STRATEGIES for ENGAGED LEARNING

Using Movement, Rhythm, and Play in the Classroom

Presented by

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EDUCARE

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Movement: Active and Stimulating

Exercise: **Movements you already know how to do**

Benefits:

- Brings oxygen rich blood to the brain
- Elevates serotonin for balanced moods
- Improves mental clarity
- Reduces stress
- Improves cardio-vascular health
- Stimulates neurogenesis

BENEFITS OF CARDIO-EXERCISE

Formula: _____ **Beats Per Minute (BPM) -- Theoretical Maximum**

-_____ **minus your age**

= _____ **maximum BPM**

Your target range: _____ **x .65 &** _____ **x .85 = 65-85%**

Frequency: _____ **to** _____ **times a week.**

Duration _____ **to** _____ **minutes**

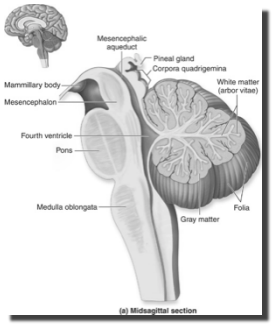
Movement: Active and Stimulating

Stimulating: **Movements that are new to you**

Benefits:

- Provides neural growth
- Builds neural capacity
- New movements are accompanied by novelty, challenge, and feedback
- Builds foundation for higher learning

THE CEREBELLUM



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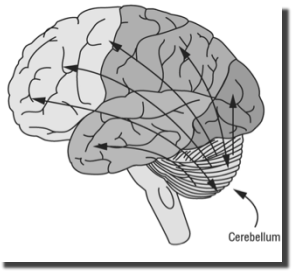
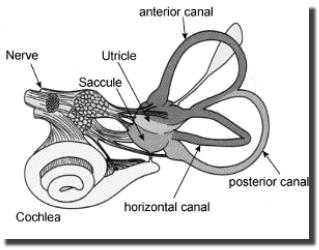
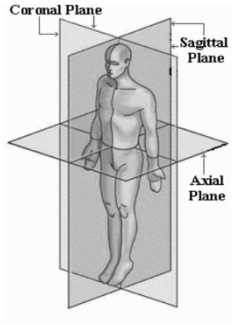


THE VESTIBULAR SYSTEM



THE MIDLINE PLANES



Three Dimensions of Movement

COMMUNICATION DIMENSION

CONCENTRATION DIMENSION

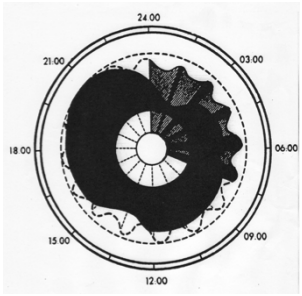
CENTERING DIMENSION

P.A.C.E. the Brain

P_____A_____C_____E_____

1. _____
2. *Brain*_____
3. *Cross-*_____
4. _____

Chronobiology and Pulsed Learning

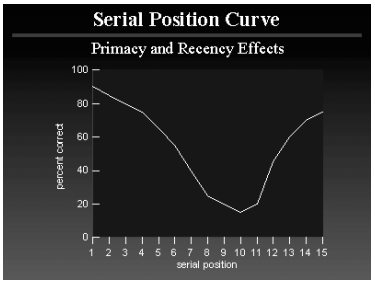


Please make a list, as follows:

1. ____
2. ____
3. ____
4. ____
5. ____
6. ____
7. ____
8. ____
9. ____

____

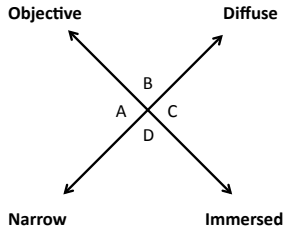
Primary-Recency Effects



Primary-Recency Effects

High Focus & Concentration Activities	*Low Focus & Concentration Activities*
Lectures *Individual reading* *Watching a video* *Delivering a presentation* *Researching on the internet* *Quiz or test*	*Think/pair/share on lecture* *Small group activity* *Class discussion* *Journal writing* *Making a graphic organizer* *Art work*

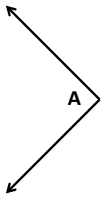
DIMENSIONS of ATTENTION



L. Femhi, and J. Robbins, *The Open-Focus Brain*, 2007

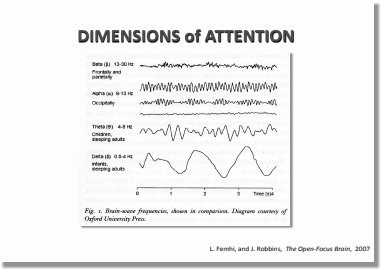
DIMENSIONS of ATTENTION

Narrow-objective:



L. Femhi, and J. Robbins, *The Open-Focus Brain*, 2007

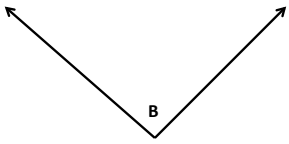
DIMENSIONS of ATTENTION



L. Femhi, and J. Robbins, *The Open-Focus Brain*, 2007

DIMENSIONS of ATTENTION

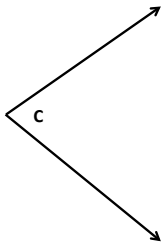
Objective-diffuse:



L. Femhi, and J. Robbins, *The Open-Focus Brain*, 2007

DIMENSIONS of ATTENTION

Diffuse-immersed:



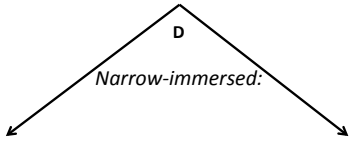
L. Femhi, and J. Robbins, *The Open-Focus Brain*, 2007

Findings on Daydreaming

- About _____ of our time is spent daydreaming.
- The brain activates several areas associated with _____.
- Recent brain scans reveal that the brain may be most _____ when wandering.
- During daydreaming the brain makes new _____ and _____.

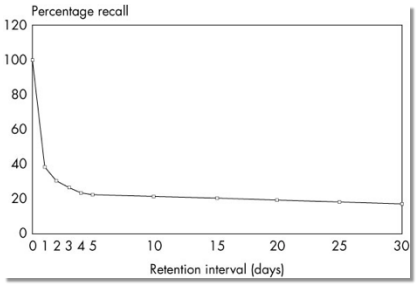
Brain in the News, Vol.16, No.7. July 2009.
"A Wandering Mind Heads Straight Toward Insight."
Reprinted from The Wall Street Journal, June 19, 2009

DIMENSIONS of ATTENTION



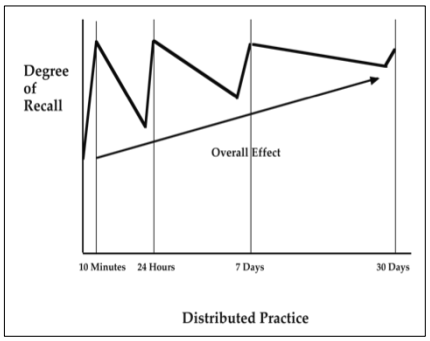
L. Femhi, and J. Robbins, *The Open-Focus Brain*, 2007

RETENTION and RECALL

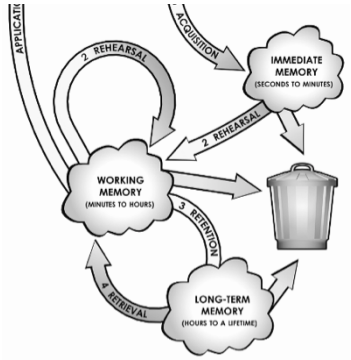


Hermann Ebbinghaus,
Memory: A Contribution to Experimental Psychology, 1885

RETENTION and RECALL



A KEY TO MEMORY: REHEARSAL



ENGAGEMENT STRATEGIES

R - R - S

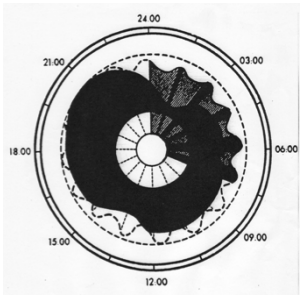
What?

Why?

How?

CHRONOBIOLOGY

BIORHYTHMIC VARIATIONS in the Circadian Cycle



Source: R. Broughton. "Biorhythmic Variations in Consciousness and Psychological Functions." *Canadian Psychological Review*, 1975; 16: 217-239.

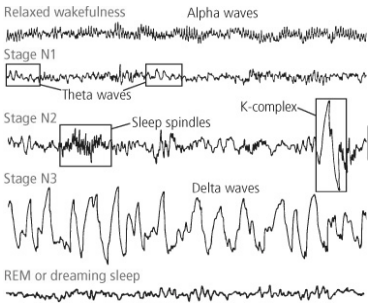
ULTRADIAN RHYTHMS

MIND-BODY ACTIVITIES MODULATED BY ULTRADIAN RHYTHMS

MIND	BODY
right-left brain dominance	left-right nasal dominance
attention	autonomic nervous system
concentration	gene-cell metabolism
learning	endocrine system
memory	immune system
sensations	breast-feeding
perceptions	hunger and sex
emotions	digestion
dreaming	work and sports
fantasy	stress response
imagination	psychosomatic responses
creativity	cellular metabolism
transpersonal sense	drug sensitivity

Source: E. Rossi, *The 20 Minute Break: Using the New Science of Ultradian Rhythms*

STAGES of SLEEP and LEARNING



STAGES of SLEEP and LEARNING

STAGE ONE SLEEP	STAGE TWO SLEEP

STAGES of SLEEP and LEARNING

STAGE THREE/FOUR SLEEP	R.E.M. SLEEP

SLEEP and LEARNING

MEMORY ENCODING

'A' students:

Average _____ more minutes of sleep

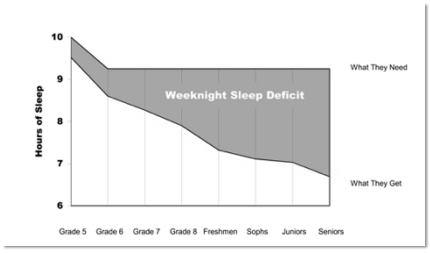
than do 'B' students,

who average _____ more minutes of sleep

than do 'C' students

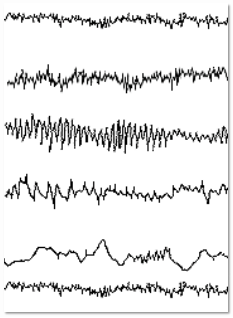
Kyla Wahlstrom
Center for Applied Research and Educational Improvement (CAREI)

SLEEP REQUIREMENTS



Source: Dr. Fred Danner, Univ. of Kentucky

BRAIN-MIND STATES:



Gamma - 25-100 Hz (40hz typical). Binds conscious perception

Beta – 13-30 Hz. Active, alert, concentration

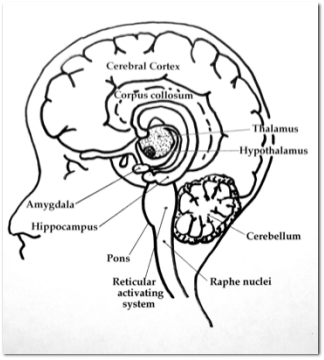
Alpha – 9-13 Hz. Relaxed focus, light trance, enhanced serotonin production

Theta – 4-8 Hz. Trance-like stat; enhanced catecholamine aids retention of learning

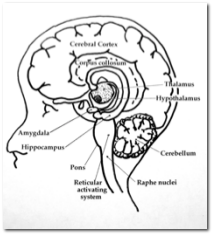
Delta – 1-3 Hz. Dreamless sleep; HGH produced

REM – Rapid Eye Movement; dreaming

HUMAN BRAIN

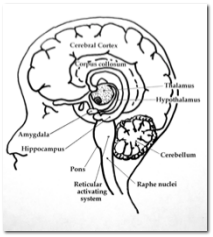


BRAIN MATURATION



- Bottom to _____
- Inside to _____
- Side to _____
- Back to _____

STAGES: PIAGET



Birth – 18 months

18 months – 6/7 years

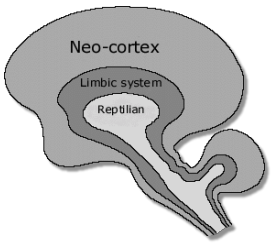
6/7 years – 11/12 years

Puberty - Adult

Mature Frontal Lobe Functions

- **Envision the future**
- **Dream big dreams**
- **Set goals**
- **Make plans**
- **Detect problems**
- **Solve problems**
- **Manage emotions**
- **Control impulses**
- **Consider consequences**
- **Learn from mistakes**

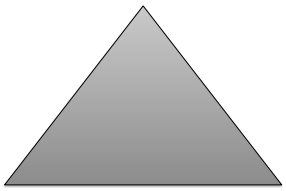
THE TRIUNE BRAIN



McLean, Paul, *The Triune Brain in Evolution: Role in Paleocerebral Functions. New York: Plenum Press. 1990.*

THE TRIUNE BRAIN

Three Non-Negotiable Requirements



For Healthy Brain Development

PLAY!

OPEN-ENDED PLAY

⇩

PLAY STATIONS

⇩

Benefits of Play

- Greater self-regulation
- Problem solving abilities
- Emotional mastery and behavioral control
- Impulse regulation
- Reduction in drop-out rate, violence and crime
- Higher IQ scores

Adele Diamond
Developmental cognitive neuroscientist
University of British Columbia
Interviewed on NPR, March 4, 2008

Elements of Play

- Pleasure and enjoyment
- Goals not imposed from the outside.
- Motivation is spontaneous, voluntary, and intrinsic.
- Active engagement on the part of the player.
- Attention to the means over the end product of the action or activity.

"Children's Play," Paul McArdle
Child: Care, Health and Development, Vol 27, No 6, 2001

Stages of Play

Stages of Play

SOCIAL STAGES	COGNITIVE STAGES
I. Solitary	I. Object play (also called practice, exploratory, manipulative play)
II. Parallel	II. Functional (use of an object for its intended use)
III. Associative	III. Pretend/symbolic
IV. Cooperative (also called peer play, socio-dramatic play)	IV. Games with rules.

"Harnessing the Power of Play." Sonia Mastrangelo.
Teaching Exceptional Children, Vol. 42, no 1, 2009

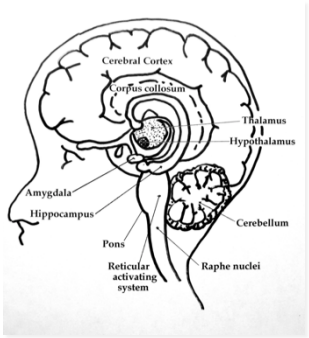
THE THREE LIFE STANCES

1. _____
2. _____
3. _____

Autonomic Nervous System

Sympathetic Nervous System (SNS)	***Parasympathetic Nervous System (PNS)***
INCREASES	***INCREASES***
Blood pressure	***Digestion***
Fuel availability	***Fuel storage***
Activity level	***Rest and recovery***
Blood clotting	***Resistance to infection***
Adrenal hormones	***Endorphins***

THE THREE LIFE STANCES



FLOW

"Flow is the mental state in which one is fully immersed in what one is doing, and is characterized by a feeling of energized focus, full involvement, and success in the process of the activity."

Flow: The Psychology of Optimal Experience
Mihaly Csikszentmihalyi
Harper and Row, 1990

CHARACTERISTICS OF FLOW

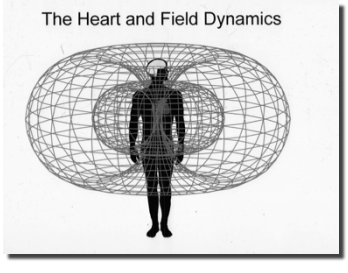
-
-
-
-

M. Csikszentmihalyi, *Flow: The Optimal Experience.* New York: Harper, 1990

ENABLING FLOW

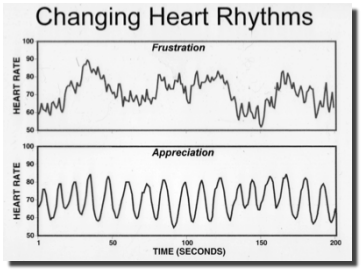
Strengthening the Upper Vagal Pathway

Intelligence of the Heart



McCraty, R., et al. "The Coherent Heart: Heart-Brain Interactions, Psychophysiological Coherence, and the Emergence of System-Wide Order." Boulder CA: Institute of Heart Math, 2003.

Intelligence of the Heart



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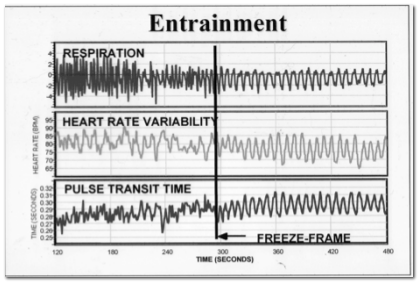

Low brain in charge **High brain in charge**

McCraty, R., et al. "The Coherent Heart: Heart-Brain Interactions, Psychophysiological Coherence, and the Emergence of System-Wide Order." Boulder CA: Institute of Heart Math, 2003.

THANK YOU FOR COMING!

For information about my work with institutions and organizations, please visit

www.TimBurnsEducare.com

Strategies for Engaged Learning

Suggested Readings

Begley, Sharon. *Train Your Mind, Change Your Brain: How Science Reveals Our Extraordinary Potential to Transform Ourselves.* New York: Ballantine Books, 2007.

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