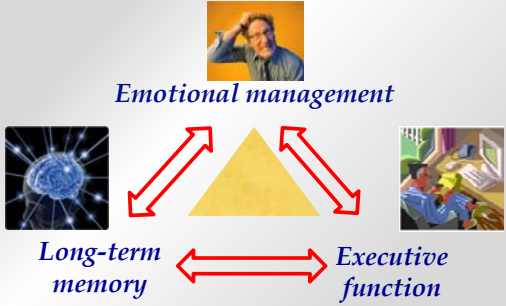
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**The Prefrontal Cortex**  
**Multiple Functions**



Emotional management

Long-term memory

Executive function

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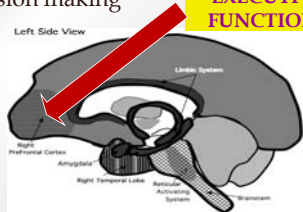
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**The Brain's Executive Functions**

- Delay of immediate gratification
- Risk assessment
- Analyzing information
- Considered decision making
- Goal planning
- Organizing
- Prioritizing
- Judgment
- Tolerance
- Empathy
- Adaptability



PREFRONTAL CORTEX DIRECTS EXECUTIVE FUNCTIONS

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**R.A.D**

**R = REACH ATTENTION**  
**RAS INTAKE FILTER**

**A = ATTITUDE & ACCESS**  
**AMYGDALA EMOTIONAL FILTER**

**D = DEVELOP OPTIMISM,**  
**MOTIVATION & MEMORY WITH**  
**DOPAMINE**

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**R = REACH ATTENTION**  
through the **RAS** filter

See archived webinar about  
**Attention**

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**Attention**

- Novelty
- No threat perceived
- Curiosity drives attention



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**Reflective**  
versus  
**Reactive**  
neural processing

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**R.A.D**

**R = REACH ATTENTION**  
RAS INTAKE FILTER

**A = ATTITUDE & ACCESS**  
**AMYGDALA is the**  
**EMOTIONAL FILTER**

**D = DEVELOP OPTIMISM, MOTIVATION & MEMORY**  
WITH **DOPAMINE**

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**Listener Poll**

What do you think is the greatest challenge common to educators represented by the following 2 photos?

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➤ Causes of Stress in School

- Fear of being wrong
- Embarrassed to read aloud
- Test-taking anxiety
- Physical and language differences
- Cliques and bullying
- Frustration with difficult material
- Boredom from lack of stimulation

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Amygdala directs input flow

Amygdala

Victorick 2016, S&L 02437809.

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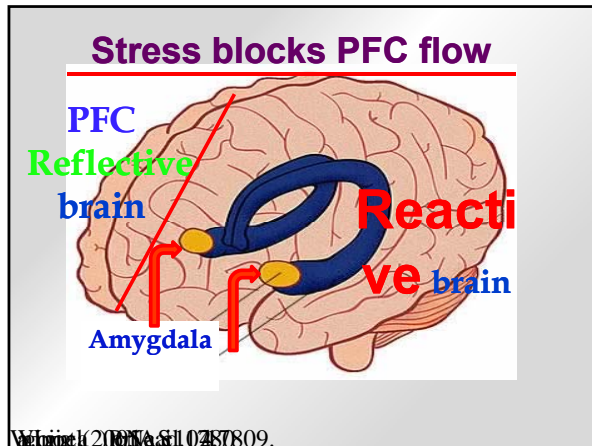
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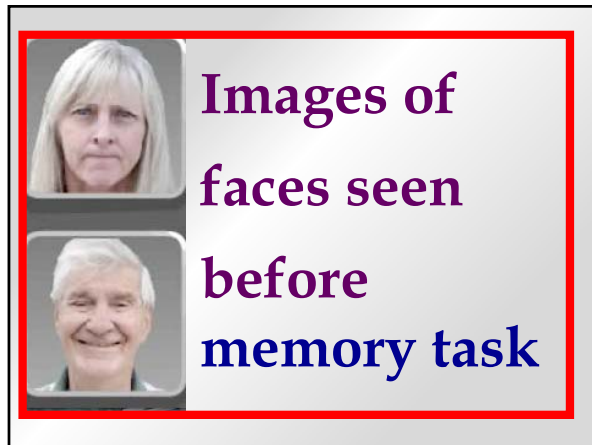
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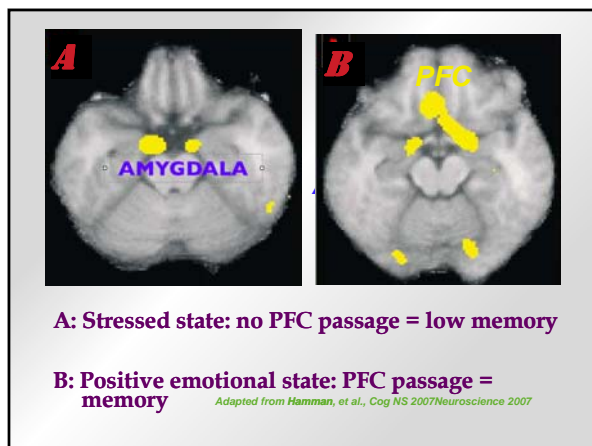
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**AMYGDALA Blocked PFC Flow**

Fear



Stress from frustration

Stress from boredom

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Lower **Reactive Brain**  
brain creates its own  
novelty when bored



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Lower brain output is  
**involuntary** in the stress state



Fight



Flight



Freeze

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## Discipline Problems



Bored students create novelty for themselves or among themselves

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Stress state:



Lower Reactive Brain in control

**Fight:** Disruptive

**Flight:** Withdrawal

**Freeze:** Zone out

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MISDIAGNOSIS WHEN THE BRAIN IS NOT THE PROBLEM



**Fight**

**Flight**

**Freeze**

oppositional-defiant

ADHD

social anxiety syndrome

seizures

OCD

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**Listener Poll**



The number one reason given by students who drop out of high school is **BOREDOM**

To what do students attribute their boredom?

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**Formal Poll Results  
Reasons for Boredom**



75% "Material wasn't interesting"

39% "Material wasn't relevant"

31% "No interactions"

*(more than one reason could be given)*

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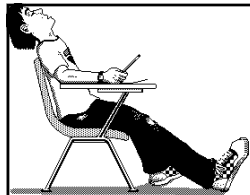
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**BOREDOM is stressful**

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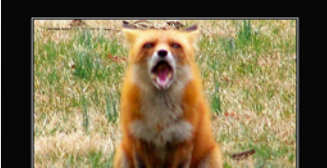
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**Frustration is  
STRESSFUL**



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Prolonged Stress      fMRI Research



- Suppressed PFC activity
- Decreased cognitive function
- Depression

Wang, J. et al (2005). Perfusion functional MRI reveals cerebral blood flow pattern under psychological stress. PNAS Proceedings

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**Amygdala  
Positive  
Interventions**



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**Reduce Stress of Threat  
Classroom Community**



Acceptance (teacher, peers, self)

Safety (physical, psychological)

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**Low Stress Interventions**

Personal sense of security in  
classroom

Routines

A "safe" place

Consistent rule enforcement



Class rituals, meetings, &  
celebrations



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**Negative Emotional  
State Intervention**

fMRI Research

Reduced amygdala to  
PFC flow

Intervention: strategies to control initial  
emotional reaction

Result: fMRI showed PFC top-down control



Oschner KN, Bunge SA, Gross JJ, Gabrieli JDE: Rethinking feelings:  
an fMRI study of the cognitive regulation of emotion. *J Cogn Neurosci*

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**Promote Passage through  
Amygdala to PFC**

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- Students practice monitoring their emotions
- Recognize and reflect before acting on emotions

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- Cues (wall chart) to identify feelings



- Evaluate feelings' intensity and how to reduce escalation
- Imaginary bubble to deflect hurtful actions & words
- Self-calm (deep-breath, observe themselves from "above")

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**University of Rochester Resilience Project**

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After children practiced monitoring & controlling their emotions:

- Improved their classroom behavior
- Half as likely to have any discipline incidents

Wyman, P and Cross, W. (2010). Teaching Self-Control Skills to Children Reduces Classroom Problems. *Journal of Abnormal Child Psychology*

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**R.A.D.**

**R = REACHING ATTENTION (RETICULAR ACTIVATING SYSTEM)**

**A = ATTITUDE AND BEHAVIOR (AMYGDALA)**

**D = Develop Motivation with Dopamine**



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**Dopamine Promotes**



Pleasure  
Curiosity & Inspiration  
Motivation

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Persistence and perseverance  
Creative imagination

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**DOPAMINE**



- Moving*
- Playing*
- Enjoying music*
- Being read to*
- Acting kindly*
- Interacting well with friends*
- Expressing gratitude*
- Experiencing Empathy*
- Experiencing humor*
- Choice*

**Feeling self-appreciation: intrinsic reinforcement**

**Optimism**

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**For Positive Attitude &  
Growth Mindset**

**Follow the Computer  
Game Model**



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**What is the PULL of  
Video Games**



*He's so close to Level 10 to even  
care about going for pizza*

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**Video games**



**Achievable Challenge  
With Incremental Progress is  
motivating**

**Hint: It's got lots to do with  
Dopamine Pleasure**

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**DIFFERENTIATED**  
**ACHIEVABLE CHALLENGE**  
to avoid the stress states of high  
boredom or frustration

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Incremental Progress  
Pumps up Dopamine



*Increased self-appreciation:  
intrinsic reinforcement*

*Increased Optimism*

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Incremental Progress Strategies

Frequent feedback

Goal Progress Tracking

Visible Connection:  
Effort=Progress to Goal



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**Promoting Optimism**



Reduces Stress  
Increases Dopamine  
Improves Mood  
Sustains Memory

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**fMRI Research Optimism**



Subjects who imagined positive future events had increased activation through the amygdala to PFC

Interpretation: The optimistic brain projects positive future events & promotes behavior favoring those events.

Riccardi, S., Raio, C., and . Phelps, E.A. (2007) Neural mechanisms mediating optimism bias. *Nature*

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**Optimistic  
Mood  
Induction**



Happiest day

Math problems solved accurately

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**Teach BOM for Optimism**

- Benefits of Optimism
- Benefits of Dopamine & how to raise it
- Emotional Control Strategies

\* See links at end for Brain Owner's Manual articles from Ed. Leadership



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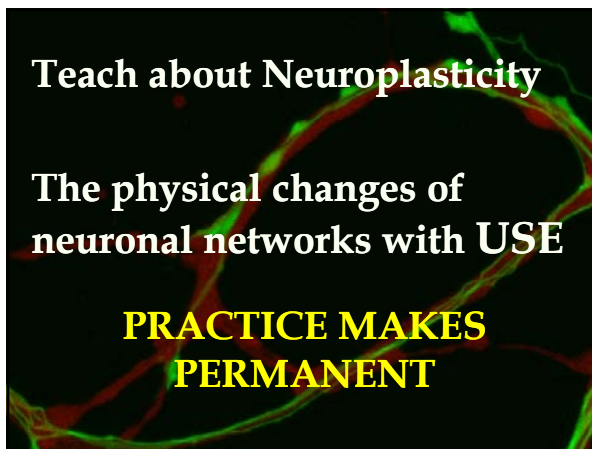
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**Teach about Neuroplasticity**

The physical changes of neuronal networks with USE

**PRACTICE MAKES PERMANENT**



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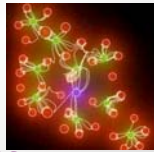
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**Long-term Memory**



Incorporation with existing

Repeatedly activating

*Neurons that fire together, wire together*

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Teach students how  
their neuroplasticity builds memory  
and intelligence so they know...



*Genius is more than genes*

© 2011 Billingsley

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Explain that  
they can  
strengthen their  
brains as they  
do their muscles  
- with exercise



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Neuro-logical Emotional Success Cycle

Provide meaningful goals

Achievable & Realistic Challenge  
(scaffolding)

Help students recognize & acknowledge  
their incremental progress



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Students see the connection  
between work/practice and  
progress



Build self-awareness of  
incremental progress

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Believe they have a good chance  
of succeeding (growth mindset)



A positive belief in oneself



A sense of competence



Motivated to persevere through  
challenge (effort)

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*My website for free access to  
articles, book chapters, & webinars*  
**[www.RADTeach.com](http://www.RADTeach.com)**

**EMAIL: [jwillisneuro@aol.com](mailto:jwillisneuro@aol.com)**

*"BRAIN OWNER'S MANUAL" Articles from Educational  
Leadership free download links*

*How to Teach Students About the Brain*  
<http://www.radteach.com/page1/page8/page44/page44.html>

*What You Should Know About Your*  
<http://www.radteach.com/page1/page8/page45/page45.html>

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