From Concept to Practice - How to Apply Neuroscience Insights to Instructional Design
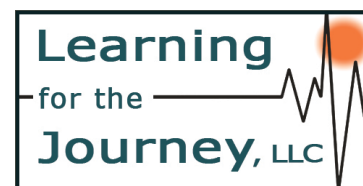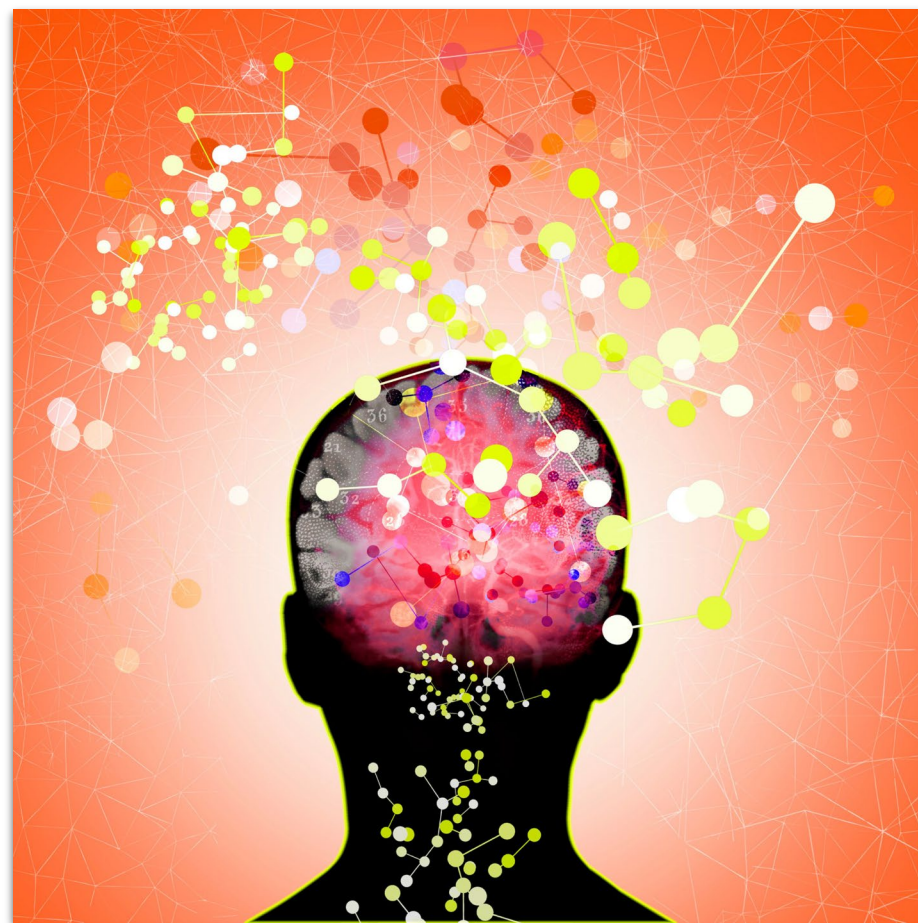

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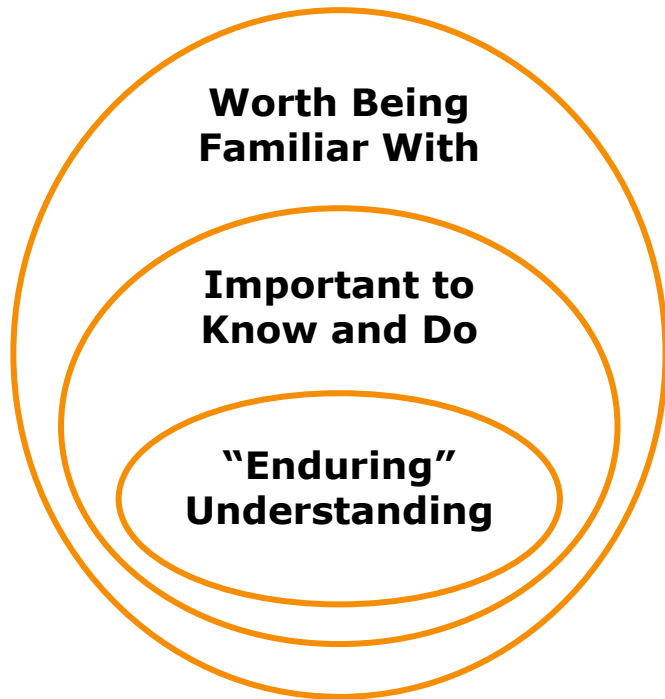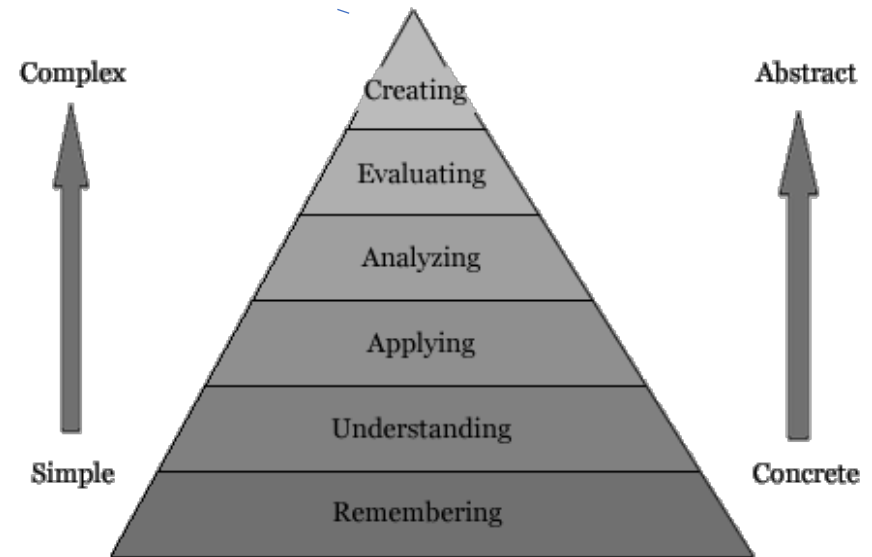**Learning for the Journey, LLC**
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Learning for a Life Well Lived

ISD Through the Lens of Neuroscience

Worth Being Familiar With

Important to Know and Do

"Enduring" Understanding

What is the acceptable evidence of learning?

Wiggins and McTighe's "Backward Design" Model and Key Question

Complex

Simple

Creating

Evaluating

Analyzing

Applying

Understanding

Remembering

Abstract

Concrete

COGNITIVE + AFFECTIVE + PSYCHOMOTOR

Bloom's Updated Taxonomy and Levels of Learning

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ISD Through the Lens of Neuroscience

- **Principles derived from Malcom Knowles' (1980) adult learning theory:**
  - Adults have a deep psychological need to be independent and self-directed; they may be dependent for a period of time, but it is temporary
  - Adults come with a reservoir of experience that becomes an increasingly rich resource for learning; adults respond best to experiential techniques, not passive learning
  - Adults are aware of specific learning needs generated by real-life events, tasks or problems; learning programs should be organized around life-applications and the learner's readiness to learn
  - Adults want to develop competencies that can be applied to their immediate situation

Adults want to be treated as adults; respected for their experience; solve the problems they face; and use the learning – now!

Instructional Design Implications

ADDIE Instructional Design Model

Analysis → Design → Develop → Implement → Evaluate

Evaluation
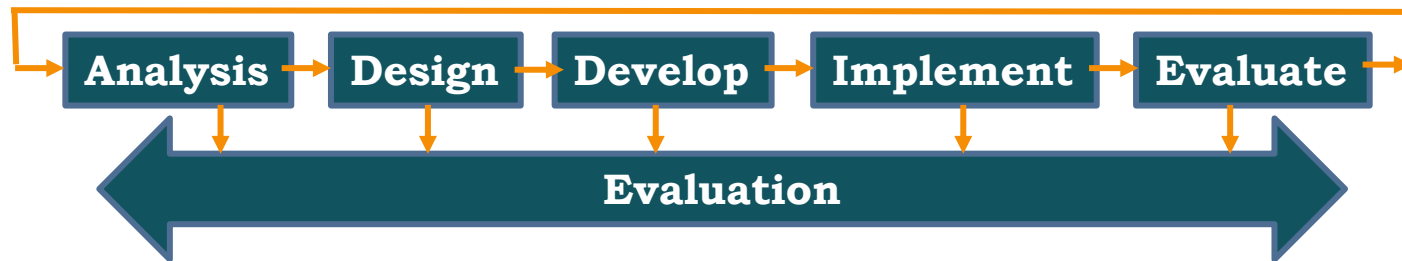
Analysis

Analysis
Assess Organizational Culture (attitude towards mistakes, degree of trust, stress level, sense of safety)
Articulate Learning Objectives (adjusting learning strategy to depth of desired learning; articulate the "why")
ID shared experiences and prior learning (what must you connect to?)
ID Likely Heuristic Errors
Establish acceptable level of learning (for the institution and the individual learner)
Inventory past institutional learning strategies and long term effect (if any!)

Instructional Design Implications

Design

Development

Design
Recognize and respect the roles and vulnerabilities of the two brains
For enduring and important training, incorporate "Stickie" learning principles and practices (interleaving, spaced learning, and reflection/elaboration/calibration)
Incorporate clear and transparent statement of "stickie" learning; forewarn adult audience that awareness is intentional and beneficial
Incorporate explicit intent and objectives to help the automatic/subconscious brain to attend to the relevant
Incorporate likely heuristic errors to help automatic/subconscious bring to avoid pitfalls
Explicitly link new learning to old learning - let the learner make the connections
Allow learners to craft a solution before providing the teaching points
Use practical, real world examples
Allow opportunity for objective feedback
Match the conceptual content level to the learners, not the instructor (avoid the curse of knowledge effect)

Development
Slow down the presentation and flow - too smooth and too fast yields false sense of mastery

Instructional Design Implications

Implementation

Implementation
Remove distractions (call phones!)
Establish clear Rules of Engagement (ROE)/behavioral norms to make it safe and to encourage growth mindset
Provide for periods of rest and diversion (give the Deliberate/Conscious brain a break)
Show respect for adult learners' expertise and experience
Respect learner's time; treat them as adults
Watch for "flight, flee, or freeze" behaviors
Split training overnight if possible; but not too long that relearning will be required
Encourage manual, not electronic notetaking

Evaluation

Evaluation
For Kirkpatrick's Evaluation Model - expect that Level I (Did they like it?) maybe "no" or not much; focus on did they learn it, use it, make a difference with it
Prepare leadership/decision makers that surveys of short-term learning and those of stickie, long-term learning can be influenced by misperceptions of fluency - compare apples with apples
Use the evaluation tool as a mechanism for recall and reactivation/reconsolidation of learning
Those will growth mind-set will probably evaluate learning higher; those with fixed mindset may be threatened by approach

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