# Engaging Students of Poverty

## Strategies for Classroom Success

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**1. Gratitude:**
What am I most grateful for in my life?





**2. Optimism:**
What am I most looking forward to?



2




## Why does gratitude, optimism, and hope matter?

- Empowers during times of stress
- Releases dopamine
- Instills a sense of control

Yeager et at 2014; Dweck, 2009

THE B?G QUESTION

*How do we support students who have experienced the negative effects of poverty and still maintain a focus on classroom instruction?*

*What is your path?*

# A – B – C

1. **Agree** on a clear, personal path
2. **"Buy-in"** from yourself on the idea
3. **Commit** to implementation

## Choose a role



- ✓Summarizer (Summarizes main points, <60 seconds, ok to use notes)
- ✓Inspiration (reads inspirational quotes)
- ✓Leader (Brings out the best in everyone, gives everyone the opportunity to participate)
- ✓Energy Management (leads group movement/energy strategies)
- ✓PL JOTD (Joke of the Day) *Example: What is the difference between a guitar and a fish?*

Poverty and how it impacts learning is less about staff development and more about survival!



It can be /ken ‘fyooziNG/…

Recognize & Understand

*but*

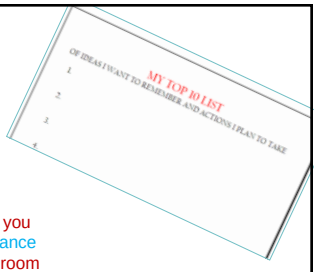
Make No Excuses &
Hold High Standards

“Poverty” tells us very little

What is your relationship with this word:

*Poverty*

The Most Important Document in Your Life!
*(At least for the next few hours)*




On the top of the page, list:
- Date & Time of the day
- Name(s) of people sitting next to you
- A word or two about your appearance
- Your approximate location in the room
- A word or two about your current mood
- On a scale of 1-10, how much do you know about this poverty stuff?

The power of the context!



The more closely there is a match between the cues/context/environment/mood of the encoding (learning) and the recall (assessment), the better students perform.

*The content and the context cannot be separated.*

D. R. GOODWIN and A. D. BADDELEY, 1975

Application Point

Context-Dependent Recall

- Match the retrieval cues with the context of the original encoding.

“OK. Interesting idea but what does this have to do with students of poverty?”

How does poverty impact a child's brain development and function?

# Know Your Effects

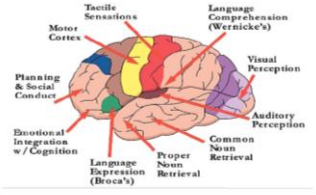
Struggling students must start making 1.5+ years of academic progress or they may drop out.

**0.00 – 0.20 = Mild, unclear effects**
**0.20 – 0.40 = Small-moderate effects**
**0.40 – 0.50 = Year's worth of gains**
**0.50 – 0.75 = Moderate effects**
**0.75 – 2.00 = Strong effects**

Olejnik, S., & Algina, J. (2000). Measures of effect size for comparative studies: Applications, interpretations, and limitations. *Contemporary Educational Psychology, 25,* 241–286.

## Brains of Lower SES *are* Different than those from Higher SES

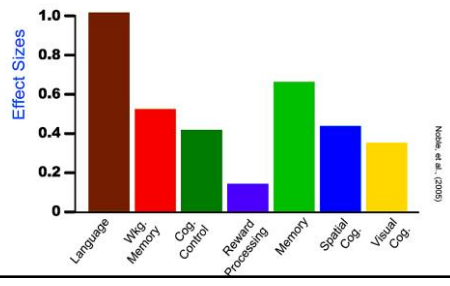
Areas include those responsible for working memory, impulse regulation, visuospatial, language and cognitive conflict

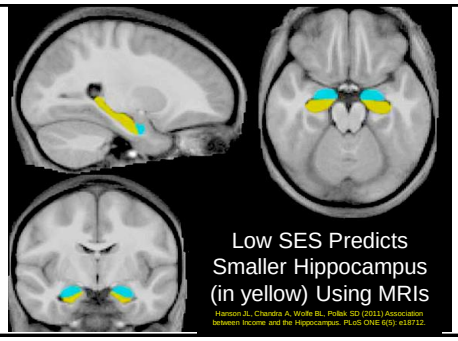



Noble KG, Norman MF, Farah MJ (2005) Neurocognitive correlates of socioeconomic status in kindergarten children. Dev Sci Jan;8(1):74-87

## Cognitive Functions

How are the brains from poverty different?



Low SES Predicts Smaller Hippocampus (in yellow) Using MRIs

Hanson JL, Chandra A, Wolfe BL, Pollak SD (2011) Association between Income and the Hippocampus. PLoS ONE 6(5): e18712.




In **Low SES Kids,** the Chronic Stress Indicators Are 17% Higher Than They Are for the **Non-Poor.**

Let's all agree…

The experiences of students in poverty are different.




*But, what does that mean?*

- For their brain development & cognitive growth?
- In the stressors they experience and how stress exhibits itself?
- For their emotional development?
- For executive function skills in the brain?
- For motivation?

Lets be honest, sometimes we organize learning with this assumption:

**Student**: "Good morning teacher. I've cleaned up my personal life, I got plenty of sleep last night and a healthy breakfast this morning. My parents helped me with my homework so I'm feeling confident and ready to take risks. I've come to class early to make sure my materials are ready. I can successfully tune out all the distractions around me so, bring it on!






## Poverty - a 10,000 foot view



*What is it? - Why does it matter?*

## Contrasting Experiences…

When compared to their middle or upper income classmates, ***how*** are children from poverty different?



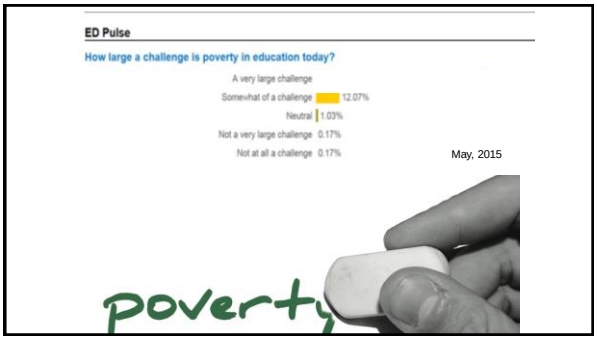
## Generalizations will be made; yes, there are exceptions

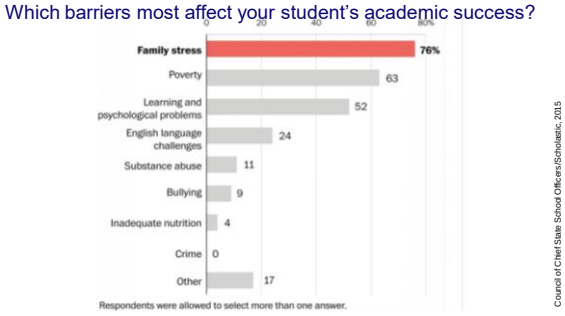


- Avoid absolutes. One cannot say, "All these people do this (or that)."
- Research suggests that, on average, "A greater % of those raised this way will experience XYZ or behave in a certain way."
- Children from every financial class might also have suboptimal experiences, but it occurs less often. Exceptions are the rule!

# Poverty is…

not a cul_____, but
a ***ch _____ condition***
affecting the ***mind, body and s __*** resulting from
multiple adverse ***r___ f___.***




Child Poverty – 3 States – Match the #s

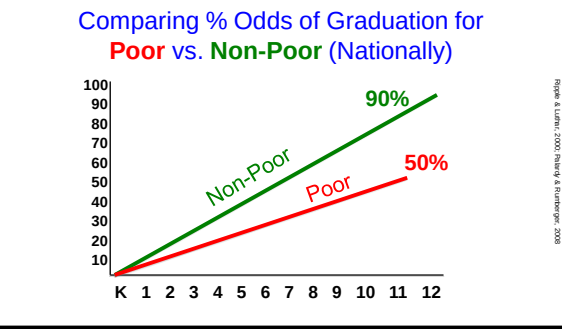
Arizona –

Nevada –

California –

22% 24% 19%

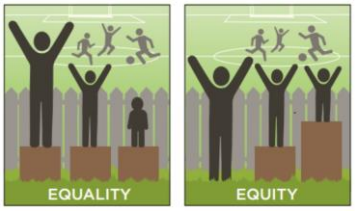
Source: Kids Count Data Center, 2016




## Bottom Line

- **Kids from poverty are often different**
- **Brains adapt to suboptimal conditions**
- **But, brains can and do change everyday**
- **You can facilitate change with equity**
- **Students can change if we change first**
- **Equity-building is your best tool**

Be the One… *Be the One that Notices…EQUITY is the Solution…*



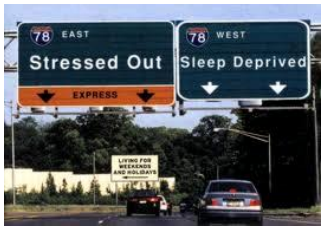

## 3 Areas of Difference

Acute / Chronic Stress
Cognitive Skill Development
Emotional Support

*We'll remember this by using the acronym A-C-E*

## Chronic Stress Effects… T or F?

1. Creates emotional problems (T or F)
   (Burgess et al. 1995)
2. Lowers IQ, reading scores (T or F)
   (Delaney-Black, et al. 2002)
3. Drastic memory loss (T or F)
   (Lupien, et al. 2001)
4. Shortens dendrites (T or F)
   (Cook and Wellman, 2004), (Brown, et al. 2005)
5. Causes neuron death (T or F)
   (De Bellis, et al. 2001)
6. Fosters inappropriate attachments (T or F) (Schore, A. 2002)



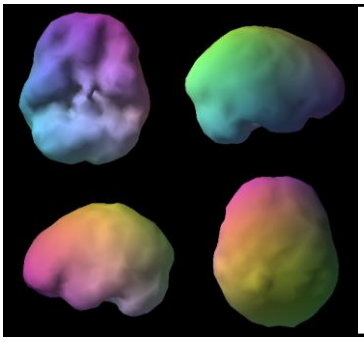

Stress is the physiological response to a perception of a lack of control over an adverse situation or person

✓**stress** (on/off) is healthy for us.



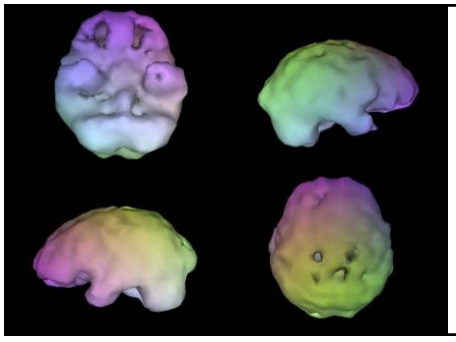
✓**distress** (chronic) is toxic to our brain and body





Healthy Brains Have Smooth Even Activation During Resting States

SPECT Scans courtesy Dr. Amen



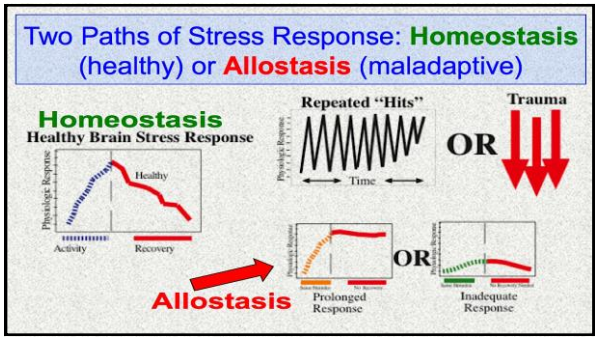
Areas of Underactivity in this Brain Under Bad Stress

*Those areas that appear to be holes are areas of underactivity.*



***Allostasis*** occurs when we re-set our brain's thermostat (our "set point") for metabolic functions

McEwen (2012) The End of Stress As We Know It




- ✓ **Traumatic Stress** – A trauma is a "blow to the system" from an exceptional experience that overwhelms a person's ability to cope. The response to trauma is often a sudden social, emotional, or behavior change or an increase in negative behaviors.
- ✓ **Chronic Stress** – Long-term exposure to risk factors can result in chronic stress. Over the long-haul, chronic stress often results in hypervigilance or learned helplessness (apathy).

# Sources of Chronic Stress

- **Experiencing neglect, abuse or trauma**
- **Being told what to do, but not HOW to do it**
- **Economic, social and health insecurity**
- **Being labeled a "minority" or the "out group"**
- **Staff with poor cultural responsiveness**
- **Micro-aggressions: being judged by skin color, expressions or neighborhood**
-
-

Courtesy of Dr Eric Jensen, 2018



Dr Judy Willis

Under "normal" circumstances absent of high stress, the amygdalae allow sensory information to reach the PFC. The PFC controls things like:

*Reflection*
*Self-control*
*Attention*
*Judgement*
*Goals*
*Impulse Suppression*

But

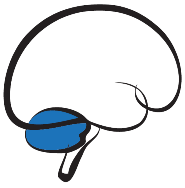
When stressors are experienced, the PFC "loses" communication with the rest of the brain.



Dr Judy Willis

"When the reflective PFC does not supervise the lower brain, responses become **involuntary**."
(Think: fight/flight/freeze responses)

"Students' involuntary behaviors may be incorrectly interpreted as cognitive limitations, intentional lack of effort, or willful opposition when in fact their brains' reactive responses are involuntary and not willful."



Early childhood stress resulted in a smaller cerebellum.

The C is responsible for (among other things):

- Acquiring new physical skills
- Coordinating movement
- Regulating stress
- Memory
- Attention

Walsh et al,2014

# Poverty is a significant source of stress.



✓low SES children are exposed to:

1) more stressors,
2) more intense stressors,
3) longer lasting stressors, and
4) have fewer coping skills than their higher SES counterparts.



Evans, G.W., Kim P. (2007) Childhood poverty and health: cumulative risk exposure and stress dysregulation.



## Instability = Stressors

*Children in poor families:*

- move twice as often
- get evicted 5X as much

(Federman, et al. 1996)

- Experience more chronic stress and up to 35% more daily hassles (Attar et al. 1994)
- Live in crowded homes (3X more likely) (US Census Bureau, 2000)

# 17%

✓In low SES kids, stress indicators are 17% higher than for non-poor students

Evans & Shaumberg, 2009 Childhood poverty, chronic stress, and adult working memory.

## Effects of Allostatic Load

- Distress is linked to >50% of ALL absences and causative in 17% (Johnston-Brooks, et al.1998)
- Distress affects attention, focus and concentration. (Erickson et al. 2003)
- Increased allostatic load impairs cognition, creativity and memory. (Lupien et al. 2001)
- Social judgment skills are diminished. (Wommack et al. 2004)
- Early life distress may create lifelong health problems (McEwen 2003)
- Distress reduces neurogenesis, memory and accelerates aging. (DiBellis et al. 2001)

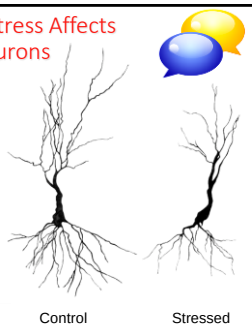
## Distress Affects Neurons

Dendrites taken from rat PFC show effects of distress.

How much exposure to distress (in time) would you predict it would take for neurons to wither as shown?

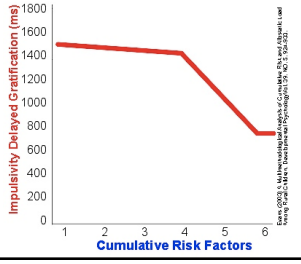
a) 2 hrs./day for 2 months
b) 30 min./day for 7 wks
c) 1 hr./day for 10 weeks
d) 10 min./day for 5 days

(Brown et al. 2005)




## Cumulative Risk Factors: More Stress = More Impulsivity

The greater number of risk factors, the harder it is to delay gratification. Chronic or acute stress shortens the time horizon.






**Remember – stress is our perception of a lack of control.**

When our stress levels go up, we need to increase control. Increase control and our stress levels go down.

*In what ways can you offer students a sense of control in your classroom or school?*

## 9 ways to manage YOUR stress better

*(Let's start by getting personal. Place a check mark next to those that are do-able.)*

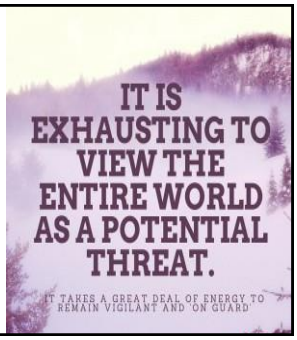
- ❑Move your body, take physical action, do something
- ❑Write it down, reflect on it later
- ❑1 week rule, "Will this matter in 1 week?"
- ❑Redirect your attention (see #1) – relationships, call someone, read, write, talk
- ❑Reframe the experience
- ❑Meditation
- ❑Get a hug
- ❑Talk with a friend
- ❑Practice Positive Self Talk*



## The effects of poverty don't stop at the school door.

*What are some of the issues that "seep" into the school day for your students? What are some of the stressors your students experience?*

Chronic stress (ongoing, repetitive,) results in our brain going into hyper arousal mode. That "always on guard" state of hypervigilance results in a host of problems: anxiety, physical problems, emotional difficulties, relationship struggles, learning disorders, etc. This state also makes it very difficult to regulate one's own behavior.






"Behavior problems" *may* be a symptom or a side effect of a stress disorder. What may appear anti-social, apathetic, or aggressive may be a result of either a constant state of hypervigilance or a condition of learned helplessness.

## Is stress contagious?
## You bet it is!



Oberle & Schonert-Reichl, 2016 Stress contagion in the classroom? The link between classroom teacher burnout and morning cortisol in elementary school students

Why is change so hard?




## Chronic stress and burnout inhibits change and often leads to apathy.

*Do you see some behaviors from students or families that seem apathetic?*

Neal, D. T., Wood, W., & Drolet, A. (2013). How do people adhere to goals when willpower is low? The profits (and pitfalls) of strong habits. *Journal of Personality and Social Psychology, 104*(6), 959-975.

*"Great theory! But what do we do?"*

Students who have experienced stressors/trauma/poverty often have "dysregulated" stress response systems.

You must: 1) give kids appropriately increasing amounts of control over their lives at school and

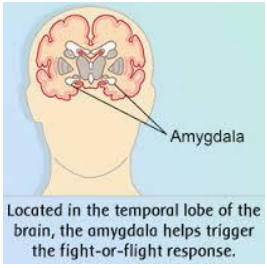
2) teach coping skills.

We all know that we shouldn't yell at kids.
*But do you know why?*

Verbal abuse alters the brain's pathways related to:

- Verbal IQ and verbal comprehension
- Depression, disassociation, and emotional response
- Anxiety

Preliminary evidence for white matter tract abnormalities in young adults exposed to parental verbal abuse. Choi J1, Jeong B, Rohan ML, Polcari AM, Teicher MH. (2009)



Located in the temporal lobe of the brain, the amygdala helps trigger the fight-or-flight response.

Once the amygdala (the emotional control center of the brain), is activated it can take 30-90 minutes after the event in order to calm, gain control, and refocus in order to learn!

## Discipline and Behavior – A few more Points to Ponder



- Behavior problems are always multi-causal.
- Control, coercion, and threats always backfire
  - "Tight ships" still sink.
- Too often we think this is the correct order:
  - Get control, then teach, so students learn.
  - But sometimes "get control" means yelling, threats, rewards, punishments, and fear. No one likes to be controlled.

Jensen, 2000

## Discipline and Behavior – A few more Points to Ponder



- Our job is to control the environment, not the student.
- Positive, structured, active learning environments make it easier for students to demonstrate and practice appropriate behaviors.
- Challenging behaviors are merely feedback. The real question is, "What will we do with that feedback?" *Deny, blame, ignore, argue, accept?*
- Prevention is key.

Jensen, 2000

## The Messy Reality of Classroom Life

Most Students Don't Misbehave Out of A Desire to Be Mean, Difficult, or Challenging.



4 Goals of Misbehavior

- Attention
- Power
- Revenge
- Avoidance

## 3 Responses that Fail

- The Punishment Model – Stop trying to get even or get revenge for how you believe you have been insulted, put down, or hurt. Always ask, "How can I help this student develop the skills to be successful?"
- The Power Model – Stop trying to prove "Who's the boss?" Power is all about control. People hate being controlled. Be an ally, not a dictator. Give control to students.
- The "Take it Personal" Model – Attempt to see the world from the student's perspective. It's not all about you. It's about helping the student figure out healthier ways to survive.

Jensen, 2016

## 3 Responses that Work

- The Reinforcement Model – Affirm what is good, not what you dislike. Affirm that you like what is happening, just not the way it is happening. *"I love that you stick up for yourself. If you don't do that, life is hard."*
- The Relationship Model– Be an ally, not a dictator. *"Now, some adults might not like how you stand up for yourself. But I will always be on your side."*
- The Redirect Model – Give students tools. *"I'll give you two ways to get what you want without ever getting in trouble again. See me right after class. Are we good?"*

Jensen, 2016

**"Thank you for staying after class"** (gratitude)

**"You're a good kid and I like having you in my class."** (affirm a positive identity)

**"Now, a lot of adults don't know you like I do. Most of them would have suspended you for what you did today."** (create a common bond, "us")

**"I know you are going places in life. But you can't go anywhere unless you stay in school.** (goals and why)

**"I'm going to show you how to get what you want without getting into trouble."** (ally, clear benefit)

Jensen, 2016

**"We'll learn just one tool today, then we'll practice it tomorrow."** (small doable steps)

**"Here's the plan. When anyone does *that* (the trigger) to you, how can you respond more like a leader?"** (gaining control, student participates, dialogue)

**"I'll be that student for 10 seconds. Show me what you'll do differently."** (role play, practice, confidence)

**"Great. Sounds like we have a plan. Thanks for staying. See you tomorrow."**

Jensen, 2016

## Goals in Behavior Interventions

- ❑ Reinforce what you do like (be specific)
- ❑ Reconnect relationally (as an ally) and deepen the relationship
- ❑ Redirect towards the solution (to learn new, more productive behaviors)
- ❑ Maintain dignity and respect in front of other students
- ❑ Keep the ultimate goal in mind = graduation!

Jensen, 2016

Despite all the challenges our kids face, they are not broken. They have strengths, dreams, abilities, and a future that is worth fighting for. We help them and we help ourselves when we look to their strengths, not their weaknesses. Of course we want to help them correct mistakes and make better choices, but we always do so from a strengths-based approach. We acknowledge the challenges before us but we focus our energy on strengths. Every child has potential.

-BH

## It all boils down to RISK FACTORS

*Risk Factors increase stress.*




**What are risk factors?**
Exposure to stressors, events, situations, or relationships that increase an individual's likelihood of physical, social, emotional, and learning difficulties.




- Abuse (physical, sexual, emotional)
- Neglect
- Mentally ill, depressed, or suicidal person in the home
- Serious physical illness
- Low birth weight
- Drug or alcohol abuse in the home
- Witnessing domestic violence
- Loss of a parent due to death or abandonment
- Being raised by anyone other than a parent
- Incarceration by any family member
- Lack of access to medical care
- Lack of access to parks, libraries, and open spaces
- High rates of mobility (family moves a lot)
- Divorce
- Underperforming schools
- Learning disability
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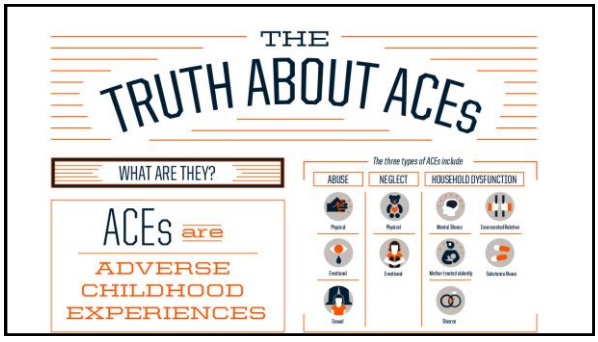
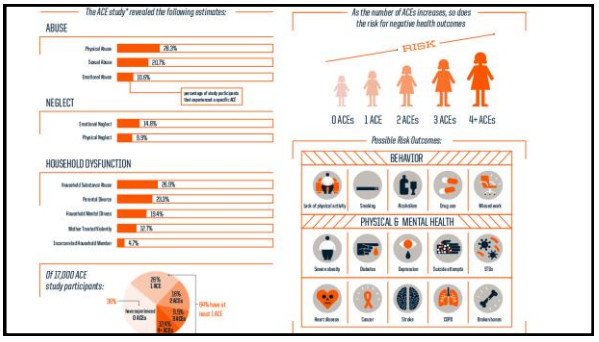



If a child has difficulties in the home/family setting, they are at a much greater risk of having difficulties in school.




Risk factors and stressors are not just an issue of poverty. Individuals of all income levels experience ACES. But, individuals in poverty experience a greater number of them.




## Probability of Outcomes

Given 100 American Adults

| 33<br>No ACEs | 51<br>1-3 ACEs | 16<br>4-8 ACEs |
|---|---|---|
| WITH 0 ACEs<br>1 in 16 smokes | WITH 3 ACEs<br>1 in 9 smokes | WITH 7+ ACEs<br>1 in 6 smokes |
| 1 in 69 are alcoholic | 1 in 9 are alcoholic | 1 in 6 are alcoholic |
| 1 in 480 uses IV drugs | 1 in 43 uses IV drugs | 1 in 30 use IV drugs |
| 1 in 14 has heart disease | 1 in 7 has heart disease | 1 in 6 has heart disease |
| 1 in 96 attempts suicide | 1 in 10 attempts suicide | 1 in 5 attempts suicide |

Think about it this way…. Imagine this:

_____ + _____ +
_____ + _____ +
_____ _____ *= Really hard to be the best version of myself*

Think of risk factors as a range of exposures (from the daily hassles of unreliable transportation to serious illness and abuse) that make life really, really difficult.

## so what



*If this information about risk factors is true, what are the likely outcomes as children grow into adulthood?*

*Working with your partners, brainstorm what might happen to a person who experiences several risk factors? What is their likely path in life? What kind of behaviors, problems, or issues might they demonstrate as they grow up?*

**hint: it's all pretty bad….exposure to multiple risk factors increases a person's use of drugs and alcohol and greatly increases suicide attempts.*

## so what

*The higher you're "ACE" score…*

- *Alcohol and drug abuse*
- *Heart disease*
- *Depression*
- *Fetal death*
- *High risk sexual activity*
- *Illicit drug use*
- *Obesity*
- *Sexually transmitted diseases*
- *Smoking*
- *Suicide attempts*
- *Unintended pregnancy*
- *Domestic violence*
- *Liver disease*
- *Incarceration*
- *Learning disabilities*
- *School behavior problems*

Remember: there are always exceptions. These are generalizations. But, the data don't lie!

> Interventionists are hungry for information regarding the impact of trauma on learning. They have tried, often in vain, to impact students motivation, engagement, and performance by what they know best; applying and adjusting curriculum and instruction. Frequently the deep seating reason for a child's inability to learn stems from structuring a mode of thinking that is preoccupied with a perceived threat couple with an instinct to survive. The parts of the brain that are engaged in learning are therefore, essentially, shut down. For a child to be successful they need to feel safe an nurtured. – *Robert Marino*

## 6 Words or Less

Based on what you know about risk factors write one sentence of 6 words or less that encompasses the over-arching concept.

_____ _____ _____ _____ _____ _____



## 3 Areas of Difference

✓ Acute / Chronic Stress
Cognitive Skill Development
Emotional Support

*We'll remember this by using the acronym A-C-E*

## Language Influences Cognition

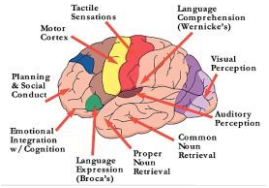


Toddlers from middle and upper income families actually used more words *in talking to their parents than low SES mothers used in talking to their own children.*

(Bracey, 2006)

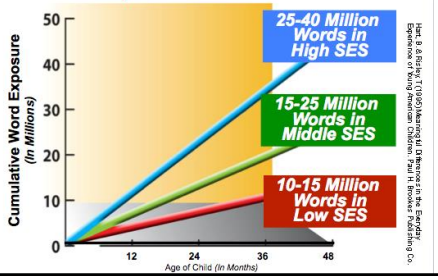
## Brains of Lower SES *are* Different than those from Higher SES

Areas include those responsible for working memory, impulse regulation, visuospatial, language and cognitive conflict




Noble KG, Norman MF, Farah MJ (2005) Neurocognitive correlates of socioeconomic status in kindergarten children. Dev Sci Jan;8(1):74-87

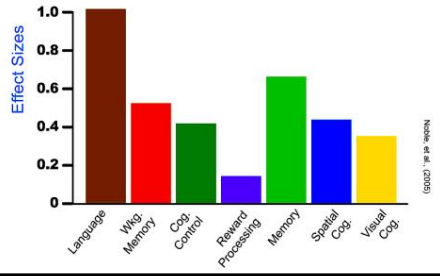
## First Four Years of Language Exposure and Low SES




Hart, B. & Risley, T (1995) Meaningful Differences in the Everyday Experience of Young American Children. Paul H. Brookes Publishing Co.

## Cognitive Functions

How are the brains from poverty different?




## *SUMMARY:* The Effects of Cognitive Under-stimulation

- ✓ Lack of vocabulary for school success
- ✓ Poor mood regulation (anger/apathy)
- ✓ Sub-grade level in language and memory
- ✓ Weaker executive functions (impulsivity, working memory, processing, sequencing and locus of control)

## ✔ *Making Changes*

*Here's how you can help more students graduate:*

1) Boost reading
2) Teach & vocabulary daily
3) Build thinking & working memory

## Which School Based Factor *(when tested at age 5)* is a Greater Predictor of Academic Success than IQ?



a) Reading scores
b) Working memory
c) Motivation level
d) Math scores
e) Positive attitude
f) Homework

Alloway, T. A. & Alloway, R. G (2010). Investigating the predictive roles of working memory and IQ in academic attainment. Journal of Experimental Child Psychology, 106, 20-29.

## What Skills Matter Most for the Student's Academic Success?

- ✓ Processing
- ✓ Attentional focus
- ✓ Locus of control
- ✓ Memory (working)
- ✓ Prioritization
- ✓ Ordering / sequencing
- ✓ Deferred gratification

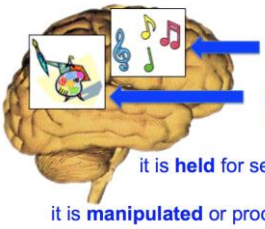
## Executive Function Skills are the "Apps" that Run Your Brain

**Apps enable you to do the things you want to do.**

**Teach kids quality apps well. You will have kids with greater success *CAPACITY.***



## What is in Our Working Memory?



***The content is…***

**sounds**, called a "phonological loop"

**OR**

**pictures**, or visual-spatial "sketchpad"

**AND**

it is **held** for seconds or moments

**AND**

it is **manipulated** or processed by our brain

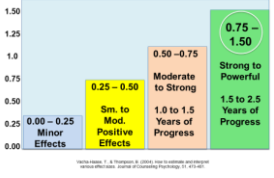
## Working Memory

- ✓ The driver of cognition
- ✓ It is required for every higher order thinking process
- ✓ Students in poverty have weaker working memory
- ✓ It is teachable and you can do it.

Lustig N, Meier B, Sorrel C. (2009) Stress effects on working memory.

***So, what does all this mean?***

Effect Sizes Made Practical




- The ES describes how powerful an intervention will be in creating change.
- *"Power"*
  *"Strength"*
  *"Distance"*
- A **.74** effect size tells us…

## Meta-Analysis on Working Memory Effect Sizes




- **K-5 ES = 1.41**
- **Secondary ES= 0.72-1.18**

Au J, Buschkuehl M, Duncan GJ, Jaeggi SM (2015) Psychon Bull Rev. 2015.

## Working Memory and Reading: Over 100 Peer-reviewed Studies



Sierra HW, Mahone EM, Lavine T, Eason SH, Cutting LE (2009) and Gathercole SE, Alloway TP, Willis C, Adams AM (2006) and Locascio G, Mahone EM, Eason SH, Cutting LE (2010)

## Working Memory and Math Correlation? Over 100 Studies

Studies have demonstrated that working memory is a "launchpad" and top predictor in mathematics achievement in primary school age children.



Passolunghi, MC, et al. (2008)

## Neuroplasticity is Remapping the Brain; Here are the Rules for Skill-Building

1. Students absolutely must b_____-i__ to it.
2. Skill must be coher_____ to the student.
3. Use increasing chal_____ and comp_____.
4. Students need a fast initial learning cu_____.
5. Their brains need error-c_____.
6. Students need ____ min./day, 3-5X a wk., 8-12 wks.
7. Once they get it right, they still need pr_____.
8. Skill-building can be strengthened in which subject areas? _____.



## *What is Executive Function?*

Reasoning
Planning
Prioritizing
Organization
Time Management
Impulse Control
Flexibility
Attention
Regulating Emotions
WORKING MEMORY

## Predictors of Student Success

"I have spent over a decade leading several major projects to understand the link between brain function and education.

_____ is the #1 predictor of learning success."

Dr. Tracy Alloway, *Journal of Experimental Child Psychology, 2012*



a) Attitude
b) IQ
c) Effort
d) Vocabulary
e) Working Memory
f) Prior Year's Grades
g) Class Behaviors
h) SES of Parents
i) Motivation

## Ways to Support Working Memory

Working memory is your brain's Post-it note

It is "brief by design" and involves memory and attention.

"It makes all the difference to successful learning."
Tracy Packiam Alloway, Ph.D

# Strategies

*Heads-up!* Here's what you personally can do to improve student achievement…

Ways to Support Working Memory

## *Improve Working Memory*

Teach Attention to Visual Detail with "What's Different?" Tasks Using Two Pictures




Ways to Support Working Memory

## *Improve Working Memory*

Spot the Differences



Ways to Support Working Memory



Ways to Support Working Memory

- Ruler
- Calculator
- Sand timer
- Coffee mug
- Post-it Note
- Fork
- Scissors
- Banana
- Cupcake
- Racquet Ball
- Apple
- Seashell
- Slinky
- Paperclip
- Battery
- Stopwatch
- Butterfinger Candy
- Blue Expo marker
- Dice
- Overhead finger pointer

Ways to Support Working Memory

Say: roa
Say: tca
Say: sya
Say: bato
Say: tsfa

Partner 1 says the letters
Partner 2 creates a word using those letters

Ways to Support Working Memory

Say: "and"
Say: "cat"
Say: "tool"
Say: "fruit"
Say: "brain"



Partner 1 says the word aloud
Partner 2 spells it backwards

Ways to Support Working Memory

Say: 3 - 7 - 5
Say: 8 – 0 - 10
Say: 77 – 6 - 12
Say: 1 - 2 - 3 - 5
Say: 99 – 88 – 77 - 65



Partner 1 says the string of numbers
Partner 2 says the string of numbers backwards

Ways to Support Working Memory

Say: 12 + 7
Say: 12 + 12
Say: 12 + 5 + 10
Say: 99 + 7 + 16
Say: 1 + 17 + 5 + 3



Partner 1 says the string of numbers
Partner 2 adds the number together

Ways to Support Working Memory

I'll read off the numbers in sequence. Below each number tells you what to do:

"H" = raise hands, say "Hooray!"
"T" = give a "thumbs up"
"C" = clap twice

Ways to Support Working Memory

*Improve Working Memory*

**1 2 3 4 5**
**H C T H T**

**6 7 8 9 10**
**C T H C H**

**11 12 13 14 15**
**T C H T H**

Ways to Support Working Memory

I'll still read off the numbers in sequence. Under each number, the letter is now in either CAPS or lower case. If it's in CAPS, respond while standing up. If in lower case, respond while seated. Remember…

"H" = raise hands, say "Hooray!"
"T" = give a "thumbs up"
"C" = clap twice

Ways to Support Working Memory

## *Improve Working Memory*

1 2 3 4 5
h c T H t

6 7 8 9 10
c T H t H

11 12 13 14 15
t c H T H

Ways to Support Working Memory

I'll still read off the numbers. If there's an underline, do everything the same as in the last slide. BUT, on the next letter, do the opposite of what it *would have* been. Here's an example…
**"H"** (by itself) = stand and say "Hooray!"

BUT…

With a sequence of "t - C - H" … the underscore on the "C" means the next letter, "H" is now a *be seated* "Hooray!"

Ways to Support Working Memory

1 2 3 4 5
h c T H t

6 7 8 9 10
c T H t H

11 12 13 14 15
t c H T H

Ways to Support Working Memory

## *Do a Room Check*



## More Solutions to Working Memory Limitations in Students

1. Use the "pause" technique. Every few minutes, pause to let content sink in.
2. Chunk content into smaller chunks to aid understanding, then review.
3. Prime the learning to create an attentional bias to the content.
4. Do a fast physical activity 1st to activate frontal lobe uppers like dopamine and norepinephrine.

(Bower 1987), (Di Vesta et al. 1979) and (Stahl 1994).

## Even *More* Strategies for Working Memory

1. Call-response songs
2. Games (Simon Says, cards, etc.)
3. Clapping repeats
4. Repeat the directions
5. Partner/group practice w/# add-ons
6. Repeat prior effort, then add a sound, word, or sentence
7. Partner, buddy or teacher speaks, student writes the content

Ways to Support Working Memory

## *Externalize Information*




Photographic Evidence

Timers

Key questions

Goal sheets

What to do when….posters






Time to make connections

Visual Attention Tasks
(What's Different?)

Games (HTC, Simon Says, 20 Questions, Board Games, Memory)

Auditory Attention Tasks

Room Check

Externalize Info

## 3 Areas of Difference

✓ Acute / Chronic Stress
✓ Cognitive Skill Development
Emotional Support

*We'll remember this by using the acronym A-C-E*

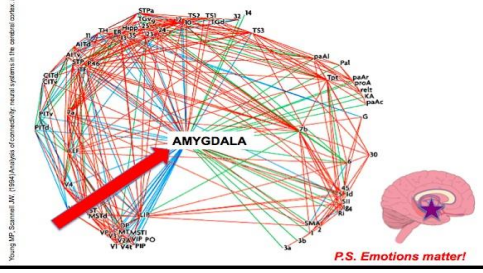
## 3 Emotional Keys

**Attunement** – To build the "emotional response keyboard"

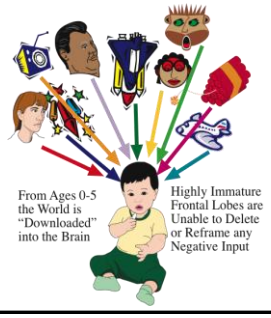
**Attachment** – safe, trustworthy relationships builds faith in others

**Emotional Punctuation** – to help the brain identify what's correct (or not) and decide if it's worth saving

## How Much Input Does the Amygdala Have to the Rest of the Brain?




*P.S. Emotions matter!*




Kids "download" the negatives of chaos, disharmony, poor relationships, foul language, poor manners, and weak vocabulary just as quickly and just as automatically as they would any positive or enrichment input.

**Kids from poverty get less "attunement" time**

attunement is the establishment of a positive, reciprocal, relationship with the primary caregiver.



This "quality time" provides the basis for learning the non hard-wired socially appropriate emotions.

## How Do Caregivers Help Infants Wire Up New Emotions?



Easterbrooks MA, Bureau JF, Lyons-Ruth K. (2012)

- Talk a lot and use new words daily and interact not talk at
- Match gestures
- Wide range of new emotions
- Simple games (pat-a-cake, hide 'n seek, etc.)
- Hugs and kisses

Most researchers agree that there are built-in human emotions. Do you know what they are?








Dr. Paul Eckman – psychologist, pioneer in non-verbal communication, micro-expressions, and emotions

## If the Healthy Emotional Brain Was Represented by a Keyboard, Many Students Today Use Fewer "Keys"



| TAUGHT: | HARD-WIRED | TAUGHT: |
|---|---|---|
| ▪Humility<br>▪Forgiveness<br>▪Empathy<br>▪Optimism<br>▪Compassion | ✓Sadness<br>✓Joy<br>✓Disgust<br>✓Anger<br>✓Surprise<br>✓Fear | ▪Sympathy<br>▪Patience<br>▪Shame<br>▪Cooperation<br>▪Gratitude |

## Discipline Problems Emerge When Teachers Expect *What They Cannot Get*




Many kids don't have the full emotional range to respond well *UNLESS* they are taught *HOW* to respond in class.

Expectation
without
Communication
equals
Frustration




And…I would add….expecting without teaching students how to meet expectations is malpractice.

Let's stop there for a minute!

**If that info about emotions/attunement is true, what impact does that have on classroom management and discipline?**



(Or, how we approach teaching students about classroom rules, norms, etiquette, behavior, etc… Or, what we can/should expect from students?)

# 3 Areas of Difference

A_____ / _____ _____
C_____ _____ _____
E_____ _____

*We'll remember this by using the acronym A-C-E*

*For kids of poverty, how much does engagement and good teaching matter?*



If a student has a good teacher, (one standard deviation above the mean AYP) as opposed to an average teacher for 5 years in a row, the achievement gap for students of poverty would be gone.

Hanushek, E (2005). The Economics of School Quality

*For kids of poverty, how much does engagement and good teaching matter?*



For students of poverty, between 50-60 % of the variation in performance comes from their school experience (as opposed to genes, background, home life, other experiences, etc).

Hargreaves, et al. (2004). International handbook of educational change




✓Our goal has to be 1.5+ years of growth for every student, every year.

✓For students of poverty, anything less will leave them farther behind each year.

✓To get those miracles, we must invest our time in high-yield strategies.

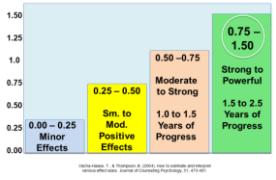
## Classroom Practices that Move the Needle



- Foster Relationships
- Ramp Up Engagement (start with movement)
- Increase Feedback
- Build Vocabulary

***So, what does all this mean?***

Effect Sizes Made Practical




- The ES describes how powerful an intervention will be in creating change.
- *"Power"*
  *"Strength"*
  *"Distance"*
- A **.74** effect size tells us…

Relationships as an Instructional Intervention

*Match the Effect Sizes*

Teacher-Student Relationships

Teacher Empathy & Warmth

Teacher Respects Students

0.74 | 0.67 | 0.61

Relationships as an Instructional Intervention

- With giving feedback on something as intimate and personal as one's learning, **relationships** must be solid.
- *What does a caring, authentic relationship get us?*
  - Increased student effort and engagement (Redding, 2013)
  - Increased resiliency (Stride & Cutcher, 2015)
  - Improved academic achievement (Hattie, 2009)

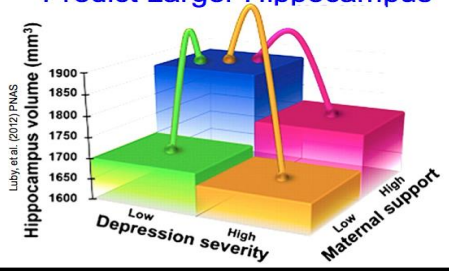
## Relationships Can Lower Stress; How Well Do You Connect?

Of all the things researchers have discovered about the value of quality relationships, one of the most surprising is that they are strong mediators of stress. *Good relationships diffuse stress and make your life easier.*



Miller-Lewis LR, Sawyer AC, Searle AK, Mittinty MN, Sawyer MG, Lynch JW. (2014) Student-teacher relationship trajectories and mental health problems in young children. BMC Psychol. 12, 27.

## Stronger Relationships & Support Predict Larger Hippocampus



## Secondary Relationships Work



Leslie teaches 9th grade honors biology in Greensboro, NC. She works at the lowest performing school in her district, yet… *100 percent of her students got proficiency on state exams and most scored near the top.*

**CORE BELIEFS**: Sky-high expectations: she promises an A/B in the course if kids do their part and help another succeed.
**CORE STRATEGIES**: Builds relationships w/ "Me Bag" activity, gets tutoring and study buddies for all, uses teams, shares data, contracts w/ parents & lots of celebrations!

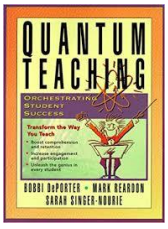
## Fast-Track Relationship Builders to Jumpstart the Long-term Process

- ❑ **1 and Done**
  Do 1 favor or connection or show of empathy SO powerful, *students remember it well*
- ❑ **2' for 10**
  Invest 2 min./day for 10 consecutive days with a student most "needing" a connection
- ❑ **3 in 30**
  Discover 3 things (other than a name) about every student you have in 1st 30 days

## BUILD RELATIONSHIPS

where they are most needed





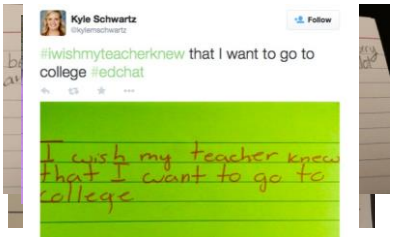

"In order for you to earn the right to teach, you must first build authentic bridges into your students' lives. A teaching credential or document stating you can teach or train merely states that you have the authority to teach. It does not mean you have the right to teach."

"Teaching someone is an earned right and is granted by the student, not by the Department of Education."

## 3 easy relationship builders

- I wish my teacher know
- Beware of "Should"
- Positive Calls Home

## What I Wish My Teacher Knew






Kyle Schwartz

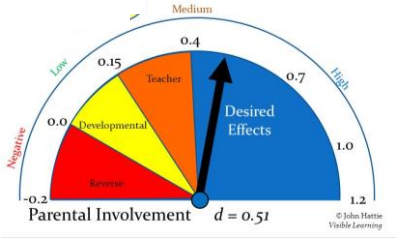
Share at Your Table; What's 1 Thing You Wish Your Students Knew About You?



## Beware of "Should"

What is problematic with statements such as

*"You should do better"*
Or
*"You should try harder"*
Or
*"You should behave better"*
Or
*"You should know how to…."*







Overall, "the higher the hopes and expectations of parents with respect to the educational attainment of their child, the higher the student's own educational expectations and, ultimately, the greater the student's academic achievement."

- *Students in a high school credit recovery program*
- *Placed into 1 of 3 groups*

Parents received a weekly message from the teacher containing positive messages about their child's performance

Parents received a weekly message from the teacher containing info on how their child could improve performance

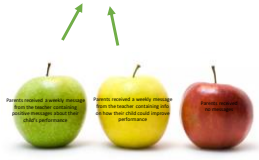
Parents received no messages



Kraft MA, Rogers T. The underutilized potential of teacher-to-parent communication: Evidence from a field experiment. Economics of Education Review (Internet). 2015;47:49-63.

- *Students in a high school credit recovery program*
- *Placed into 1 of 3 groups*

- 6.5% more likely to earn credit
- 6% less likely to drop out
- Reduced absenteeism by 2.5%



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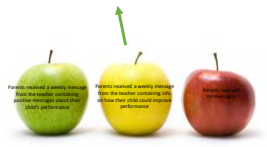
- *Students in a high school credit recovery program*
- *Placed into 1 of 3 groups*

- "Improvement" messages were more effective than "positive" messages – 8.8% increase in course credit compared to the "positive" message group

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- *Students in a high school credit recovery program*
- *Placed into 1 of 3 groups*

*What is our "take home" message?*

- Improvement messages, by nature, communicate knowledge of the child by the teacher. Parents want to know that the teacher truly knows their kid. This communicates trust and understanding.
- "I like your kid" messages are great, but what are parents to do with that information? (other than agree and praise their kid)




Kraft MA, Rogers T. The underutilized potential of teacher-to-parent communication: Evidence from a field experiment. Economics of Education Review [Internet]. 2015;47:49-63.

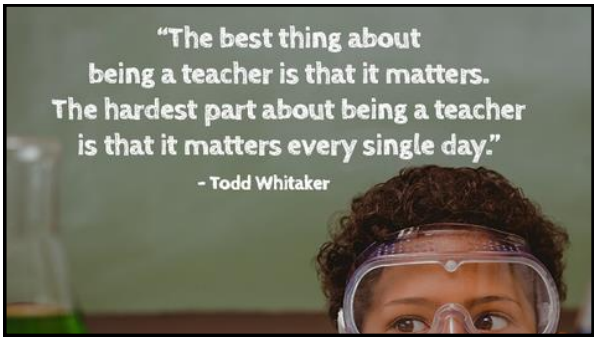
| Low Intensity Strategies | High Intensity Strategies |
|---|---|
| Letters/Postcards | Phone calls |
| Newsletters | Face-to Face Conversations |
| Flyers | Conferences |
| Electronic/media | Personalized notes |
| Report Cards | |
| *One Way Communication* | *Two Way Communication* |

## Effective 2-Way Communication…(in person or via the phone)

- Develops rapport
- Helps with perspective and understanding
- Establishes "…a mutuality of trust"
- Builds appreciation of contrasting experiences
-
-




We have a moral and ethical obligation to communicate with our families. This is especially true for underperforming or marginalized students.



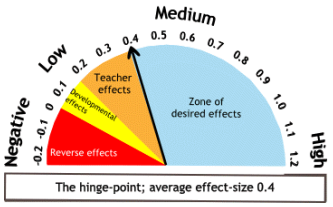
## Classroom Practices that Move the Needle



- Foster Relationships
- Ramp Up Engagement (start with movement)
- Increase Feedback
- Build Vocabulary

Energy Management (Movement) Strategies have a staggering Effect Size!

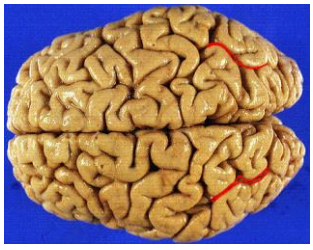
ES = 1.51




Ervin, et al. (2012). A Quantitative Review of Physical Activity, Health, and Learning Outcomes Associated with Classroom-Based Physical Activity Interventions. Journal of Applied School Psychology. 28, 14-36

Quiz Time – True or False?

1. Too much sitting and "downtime" is associated with higher levels of anxiety (Teychenne et al, 2015).
2. Students who are physically fit get better grades (Coe et al, 2006).
3. Movement opportunities improve outcomes for students diagnosed with attention-deficit hyperactivity disorder (Rapport, 2015).
4. Just 20 minutes of moderate physical activity boosts cognitive function by 14% (Samani, et al, 2017).



Tschentscher, N., Hauk, O., Fischer, M. H., & Pulvermüller, F. (2012). You can count on the motor cortex: Finger counting habits modulate motor cortex activation evoked by numbers. Neuroimage, 59-318(4-12), 3139–3148.

Say hello to your

*Intraparietal Sulcus*

The part of your brain that processes _____ is also partially responsible for _____.

The brain/cognition and the body are connected in just about every way.




TED Ideas worth spreading

Cambridge U
Daniel Wolpert
neuroscientist

Want to increase attention and engagement by 12%?

*(7 more minutes per hour!)*





Sarah Taylor's 2nd Grade Classroom – Mesquite Elem

Dornhecker, M., Blake, J., Benden, M., Zhao, H., & Wendel, M. (2015). The Effect of Stand-biased Desks on Academic Engagement: An Exploratory Study. International Journal of Health Promotion and Education, 53(5), 271–280.

Even More Proof

The more time boys spent sitting still in 1st grade resulted in *fewer* reading gains in 2nd ***and*** 3rd grade!

Haapala, E. A., Väistö, J., Lintu, N., Westgate, K., Ekelund, U., Poikkeus, A.-M., … Lakka, T. A. (2017). Physical activity and sedentary time in relation to academic achievement in children. Journal of Science and Medicine in Sport, 20(6), 583–589.

Do you need to raise their reading scores?

*Get them moving!*

As little as 12 minutes of aerobic exercise (like running in place) can eliminate the gap between low-income and high-income students!



Aerobic exercise increases reading comprehension and visual attention.

Tine, M. (2014). Acute aerobic exercise: an intervention for the selective visual attention and reading comprehension of low-income adolescents. Frontiers in Psychology, 5, 575.

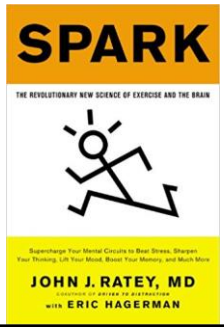
Stationary Bikes and Reading – a match made in your *cerebellum*!





Bikes, Balls in Class: How Phys Ed Transformed One School

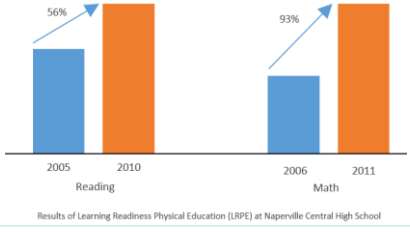
abcNEWS






Dr. John Ratey

- Cognitive development & physical development go hand-in-hand.
- Exercise increases blood flow and oxygen to the brain.
- Exercise stimulates BDNF – “miracle gro” for the brain.




Results of Learning Readiness Physical Education (LRPE) at Naperville Central High School

Students who participated in the LRPE program significantly outperformed students who did not participate - 56% better in reading; 93% better in math.

## Exercise and Movement Help Regulate Mood
(including depression)

- Aerobic exercise was found to be more effective than antidepressants in treating depression.
- Movement is effective at helping ADHD individuals improve focus and motivation.
- Movement and exercise helps reduce the symptoms of anxiety.

Blumenthal, et al 1999; Anderson & Shivakumar, 2013; Fritz & O'Connor, 2016

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Recess improves behavior and academic achievement!



Rhea, 2013. Program Proves More Recess Improves Academic Performance and Behavior www.50million.shapamerica.org

Decades of research show a link between recess, movement, and academics. This isn't new stuff.

More recent research demonstrates that poor students are less likely to get recess … further widening the achievement gap. In our efforts to increase test scores, too many schools have opted to reduce movement in order to focus on remediation and test prep.
(Pellegreni, 2012)

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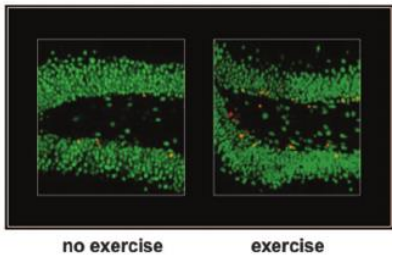
Notice the explosion of new neurons in the hippocampus, noted in reds and yellows, after exercise.




Pereira, et al. 2007 An in vivo correlate of exercise-induced neurogenesis in the adult dentate gyrus

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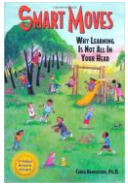
## Who (else) Says Movement Works?




Over 3,400 peer-reviewed studies in quality journals on environmental enrichment with data from both animal and human studies.

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Application Point

## Incorporate Movement

- Games – Simon Says, etc
- Stretching
- Deep Breathing (yoga)
- Roam the Room/Gallery Walk
- Standing
- Running in Place

Oxygen + Glucose = the brain's fuel

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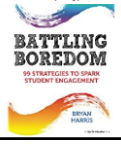
A – Movement increases blood circulation (which includes oxygen, nutrients, and hormones)
B – Glucose is also released during movement
A – Movement activities can be as simple as standing, stretching, and deep breathing
B – Or, they can be as involved as games, energizers, and student-led activities
A – Movement and exercise helps regulate mood, attention, and improves focus
B – There is a ton of research that demonstrates the connection between cognition, movement, and exercise.
A –When students move more (including recess) we see an improvement in everything from reading scores to social-emotional skills
B – I'm convinced, I'd love to hear about more strategies.

## Even More Movement Strategies

- Ball Toss
- Change of Perspective
- Consultation
- Corners
- Create-A-Skit
- Dueling Flip Charts
- Gallery Walk
- Give One/Get One
- Hand Motions
- Inside/Outside Circle
- Line Ups
- Move and Touch
- Snowball Fight
- Stand When
- Stand, Stretch, and Breathe
- Voting Stickers
- Wear-A-Word




(Shameless plug)



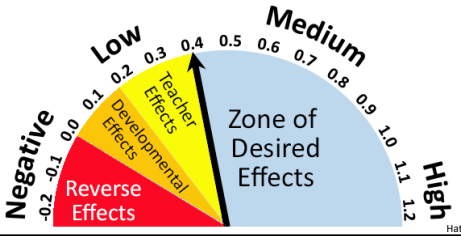

## Classroom Practices that Move the Needle



- Foster Relationships
- Ramp Up Engagement (start with movement)
- Increase Feedback
- Build Vocabulary

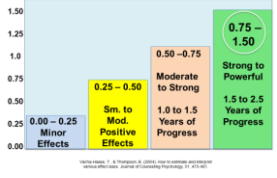



## Feedback 0.74




## *So, what does all this mean?*

### Effect Sizes Made Practical




- The ES describes how powerful an intervention will be in creating change.
- *"Power"*
  *"Strength"*
  *"Distance"*
- A **.74** effect size tells us…

## 3 *Feedback in 3 Definitions*



"Feedback is information provided by an agent (teacher, peer, book, parent, self) regarding aspects of one's performance or understanding."

– John Hattie, Visible Learning, 2009

## 3 Feedback in 3 Definitions



"Just-in-time, just-for-me information delivered when and where it can do the most good."

-Susan Brookhart

How to Give Effective Feedback to your Students

## 3 Feedback in 3 Definitions



"Feedback is information about what you did as compared with exemplary performance; it is not praise, blame, or advice."

-Grant Wiggins, Understanding by Design

**Feedback is**
actionable information about the task, process, behavior, or product.

**Feedback answers**
Where am I going?
How am I going?
Where to next?

In other words, feedback is information about the journey as students master content and develop skills.



**Feedback is**
actionable information about the task, process, behavior, or product.

**Feedback isn't**
Praise
Blame
Advice
(solely) Reliant on the teacher
Rewards or Grades



Feedback, Advice, or Praise?

- "Speak up so everyone can hear you."
- "Good speech. It was very well organized and you used several good examples."
- "Next time you need to create a better outline. It seems like you forgot what you were going to say."
- "Next time, try to think of examples and include them in your speech. But overall you did a really good job."
- "That was really good. Your grade is 95%."
- "I noticed that several students had confused looks on their faces when you gave your first example. Did you notice that, too? What might that mean?"
- "Your speech lasted 1 minute and 42 seconds. Go back to the rubric we used during planning and give yourself the appropriate rating. When you are done, come back and tell me what rating you gave yourself."

## Complimentary but Distinct

(only feedback is correlated to achievement)

- Feedback = what you did or did not do, a description of performance traits
  *"I saw people straining to hear when you were speaking."*
- Advice = what you might do to honor the feedback and improve performance
  *"Use the microphone so everyone can hear."*
- Praise = statement meant to express approval
  *"Excellent job. I'm very proud of the hard work you put into your speech."*



## Why does feedback work?
## A "Brain" explanation

The concept of the "rough draft"

The brain rarely gets something "right" the first time.

Until certain conditions are met, the brain may not go beyond the "rough draft".

Those conditions might include: *Relevance, Emotional Connection, Repetition, Social Interaction, Interest, Survival, Feedback*



The purpose of feedback is to reduce discrepancies between current understanding or performance and the desired goal.

- Hattie reminds us that feedback is powerful only when it is acted upon by the learner. That is why it causes learning. Students answer the questions of where, how, and where next. We may provide the source/data but **they** need to answer the questions!



Quiz Time

1. Feedback is _____information about the task, process, behavior, or product.
2. Answers the questions - Where am I going? How am I ____? Where to _____?
3. What are the differences between praise, feedback, and advice?
4. The purpose of feedback is to reduce _____between current understanding or performance and the desired goal.




The reason feedback works is because it requires action, thinking, behavior, doing by the person who receives it.

This is the key!

Praise is not associated with growth.

Advice is not associated with growth.

Praise and advice are not bad things. They are just much less likely to get kids to think and grow.

When I receive true feedback, I have to make a decision. I have to decide what to do. I have to decide where to go. I have to decide next steps.

Statements and directives do not require thinking. They just require compliance.

*One more thought before the strategies…*

- Have you ever thought to yourself, *"Where do I find the time?"* This is the universal rallying cry for teachers – TIME! I need more time!
- While I will agree that your plates are full, I will challenge you on this – if there is no time to give, get, and use feedback, there is no time for learning.
- Feedback is essential; it causes learning.
- That is so brilliant it needs to be repeated – *if there is no time for feedback, there is no time for learning!*

## S-E-A Feedback

*What was the outcome?*

Was it a result of:

A strategy
An effort
An attitude

They all have one thing in common.
They are all under my _____

SEA is about specificity. These types of questions will get an effect size of .74 according to Hattie. That's impressive! But, can we do even better?

## Sources of Feedback

- Teacher *to* Student ☑
- Student *to* Student
- Source *to* Student
- Student *to* Teacher
- Student *to* Self

## *Student to Student Feedback*

Strategy

- *I noticed – I Wondered*

Variations:

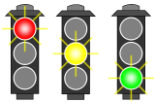
- 2 Stars and a Wish
- \+ - ?
- Warm and Cold
- More of, Less of



## *Source to Student Feedback*

Strategy

- Traffic Light along with Anchor Papers – Projects – Models -Rubrics



## *Student to Teacher Feedback*

Strategy

### Course Evaluation

When conducting course evaluations, keep some things in mind:

- Its not personal, *probably*.
- A little humility is good thing – you don't know everything about yourself.
- Avoid the "buts" – A "but" will disqualify you and reinforce negative assumptions. *"OK, we might not do a lot of fun projects but that's only because my kids don't listen and pay attention."*

http://www.weareteachers.com/

## 1. Conduct Course Evaluations

| | |
|---|---|
| My teacher provides clear directions | 1 2 3 4 5 |
| My teacher cares about me | 1 2 3 4 5 |
| The lessons and activities are fun | 1 2 3 4 5 |
| Students are treated fairly | 1 2 3 4 5 |
| My teacher is organized | 1 2 3 4 5 |
| Grades are fair and accurate | 1 2 3 4 5 |
| I have a chance to express opinion | 1 2 3 4 5 |

Strategy

http://ascd.typepad.com/blog/2011/12/the-power-of-student-feedback.html

## *Student to Self Feedback*

- Written Reflections with Sentence Starters

*"I can see that _____ happened because…."*

*"Next time I will…."*

*"I thought _____ was really good because…"*

*"I know…."*

*"I like…"*

*"I can…"*



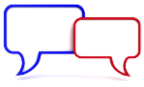

My Top 10 List

## *Reflection Time*



*So what?*

## *Team Planning*



## Thank you

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