The Art of Changing the Brain

Enriching teaching by exploring the biology of learning

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Available at: Amazon.com (best price!)

Four major functions of brain

FOUR PILLARS OF LEARNING

• GET INFORMATION (SENSORY)
• MAKE MEANING (BACK INTEGRATIVE)
• CREATE YOUR OWN IDEA (FRONT INTEGRATIVE)
• ACT-TRY OUT IDEAS, SOLUTIONS (MOTOR)
• ATTEND TO OUTCOMES (SENSE, GET NEW INFORMATION)
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Flow of signaling in cortex
THE ART-PART I

USE THE FOUR PILLARS-
ALL OF THEM!

EMOTION, BRAIN,
LEARNING, MOTIVATION
1. The biochemistry of emotion (dopamine, serotonin, adrenalin, endorphins) is required for learning.

2. Brain evolved as an organ of emotion.

3. Understanding brain emotion systems helps us understand motivation.
AMYGDALA-CORTEX CROSSTALK-
EMOTION TO INTEGRATION (AND
VICE VERSA)

FEAR-FROM THE PLUS TO
THE MINUS
ATTENTION
ENERGY
REMEMBER CLEARLY
STRESS
CAN’T THINK
DAMAGE MEMORY

DOPAMINE PATHS-REWARD
IN THE FRONT
THE ART-PART II

ASK “HOW DOES THE STUDENT FEEL?”

ENGAGE FRONT CORTEX - STUDENT SHOULD TAKE OWNERSHIP

WHAT IS KNOWLEDGE? HOW DOES IT CHANGE?

THE THIRD PRINCIPLE FOR CHANGING THE BRAIN
Brain networks change

Neuron firing generates branching

Building on old networks
THE ART- PART III

Begin with student knowledge
Build on what is useful
Ignore what is not useful

WHAT IS THE ART?

1. Use all four major functions of brain
2. Ask “how do my students feel?”
3. Work from existing networks of neurons
4. Balance all these