


Active Learning

Educate a woman, empower the world.



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Introductions

1. Name
2. Domain
3. An achievement



Anticipation Guide

Directions: For each of the following 3 sentences,

- Agree
- Disagree
- Edit into agreement

Anticipation Guide

1. Strategies that foster active learning include: case studies, lectures, and experiments.
2. Effective active-learning instruction makes learning more effortful, creative, and engaging.
3. We learn more from doing than reading, and more from reading than listening (doing > reading > listening).

Why?

It Depends.

Priming
Spread of Activation

A dark, moody photograph of several cigars in a humidor, with the text "What do you remember from last year?" overlaid in white. The cigars are arranged in rows, and some labels are visible, including "CONCILI", "III", and "DESCALZO".

What do you remember from last year?

Teaching & Learning

Take Risks with Your Teaching

Knowledge

Knowledge Structures

Declarative

Facts
Concepts

“Knowing
That”

Procedural

Processes
Skills

“Knowing
How”

Conditional

Strategies
Decisions

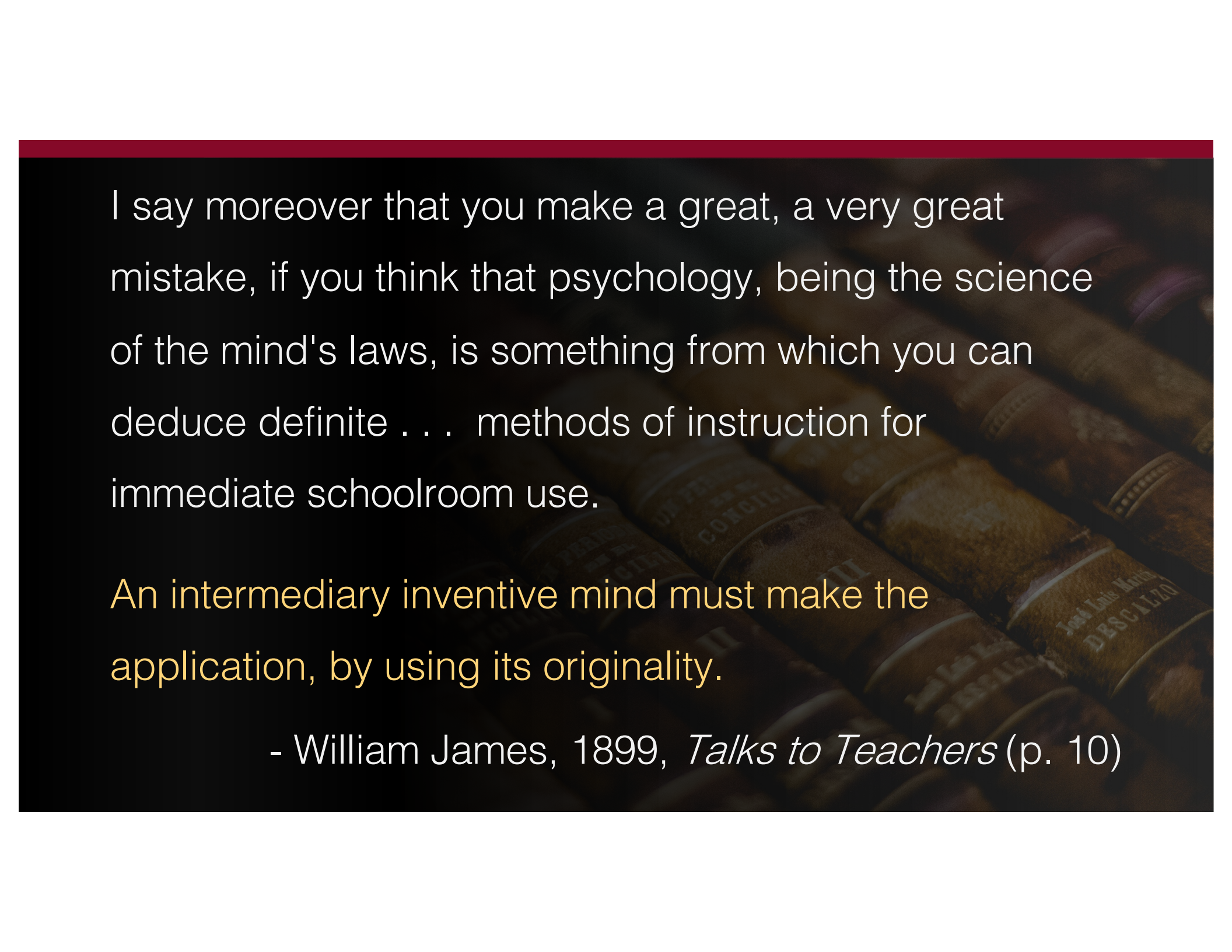
“Knowing
When”

Schemas

Domains

Models

Frameworks

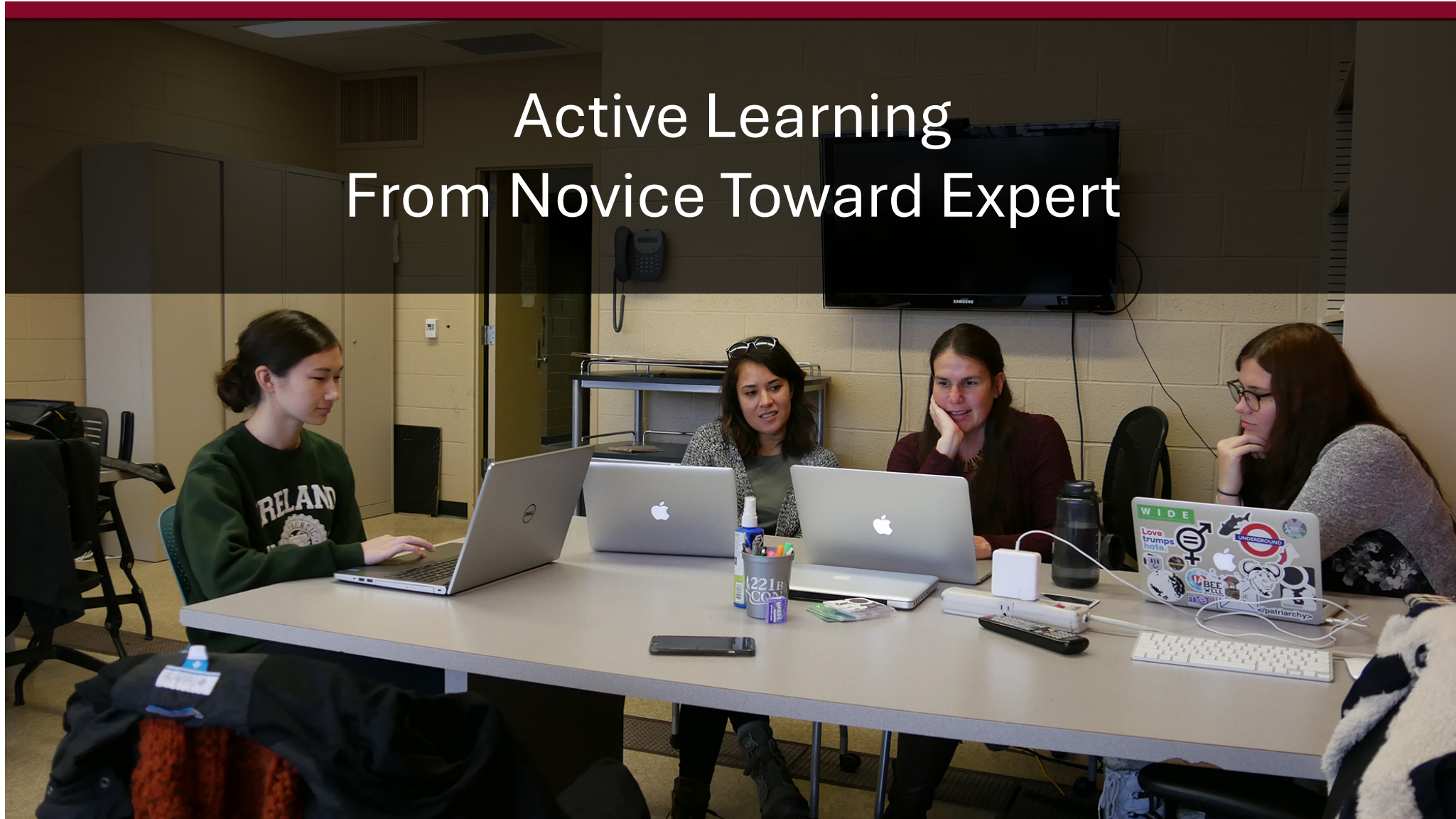


I say moreover that you make a great, a very great mistake, if you think that psychology, being the science of the mind's laws, is something from which you can deduce definite . . . methods of instruction for immediate schoolroom use.

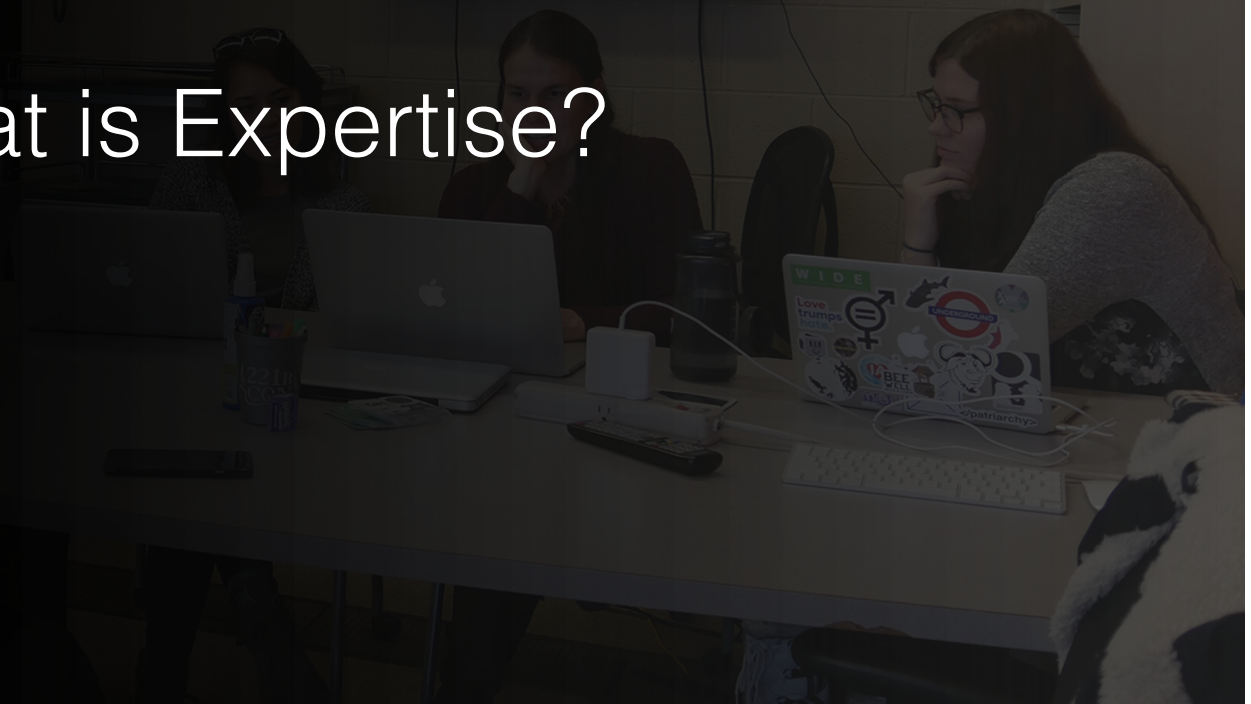
An intermediary inventive mind must make the application, by using its originality.

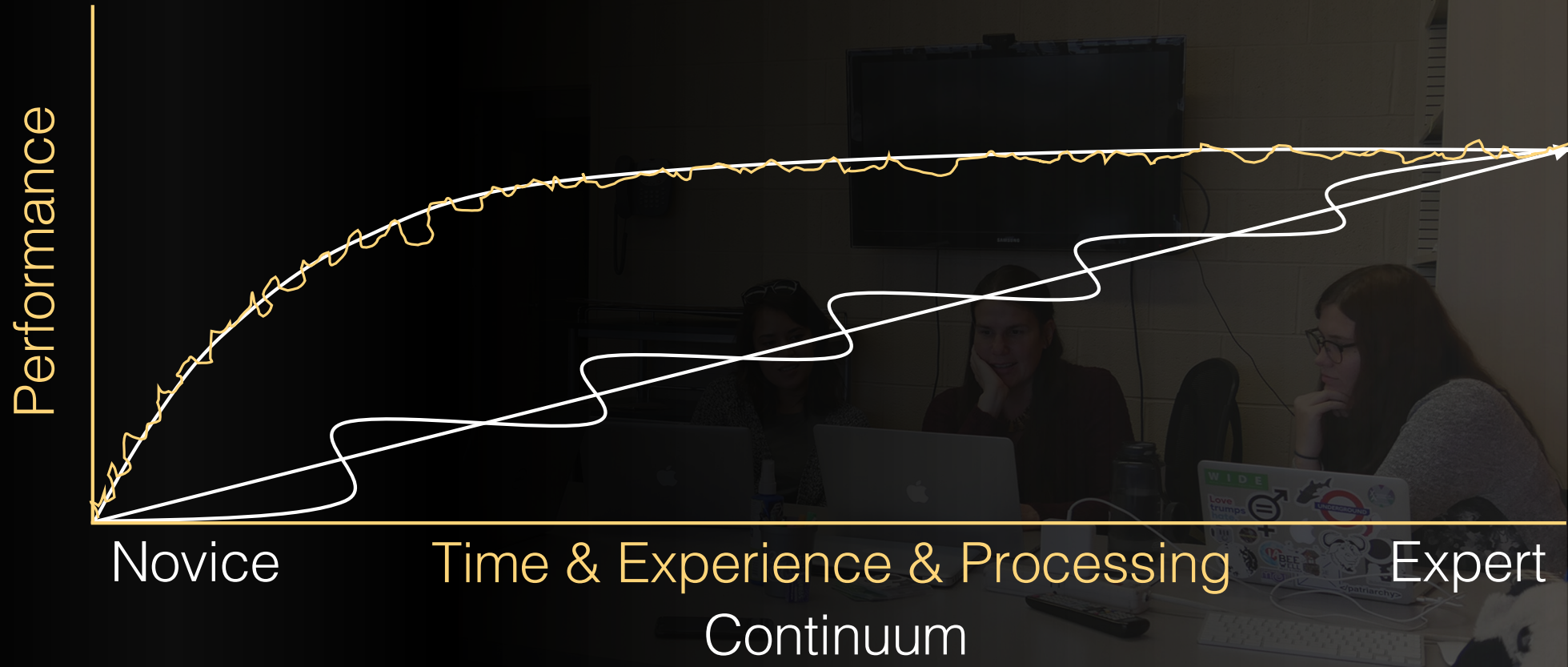
- William James, 1899, *Talks to Teachers* (p. 10)

Active Learning From Novice Toward Expert



What is Expertise?





Performance

Novice

Time & Experience & Processing
Continuum

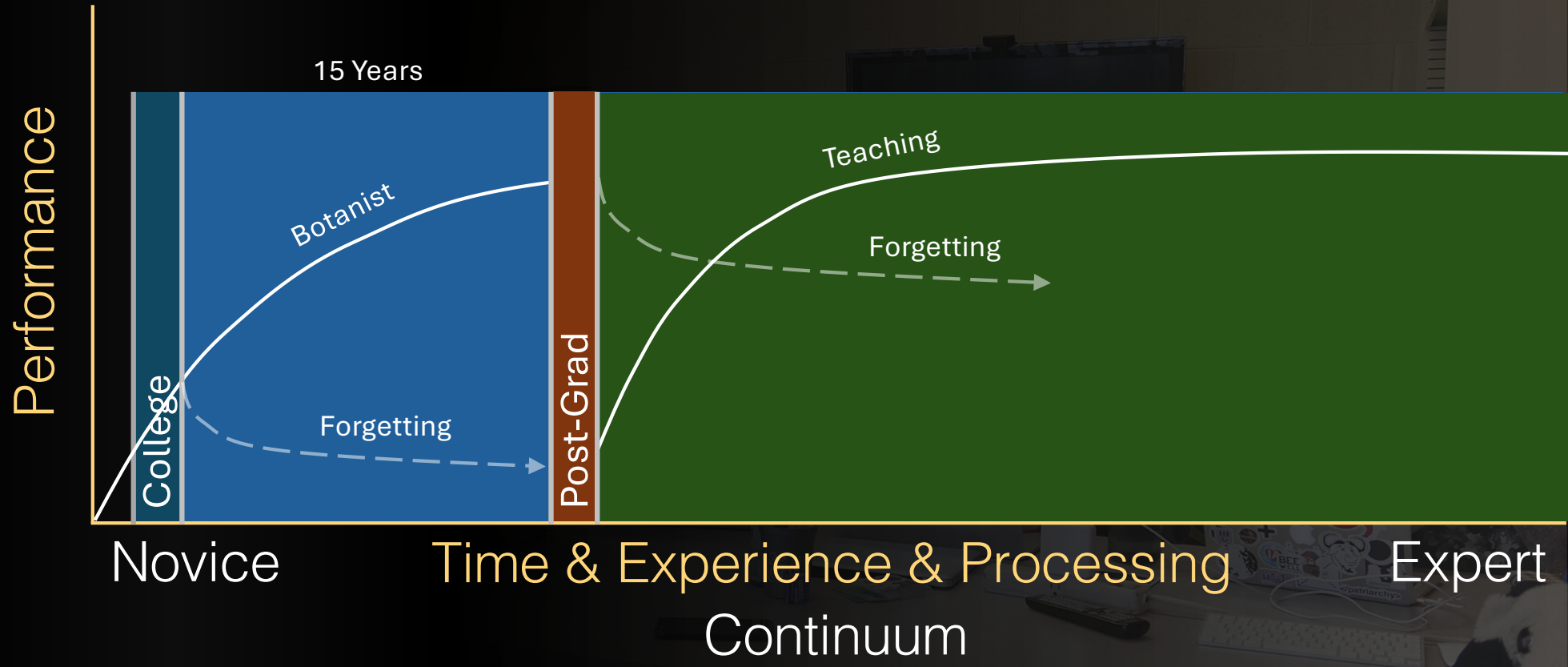
Expert

Ah Ha!

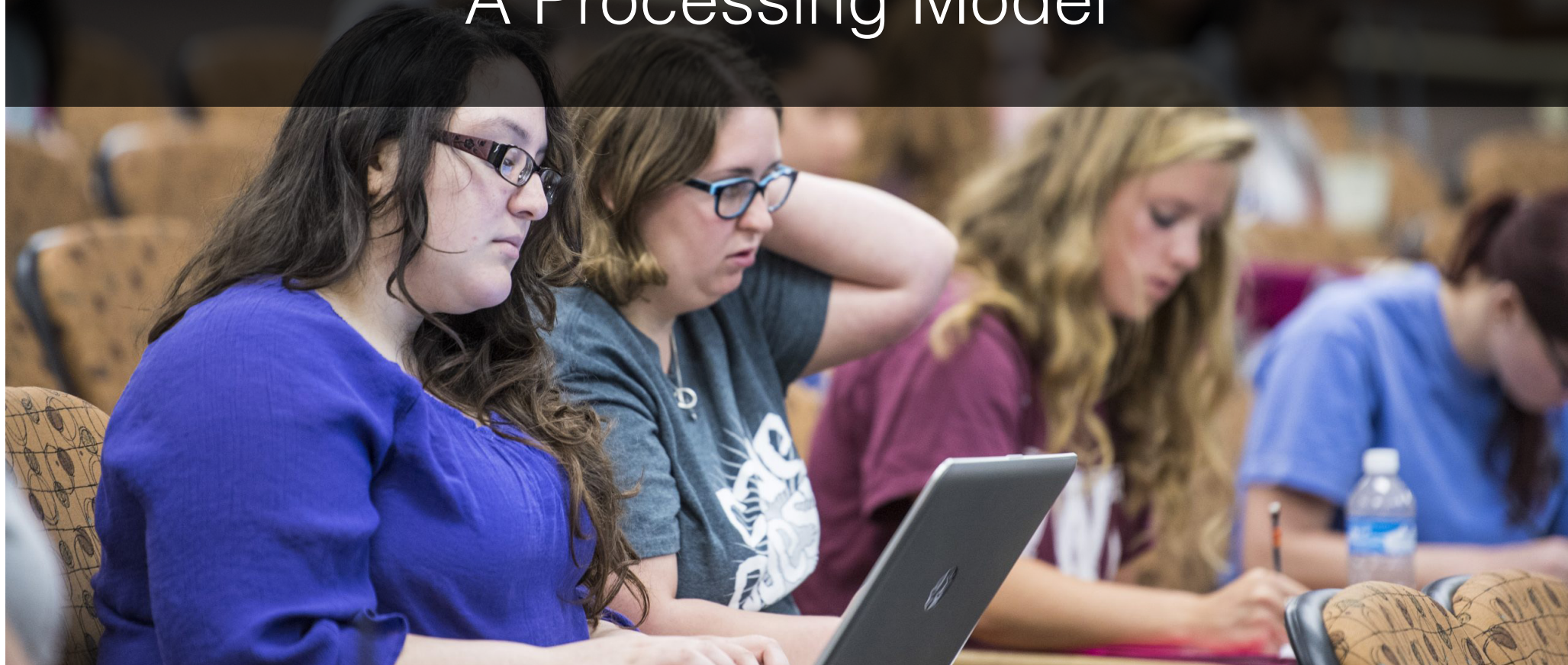
Discovering the DNA Structure in 2 Hours

James Watson & Francis Crick





Active Learning A Processing Model





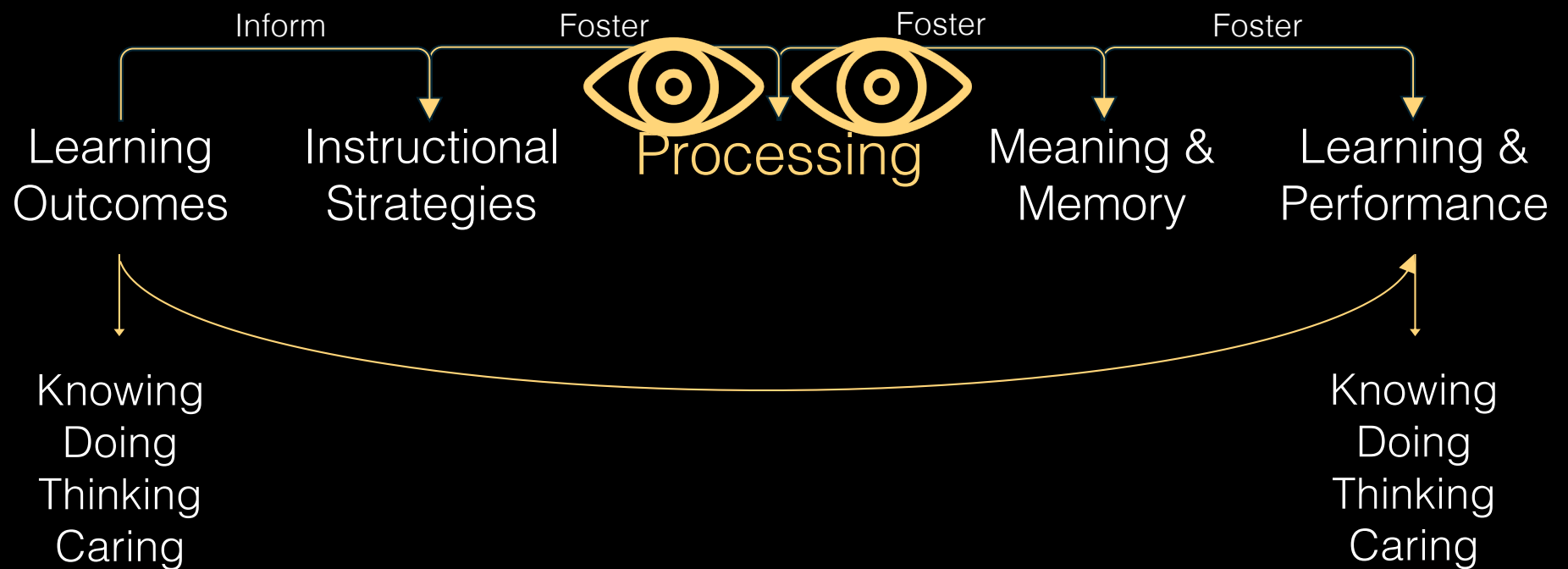
What is Active Learning?

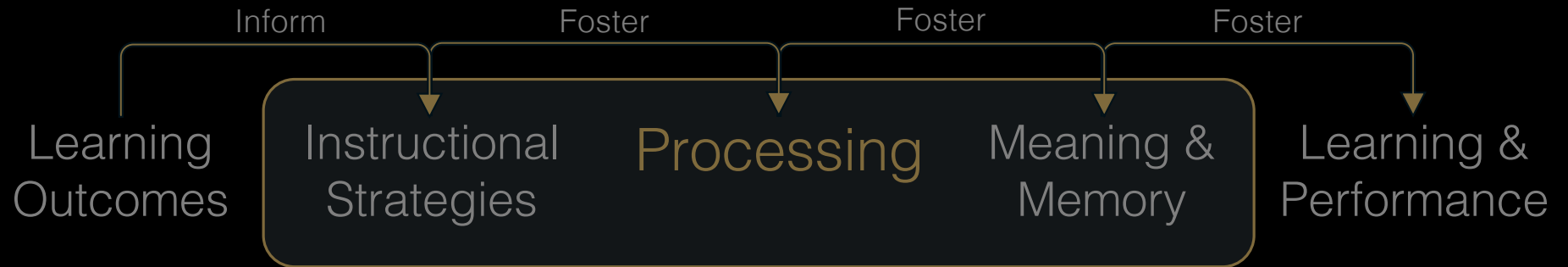
What is Active Learning?

Active learning fosters **deep** and **flexible** knowledge through cognitive, behavioral, social, and affective **processing** of one's **knowledge** and **experience**.

Doolittle & Wojdak

A Processing Model of Active Learning





Directions
(sentences)

Performance

What we process
What do these results tell us?
We learn.

Low Meaning
Low Learning

Pronunciation

High Meaning
High Learning

Incidental
Learning

Mental Image

=

??? Meaning
??? Learning

Intentional
Learning

Your Strategy



What we **process** we learn.

Learning occurs to the extent that processing fosters **meaning and memory**.



Short-Term Memory (hippocampus)

What: episodic memories

Form: encoding, neural representations, patterns, connections

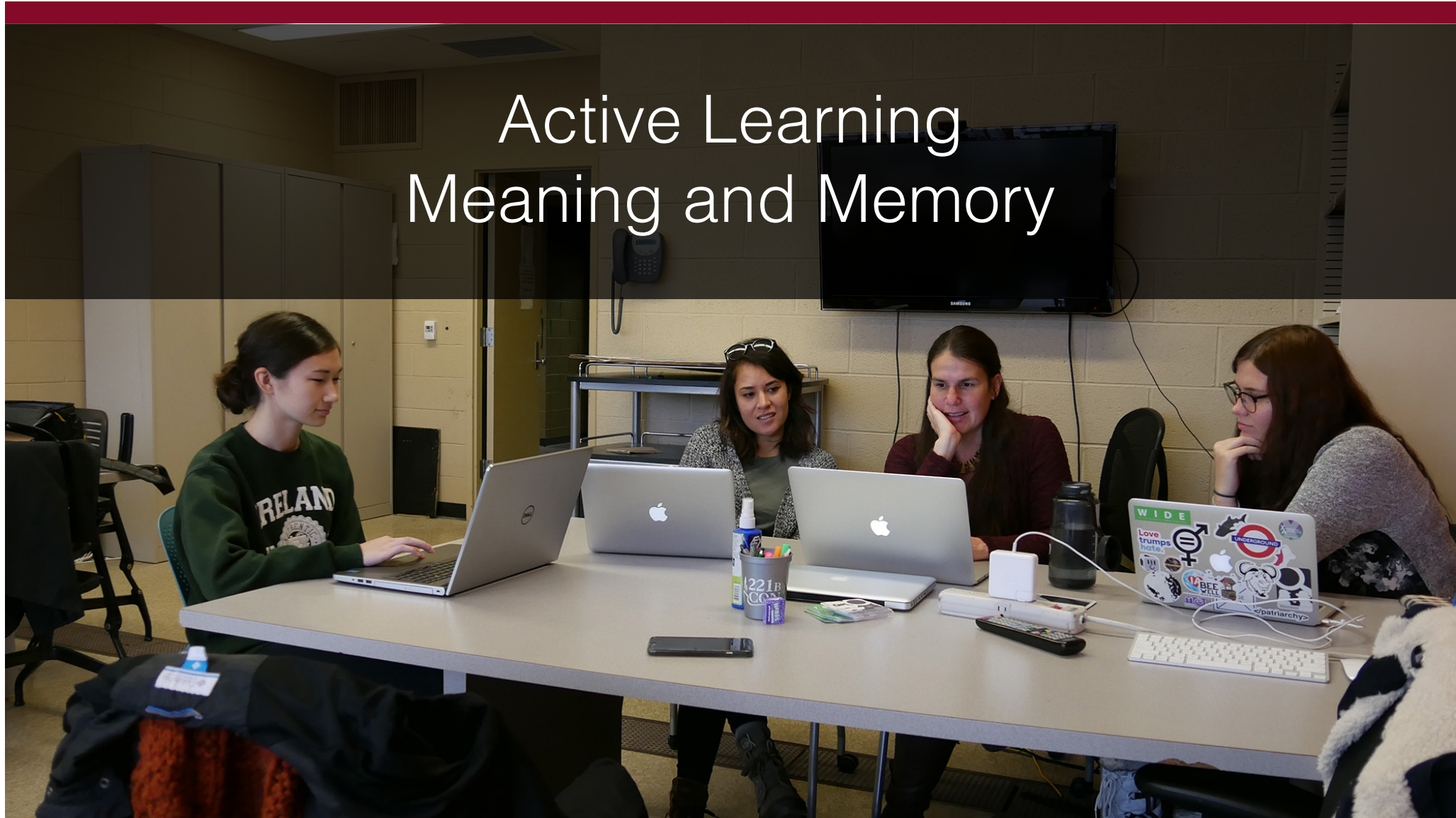
Lasts: seconds-minutes depending . . .

Episode, Context Specific, Details

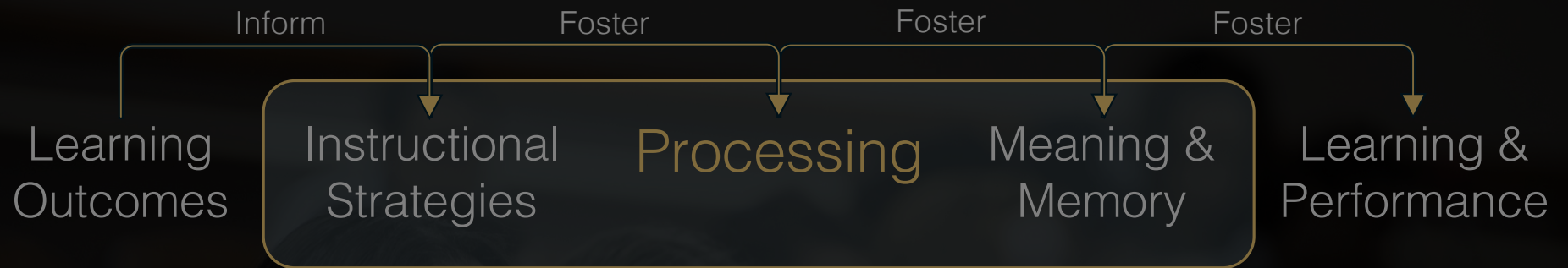
↑ Fragile, ↑ Interference, ↑ Decay

making memory

Active Learning Meaning and Memory







What is Meaning?

Subjective Interpretation



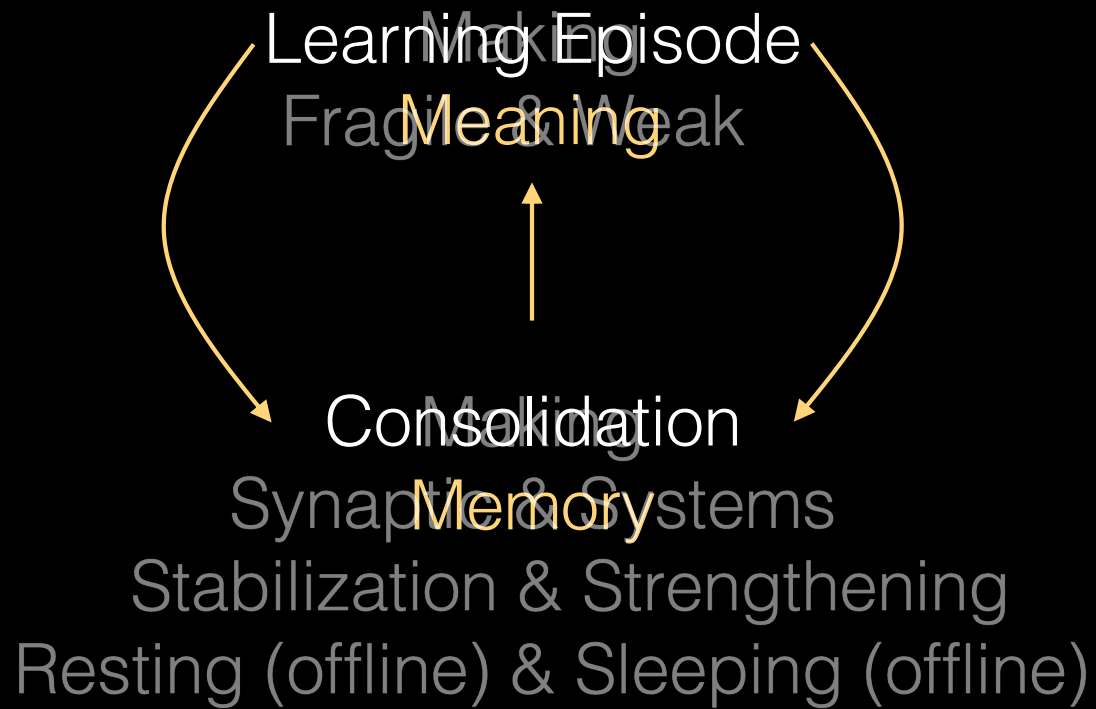
Processing that Fosters Meaning Making

Attention
Recognition
Activation
Emotions

Organization
Contextualization
Socialization
Application

Prediction
Inferencing
Reflection
Abstraction

Memory
Declarative & Procedural
Knowledge

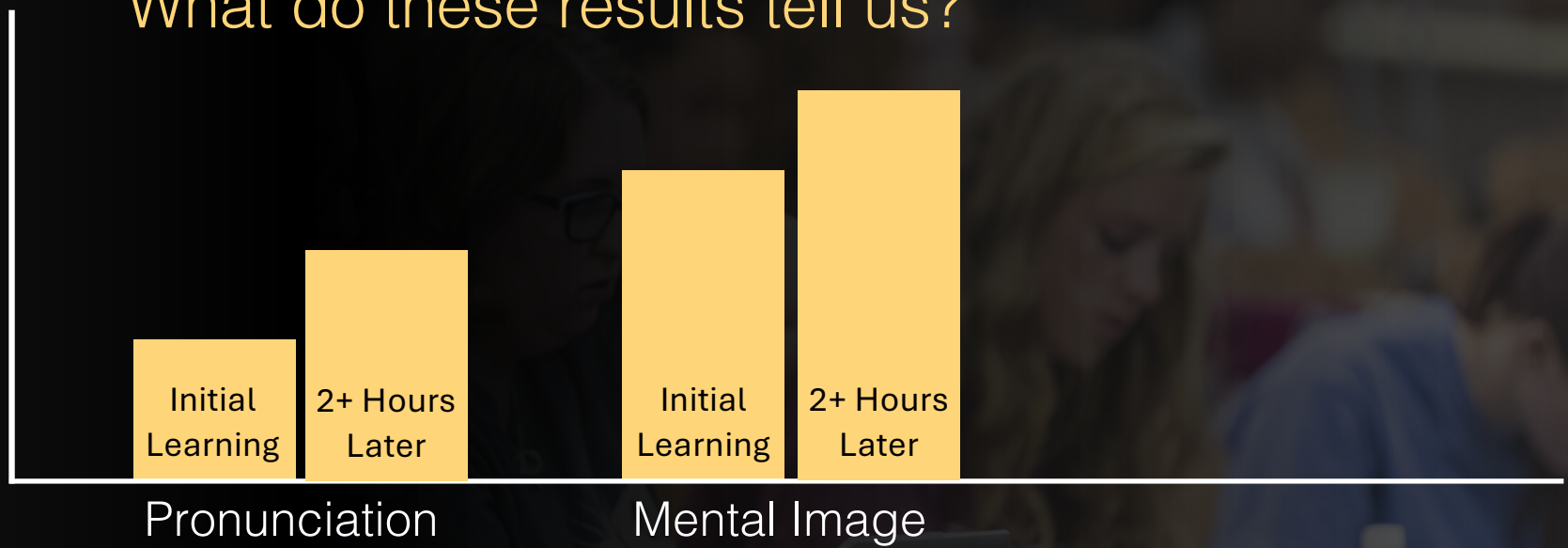


Consolidation
Synaptic & Systems
Stabilization & Strengthening
Resting (offline) & Sleeping (offline)

But first . . .
(sentences)

What do these results tell us?

Performance



Consolidation

Synaptic & Systems

Stabilization & Strengthening

Resting (offline) & Sleeping (offline)

Synaptic Consolidation (hippocampus)

Forms: Seconds-Minutes-Hours
Lasts : Hours-Days+

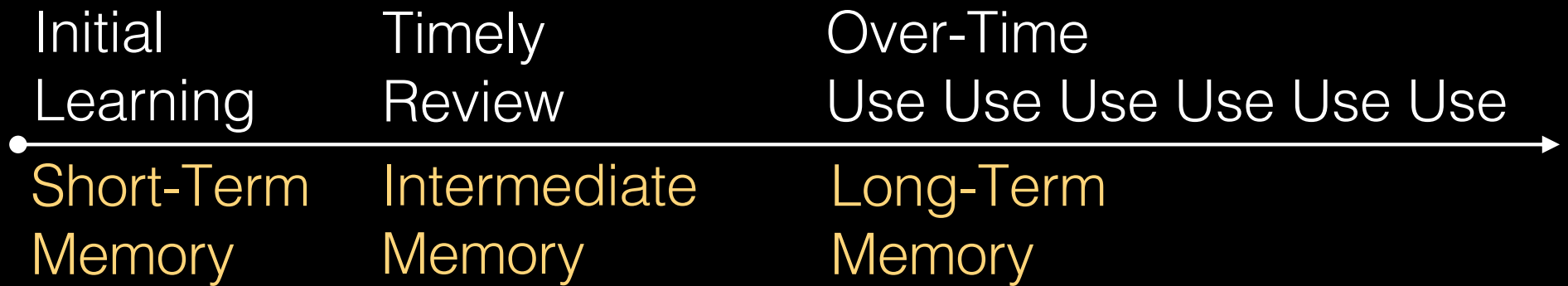
Reactivation & Replay; Discrimination
Episodic, Context-Specific, Details
↑ Stability, ↑ Strength
Intermediate-Term Memory

Systems Consolidation (neocortex)

Forms: Days-Months-Years
Lasts : Months-Years-Forever 😊

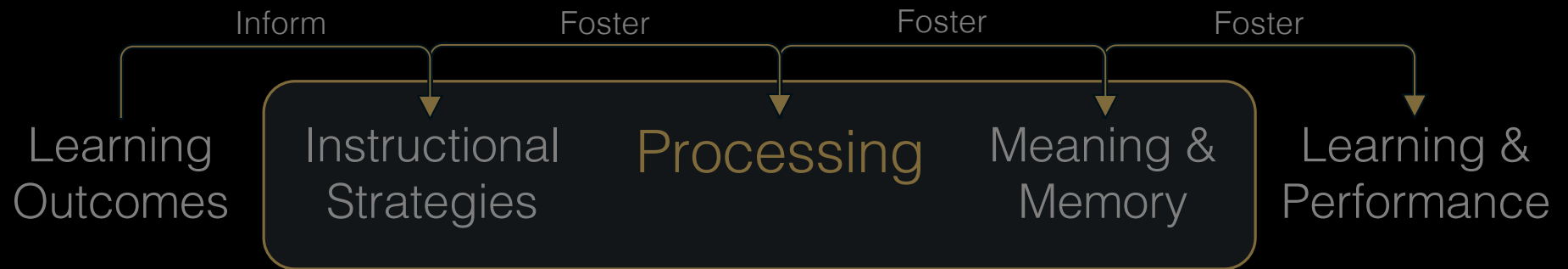
Reactivation & Retrieval
Integrate, Organize, Generalize
↑ Stability, ↑ Strength
Long-Term Memory

Consolidation
Synaptic & Systems
Stabilization & Strengthening
Resting (offline) & Sleeping (offline)



Active Learning Processing





Meaning

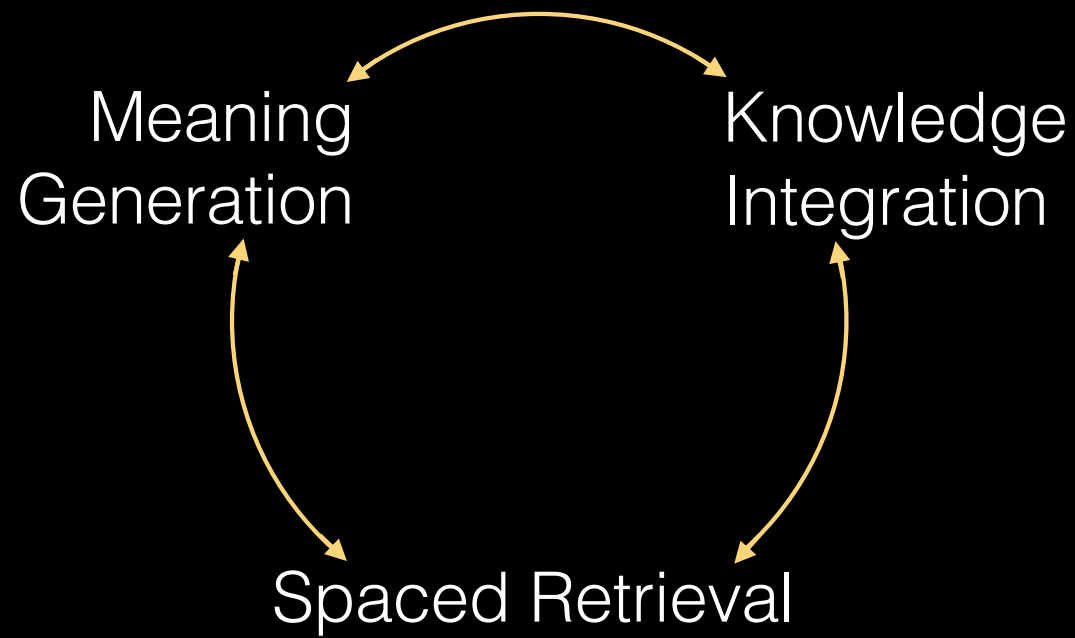
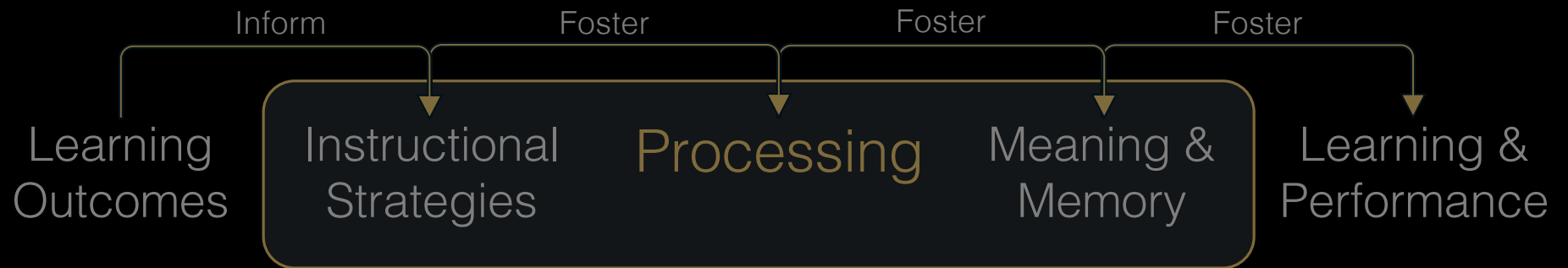
- Meaningful Learning
- Elaborative Learning
- Integrative Learning

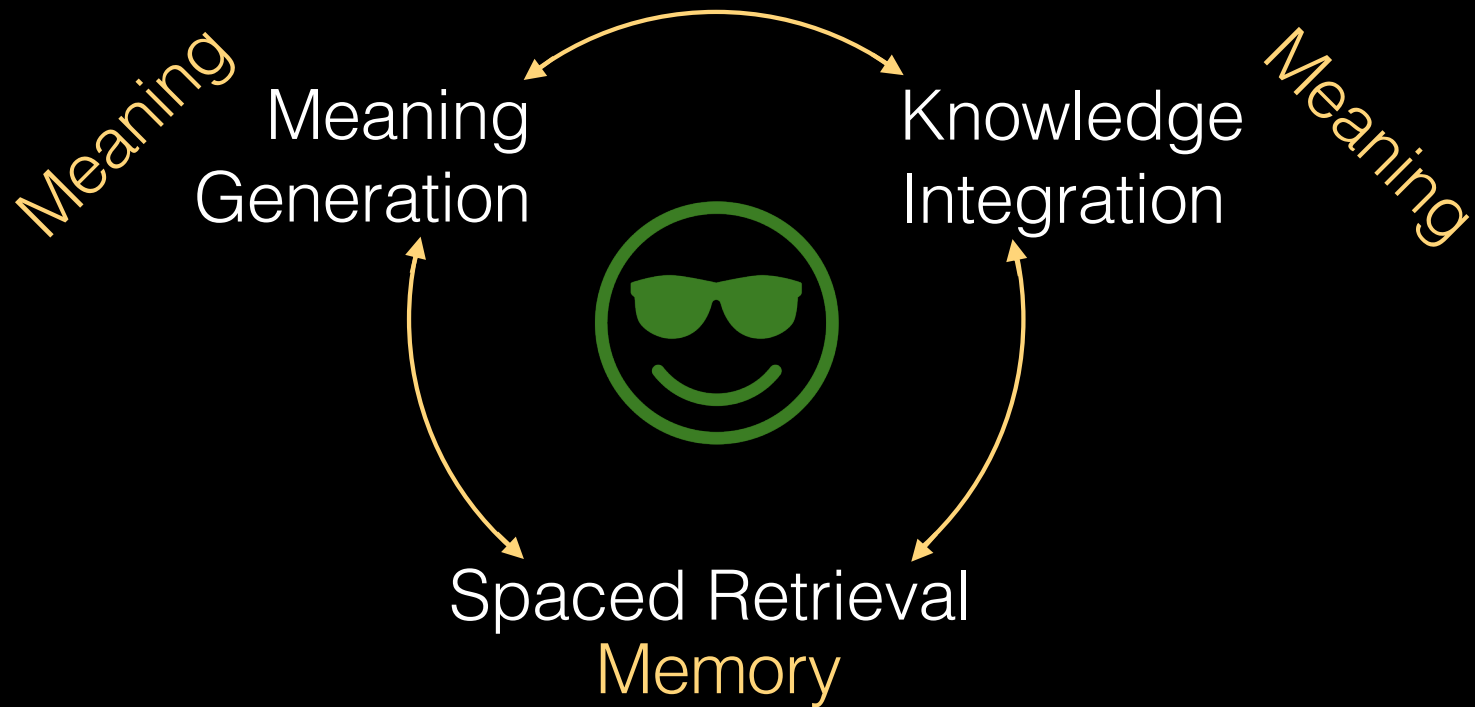
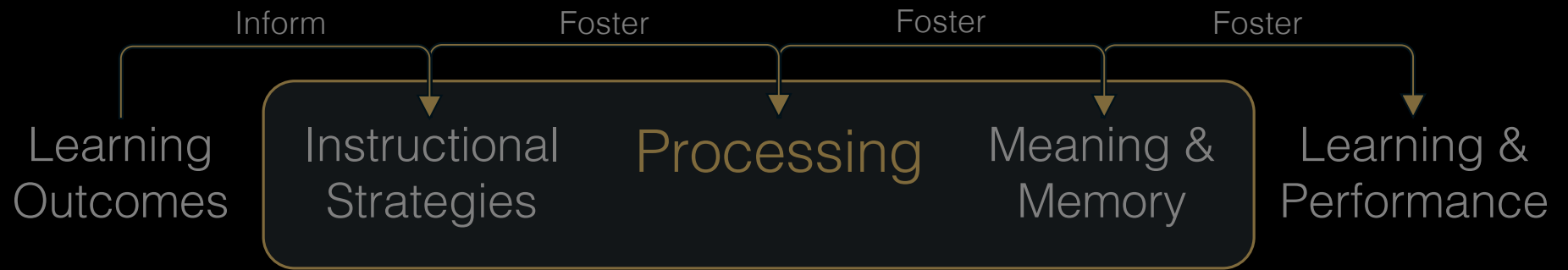
Connecting & Integrating

Memory

- Retrieval Practice
- Spaced Practice
- Generative Practice
- Interleaving

Reactivation & Strengthening








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