


# Introduction To Brain-Based Learning

Dr. Jeff Sapp

Every educator uses a variety of tools and strategies.

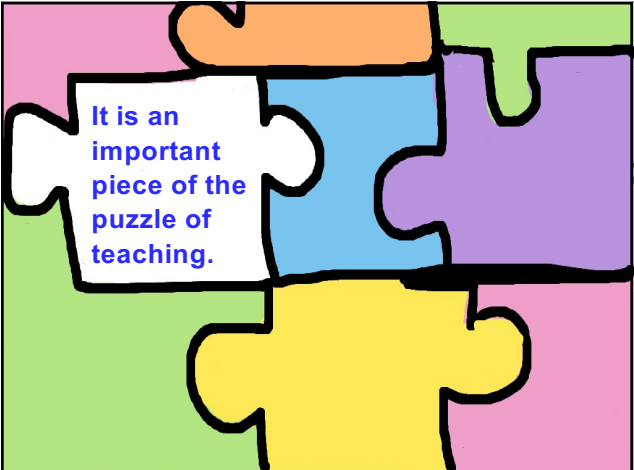

The purpose of this session is to provide key distinctions about which strategies are



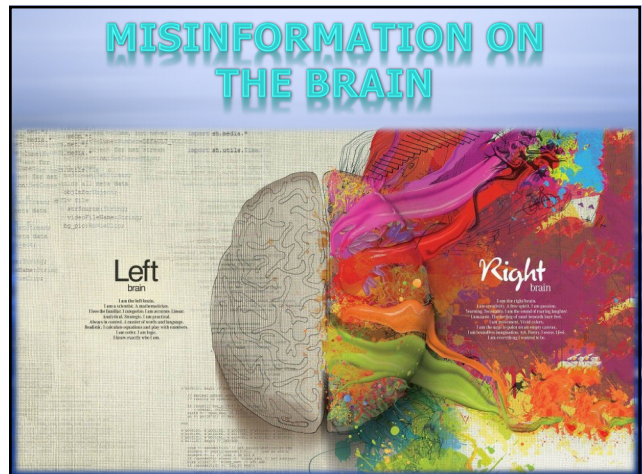
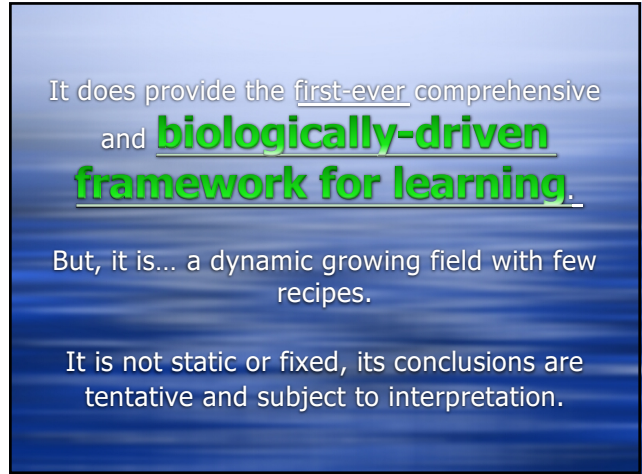
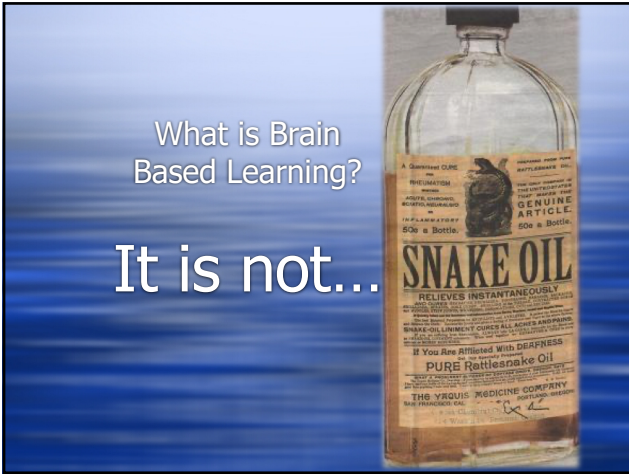
**compatible** with our brain's natural design for learning. The one's that are compatible, you'll want to

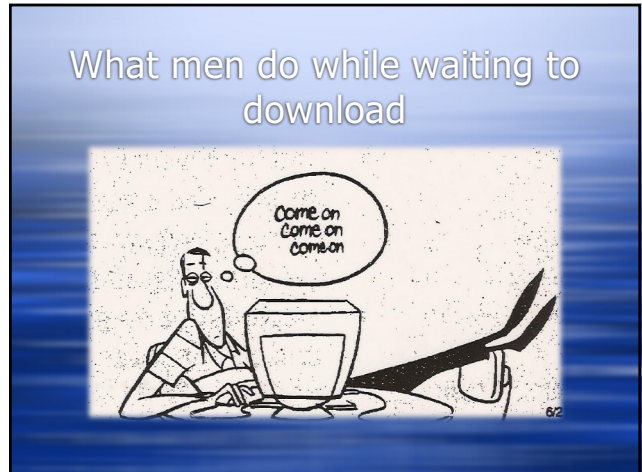
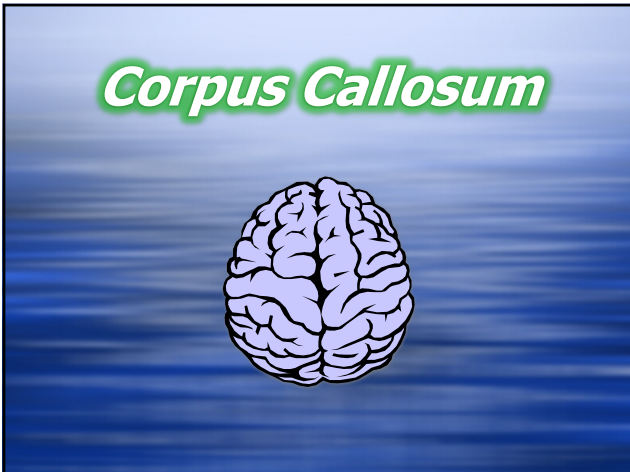
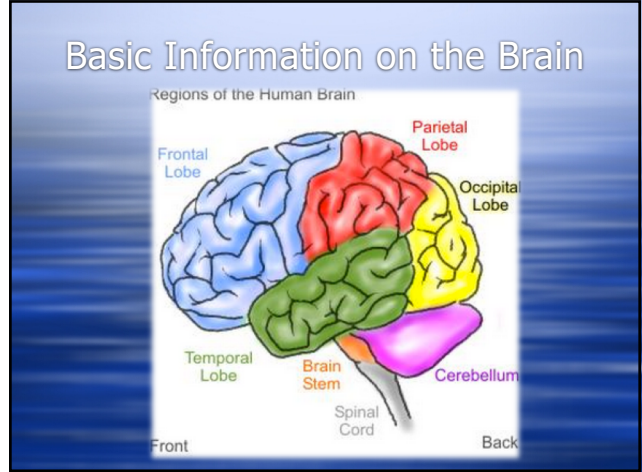
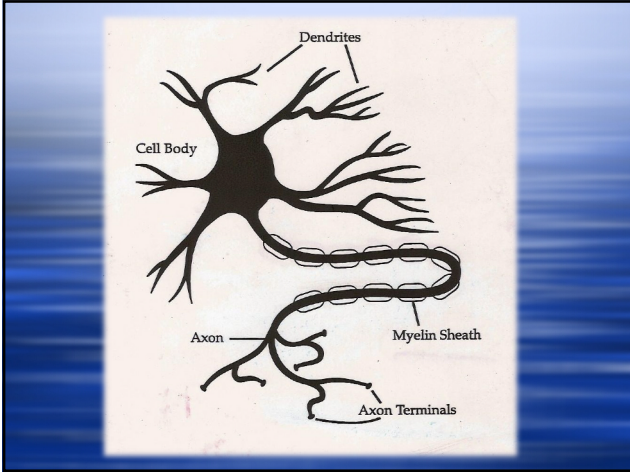
**keep** and use more often. You'll want to strongly **modify or drop** the ones that are "brain-antagonistic."

Brain-based learning is a system-wide approach that is based on how current research in neuroscience suggests **our brain naturally learns best.**



It is an important piece of the puzzle of teaching.





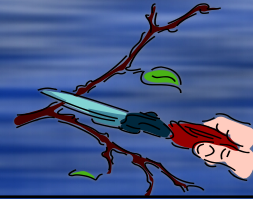
What women do while waiting to download



DITTOS DO NOT PRODUCE DENDRITES

We're born with a trillion connections in our brains, but...

The brain **weeds out** and **prunes away** what is not being used.



BOREDOM COSTS YOU!  
Use it or lose it!

What age has the highest growth of dendrites?



Teenage  
and  
Adolescence

How do we achieve long-term memory?

- ◆ Is this USEFUL?
- ◆ Does it CONNECT TO WHAT I ALREADY KNOW?
- ◆ Does it MAKE SENSE to me?
- ◆ Can I USE or REHEARSE this information in any way?
- ◆ Can I have REPEATED PRACTICE?
- ◆ Will someone give me FEEDBACK?
- ◆ How do I FEEL about this information?

Let me give you an example of how knowing the biology of the brain can help you in your teaching...

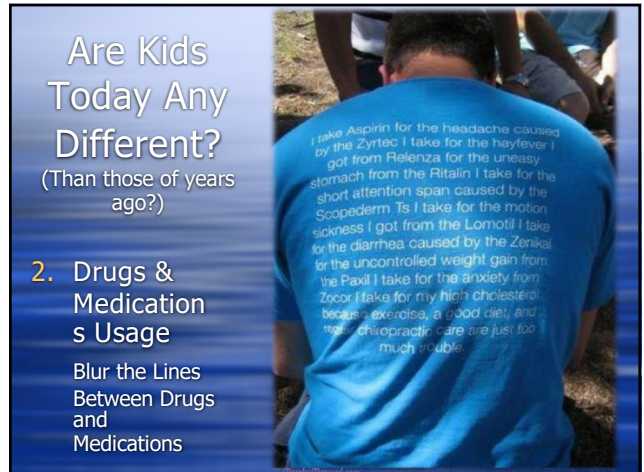
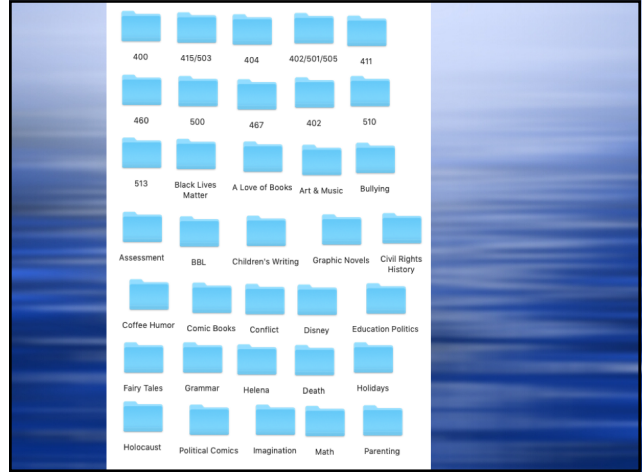
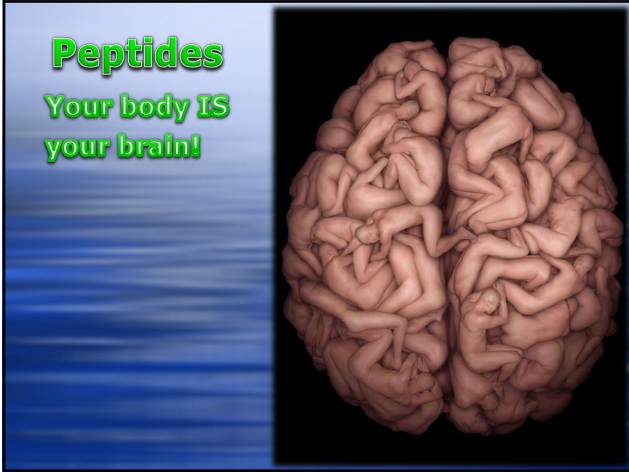
...after all these years of study...

## Peptides

- ◆ Peptides are amino acids throughout your body and carry over 98% of all mind/body information. They are the body's 2nd nervous system and they drive attention, learning and memory.
- ◆ Your body IS your brain!

## Reticular Activating System or RAS





### Are Kids Today Any Different?

(Than those of years ago?)

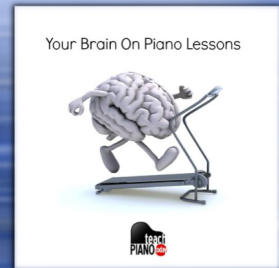
- 3. Less "Crawl-Time" + Physical Activity  
(Car Seats, School, P.E. Programs Cut)

**As many as 30% of elementary kids – some 9 million – don't even get daily school recess.**

### Are Kids Today Any Different?

(Than those of years ago?)

- 4. Change in Social/Economic Structure  
Fewer resources available for growing children
- 5. School Budget Cuts  
Fewer Music, Drama & Art classes



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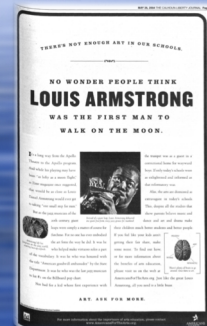
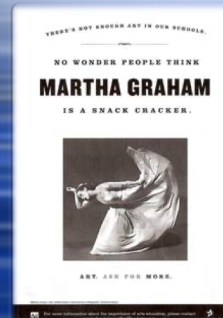
(Than those of years ago?)

- 6. Greater Threat, Stress & Violence  
Television, School, Family
- 7. More Hours of Television per Week  
Greater passivity, Less thinking



Resource: *Inside the Brain* by Kotulak, *Why Kids Can't Think* by Healy

### AmericansForTheArts.org



## The Brain is Meaning Driven

Attention is secondary (20% or less). We gain meaning in 3 ways: **patterns, emotions, and relevance**. The brain is poor at learning isolated facts. We learn best with themes, the “big picture,” and interdisciplinary relationships.

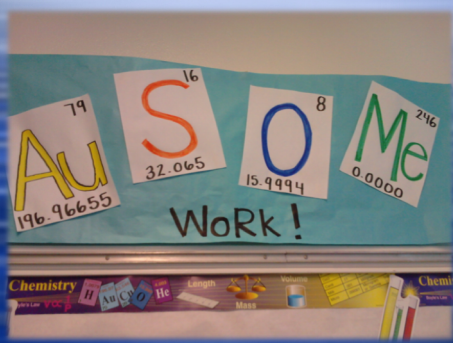
## Attention & Learning

- ◆ Utilize more non-conscious learning (Posters, people, music, projects)
  - ◆ **Content Area** Posters
  - ◆ **Affirmation** Posters
  - ◆ **Symbolic** Posters
  - ◆ **Preaching** Posters
- ◆ Use cross laterals to wake up the brain - [www.braingym.org](http://www.braingym.org)



Resource: [Brain-Based 6-Day Level #1 Training Manual](#) by Eric Jensen

## Affirmation Poster (Chemistry)



## Content Poster (Chemistry) for Classroom Management Rules

beryllium 4 <b>Be</b> 9.0122	
nickel 28 <b>Ni</b> 58.693	cerium 58 <b>Ce</b> 140.12



## Practical Side of Enrichment

### Provide Challenges

Novel problem-solving is best

Difficult, but do-able

### Feedback

Learner-controlled is best

Frequent & specific is critical

### Optimizers

Nutrition, brain foods, water

Physical activity

## Two Greatest Influences on Maximizing Brain Growth

### **Challenge + Feedback**

## Challenge

- Stimulates brain growth
- Too little means boredom
- Too much can intimidate

### Best forms of challenge:

Relevant problem-solving

Competitive/cooperative games

**Writing, arts, drama**

Complex projects

### How to create challenge

Vary allotted time

Change circumstances

Vary resources available

Alter standards of quality

## The Brain Is Designed To Learn Fastest From Feedback

- But It Rarely Does...Why?  
Most of our feedback is
- Too Late
  - Too Little
  - Lacks impact
  - Too Vague
  - In the Wrong Form

What did I do well?

What can I improve on next time?

## Choice & Variety

(Always use both...)

The younger the learners, the more the variety... They need the exposure to enrich the brain.

The older the learners, the more the **choice**... They need to do what they are good at

Both groups need both!  
It's the way they're used that counts!

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## Choice & Variety

### The Great Gatsby Menu Planner

Menu for: \_\_\_\_\_ Due: \_\_\_\_\_  
*All items in the main dish and the specified number of side dishes must be complete by the due date. You may select among the side dishes and you may decide to do some of the dessert items, as well.*



#### Main Dishes (Required-Complete All)

1. Design a new cover for the novel, based on your own interpretation of the themes.
2. Write a letter to Daisy as if you are Gatsby—or vice versa.
3. Re-create the dialogue we never hear between Daisy and Tom, after Daisy runs over Myrtle.



#### Side Dishes (Required-Choose One)

1. Create an ABC book—the ABC's of *The Great Gatsby*.  
\*Choose 13 letters of the alphabet to write the "ABC's" of the novel. eg: G is the Green light that represents Gatsby's hope and love for Daisy (you will need a visual representation in every page).
2. Create a soundtrack to the novel, using music from the era and music that conveys the theme of "The American Dream," and justify why each song should be included in the soundtrack.  
\*Do not submit in a jewel case! Put CD's in envelopes and attach it to the rest of the work.
3. Create a "Jazz Age" dictionary with definitions of terms, examples of their usage, and visuals.  
\*This will require a little bit of research on your part!



#### Desserts (Optional—Extra Credit)

1. Watch the film version. Afterwards, write a persuasive essay in which you defend whether or not you believe the film does the novel justice.
2. Interview an immigrant to the United States and ask them about their perception of "The American Dream." Compare and contrast their perceptions of the "The American Dream" with that of the era in the novel.
3. Write a mini-research paper that addresses the following question: How did the idea of "The American Dream" help contribute to the Great Depression?

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## All Behavior is **State Dependent**

States are simply the “mind-body moment” composed of your:

### **Thoughts**

Mental pictures (visual)  
Sounds (internal dialogue)  
Feelings (kinesthetic)

### **Physiology and States**

Eye patterns, breathing patterns, postures, gestures  
temperature, digestion, etc.

## 7 Most Common Participant States

Disappointment  
Curiosity/Anticipation  
Fear  
Confusion  
Apathy/Boredom  
Frustration  
Self-Convincer

## STATES

- ◆ Key Questions
  - ◆ “In what state are your learners?”
  - ◆ “Are those states appropriate for the task?”
  - ◆ “What are you going to do about it?”

## How Does the Brain Make Meaning?

The brain is a natural for seeking and making meaning. As learning catalysts, we can either impede or facilitate the process. Here are the three primary variables:

**1) Relevance**

Connect information with other known information  
Use associations with prior knowledge to make in  
meaningful

**2) Emotion**

The stronger the emotion, the more the meaning.  
All emotional experiences “code” our learning as  
important.

**3) Context/Patterns**

Information in isolation has little meaning. Each  
“puzzle piece” is always part of something larger.  
Meaning comes from understanding the larger  
pattern.

RELEVANCY is a critical ingredient  
for meaning.

RELEVANCY is how the learner  
personally connects with the  
material not how you connect  
(although that helps)...

**Start with the personal and  
move to the academic.**

Family  
Romance  
Learning  
Health  
Peers/Friends  
Money/Finance

**EMOTIONS ARE CRITICAL**

While excessive emotions can impair rational thinking,  
the ABSENCE of emotion is equally damaging.

Positive emotions create an excitement and love of  
learning. They spur motivation to learn and let us  
know that we know, creating a confidence in  
ourselves and in our abilities.

Learning is more than mental...our learning, beliefs and  
meaning, are run by feelings.

## Feelings & Emotions in the Learning Context...

### *Too Intense or Excessive*

Rage/Aggression/Violence  
Abuse/Insult/Hostility/Sarcasm  
Humiliation/Embarrassment/Fear  
Threat/High Stress/Hunger

### *Healthy & Appropriate Ones*

Frustration/Worry/Concern  
Anxiety/Tension/Satisfaction  
Low-Moderate Stress  
Excitement/Joy/Bliss  
Optimism/Hope/Love  
Disappointment/Discouragement  
Rejection/Sadness/Grief

### *When They're Lacking...*

Apathy/Disconnected/Inertia  
Hopelessness/Resignation  
Deep Despair/Suicidal

## The Power of Influence

Studies suggest that what you say to another does affect their state.

In the New England Journal of Medicine, Rozanski reports that sarcasm can trigger heart abnormalities. Yes, words can and do have a powerful impact.

Other studies suggest *that what you think about* another can influence them.

In Healing Words (Dossey), one double-blind study at S.F. Gen. Hospital (393 computer-random selected heart patients), suggests that positive thoughts work.

Those prayed for were...

- 5X** less likely to require antibiotics
- Less likely to die within **two** years
- 3X** less likely to have complications

The number one factor for brain-compatible learning is...

## RELATIONSHIPS

**We teach people,  
not content!**

### An email from this morning...

"Later this past summer in Philly, we were talking about writing and penmanship (he writes in Art Major all-caps like me and has a signature that is amazingly similar to my own celebrity-scrrawl that I designed in high school. Yes, I'm Cher.). I mentioned that my native penmanship had been influenced by a teacher/mentor I had in 7th grade while in Costa Rica. 'What ever happened to them? You should reach out and catch up.' Lucky taught me to communicate - and write - even better than my natural talent. It was he that spurred me to reconnect, but to this day, my literal writing - the letters b, d, p, q, z - still hold their influence from your impression on me. Over 40 years - poems, shopping lists, love letters, to-do notes, stories - as I've written them, all have carried a bit of your mark on them. THAT is how much I have carried your memory with me."

