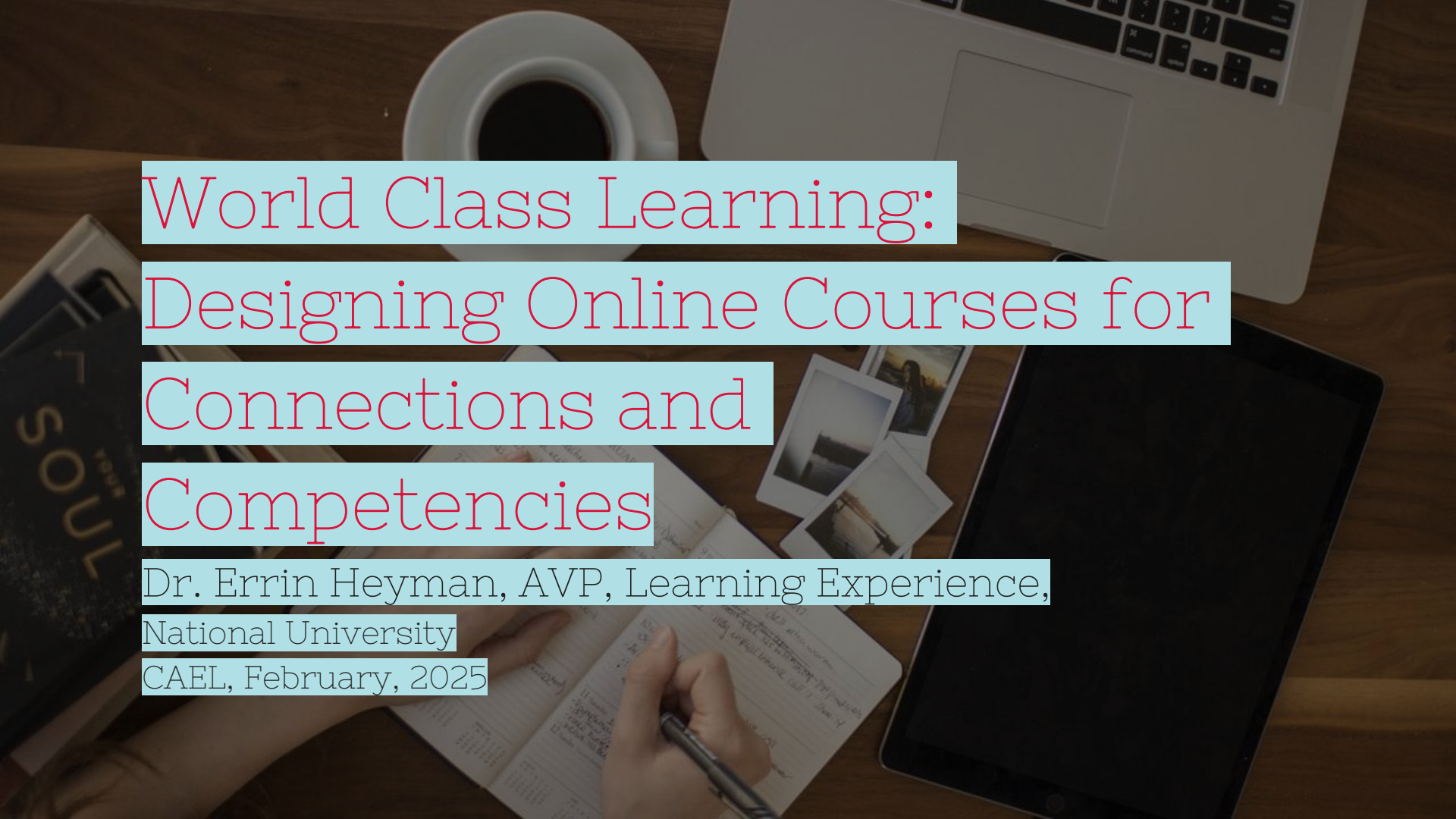




World Class Learning: Designing Online Courses for Connections and Competencies

Dr. Errin Heyman, AVP, Learning Experience,
National University
CAEL, February, 2025

Topics

- ◎ Who is NU?
- ◎ Neuro-Connected Learning
- ◎ Learning Science
- ◎ Applications in Practice
 - ◎ Online Learning at NU



Mission

To deliver accessible world-class student experiences by providing quality programs and services that ensure student success through meaningful learning.



Vision

To be an inclusive and innovative university **serving lifelong learners who contribute to the positive transformation of society.**



130,000+



Total Learners Served per Year

50K

+

80K

Degree-Seeking
Students

Workforce &
Professional
Development Students



Schools of Study



- School of Arts, Letters, & Sciences
- School of Health Professions
- College of Business, Engineering & Technology
- College of Law & Public Service
- John F. Kennedy School of Psychology & Social Sciences
- Sanford College of Education

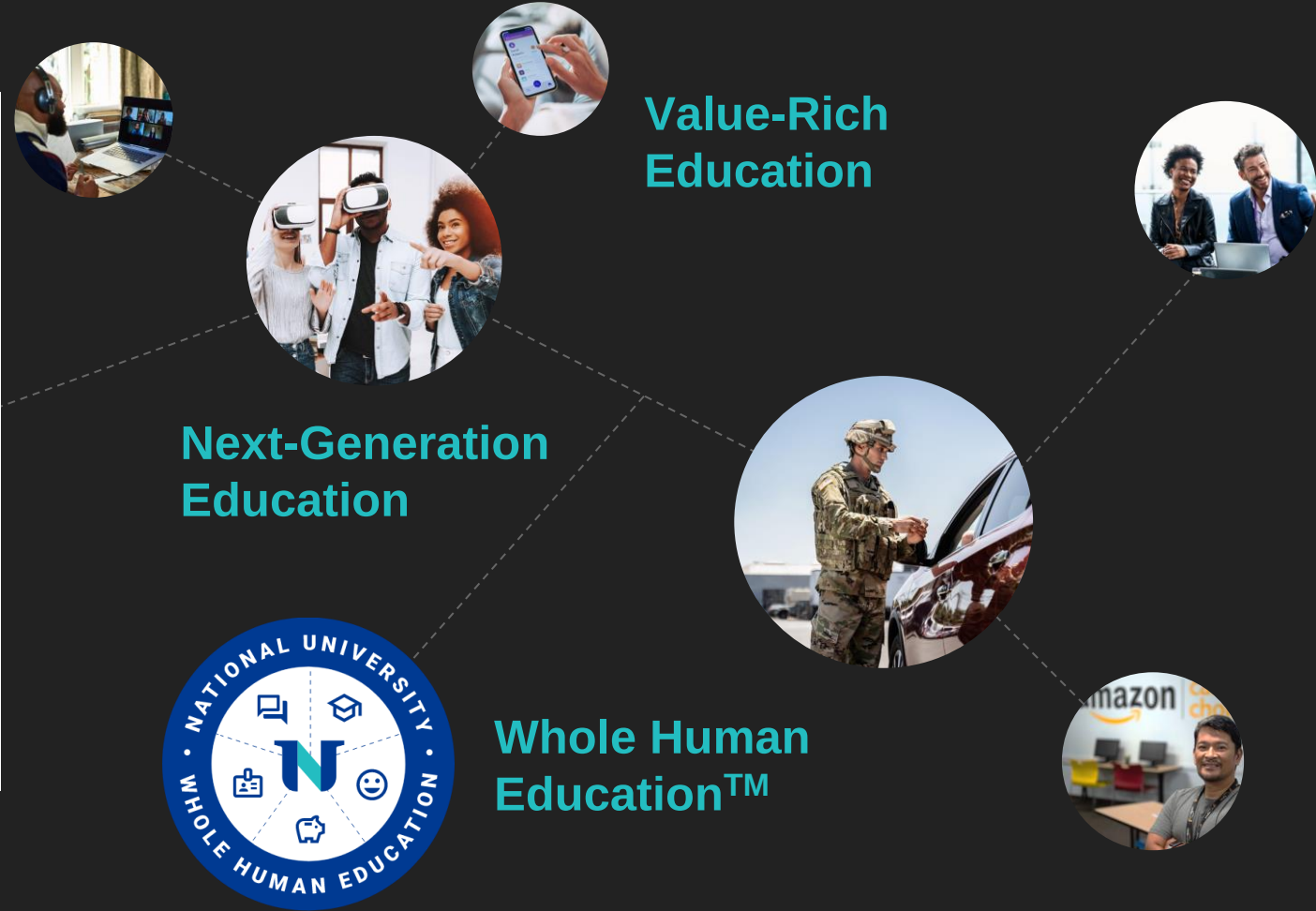
230k Alumni in
50 States
and 20 Countries



One of the Largest
Private Nonprofit
Universities in the US



NU's New Possibilities in Education



In the Chat...

What do you think of when you hear

Neuro-connected Learning

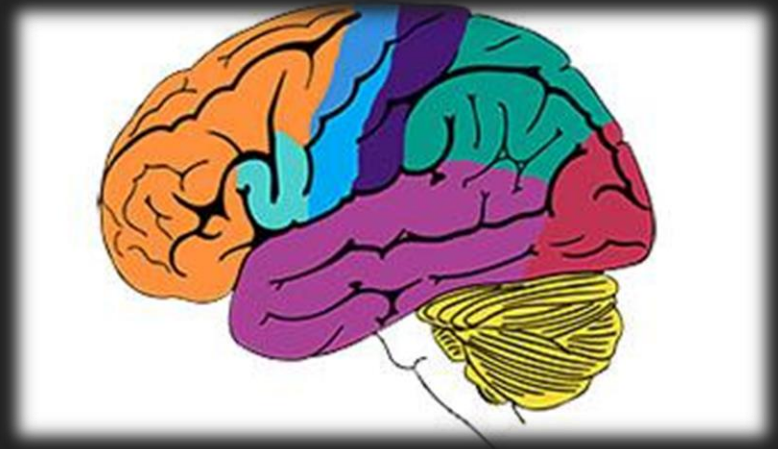
?



Neuro-connected Learning

Our Brains Produce...

- © Cortisol
- © Glutamate
- © Serotonin
- © Oxytocin
- © Norepinephrine
- © Dopamine
- © Endorphins



Feel-bad

- © Cortisol—boredom + stress [*the killer* hormone]
- © Glutamate—trauma [eats neurons!]

Feel-good

- © Serotonin—sense of calm/stasis, regulates sleep
- © Oxytocin—sense of well-being/trust
- © Norepinephrine—regulates cognitive function, attention
- © Dopamine—brain's reward center
- © Endorphins—truly *feel-good*, decreases pain receptors



Learning Science

Connected to Learning...

- ◎ Cognition—knowing/not knowing
- ◎ Affection—belonging/not belonging
- ◎ Conation—"grit"
 - ◎ Mindset (I think I can/can't)
- ◎ Motivation
 - ◎ Extrinsic/Intrinsic



Examples

- ◎ Cognition—knowing [*I got it right!* = serotonin, dopamine] (motivation)]
- ◎ Affection—belonging [*I feel like I belong* = oxytocin; *I don't belong, I'm lonely* = glutamate]
- ◎ Trauma, fear = glutamate
- ◎ Bored = cortisol
- ◎ Conation—"grit"—[*I've been told I can't* = glutamate, norepinephrine (anxiety)]

Instructional Frameworks

- x Interleaving
- x Novelty
- x Spaced Repetition
- x Forced Retrieval
- x Desirable Difficulty



Interleaving

- X Process where multiple subjects or topics are mixed
- X Contrast from blocked practice, where one topic or skill is practiced repeatedly before moving on to the next.

<https://www.structural-learning.com/post/interleaving-a-teachers-guide>

Novelty

- x Interleaving creates novelty
- x Novelty creates desired challenge
 - o Do, Show, Tell, Review, Ask
- x Link novel concepts to known knowledge

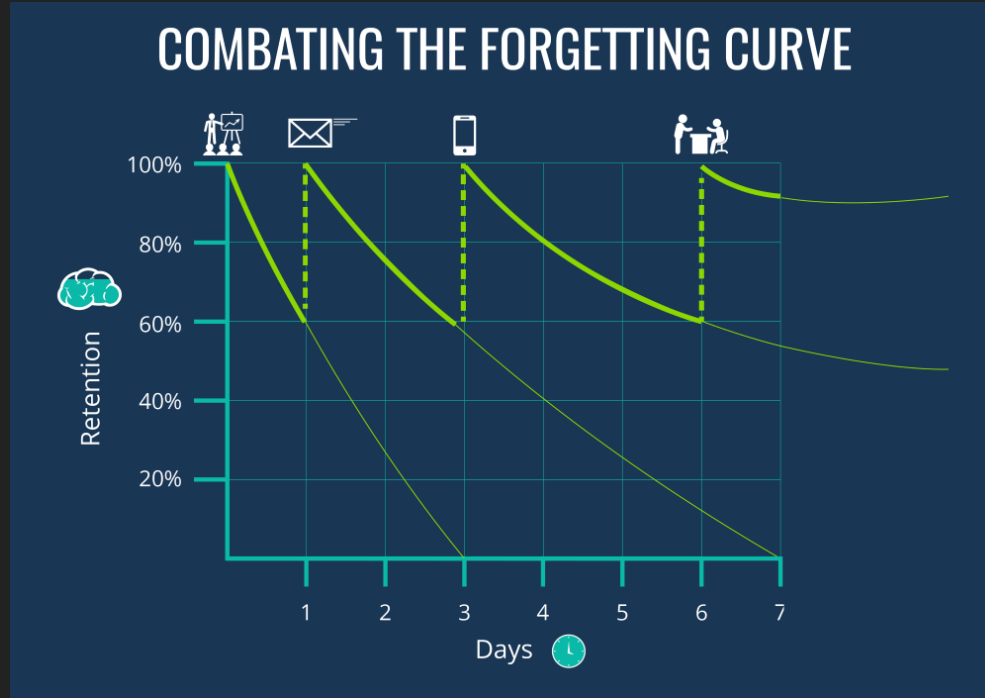
Spaced Repetition

After learning a new concept, skill or idea, learners should give their mind time to *forget* so that the brain, in subsequent study sessions, must *struggle* to recall the information that was learned previously.

<https://academicaffairs.arizona.edu/l2l-strategy-spaced-practice>

Spaced Repetition

Linked to forced retrieval

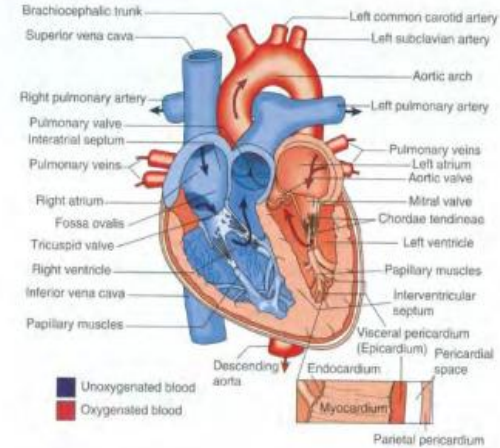


<https://elearningindustry.com/forgetting-curve-combat>

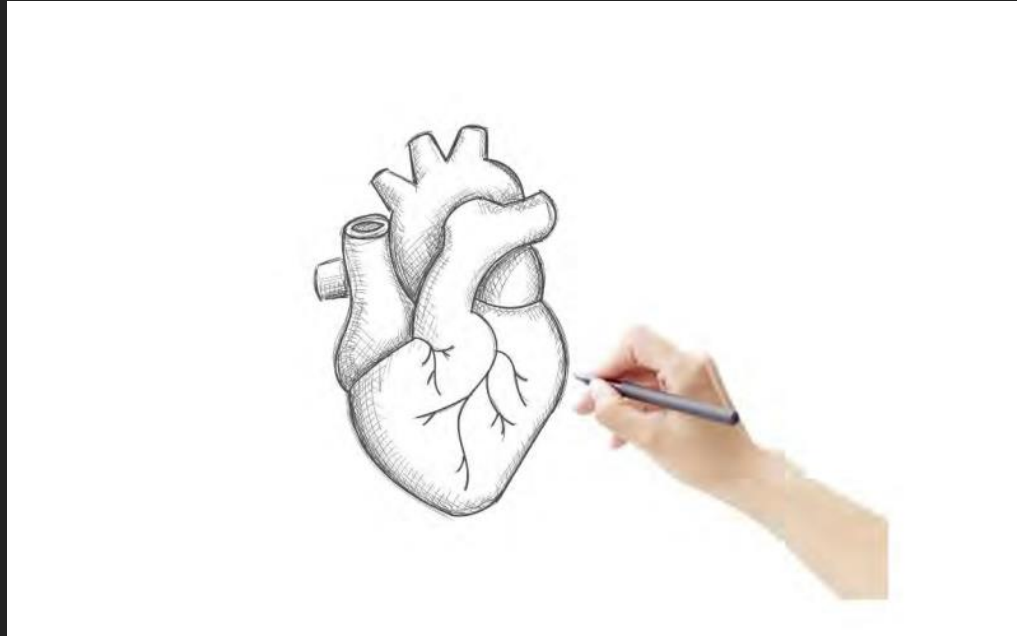
Forced Retrieval

- x Part of combatting the *forget curve* is forced retrieval
- x Quizzes, tests (they can be used for good!)

Appropriate Challenge— Desirable Difficulty



Appropriate Challenge—Better: Faculty Draws



Appropriate Challenge—Best: Students Draw

Secure | <https://whiteboard.lionshare.saintleo.edu/board?conversationId=26290003&slideId=26290033&unique=true&showTools=true>
jeff.borden working in Diving with a Buddy Page 3/4

Vocab Check

Myocardium?

It's the cardiac muscle

Slow Down Please!

The diagram is a hand-drawn cross-section of a heart. It is divided into four main chambers by a vertical line and a horizontal line. The top-left chamber is labeled 'Right Atrium' in blue ink. The top-right chamber is labeled 'Left Atrium' in blue ink. The bottom-left chamber is labeled 'R+ ventricle' in blue ink. The bottom-right chamber is labeled 'Pericardial Muscle' in blue ink. In the center, between the atria and ventricles, are several vertical lines representing 'valves'. The entire heart is enclosed in a brown outline. The drawing is on a whiteboard interface with various toolbars and a list of participants on the right side.

Participants:

- Elsie A Barton
- Paige H Chen
- Wayne O Connolly
- Julia E Desai
- Claire A Gallagher
- Stephanie A Hawk

Approaches

- X Gamification
- X Competencies/Skills
- X Problem-based Learning
- X Case Study
- X Narrative/Storytelling

Competencies/Skills

- X What can a student demonstrate?
- X Assessments linked to content
- X Reflect desired levels: what can a student do under XXX circumstances, and at what level of expertise?

A red double quote mark is positioned at the bottom of a light blue vertical bar.

If you wanted to create an education environment that was directly opposed to what the brain was good at doing, you probably would design something like a classroom.

--John Medina (author of *Brain Rules*)



Applications

How do we design with the neuro-connected learning and science in mind?

Design courses/material that can create:

- ◎ Belonging
- ◎ Proper cognitive load
- ◎ Quick (but not necessarily easy) wins (conation & cognition)
- ◎ Appropriate challenge (desirable difficulty)

A laptop is open on a brown leather sofa. The screen displays a calendar for 2020 with various events like 'Conference', '2020 Convention', and 'First Quarter Report'. To the right of the laptop are a Dell portable charger, a small black device, and a closed laptop. The text 'Online Learning at NU' is overlaid in red on a light blue background.

Online Learning at NU

Optimal Course Components– World Class Learning

NU's online course documentation is created to serve as a North star for **quality and efficacy**. Our teaching and learning mission goes beyond course completion, seeking to provide **authentic educational** experiences, encourage **retention** of information, promote scaffolding, and **motivate students** to succeed.

To create superior learning experiences, NU will look to **consistently replicable learning science** and **neuroscience** practices that can be considered effective for learners. NU courses will assure interactivity, peer-to-peer work, differentiation, and rigor, while providing a **safe place for students to learn**, find support, and access important resources. It takes a village to fully educate the *whole learner*. The concepts, strategies, and procedures are presented as **a guide** in the course development process...

A low-angle, close-up shot of a person's legs and feet as they walk on a sidewalk. The person is wearing blue jeans and dark sneakers with light-colored soles. The sidewalk is made of large, light-colored rectangular tiles. A metal grate with a grid pattern is visible in the background. The lighting is warm, suggesting late afternoon or early morning, and a long shadow of the person is cast onto the tiles.

Questions?

Thank you!

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Borden, J. (Ed.), 2021. *Education 3.0 and learning across modalities*. IGI Global Publishing. DOI: 10.4018/978-1-7998-8032-5



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