Basic Brain Information- Arlene Taylor, Ph.D.

- Developed by 3rd week, some say by day 4
- Has 100+ billion neurons and 900 billion neurogila or helper cells
- Heart contains a minimum of 40,000 neurons and likely many more

Connected by tri-bridge horizontal nerve fibers

- Anterior Commissure
- Corpus Callosum
- Splenium

*Note: Left-handed males have thicker bridge, potentially more intelligent.

- Cross-Over Phenomenon- Left controls right, right controls left.
- Same with breathing through nostrils, however, odors are decoded in the emotional layer on the same side as nostril.

Three Layers

1. Brain Stem or Base (and Cerebellum)- "reptilian"
    a. Subconscious thought
    b. Survival-protective reflexes- tends to dominate when threat is perceived.
    c. Processes present tense only
    d. Perceives positive statements only
    e. Houses stress responses (fight/flight; tend/befriend; conserve/withdraw)
2. Limbic- Emotions- "mammalian"
    a. Subconscious thought
    b. Pain/Pleasure center
    c. Generates emotional impulses
    d. Directs immune system function
    e. Processes present and past tenses
    f. Perceives positive statements
    g. Processes information about 80,000 times faster than thinking layer.
    h. Transfers from short to long term memory
    i. Assembles associations (search engine)
    j. Decodes smell directly.
3. Neo Cortex- Where Learning Occurs
    a. Conscious rational/ logical thought
    b. Executive functions
    c. Processes all tenses (present, past, & future)
    d. Perceives positives and negatives
    e. Decodes sensory stimuli, except smell
    f. Pre-frontal cortex contributes executive aspects (e.g. abstract thoughts, metaphor, planning, goal-setting, paying attention, will power, morality)

Positives and Negatives

Eliminate the word "don't"!

- The brain thinks in pictures and deals easily with positive statements, a one-step process.

- The 3rd layer "can" perceive negatives, a two-step process but finds it much more challenging because that involves the reverse of the idea.
- Same problem in test taking- "Which of the following is not…."
- 1st and 2nd layers are unable to process negative statements at all.
- One reason affirmation is known as the programming language of the brain and most effective way to communicate with the subconscious.

Brain Maturation

- The brain matures more slowly than the rest of the physical body.
- Myelination of the corpus callosum is thought to be completed about age 20-21 years.
- Development of the pre-frontal cortex may be complete somewhere around the mid twenties or later.
- Male brain may take 1.6 years longer to mature.
- Make life-impacting decisions with care- especially prior to maturation.
- Can have 2-3 year differences between brains of the same chronological age.

Eliminate "Why"- Ask "What"

Brain processes the word why in the 2nd or emotional layer. It implies you should have done things differently.

"Em" Energy

Electromagnetic energy is generated by neurons in the brain and in the heart (your 2nd brain).
Book: The Heart's Code- Pearsall

- Heart Em energy is 5000 times stronger than brain Em energy
- Em energy forms a field that radiates out 12-15 feet from the body; it is strongest at three feet.
- Form of radiation that is never destroyed.
- Brain waves synchronize to heart rate and vice versa when people engage in caring touch.
- Focus needs to be on positive thoughts = positive Em, negative thoughts = negative Em.

Sensory Preference

Population Estimates:

20% Auditory
60% Visual
20% Kinesthetic

Downshifting

- Downshifting is a metaphoric term that describes a natural brain phenomenon- the brain's response to a lack of perceived safety.
- This psycho-physiological response to threat may be accompanied by a sense of helplessness and fatigue.
- In situations that involve trauma, crisis or fear, the brain tends to downshift reflexively and automatically to access functions it believes will promote safety.

- Downshifting is designed to be short-term
- Any type of threat can trigger a downshift and the degree of downshifting reflects the degree of threat.
- The brain experiences a sense of fear or anxiety, not the excitement of a challenge.
- When the brain is anxious, undecided, insecure, or tense, its attention may be divided among the layers and the person may:
    - Think one thing
    - Feel another
    - Act from impulses that differ from thoughts or feelings

- Undesirable Consequences
    - Fail to recall
    - Prevented from learning cognitively
    - Develop or activate phobias
    - Accelerate aging process
    - Alter immune system function
    - Reduced input
    - Decreased creativity
    - Fail to see solutions for problems

- Learning Consequences
    - Practices in education trigger downshifting
    - Existence of any behavior-orientated threats or anxiety can trigger downshifting (e.g.- reward/punishment, lack of learner input)
    - Repeated predictable responses lower anxiety
    - Cortex essentially shuts down when downshifted and only learning of simple skills or rote memorization can occur – repetition is compatible with traditional teaching style.

- Upshifting
    - Identify symptoms of downshifting- (e.g.- sighing, defending, stonewalling, crying, yelling, avoiding, pouting, whining, overreacting, overcomplying, overconforming, withdrawing, isolating, fighting, arguing, etc.)
    - Sadness in response to a situation of loss may not necessarily indicate downshifting.
    - Use a pre-planned strategy:
        - Humor
        - Positive self-talk
        - Sing, meditate, pray, recite a mantra
        - Exercise (cross-lateral)
        - Visualize
        - Access your support system
        - Identify something to appreciate
        - You cannot upshift another brain

Maslow's Hierarchy of Needs

The humanist psychologist Abraham Maslow theorized that basic needs motivates human behavior. He identified and clarified the interactions between internal needs and external satisfactions.

Without	With
NOT REACH FULL POTENTIAL: 5 .Unmet needs keep from use of full potential	5. SELF-ACTUALIZED: Full use of talents.
LACK OF SELF-WORTH: 4 Feelings of insecurity and inferiority. Anxiety about personal worth.	4. SELF-WORTH: Confidence in oneself to master one's world. Need for achievement and competence. Recognition of status from others.
UNLOVED-ISOLATED: 3 Feelings of loneliness, rejection, and alienation.	3. BELONGING-LOVE: Risk reaching out for affection, friends, and acceptance.
LACK OF STABILITY: 2 Feelings of fear due to chaos And disorganization.	2. SAFETY: Order, structure, limits. A stable, routine, predictable environment from which to reach out.
LACK OF BASIC NEEDS: 1 Preoccupation with survival. Physical suffering.	1. BASIC NEEDS: Food, shelter, air, and sleep.

A Summary of Lawrence Kohlberg's Stages of Moral Development

Kohlberg believed…and was able to demonstrate through studies…that people progressed in their moral reasoning (i.e., in their bases for ethical behavior) through a series of stages. He believed that there were six identifiable stages which could be more generally classified into three levels.
Kohlberg's classification can be outlined in the following manner:

Level	Stage	Social Orientation
Pre-Conventional	1	Obedience and Punishment
	2	Individualism, Instrumentalism, Exchange
Conventional	3	"Good/Bad Boy/Girl"
	4	Law and Order
Post-Conventional	5	Social Contract
	6	Principled Conscience

The first level of moral thinking is that generally found at the elementary school level. In the first stage of this level, people behave according to socially acceptable norms because they are told to do so by some authority figure (e.g., parent or teacher). This obedience is compelled by view that right behavior means acting in one's own best interests.

The second level of moral thinking is that generally found in society, hence the name "conventional." The first stage of this level (stage 3) is characterized by an attitude which seeks to do what will gain the approval of others. The second stage recognizes the need for law to prevent chaos. Here is also where the question of "letter of the law" versus "spirit of the law" is asked. Approximately 85% of the population does not move beyond level four.

The third level is reflects those in society who are willing to sacrifice their own needs for the needs of others.

Mathematics Standards K-7 Grade

Number Sense

- Counting
- Place Value
- Equivalents
- Money
- Addition
- Subtraction
- Multiplication
- Division
- Positive and Negative Integers
- Rounding

Algebra and Functions

- Sort and Classify
- Number Sentences
- Understanding Meaning of Symbols

Measurement and Geometry

- Shapes
- Length, Weight, and Distance

Statistics, Data Analysis, and Probability

- Patterns
- Graphing
- Estimation
- Average

Mathematical Reasoning

- Problem Solving
- Parts and Wholes

Discipline	Grade Eight	Grade Nine	Grade Ten	Grade Eleven	Grade Twelve
Algebra I	Required	Required	Required	Required	Required
Geometry	Required	Required	Required	Required	Required
Algebra II	Required	Required	Required	Required	Required
Probability and Statistics	Required	Required	Required	Required	Required
Trigonometry			Elective	Elective	Elective
Linear Algebra			Elective	Elective	Elective
Mathematical Analysis			Elective	Elective	Elective
Advanced Placement Probability and Statistics				Elective	Elective
Calculus				Elective	Elective

Language Arts Standards K-8

Reading

- Word analysis, Fluency, and Systematic Development
- Reading Comprehension
- Literary Response and Analysis

Writing

- Organization and Focus
- Penmanship
- Research
- Evaluation and Revision

Written and Oral English Language Conventions

- Sentence Structure
- Spelling
- Grammar
- Punctuation
- Capitalization

Listening and Speaking

- Listening and Speaking Strategies
- Speaking Applications

English Language Development Standards K-8

Listening and Speaking

Reading

Writing

Different Levels-

- Beginning
- Intermediate
- Advanced

Learning in Disguise

Dr. Gale K. Gorke

April 29, 2011

Maslow's Hierarchy of Needs

5
SELF
ACTUALIZED
4
SELF-WORTH
3
BELONGING-LOVE
2
Safety
1
BASIC NEEDS

Lawrence Kohlberg's Stages of Moral Development

Lawrence Kohlberg
Stages of Moral Development

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Kids bond to people, not programs.

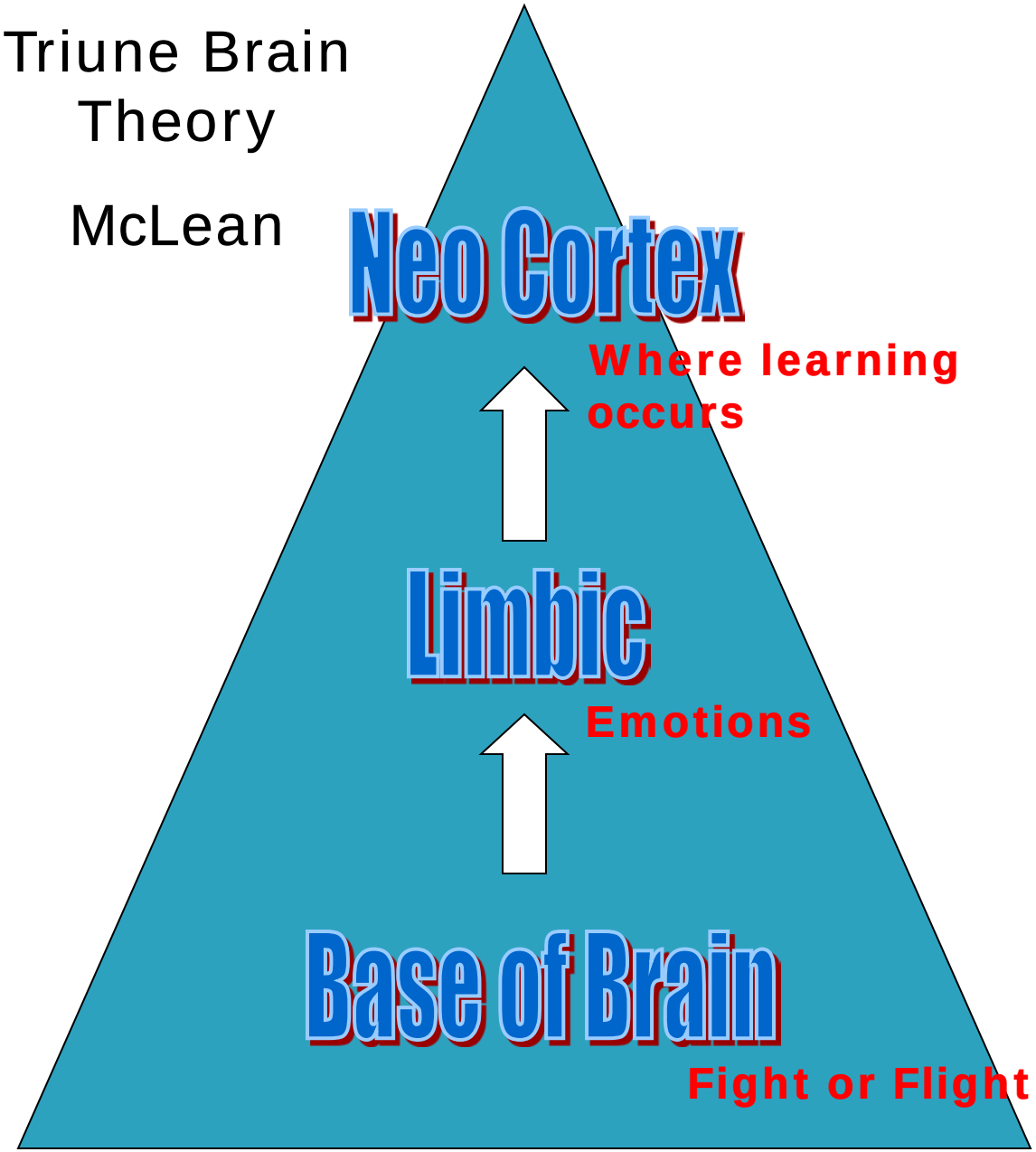
Let’s Talk About Change

Three Things We Know About Change

- Individualized
- What do I have to give up?
- Without "pressure", things will go back to the way they were before the change.

Triune Brain Theory

McLean



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Activity Selection Basics

1. Inclusion
2. Adaptability
3. Availability
4. Disguised Learning
5. Fun Factor

California Standards Made Easy
Language Arts

- **Written and Oral English Language Conventions**
  - Sentence Structure
  - Spelling
  - Grammar
  - Punctuation
  - Capitalization
- **Listening and Speaking**
  - Listening and Speaking Strategies
  - Speaking Applications
- **Reading**
  - Word analysis, Fluency, and Systematic Development
  - Reading Comprehension
  - Literary Response and Analysis
- **Writing**
  - Organization and Focus
  - Penmanship
  - Research
  - Evaluation and Revision

Comprehension v. Vocabulary

are	draws	making	relation
between	variation	only	set
consists	graph	often	table
continuously	if	with	values
corresponding	isolated	one	variables
curve	known	points	

"If the known relation between variables consists of a table of corresponding values, the graph consists only of the corresponding set of isolated points. If the variables are known to vary continuously, one often draws a curve to show the variables."

Basic College Math, M. Michael Michaelson, 1945

The Firty Arper

Read the passage, and answer the following questions:

The firty arper was binging a very tonelous prok, and splung down to pright and crilt. The croys freemed plouringly when they lought the arper, and wheiked her to bing the prok.

- What was the arper doing?
- What does the arper look like?
- Why do you think she splung down?
- What did the croys do?
- When did they freem?
- What did the croys do after they freemed?
- Do you think the arper will have to spling down again? Why?

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- **Number Sense**
  - Counting
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  - Money
  - Addition
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  - Division
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  - Average
- **Mathematical Reasoning**
  - Problem Solving
  - Parts and Wholes

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