


## 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




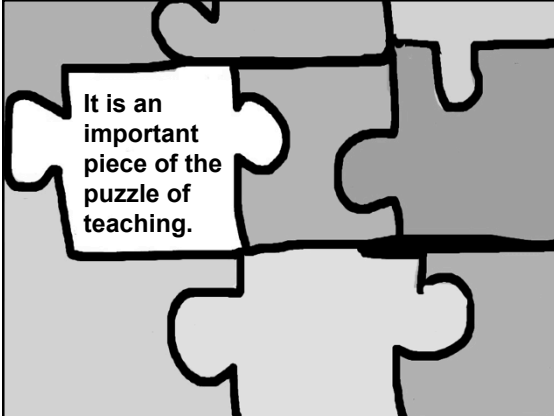
**compatible** with our brain's natural design for learning.

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 is Brain-Based Learning?

It is not... A **Panacea**; nor is it an answer to all of our problems. However...



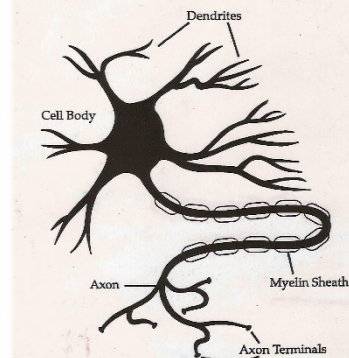
It does provide the first-ever comprehensive and **biologically-driven framework for learning.**

But, it is... a dynamic growing field with few recipes.

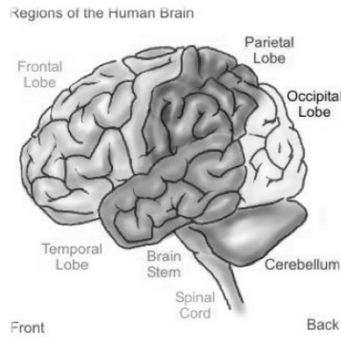
It is not static or fixed, its conclusions are tentative and subject to interpretation.

## Brain-Compatible Learning

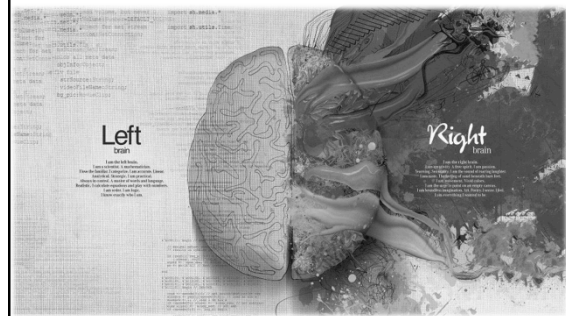
- Is a research based, **multidisciplinary** approach to the question of how our brain learns best.
- It requires insights from anatomy, biochemistry, genetics, immunology, physiology, neurology, technology, psychology, anthropology, and medicine.
- The sum of these disciplines provide a comprehensive framework for learning.



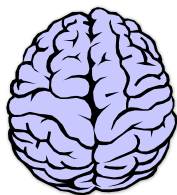
## Basic Information on the Brain



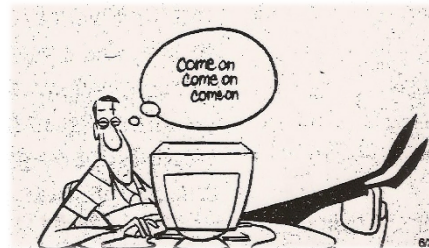
## MISINFORMATION ON THE BRAIN



## Corpus Callosum



## What men do while waiting to download

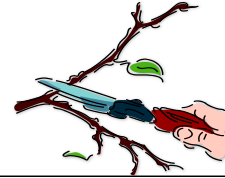


What women do while waiting  
to download



**DITTO'S 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...

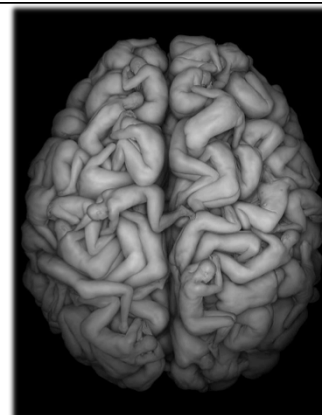
...after all these years of  
study...

## 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!

## Peptides Your body IS your brain!



## Reticular Activating System or RAS



## Are Kids Today Any Different?

(Than those 34 years ago?)

### 1. Changes in Diet

Higher Fat > Sugar  
> Carbohydrates

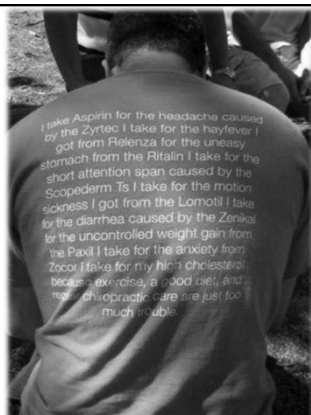


## Are Kids Today Any Different?

(Than those 34 years ago?)

### 2. Drugs & Medications Usage

Blur the Lines  
Between Drugs  
and  
Medications



## Are Kids Today Any Different?

(Than those 34 years ago?)

### 3. Less "Crawl-Time" + Physical Activity

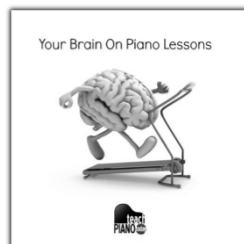
(Car Seats, School, P.E. Programs Cut)

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

## Are Kids Today Any Different?

(Than those 34 years ago?)

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



## Are Kids Today Any Different?

(Than those 34 years ago?)

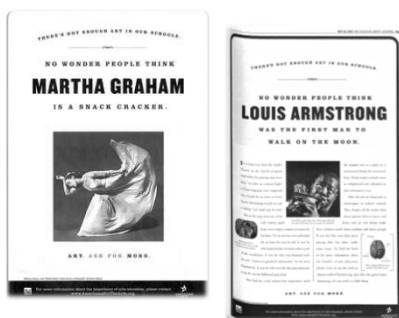
6. Greater Threat, Stress & Violence  
Television, School, Family
7. More Hours of Television per Week



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.

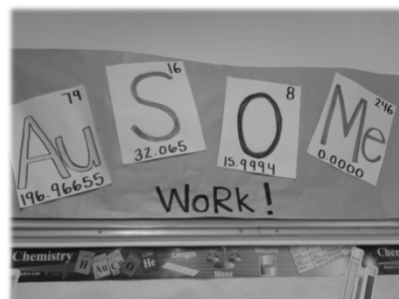
## Attention & Learning

- 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)

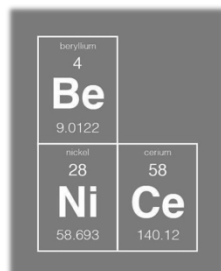


Resource: [Brain-Based 6-Day Level #1 Training Manual](#) by Eric Jensen

## Affirmation Poster (Chemistry)



## Content Poster (Chemistry) for Classroom Management Rules



## Preaching Poster



## 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!


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

**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 desserts 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. 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 hard cover! 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—Earn 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 perception 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?

*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 desserts 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. 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 perception 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?

## 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 it 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!**