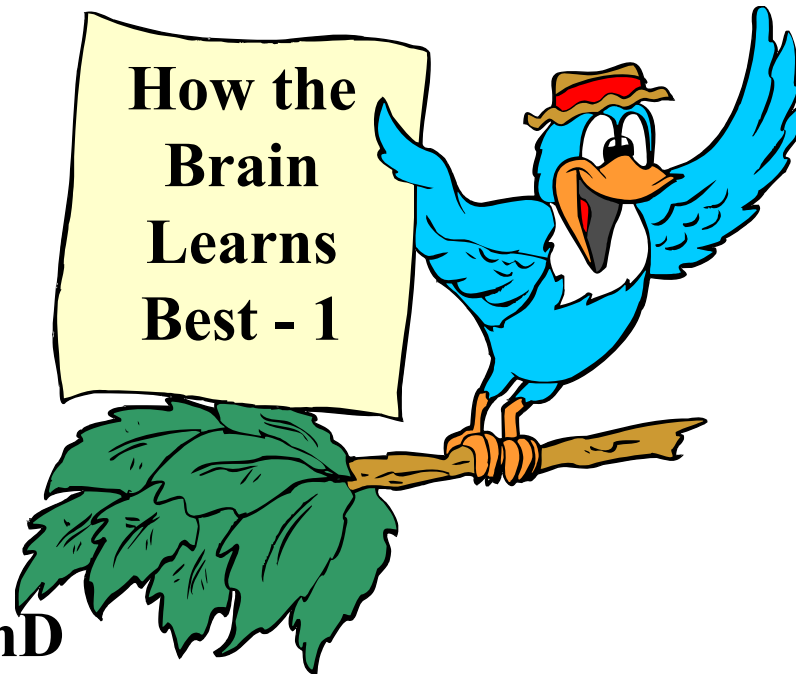




**Presents**



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**[www.arlenetaylor.org](http://www.arlenetaylor.org)**  
**Brain References**

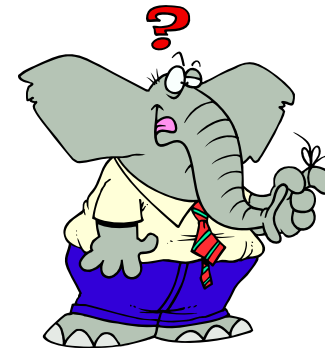


# How Does the Brain Learn?

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**No one knows for sure!**

**If it was known, it could make life so much easier for everyone—  
parents, students, teachers, coaches...**



- **Studies on brain function and intelligence are forging new perspectives, however, on how the brain learns BEST**

# The Bad News

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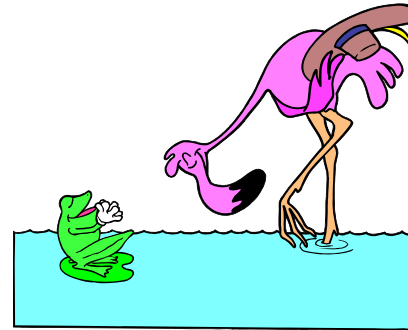
**Unlike animal studies, human studies are by nature correlational rather than experimental – there has been some inconsistency among studies and their conclusions**

**There is always some personal bias among those who attempt to understand perceived outcomes and make related practical applications**

# The Good News

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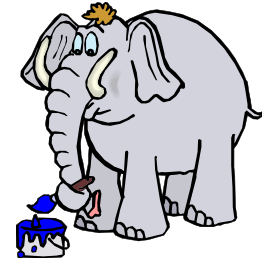
**A plethora of studies have shown with some impunity how the brain naturally learns BEST!**



**This is at once exciting and even exhilarating because with some effort and innovation the process of learning could be enhanced significantly for most individuals**

# The Sad News

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**It's also depressing—since millions of brains are experiencing sub-optimal learning as they move through or drop out of the educational process in a variety of environments, some of which are at least demeaning if not outright punishing or even abusive at some level**

**Oh, students are learning—many to hate both school and the process of learning**

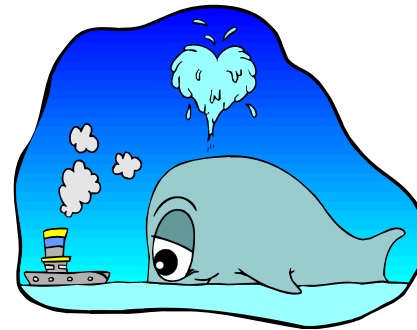
# Research

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**A plethora of study conclusions are available; some of which date back 20 years or more (e.g., natural lighting)**

**Many references are located on the Realizations Inc website – [www.arlenetaylor.org](http://www.arlenetaylor.org)**

**Brain References  
Learning and the Brain**



# Best - Multiprocessing

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**The brain learns best through  
a variety of inputs, often  
Occurring at the same time**



**Traditionally, educational information  
tends to be presented sequentially**

**A recent internet search found 657,000  
sites for sequential lesson plans and only  
18,400 sites for non-sequential lesson  
plans (2%)**



# Associations Are Needed!

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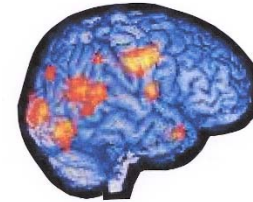
**The brain needs multipath,  
multimodal, and multisensory experiences  
to create as many associations as possible**

- **It is insufficient to merely read or hear about a topic**
- **The more complex the topic, the more likely the brain is to learn and to retain the information when rich sensory input accompanies the learning experience**

# Best - Whole-Brain Learning

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**The whole brain needs to be engaged to facilitate learning**



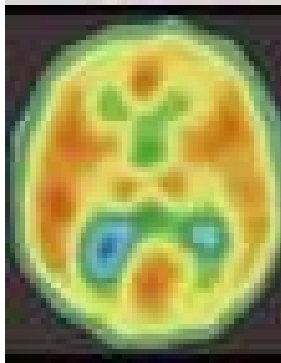
**Unfortunately, a multipath, multimodal, multisensory combination is not readily available in today's style of formal teaching**

- **Learning activities that include strengths of both hemispheres need to be designed and implemented on a regular basis**

# Reading Aloud

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**Reading aloud can help students get more out of their reading, reinforce their speaking ability at the same time, and increase retention and recall because they see, articulate, and hear**



**PET Scans have shown dramatically increased stimulation to the brain during reading aloud**



# Being Read To

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**The single most important activity for building the knowledge required for eventual success in reading (silent or aloud) is reading aloud to children at home and in the classroom**



**It is deemed more important than book reports, worksheets, homework, assignments, and flashcards**

**—Jim Tralese, *Reading Aloud Handbook***

# **Best - Flexible Environment**

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**All brains are basically very much alike and yet each differs so the learning environment needs to be very flexible**



**Each brain develops so uniquely that completely normal development can differ by a spread of two or more years between learners of the same chronological age**

# Huge Implications for Flexibility

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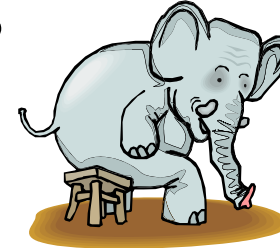
- **Classroom configuration**
- **Grade-related standards**
- **Forced silence and / or physical inactivity demanded by adults who believe that a quiet and controlled environment is best for learning**



**Think about the complexity of most home environments in which children learn very quickly, especially ages one to five**

# Best - Flexible Seating

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- **Arrangements (e.g., circles, U shapes, V shapes) with move- ability and ½ seated and ½ standing desks**
- **Position (e.g., some learn best seated in a traditional chair position; others in a nontraditional body position (e.g., sitting or lying on the floor, curled up / stretched out on a couch, standing, walking around, in a beanbag)**

# Student Impact

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**An increase in physical space between students leads to an increase in on-task time and a decrease in disruptive behavior**



- **At least 20% of learners are significantly affected, either positively or negatively, by seating options or the lack of these options**  
—Rita and Ken Dunn  
Learning Style Model Study 1980-1990



# Best - Physical Movement

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**Students are not only permitted but also are encouraged to stand and to get up and move around**

**Studies of adolescents:**

- **50% needed extensive mobility while learning**
- **25% needed occasional mobility**
- **25% needed at least minimal movement**



# Optimizes the Brain

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**The brain is activated during physical movement, which helps to optimize its performance**

- ✓ **Just standing up creates more attentional arousal**
- ✓ **Increases blood flow and oxygen to the brain by 10-15%**
- ✓ **Can speed up the processing of information by 5-20%.**



# Some MUST Move to Learn ...

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|                                    |                                   |                                    |
|------------------------------------|-----------------------------------|------------------------------------|
| <b>Extroverts</b><br><b>15-16%</b> | <b>Ambiverts</b><br><b>68-70%</b> | <b>Introverts</b><br><b>15-16%</b> |
|------------------------------------|-----------------------------------|------------------------------------|


**Relatively *sleepy*  
brains that need and  
crave stimulation**

**Relatively  
*super alert*  
brains**

# Some MUST Move ...

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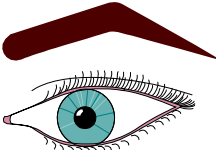



|                                                                        |                                                                                                                |                                                                      |
|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| <b>Empathizing<br/>Brain -<br/>Equated more with<br/>female brains</b> | <b>50-50<br/>Brains</b><br> | <b>Systemizing<br/>Brain -<br/>Equated more<br/>with male brains</b> |
|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|

**Stop asking boys to “Look at me when I’m talking to you . . .” It’s stressful! They typically listen better when they’re not looking at you or are doing some activity.**

# Some MUST Move ...

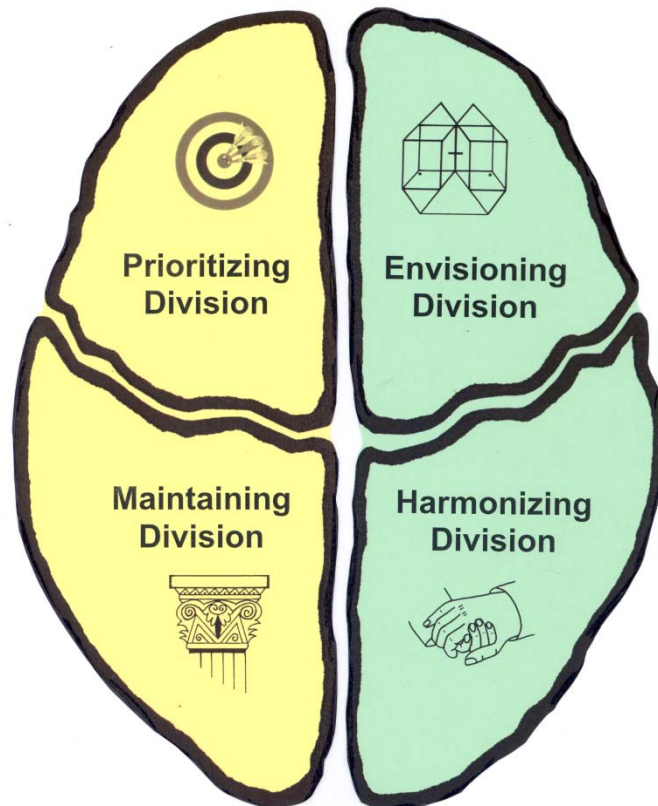
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|                                                                                                                                                                                |                                                                                                                                                                           |                                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>20% Auditory –<br/>more females</b></p> <p><b>How<br/>things<br/><u>sound</u></b></p>  | <p><b>60% Visual –<br/>more males</b></p> <p><b>How<br/>things<br/><u>look</u></b></p>  | <p><b>20%<br/>Kinesthetic –<br/>equal #s M-F</b></p> <p><b>How<br/>things<br/><u>feel</u></b></p>  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Sensory Preference Estimates**

# Some MUST Move ...

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**Individuals with  
an energy  
advantage in the  
Envisioning  
Division**

**Four Divisions of the  
Human Cerebrum**

# Some MUST Move, Cont'd

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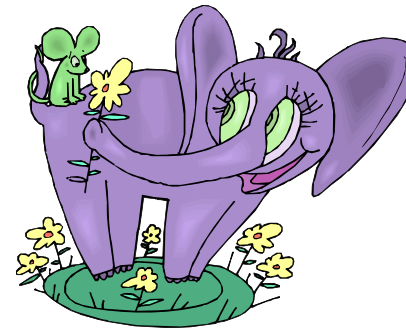
- **ADHD**
- **Autism Spectrum and**
- **Asperger Syndrome**



# Best - Internal Motivation

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**Studies: internal motivators yield higher performance than external motivators (e.g., praise, rewards, punishment)**



- **Rewards for effort are more encouraging than rewards for success in the long term**





# Motivation, Cont'd

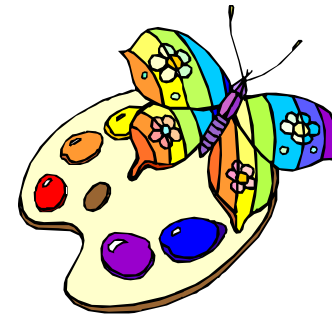
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**Encouragement increases  
positive outcomes:**

**“You’re on the right track”**

**“Give it your best effort”**

**“Keep going, it’ll come”**



**Encouraging creativity for its own sake  
appears to be far more effective than  
providing external rewards for creativity, too**



# Motivation, Cont'd

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**The brain operates differently under the context of a reward:**

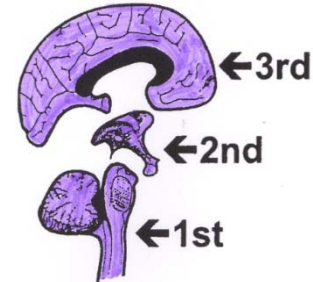
- ✓ **Behaviors become more narrow, stereotypical, rigid and predictable**
- ✓ **Performance of repetitious tasks can be enhanced, but only temporarily**



# Downshifting

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**Learner thinking is downshifted in the presence of any behavior-oriented threats and anxiety**

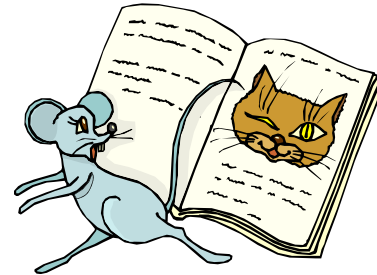


- **Behavior-oriented threats and anxiety are often seen under typical reward systems used in many educational settings**
- **The entire traditional system of grading is basically an external reward and punishment system**

# The Bottom Line

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**It has been known for some time and at some level that traditional styles of education do not work for many brains—most are actually brain-antagonistic**



- **Studies have revealed much more about how the human brain naturally learns best—when will education embrace that knowledge?**