

The background of the slide features a complex network of glowing blue lines and nodes, resembling a neural network or a web of connections. The lines are thin and radiate from central points, creating a starburst effect. The overall color palette is dark blue and black, with the glowing lines providing a high-contrast, futuristic aesthetic.

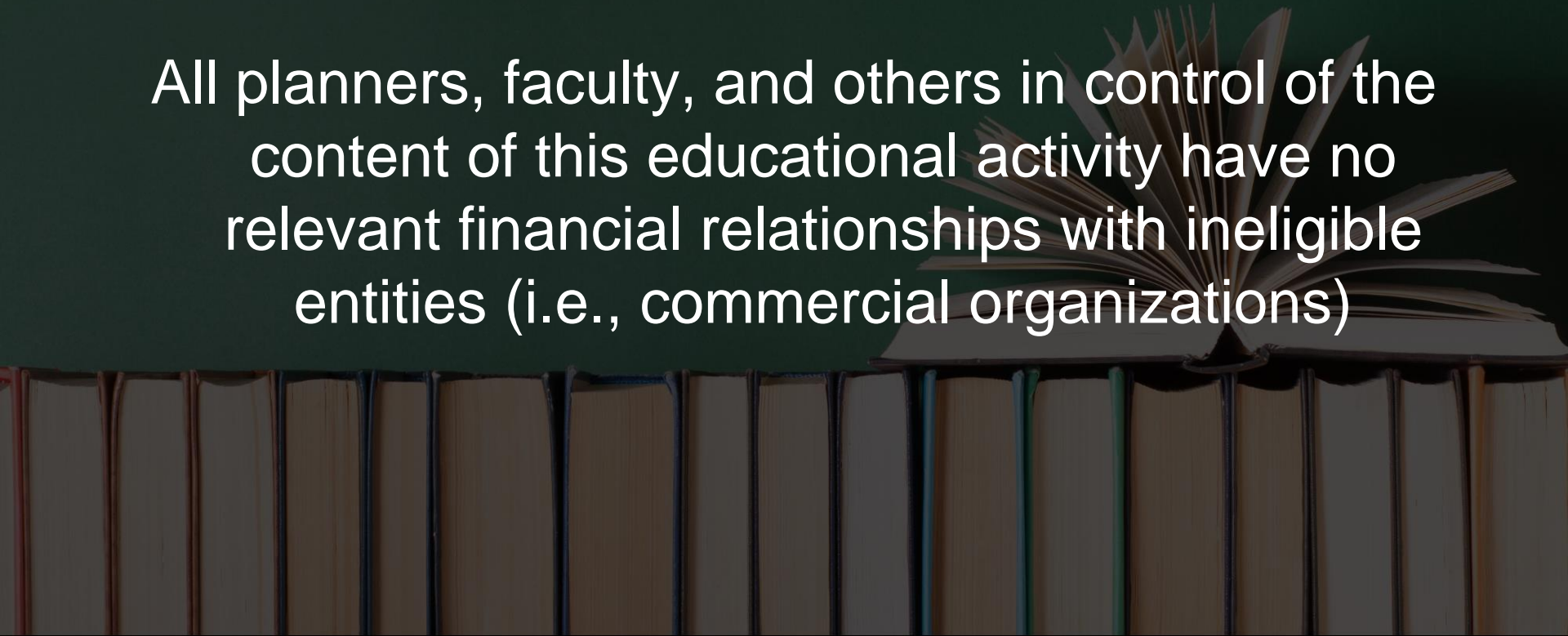
# **Make it Stick!**

# **Cognitive Learning Science**

Jason Hine, MD and Isaac Stickney, MEd, CGS

# **Integrity & Independence in Continuing Interprofessional Development**

All planners, faculty, and others in control of the content of this educational activity have no relevant financial relationships with ineligible entities (i.e., commercial organizations)

A row of several books is shown at the bottom of the slide. The books are mostly closed, with their spines visible. On top of the books, one book is open, showing its pages. The background is a dark, textured green.

# Goals

1. Be able to define spaced repetition, interleaving, generation, and test-enhanced learning.
2. Leverage different modalities in the application of cognitive learning science.
3. Be able to utilize best practices in cognitive learning science in implementing their own curricula in the future.

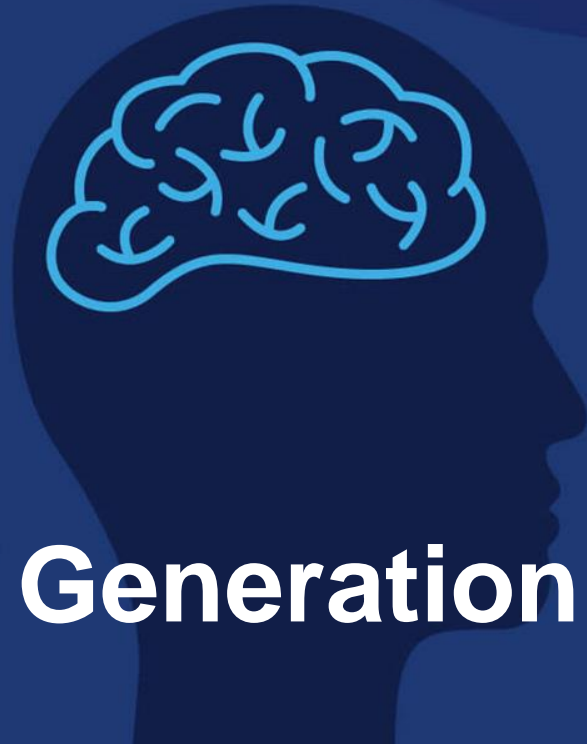
# Spaced Repetition







**Interleaving**



**Generation**



# Test-Enhanced Learning

**You are responsible for creating a curriculum to educate new students on the cardiovascular system and the pulmonary system. Use the cards to build out the curriculum, label sessions with the system/time to be studied and the learning technique to be used.**



**Group Exercise - 15 minutes**



**PRE-SESSION**

**SESSION 1**

2 hours

**BETWEEN SESSION**

**SESSION 2**

2 hours

**BETWEEN SESSION**

**SESSION 3**

2 hours



# Cardiology

# Pulmonary

\_\_ minutes

### Free Choice

Below, indicate the method and description.

### Final Exam

Final evaluative test on materials learned.

*Test-Enhanced Learning*

### Priming Quiz

Before a learner has access to the learning materials, they are quizzed on the topic matter, engaging prior knowledge and priming their brain to recognize their unknowns.

*Test-Enhanced Learning*

### 1 Hour Lecture

Presentation from teacher on topic matter, via PowerPoint or other medium.

### Assigned Reading

Students read through some learning materials on a topic matter.

### Case Discussion / Problem-Based Learning

Students work through a case presentation, create orders, get results.

*Interleaving*

### Infographic / Schema Creation

Learner builds a graphic depiction of an element of physiology or pathology on the topic matter

*Generation*

### Midterm Quiz

Quizzing on material learned thus far.

*Test-Enhanced Learning*

### 20 Minute Lecture

Presentation from teacher on topic matter, via PowerPoint or other medium.

### Small Group Discussion

Students work through case-based problem sets

*Generation / Interleaving if mixed topics*

### Open-Ended Questions

Learners answer open-ended questions on topic matter with either pre-fab questions and/or group discussion

*Generation / Test-Enhanced Learning*

**PRE-SESSION**

**SESSION 1**

2 hours

**BETWEEN SESSION**

**SESSION 2**

2 hours

**BETWEEN SESSION**

**SESSION 3**

2 hours

**Cardiology**  
**Pulmonary**

**30 minutes**

**Priming Quiz**

Before a learner has access to the learning materials, they are quizzed on the topic matter, engaging prior knowledge and priming their brain to recognize their unknowns.

*Test-Enhanced Learning*

**Cardiology**  
**Pulmonary**

**60 minutes**

**1 Hour Lecture**

Presentation from teacher on topic matter, via PowerPoint or other medium.

**Cardiology**  
**60 minutes**

**Small Group Discussion**

Students work through case-based problem sets

*Generation /  
Interleaving if mixed topics*

**Pulmonary**

**60 minutes**

**Infographic /  
Schema Creation**

Learner builds a graphic depiction of an element of physiology or pathology on the topic matter

*Generation*

**Pulmonary**

**20 minutes**

**20 Minute Lecture**

Presentation from teacher on topic matter, via PowerPoint or other medium.

**Pulmonary**

**40 minutes**

**Small Group Discussion**

Students work through case-based problem sets

*Generation /  
Interleaving if mixed topics*

**Cardiology**

**60 minutes**

**Case Discussion /  
Problem-Based Learning**

Students work through a case presentation, create orders, get results.

*Interleaving*

**Cardiology**  
**Pulmonary**

**60 minutes**

**Open-Ended Questions**

Learners answer open-ended questions on topic matter with either pre-fab questions and/or group discussion

*Generation /  
Test-Enhanced Learning*

**Cardiology**  
**Pulmonary**

**120 minutes**

**Final Exam**

Final evaluative test on materials learned.

*Test-Enhanced Learning*

# Discuss Boards

An overhead view of a collaborative workspace. Several people are seated around a light-colored wooden table. In the center, a person with blonde hair is typing on a laptop. To their right, another person is writing on a notepad. Further right, a person is using a computer mouse. The table is cluttered with various items: two large computer monitors, a laptop, keyboards, mice, notebooks, pens, pencils, a small potted plant, a glass of water, and a color calibration chart. The overall atmosphere is one of active collaboration and discussion.



# Commitment-to-Change

A close-up photograph of several hands of different skin tones stacked on top of each other, symbolizing unity and commitment. The hands are positioned in a way that suggests a group effort or a shared goal. The lighting is soft, and the background is blurred, focusing attention on the hands.