Re-envisioning Medical Education: Transforming Constraints into Opportunities

Part ll – The Future is Now

Peter Horneffer, MD
Executive Dean
All American Institute for
Medical Sciences, JM

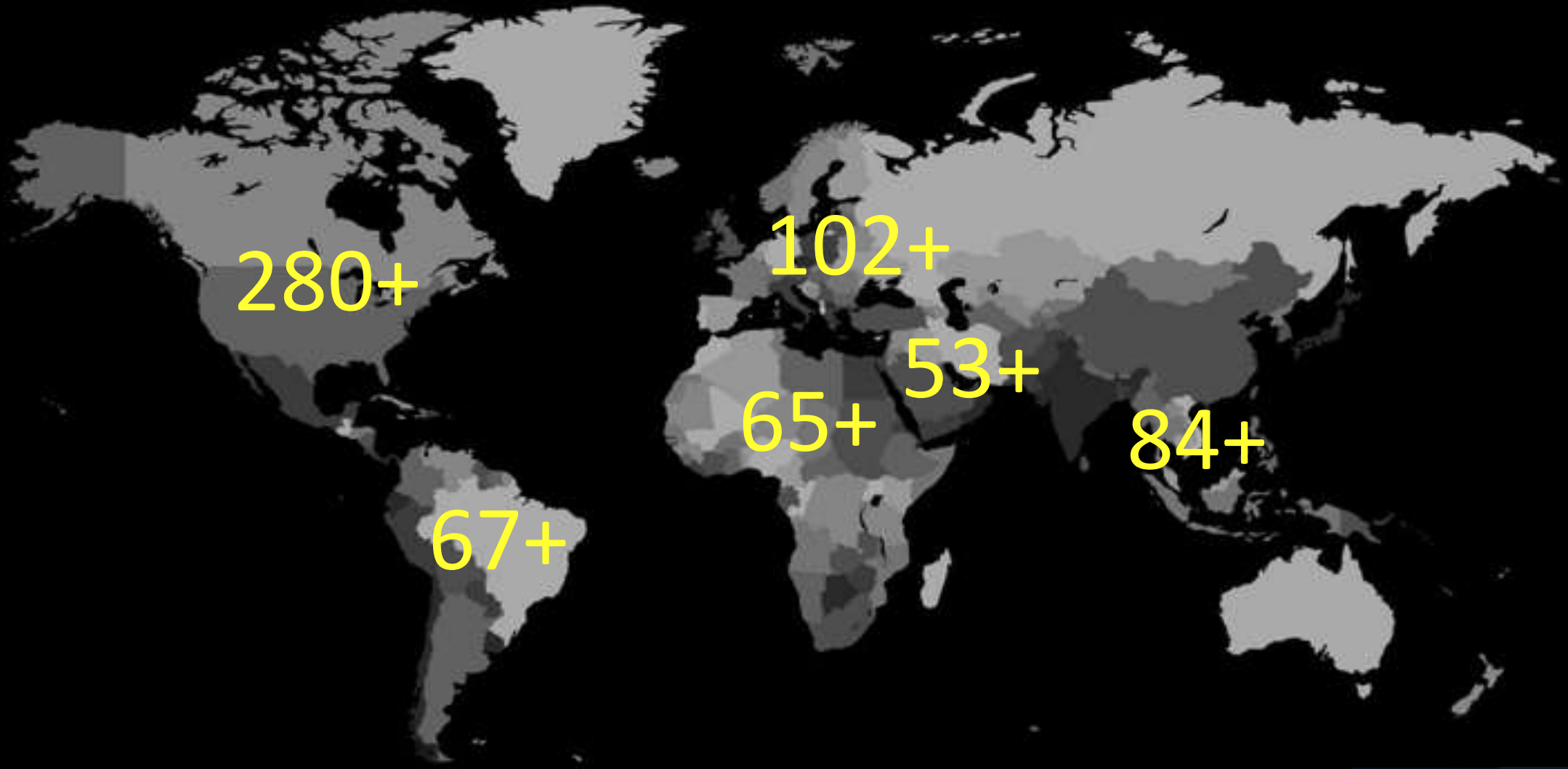
Director
Medical Education Programs
Lecturio.com

Cardiac Surgeon, Sinai Hospital
Baltimore, Maryland

Atsusi "2c" Hirumi, PhD
Professor
Instructional Design & Technology
Medical Education | Learning Sciences
College of Medicine | College of Education
University of Central Florida

Professor Extraordinarious
Dept. of Financial Accounting
College of Accounting Sciences
University of South Africa (UNISA)

A Global Community – We're in this together.



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Participants

- 101 Medical School Deans and Rectors
- 312 Faculty Members
- 70 Directors / CEOs
- 36 Instructional Designers & Curriculum Experts
- 6 Faculty Development Experts
- 11 Education Consultants
- 24 Students
- 91 “Other“

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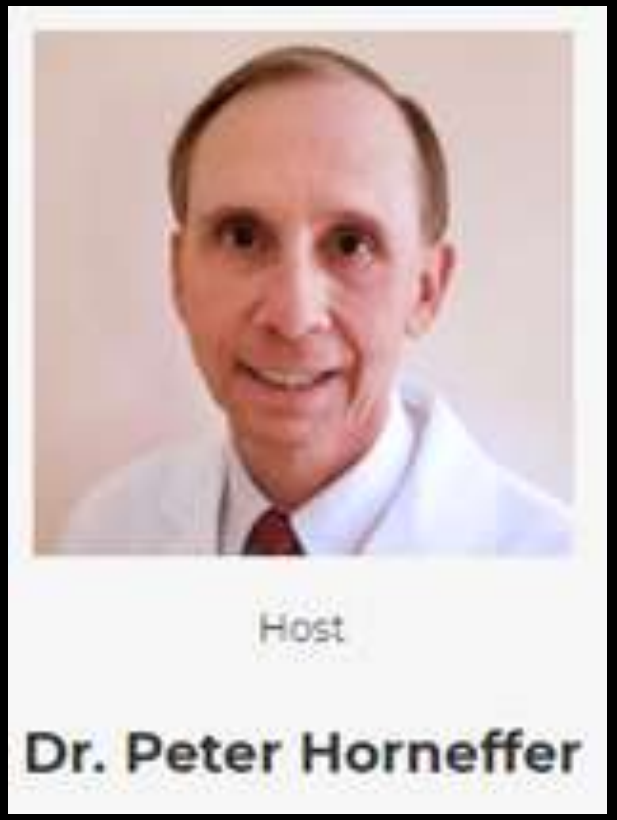
Disclosures…



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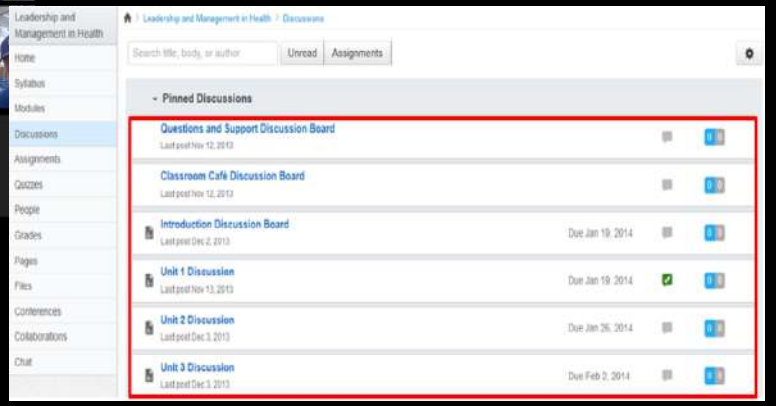
The Current Reality



Ethics (Lecture 1: Introduction)

- Ethics (Moral Philosophy)—>commonly divided into three (not unconnected) branches:
  - ***Applied Ethics*** is conc. with what we ought to do (and think) about particular moral issues;
  - ***Normative Ethics*** is concerned with what sorts of moral considerations are important, generally: e.g., which principles we ought to act on, and/or how it is morally good to be;
  - ***Metaethics*** is concerned with what is going on when we do normative and applied ethics (either formally or informally), and involves asking questions about, e.g., the *meaning* of moral language, whether there are any objective moral *truths*, how we *know* about what the right moral principles are, etc.

- Universality: we all have at least some moral views—> For some people, this will be what makes moral philosophy worth thinking about (because it is a branch of philosophy which clearly engages with something of universal concern)

Ma se la morale è di tutti… —>according to someone, this will be a reason to doubt that philosophy has much to offer: *"Most people manage to think about moral issues quite well, without studying moral philosophy: why should we think that philosophers know more about morality than anyone else?"*

Making use of moral theories and arguments, farne uso al fine di giustificare determinati ragionamenti morali oltre che per "capirci di più": Perhaps the importance of moral philosophy for moral thinking more generally is that moral thinking makes use of – or could usefully make use of – moral *theories* and *arguments*.

- Generality of moral theories: But can moral *theories* be any use to moral thinking? Are they too **general** to be of use? Aren't all moral cases different?
  - *Even if all the cases are different in many respects, it does not follow that there are no general principles which govern them;*
  - *And anyway, there is no reason to think that all moral theories are highly general: moral philosophers often discuss very specific issues, without invoking completely general theories; some theories are theories about very specific things!*

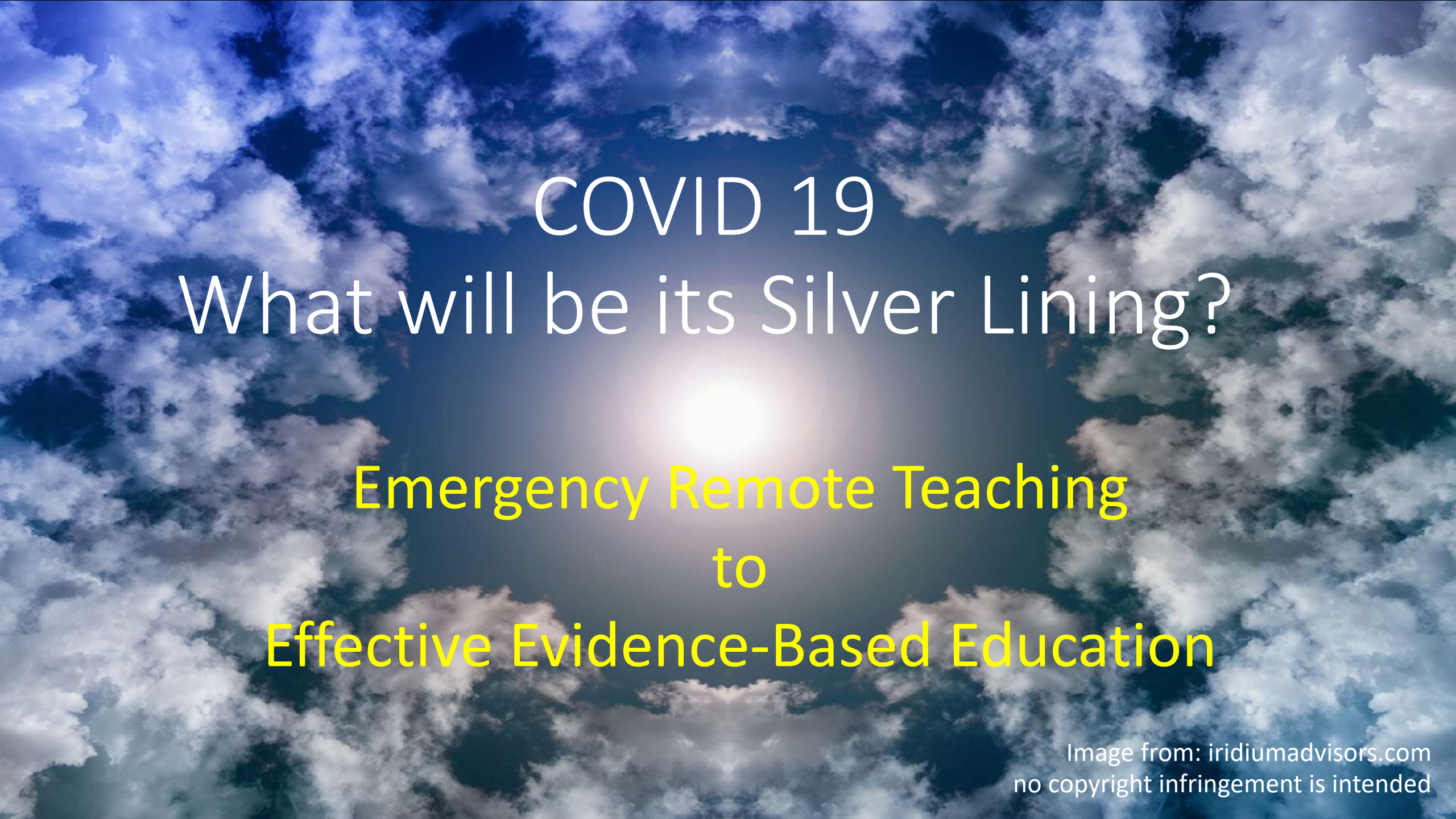
Che effetti hanno i nostri pensieri? Se pensiamo a qualcosa—>morality thinking ci aiuta a capire meglio noi stessi, e, di conseguenza, a capire meglio gli altri.

- Moral theory and evidence: metodo in qualche modo "scientifico", analogo a quello utilizzato dalle scienze naturali. Rather than making *empirical* predictions which are tested by observation, moral theory delivers results which we can test for their acceptability in particular cases.

- Moral philosophy is difficult: not because it involves a great many technical manoeuvres, like logic or some metaphysics and philosophy of language; but because it calls for **good judgement**.

There is not a teachable algorithm or technique for good judgement; knowing what is worth taking seriously in morality calls for sensitivity, honesty and experience of serious moral thought. (These are not things which only philosophers have!)

Emergency Remote Teaching



COVID 19
What will be its Silver Lining?

Emergency Remote Teaching
to
Effective Evidence-Based Education

Image from: iridiumadvisors.com
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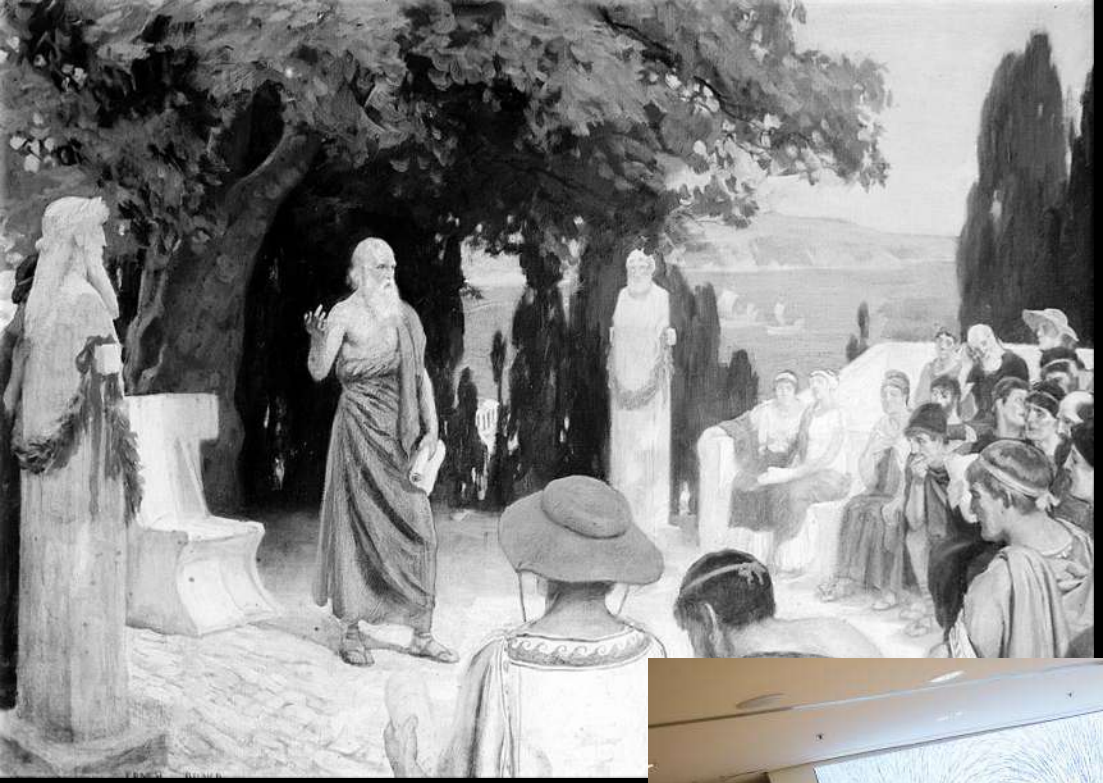
Resources for facilitating EBME

Instructional Designers

- Analyze learners, goals, context
- Define objectives
- Designing and aligning assessments and strategies
- Acquiring and appraising evidence
- Curating and development materials.
- Aligning research, theory, and practice

Learning Platforms

- Curated high quality content
- Guided delivery
- Evidence-based learning strategies
- Data tracking and feedback
- Deliverable remotely !COVID-19!



400 BCE

Image courtesy of the Alan Mason Chesney Medical Archives of the Johns Hopkins Medical Institutions

1960 CE

2020 CE

What's wrong with teacher-directed methods and means?

Teacher-Directed Methods

- PPT and text-based materials focus on the transmission of information
- Limited interactions result in feelings of isolation and anonymity
- Lack interactions to interpret and construct knowledge
- Inordinate use of precious synchronous time
- Based on speaking and listening, not necessarily engaging
- Fail to use potential technology

Teacher-Directed Methods

Without interactions, instruction may simply become "passing on content as if it were dogmatic truth, and the cycle of knowledge acquisition, critical evaluation and knowledge validation, that is important for the development of higher-order thinking skills, is nonexistent."

(Shale & Garrison, 1990, p. 29)

What is the difference between information vs. education?

Information

Audio, video, text, and/or graphic designed to transmit a message from sender to receiver

Education

Series of events & interactions intentionally designed to facilitate learning

Craft-Based (SME) vs Systematic Design

Information

Audio, video, text, and/or graphic desgined to transmit a message from sender to receiver

Education

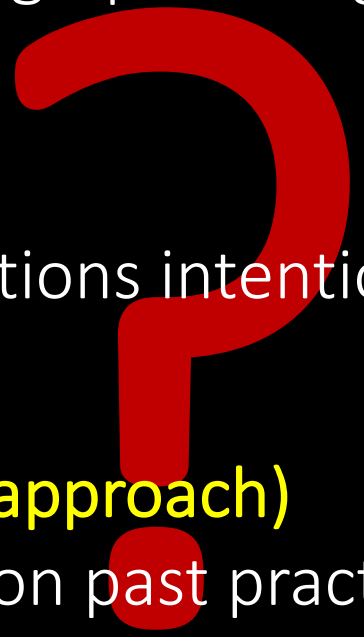
Series of events & interactions intentionally designed to facilitate learning

Craft-Based Design (SME approach)

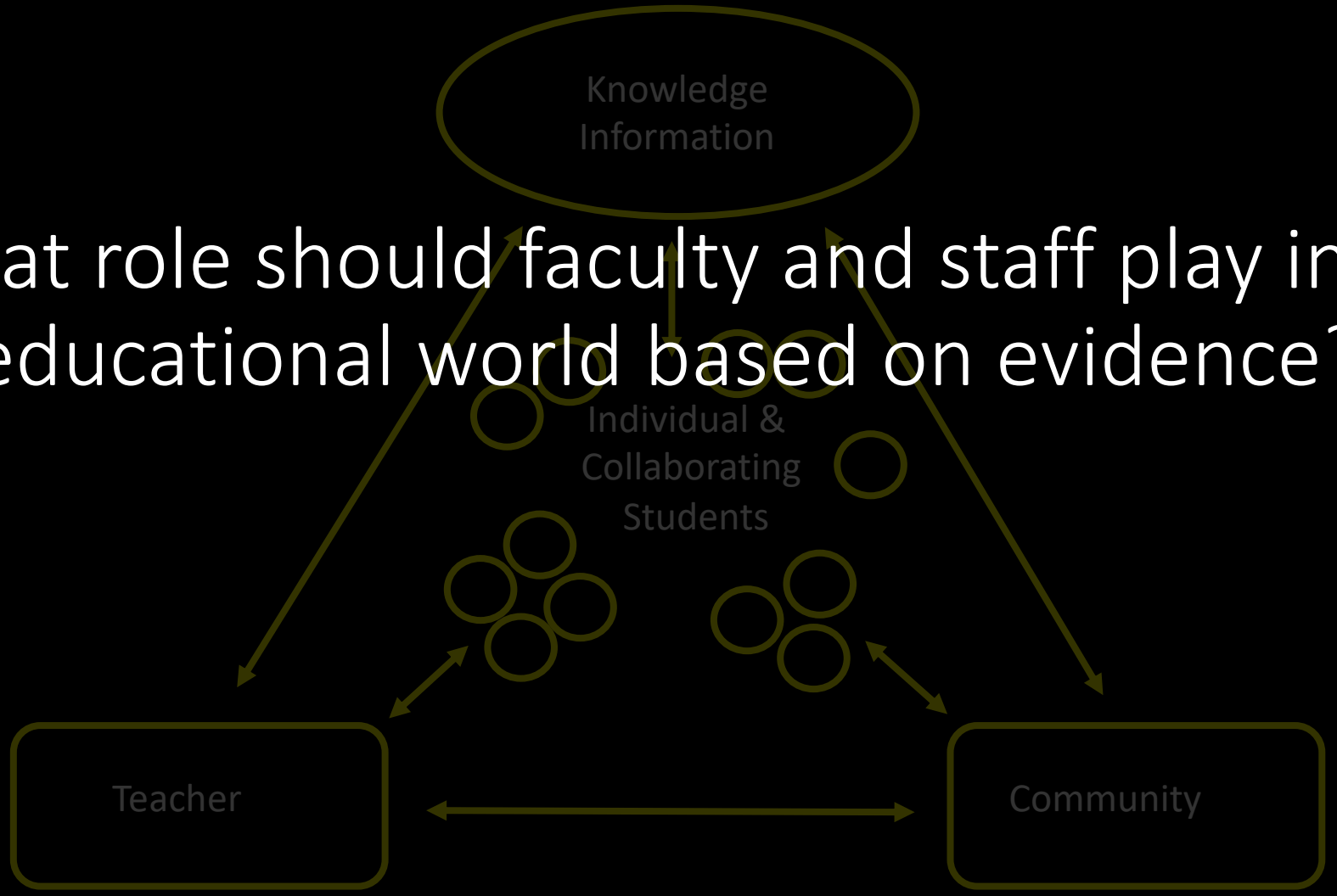
Events & activities based on past practices, opinions, fads, politics, etc. (N=1)

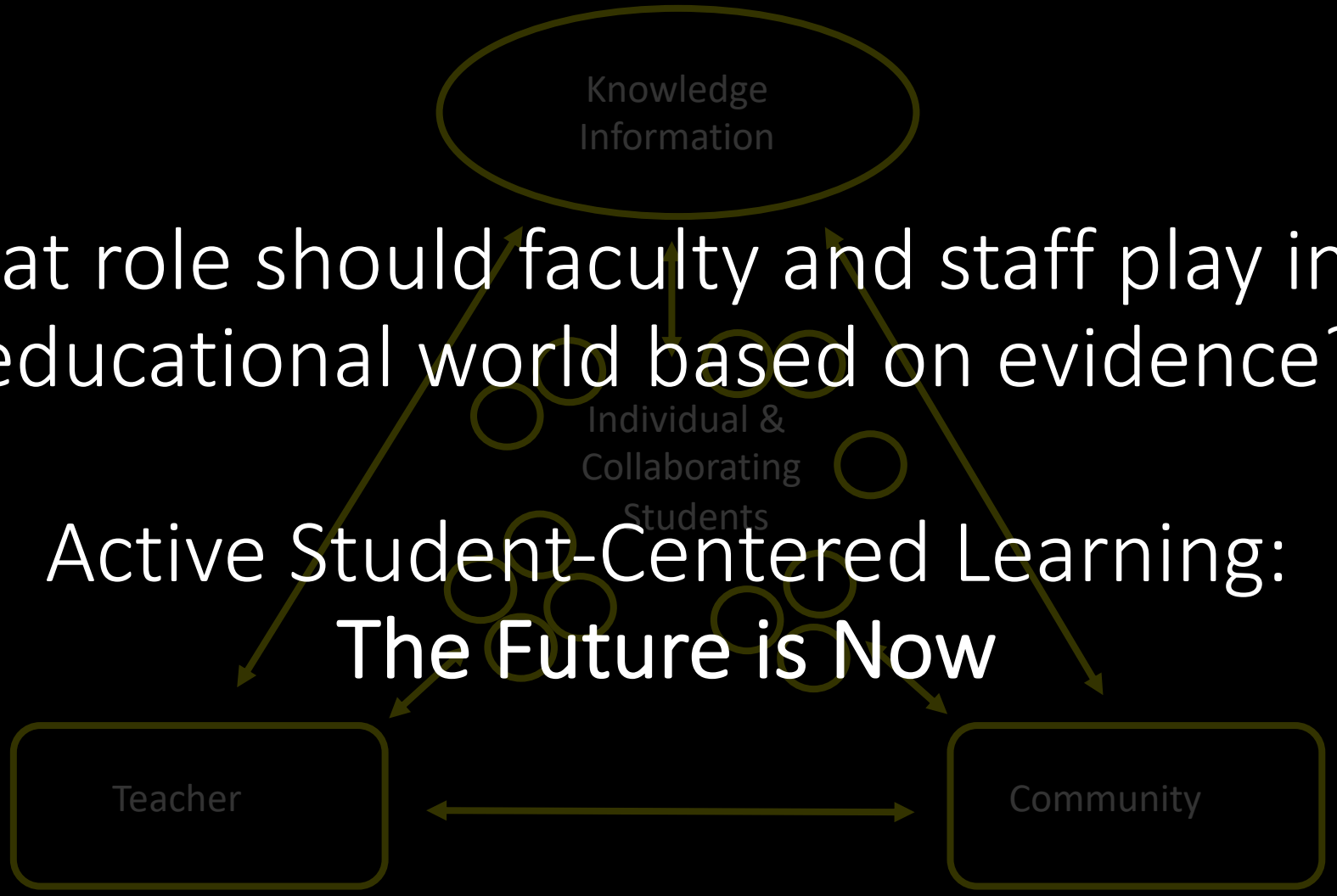
Systematic (evidence-based) Design

Events & activities based on practical experience, research & theory



What role should faculty and staff play in an educational world based on evidence?

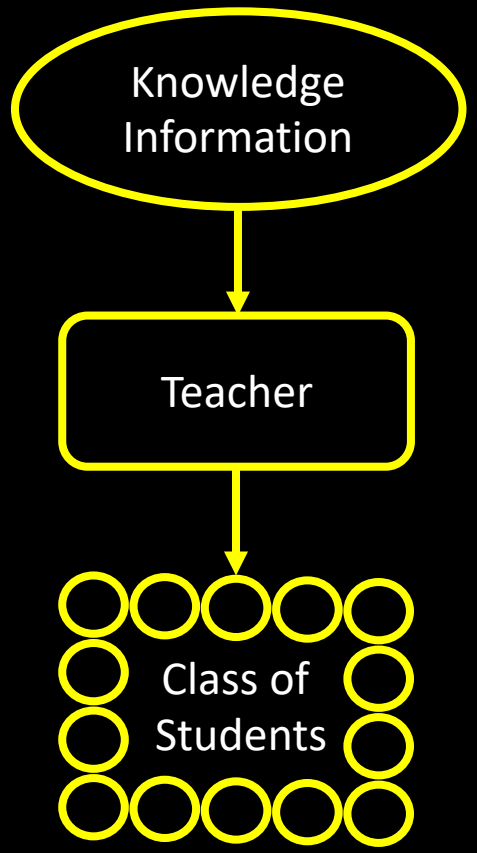




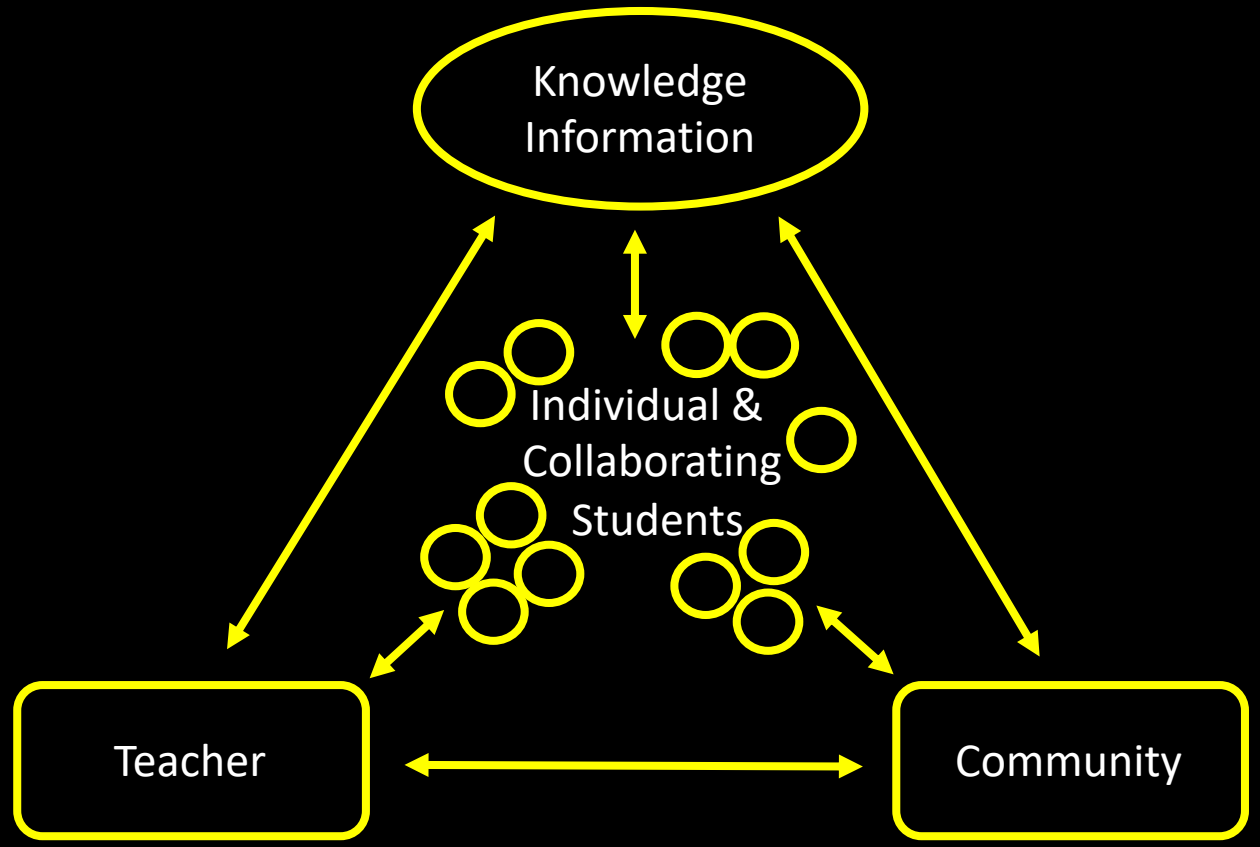
What role should faculty and staff play in an educational world based on evidence?

Active Student-Centered Learning:
The Future is Now

Active Student-Centered Learning (Table)



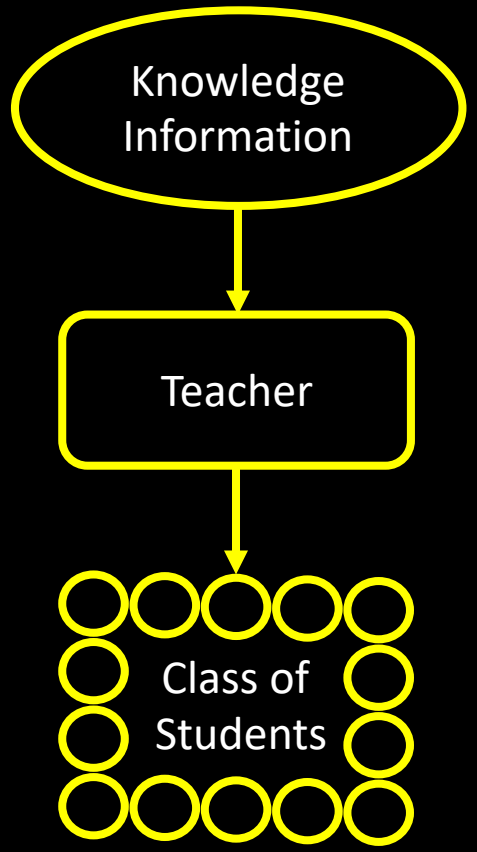
Teacher-Directed Learning



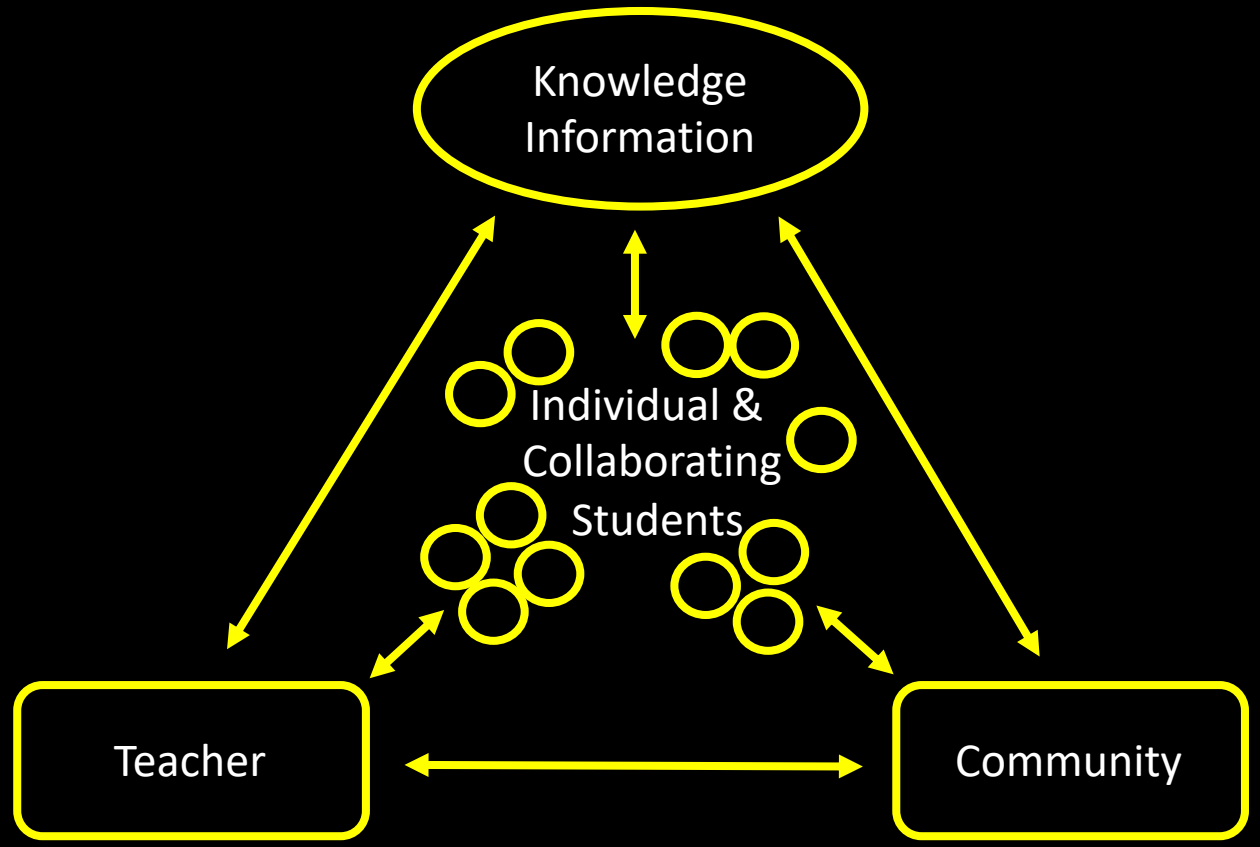
Student-Centered Learning

(Hirumi, 2002)

Active Student-Centered Learning (Tactics)

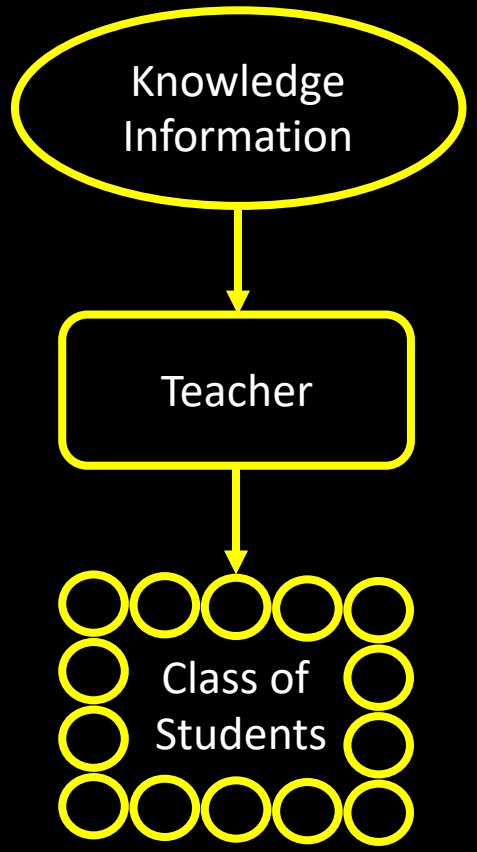


Teacher-Directed Learning

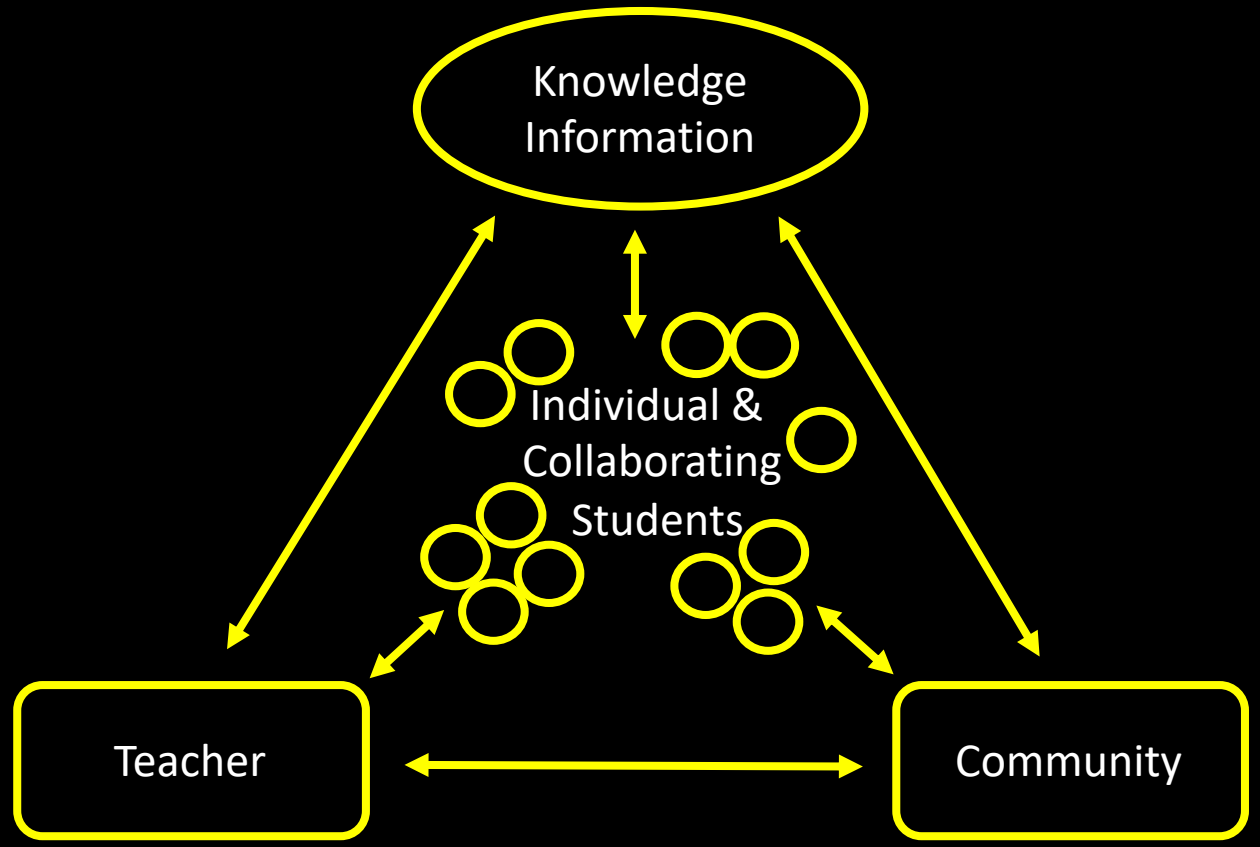


Student-Centered Learning

Active Student-Centered Learning (Strategies)



Teacher-Directed Learning



Student-Centered Learning

Table 3. Sample Instructional Treatment Plan

Event	Description	Tools

(Hirumi, 2014b)

Table 3. Sample instructional strategy applying guided experiential learning (Clark, 2004)

Event	Description	Tools
Goals		
Reasons & Activation		
Demonstration		
Application		
Integration		
Assessment		

Table 3. Sample instructional strategy applying guided experiential learning (Clark, 2004)

Event	Description	Tools
Goals	Asynchronous: Present terminal and enabling objectives Synchronous: Review objectives at start, refer during	
Reasons & Activation	Asynchronous: Ask students to recall problems with misalignment. Activate prior knowledge of objectives Synchronous: Ask students to recall problems with misalignment. Activate prior knowledge of objectives	
Demon-stration	Asynchronous: Embed content information on (a) NRT vs. CRT, (b) types of assessment, and (c) forms of assessments within video of expert completing LAAT Synchronous: Demonstrate process for completing a learner assessment alignment table. Provide links to and review content information on NRT vs. CRT, types and forms of assessments.	
Application	Asynchronous: Ask learners to generate individual draft LAATs Synchronous: Ask learners to draft simple LAAT in class, and complete individual assignment online.	
Integration	Asynchronous: Learners to complete LAAT as team for course project. Post to receive feedback. Synchronous: Learners may work with teammates in class	
Assessment	Asynchronous: Use assessment rubric to provide feedback on drafts as well as to provide feedback and evaluate final copy. Synchronous: Use assessment rubric to provide feedback on drafts	

Table 3. Sample instructional strategy applying guided experiential learning (Clark, 2004)

Event	Description	Tools
Goals	Asynchronous: Present terminal and enabling objectives Synchronous: Review objectives at start, refer during	• LMS (Modules) • LMS (Conference) • Class
Reasons & Activation	Asynchronous: Ask students to recall problems with misalignment. Activate prior knowledge of objectives Synchronous: Ask students to recall problems with misalignment. Activate prior knowledge of objectives	• LMS (Modules) • LMS (Conference) • Class
Demonstration	Asynchronous: Embed content information on (a) NRT vs. CRT, (b) types of assessment, and (c) forms of assessments within video of expert completing LAAT Synchronous: Demonstrate process for completing a learner assessment alignment table. Provide links to and review content information on NRT vs. CRT, types and forms of assessments.	• LMS (Modules) • LMS (Conference) • Class
Application	Asynchronous: Ask learners to generate individual draft LAATs Synchronous: Ask learners to draft simple LAAT in class, and complete individual assignment online.	• LMS (Modules) • LMS (Discussion) • LMS (Conference) • Class
Integration	Asynchronous: Learners to complete LAAT as team for course project. Post to receive feedback. Synchronous: Learners may work with teammates in class time permitting	• LMS (Modules) • LMS (Discussion) • LMS (Conference) • Class
Assessment	Asynchronous: Use assessment rubric to provide feedback on drafts as well as to provide feedback and evaluate final copy. Synchronous: Use assessment rubric to provide feedback on drafts	• LMS (Modules) • LMS (Discussion) • LMS (Conference) • Class

Overview

You will encounter these interactive elements in the following cases.
They will either provide you with useful information or help you progress with the case.

Question: What should you say?

Yes | No

Choose the correct answer to continue the case.

New studies about COVID-19 are being published frequently, and the best strategies will likely evolve.

This case illustrates the best known practices for COVID-19 patients at the time of publication.

Medical glossary | Specific information | Additional information

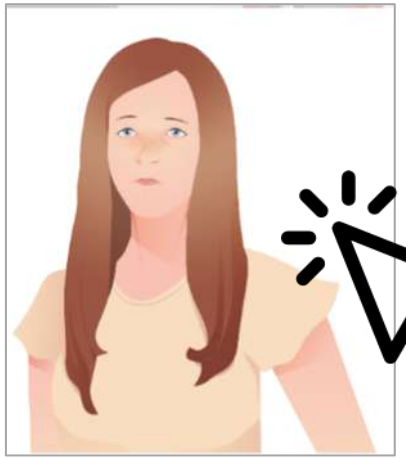
Previous slide | Next slide

Back | Start the case

Case Selection

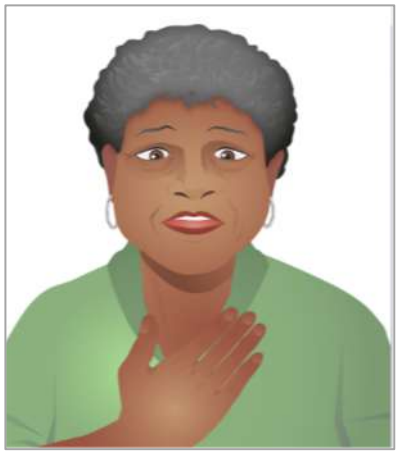
For more details, click on the case.

Early Symptomatic Management



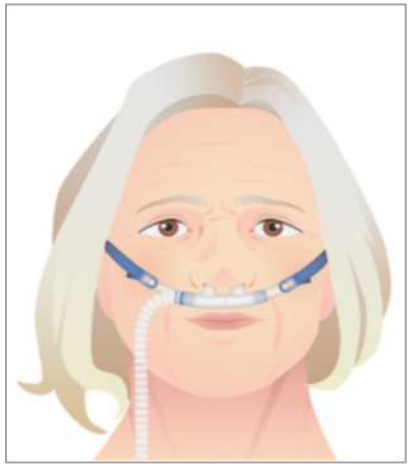
Managing Sepsis

Airway Considerations

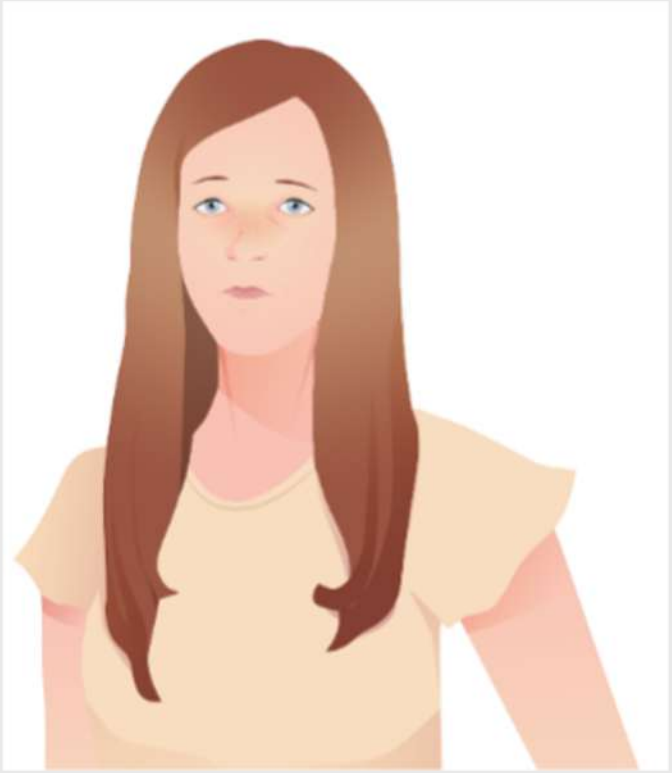


Cardiac Arrest Management

Hypoxia Management in Ventilated Patients



Early Symptomatic Management



Lead author: Julie Rice, MD, MSMS
Co-Authors: Eisha Chopra, MD, Julianna Jung, MD, Daniel Swedien, MD

Worsening dyspnea in patients with suspected or confirmed COVID-19 infection is concerning for progressing pulmonary disease. These patients warrant further inpatient evaluation and management. In this case, you'll gain an overview of supportive care measures for symptomatic patients and infection control interventions necessary to reduce COVID-19 transmission.

The learning objectives for this case are:

- Choose correct PPE for providers caring for COVID-19-positive patients.
- Apply initial management steps for symptomatic COVID-19-positive patients that minimize aerosolization.
- Describe why non-invasive ventilation (NIV) is avoided in COVID-19-positive patients.
- Recall goal oxygenation targets for symptomatic/hypoxic COVID-19-positive patients.

Start the case

The Case of AB

AB is a 41-year-old man who complains of cough and shortness of breath (SOB).

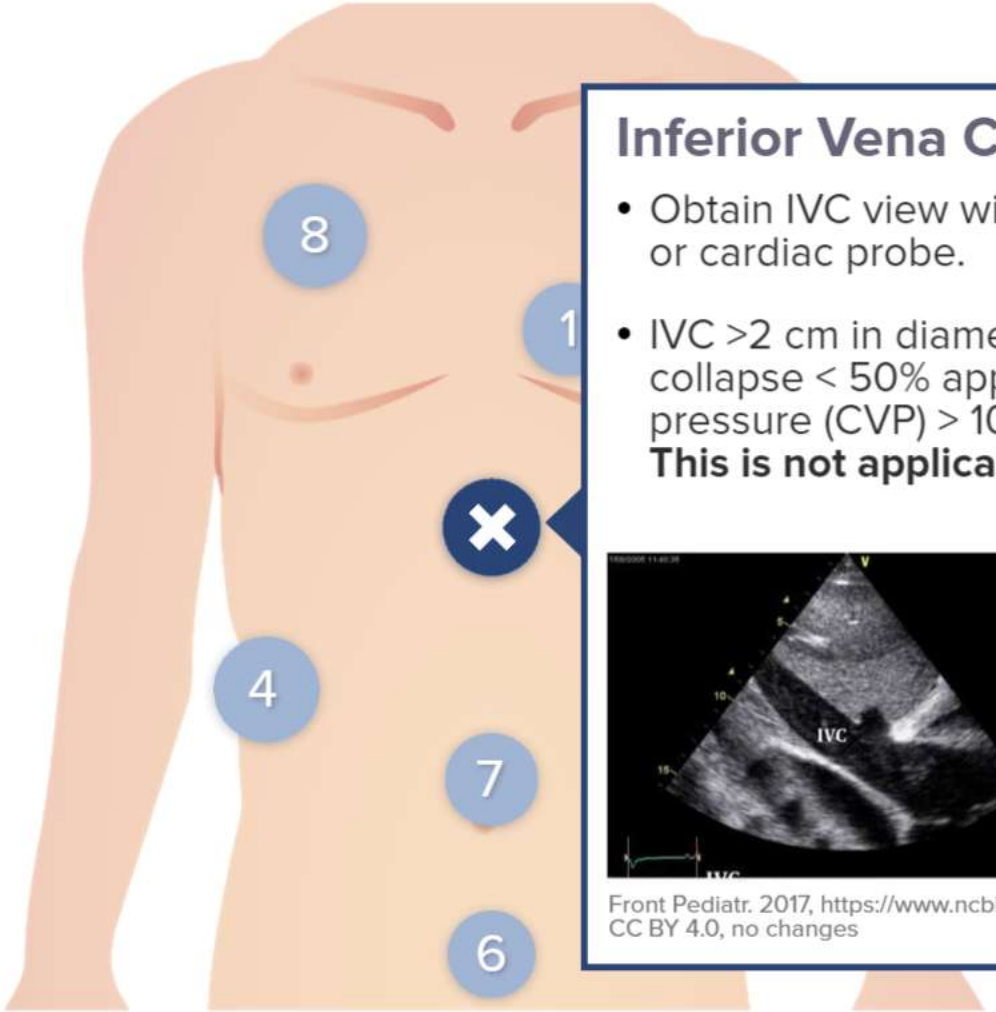
He initially presented to the emergency department (ED) last week for fever, sore throat, and myalgia.

He had a positive SARS-CoV-2 RNA test and was discharged home to self-quarantine.

He comes back to the ED today for persistent fevers, new productive cough, and increasing SOB with pleuritic chest pain.

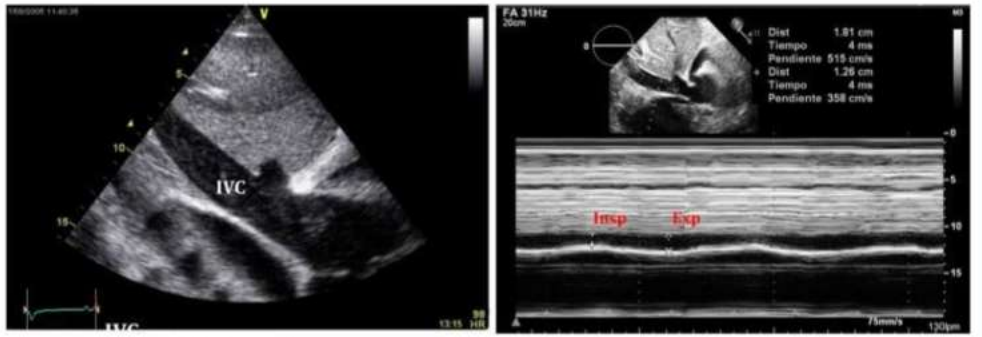
Next

RUSH Exam



Inferior Vena Cava (IVC) View

- Obtain IVC view with either abdominal or cardiac probe.
- IVC >2 cm in diameter and inspiratory collapse < 50% approximates central venous pressure (CVP) > 10 cmH_2O.
  This is not applicable for intubated patients!



Front Pediatr. 2017, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5401877/figure/F11/, CC BY 4.0, no changes

Back

Next

Pulmonary views

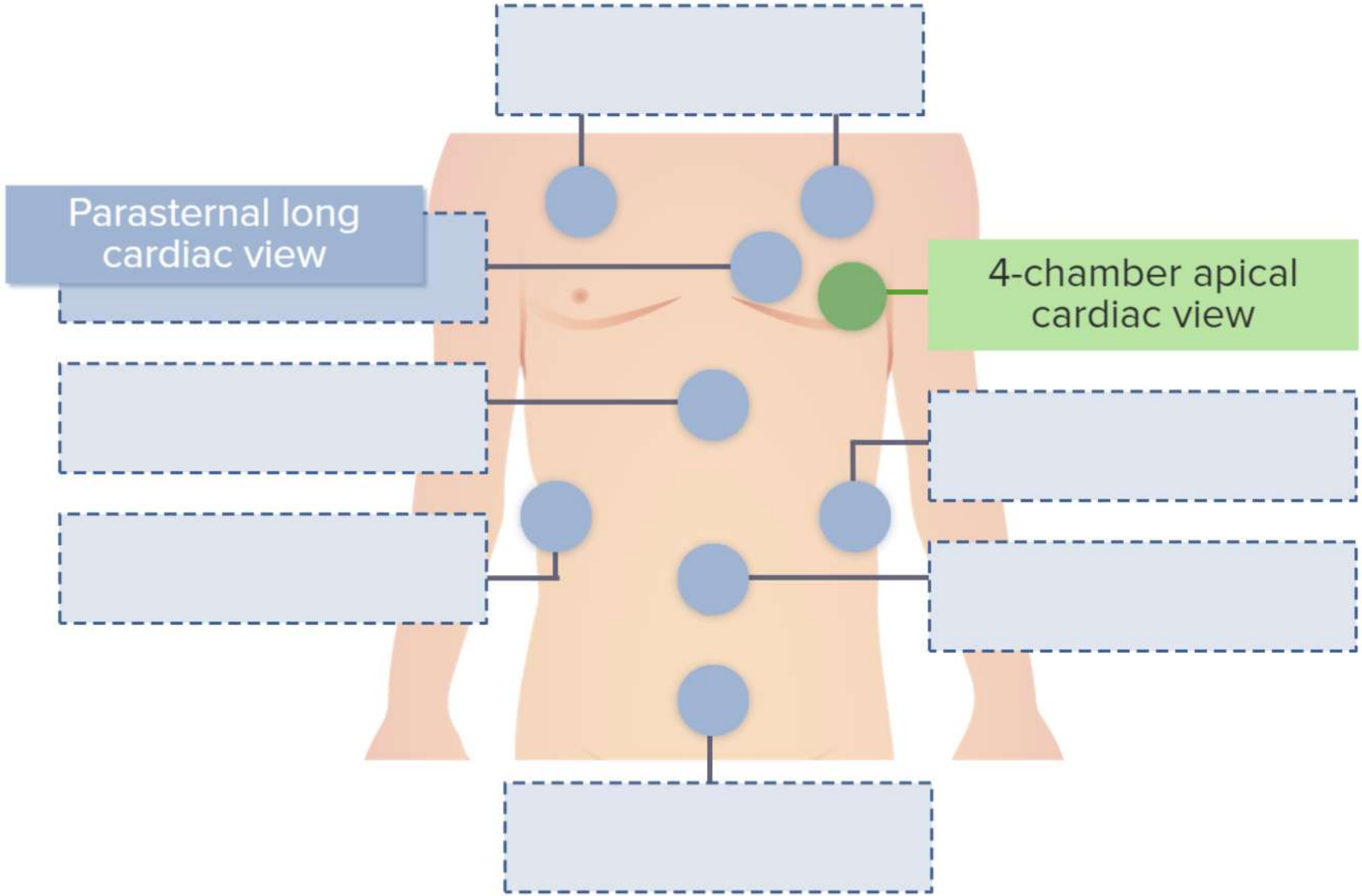
Inferior vena cava (IVC) view

RUQ/Morison's pouch with thorax view

Suprapubic/ bladder view

Aorta views

LUQ/splenorenal with thorax view



Refresh

?

Back

Next

Parasternal long cardiac view

Pulmonary views

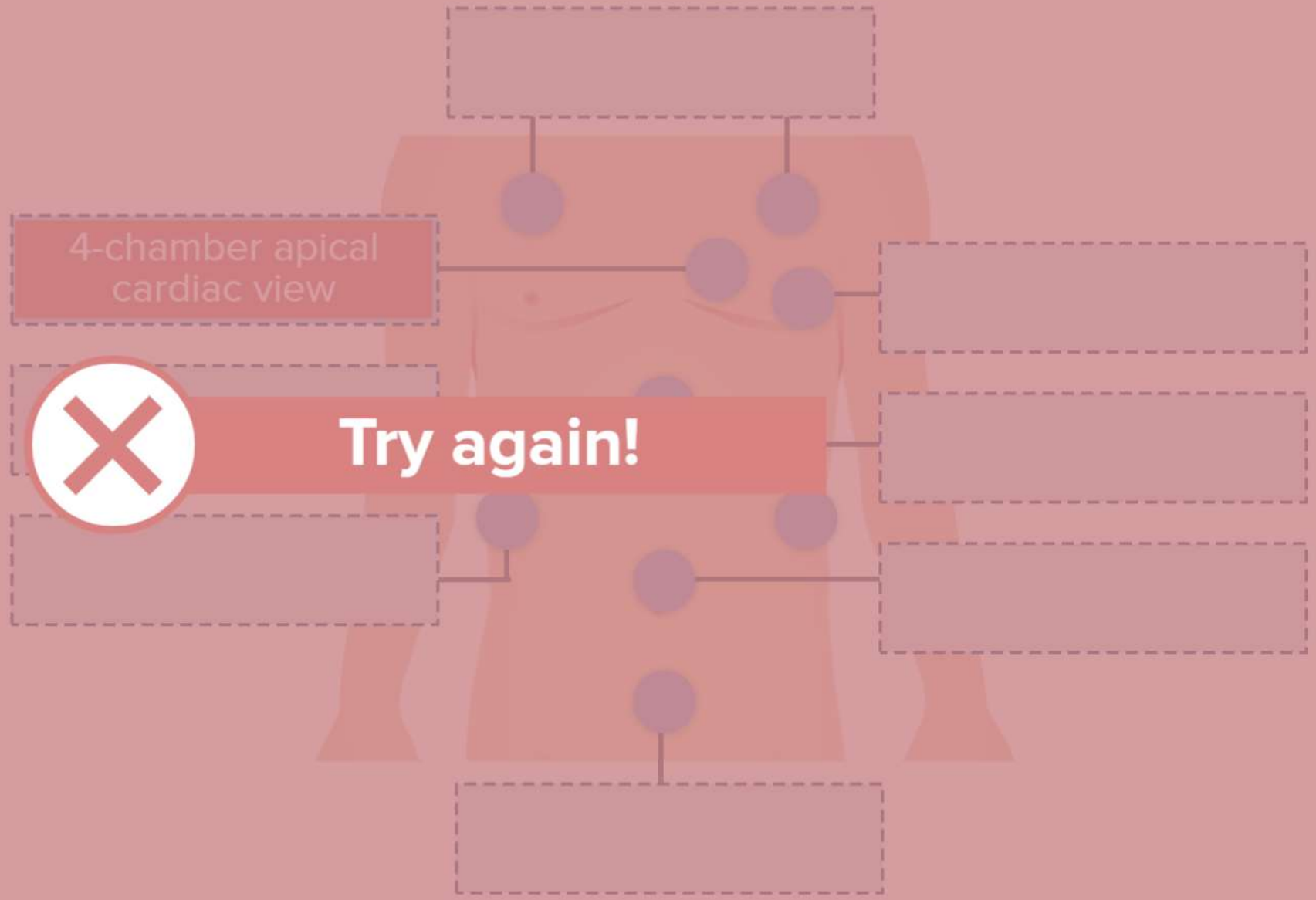
Inferior vena cava (IVC) view

RUQ/Morison's pouch with thorax view

Suprapubic/ bladder view

Aorta views

LUQ/splenorenal with thorax view

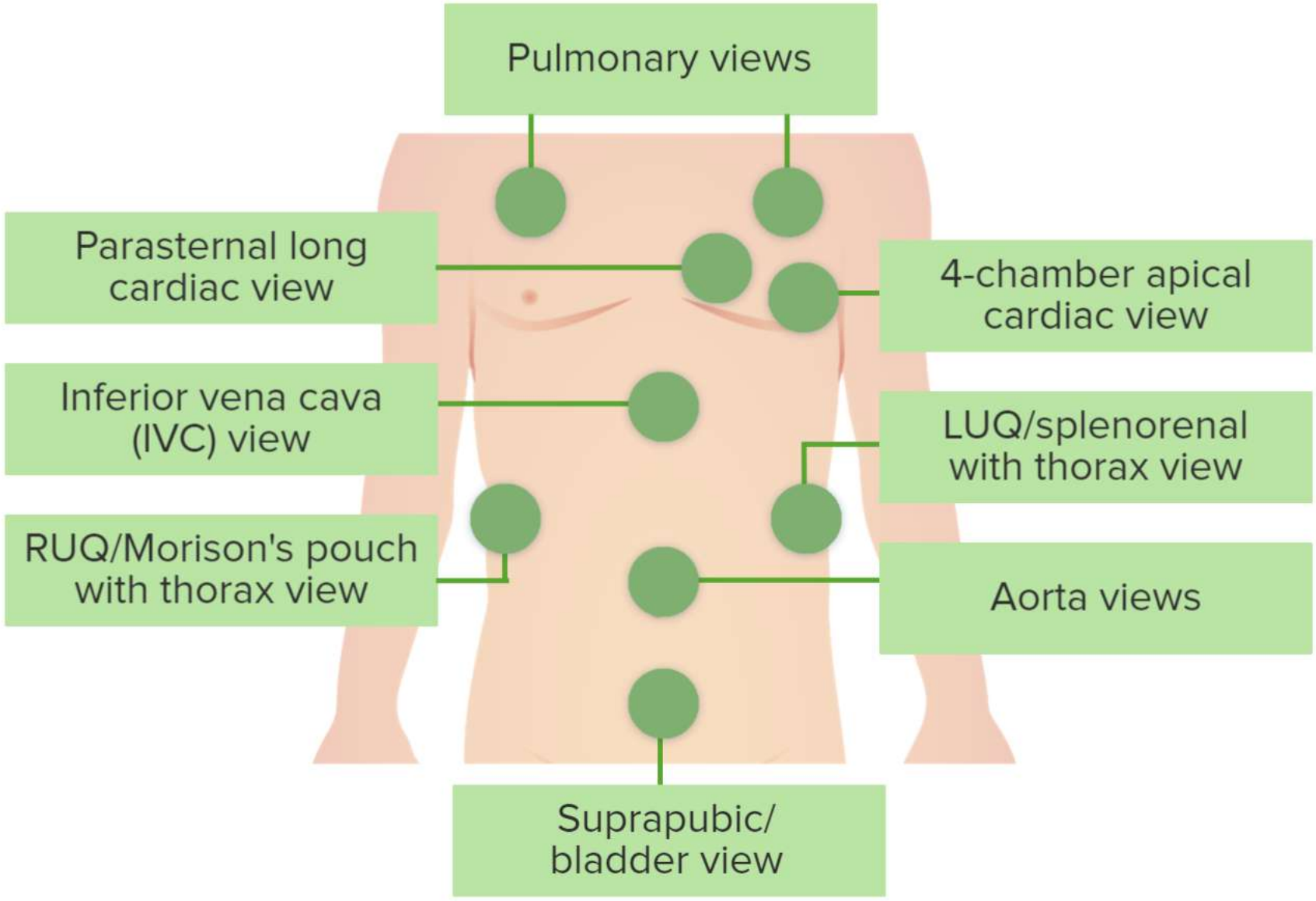


Try again!

Refresh

Back

Next



Try again

Continue case

Test yourself 2/2

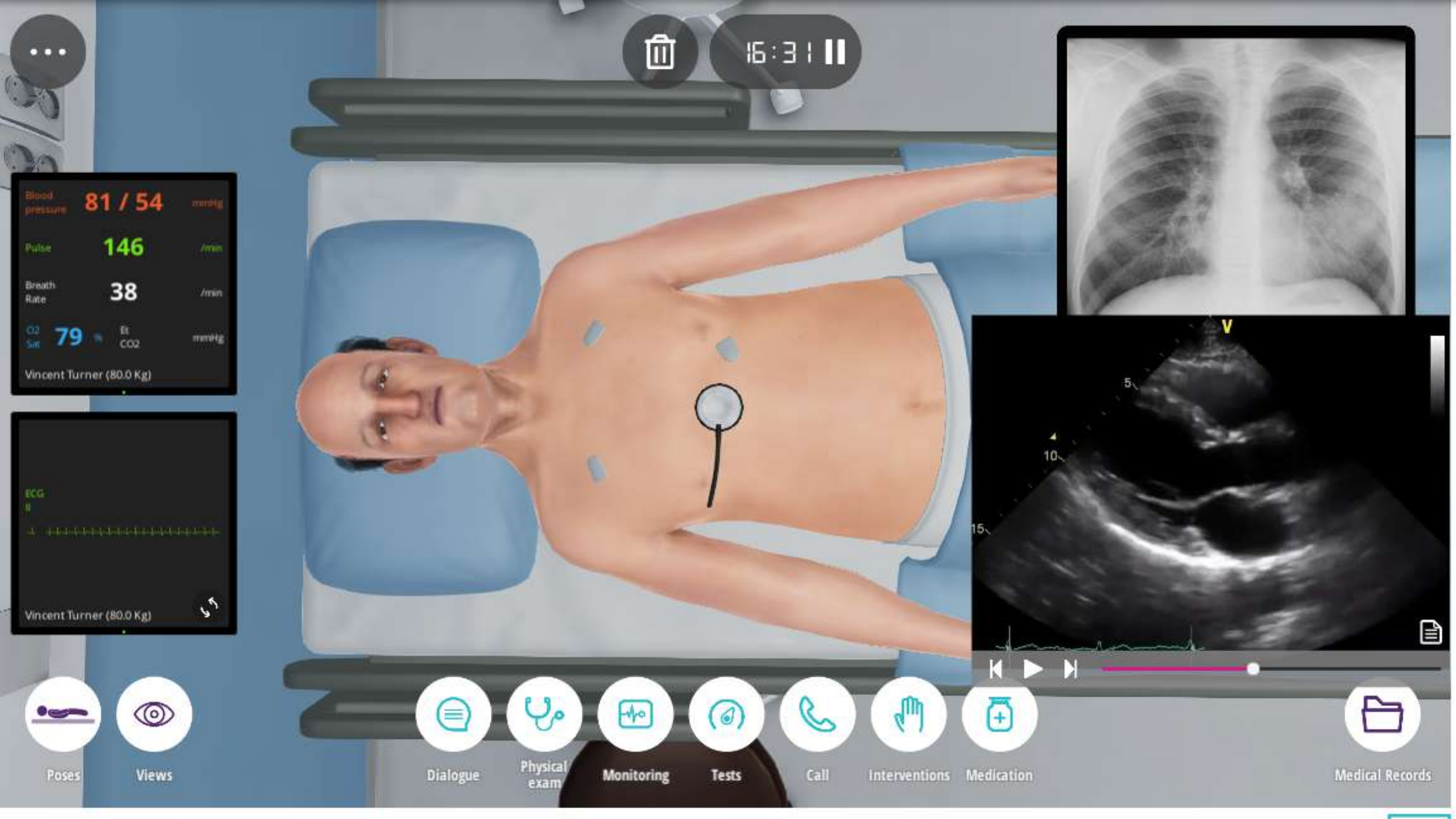
Choose the right answer.

Why is NIPPV avoided in patients with COVID-19?

- It decreases lung compliance.
- There is no data for mortality reduction.
- There is a risk of virus aerosolization.

Great! You managed all the questions right! Select a new case

Go to case selection


16:31
Blood pressure
81 / 54
mmHg
Pulse
146
/min
Breath Rate
38
/min
O2 Sat
79
%
Et CO2
mmHg
Vincent Turner (80.0 Kg)
ECG
II
Vincent Turner (80.0 Kg)
V
5
10
15
Poses
Views
Dialogue
Physical exam
Monitoring
Tests
Call
Interventions
Medication
Medical Records

When do we use teacher-directed vs. learner-centered methods?

Learned Outcomes

Table 2. Comparison of published taxonomies of learning

Tripartite (Hilgard, 1980)	Gagne (1985)	Bloom (1956)	Revised Bloom Anderson & Krathwohl (2001)		Anderson (1981)	Reigeluth & Moore (1999)	Miller (1990)	Krathwohl, Bloom & Masia (1964)	Simpson (1972)
Cognitive	Verbal Information	Knowledge	Factual Knowledge Conceptual Knowledge Procedural Knowledge Meta-Cognitive Knowledge	Remember	Declarative Knowledge	Memorize Information	Knows (Knowledge)		
	Concepts	Comprehension		Understand		Understand Relationships	Knows How (Competence)		
	Procedures & Rules	Application		Apply	Procedural Knowledge	Apply Skills	Shows How (Performance)		
	Problem Solving	Analysis Synthesis Evaluation		Analyze		Apply Generic Skills	Does (Action)		
	Cognitive Strategies			Evaluate					
				Create					
Affective	Attitudes							Receiving Responding Valuing Organization Characterization	
Psychomotor	Motor Skills								Perception Set Guided Response Mechanism Complex Response Adaptation Origination

Learned Outcomes

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Cognitive	Problem Solving	Analysis Synthesis Evaluation		Analyze	Procedural Knowledge	Apply Generic Skills	Does (Action)		
	Cognitive Strategies			Evaluate					
				Create					
Affective	Attitudes							Receiving Responding Valuing Organization Characterization	
Psychomotor	Motor Skills								Perception Set Guided Response Mechanism Complex Response Adaptation Origination

Blended Learning

Synchronous
(f2f)
Ill-Structured
Dynamic Info

BLENDED

Asynchronous
(online)
Well-structured
Stable Info

(Hirumi, Bradford, & Rutherford, 2011)

The Flipped Classroom

IN CLASS

OUT OF CLASS

BEFORE

Students prepare to participate in class activities

GOAL

DURING

Students practice applying key concepts with feedback

GOAL

AFTER

Students check their understanding and extend their learning

GOAL

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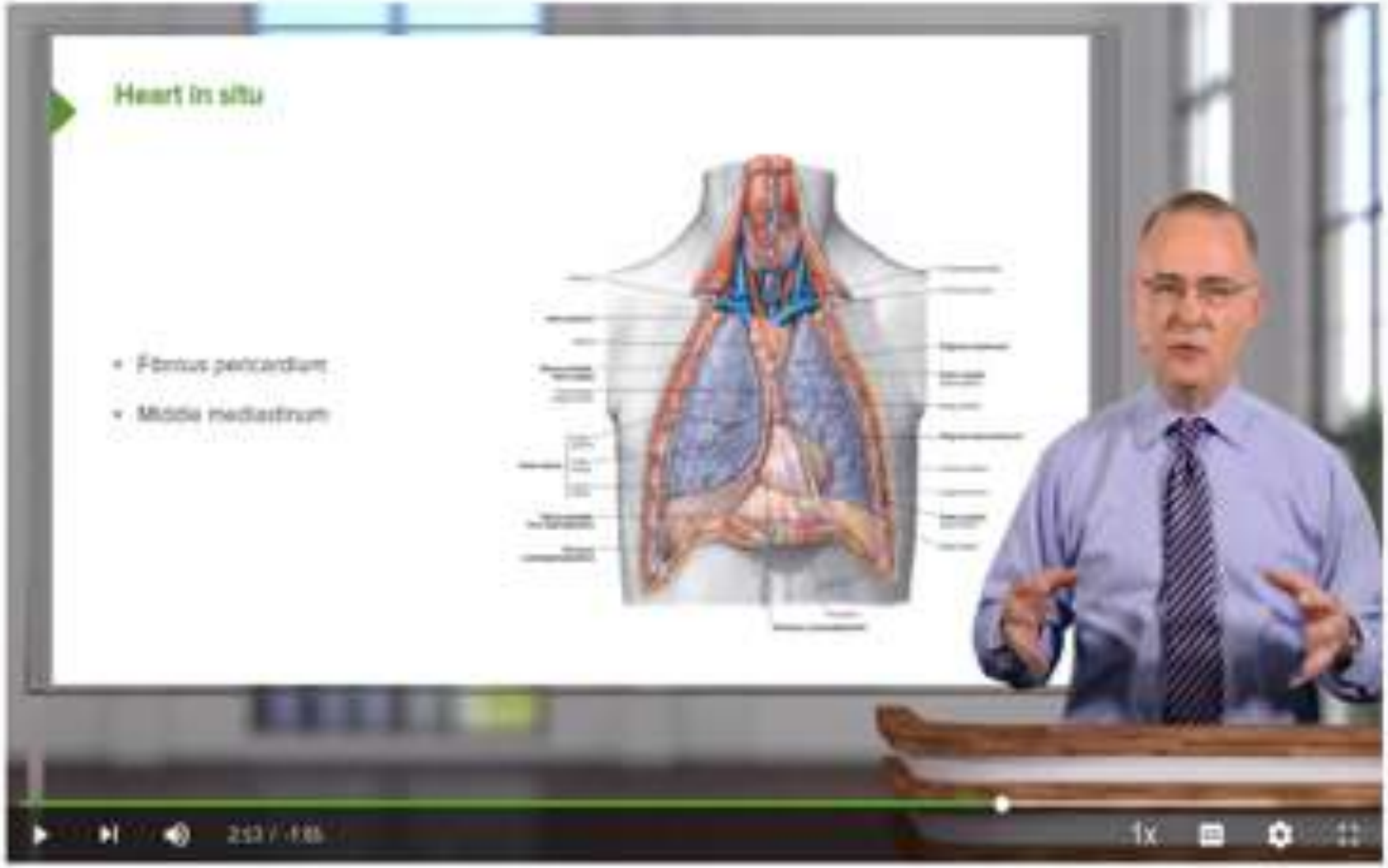
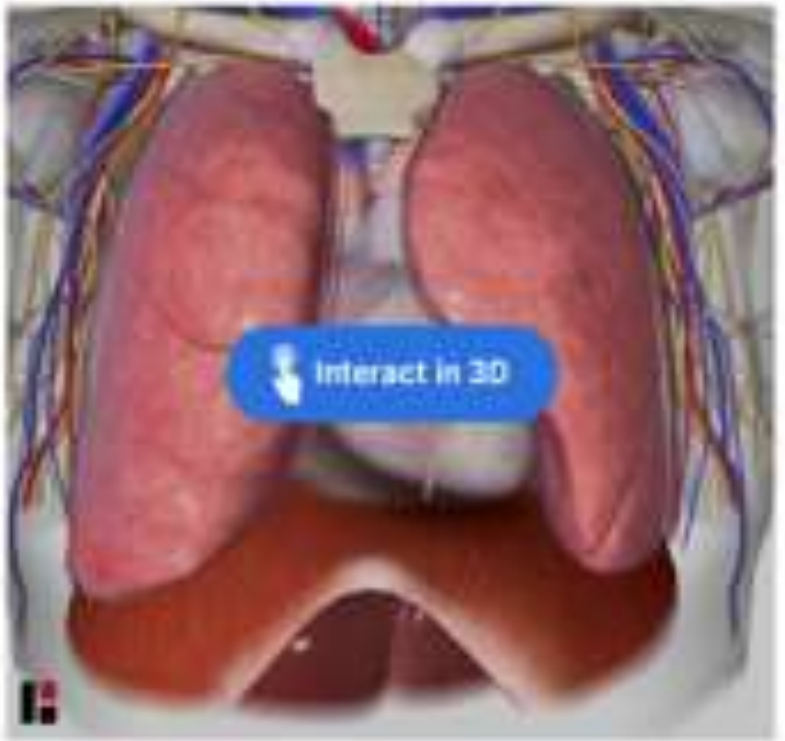


In Situ View – Heart (Cor) by Craig Canby, PhD

ASSIGN

Bookmark | 3D Model | Transcript | Slides | Notes | Report

3D Model



Playlist
25 videos

- In Situ View – Heart (Cor)
- Pericardium and Pericardial Cavity – Heart (Cor)

Show Playlist

ADMINISTRATION

- Statistics
  - Users
  - Content
  - Qbank
  - Dashboard
- Content Management
- Assignments
- Patient Notes (Beta)
- User Management
- Settings

CONTENT VIEW

- Home
- Video Library

User Statistics

Jun 15, 2019 - Jun 15, 2020

Active Users	Started Lectures	Answered Recall Questions	Answered Qbank Questions	Viewed Articles
185	81,809	273,886 61 % correct	10,925 60 % correct	535

Groups | Users

Name	Videos			Recall Questions		Articles	Qbank Questions	
	Started	Finished	Watched Minutes	Answered	% correct	Viewed	Answered	% correct
Admin	150	122	758	53	70 %	14	38	37 %
Clinical Rotations	4,488	4,262	22,601	4,537	84 %	4	2,088	61 %
Faculty Staff	1,056	431	3,324	2,169	75 %	76	1,064	79 %
MD 10	3,236	3,194	15,724	151	75 %	0	1,103	51 %
MD 11	3,280	3,251	15,827	380	72 %	0	870	51 %
MD 12	380	326	2,480	1,376	79 %	1	406	43 %
MD 13	16,075	14,560	86,244	55,742	61 %	32	2,875	66 %
MD 14	6,654	6,309	38,197	10,137	52 %	16	516	55 %
MD 15	29,492	27,830	161,027	97,594	58 %	152	490	43 %
MD 16	8,596	8,233	45,178	38,832	54 %	33	69	30 %

Filter by:

Date Range

Last 12 Months

Group

ALL

User

ALL

Course Subject

ALL

Course

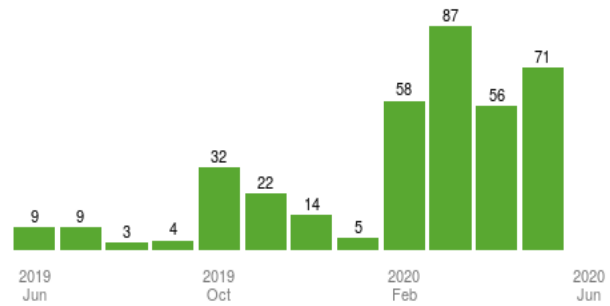
ALL

Qbank Question Subject

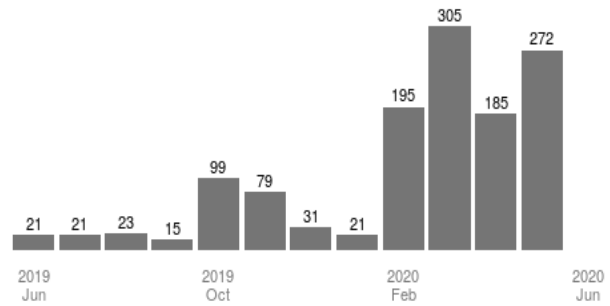
ALL

Overview | Performance by Course | Performance by User

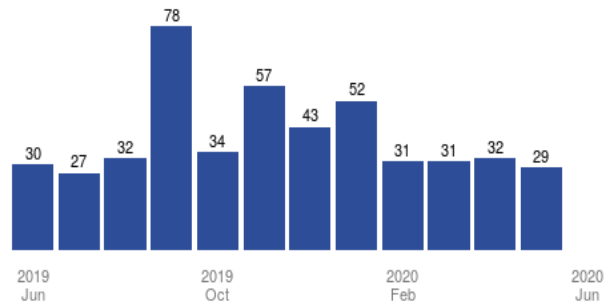
Average Lectures Watched per User



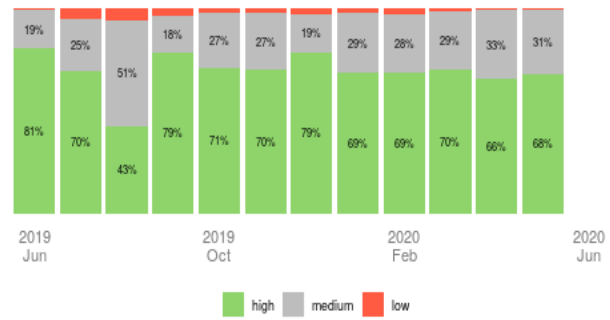
Average Recall Questions Answered per User



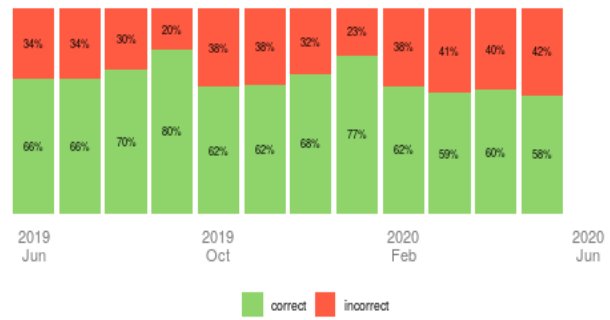
Average Qbank Questions Answered per User



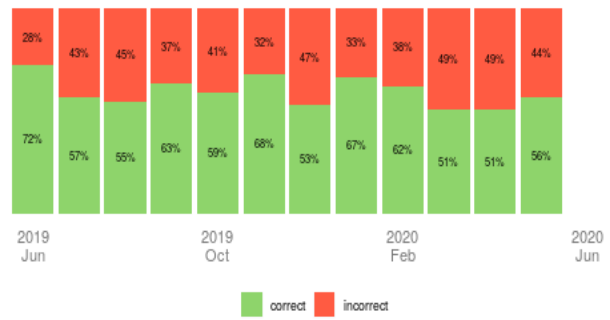
Overall Recall Question Confidence



Overall Recall Question Performance



Overall Qbank Question Performance



How do we get faculty to flip their courses and move to active, student-centered learning?

P = f(SK x M x O)

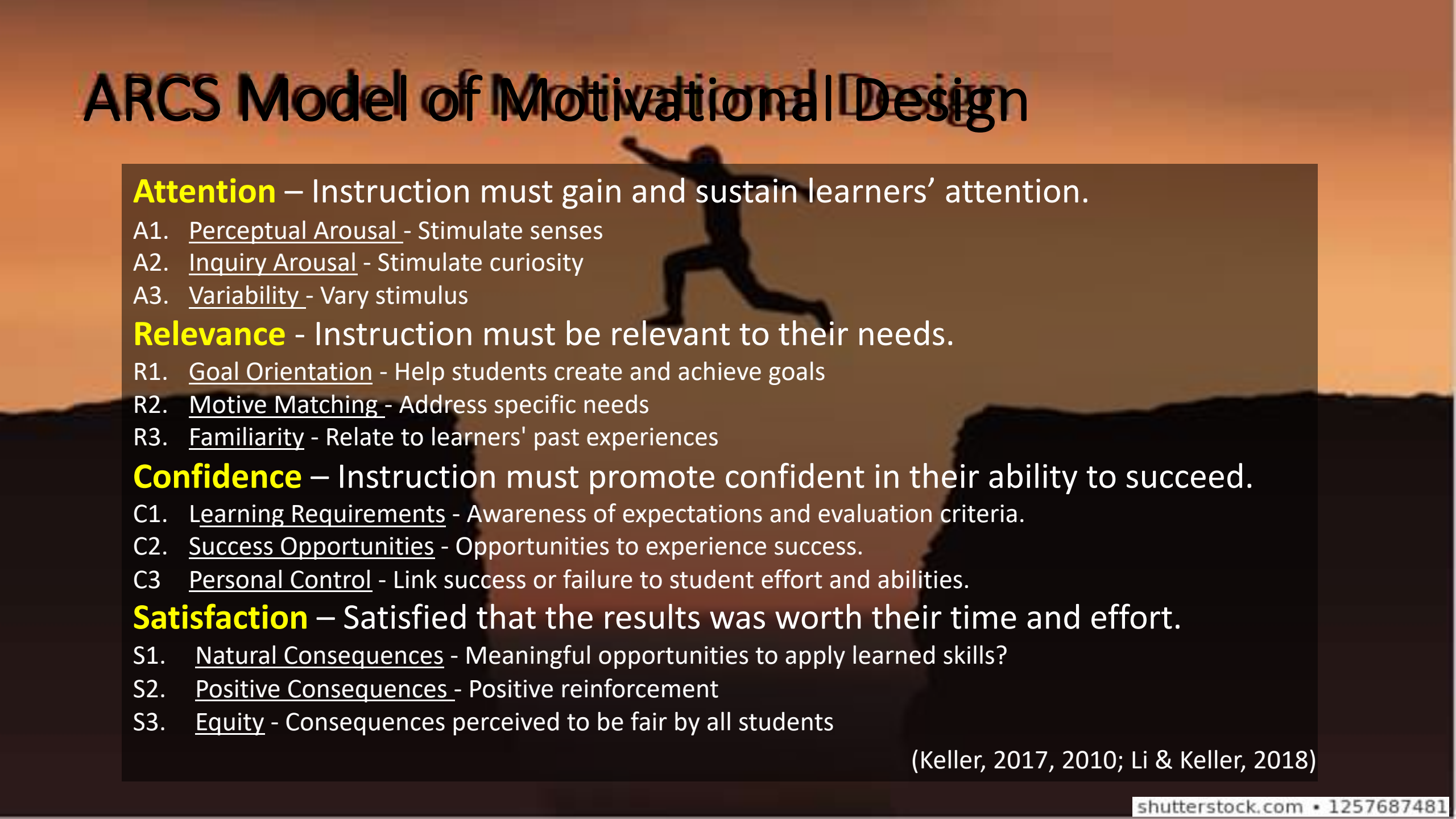
- *Skills and Knowledge*
- *Motivation* – Theoretical construct used to explain the direction and degree of effort individual's use to initiate, persist, and/or return to goal directed behavior.
- *Opportunity* – Tools, time, policies, and other resources necessary to use innovation and perform.

Characteristics affecting adoption

- **Relative Advantage** - Better than the idea, practice, or object it supersedes (time, money or status).
- **Compatibility** – Consistent with existing values, past experiences, and needs of potential adopters.
- **Complexity** - Relatively difficult to understand or use.
- **Triability** - Experimented with on a limited basis. Directly related to immediate and reoccurring costs.
- **Modifiability** – Modified to meet unique individual and contextual needs.
- **Observability** - Results of an innovation are visible to others.

(Rogers, 2003)

ARCS Model of Motivational Design



Attention – Instruction must gain and sustain learners' attention.

A1. Perceptual Arousal - Stimulate senses
A2. Inquiry Arousal - Stimulate curiosity
A3. Variability - Vary stimulus

Relevance - Instruction must be relevant to their needs.

R1. Goal Orientation - Help students create and achieve goals
R2. Motive Matching - Address specific needs
R3. Familiarity - Relate to learners' past experiences

Confidence – Instruction must promote confident in their ability to succeed.

C1. Learning Requirements - Awareness of expectations and evaluation criteria.
C2. Success Opportunities - Opportunities to experience success.
C3 Personal Control - Link success or failure to student effort and abilities.

Satisfaction – Satisfied that the results was worth their time and effort.

S1. Natural Consequences - Meaningful opportunities to apply learned skills?
S2. Positive Consequences - Positive reinforcement
S3. Equity - Consequences perceived to be fair by all students

(Keller, 2017, 2010; Li & Keller, 2018)

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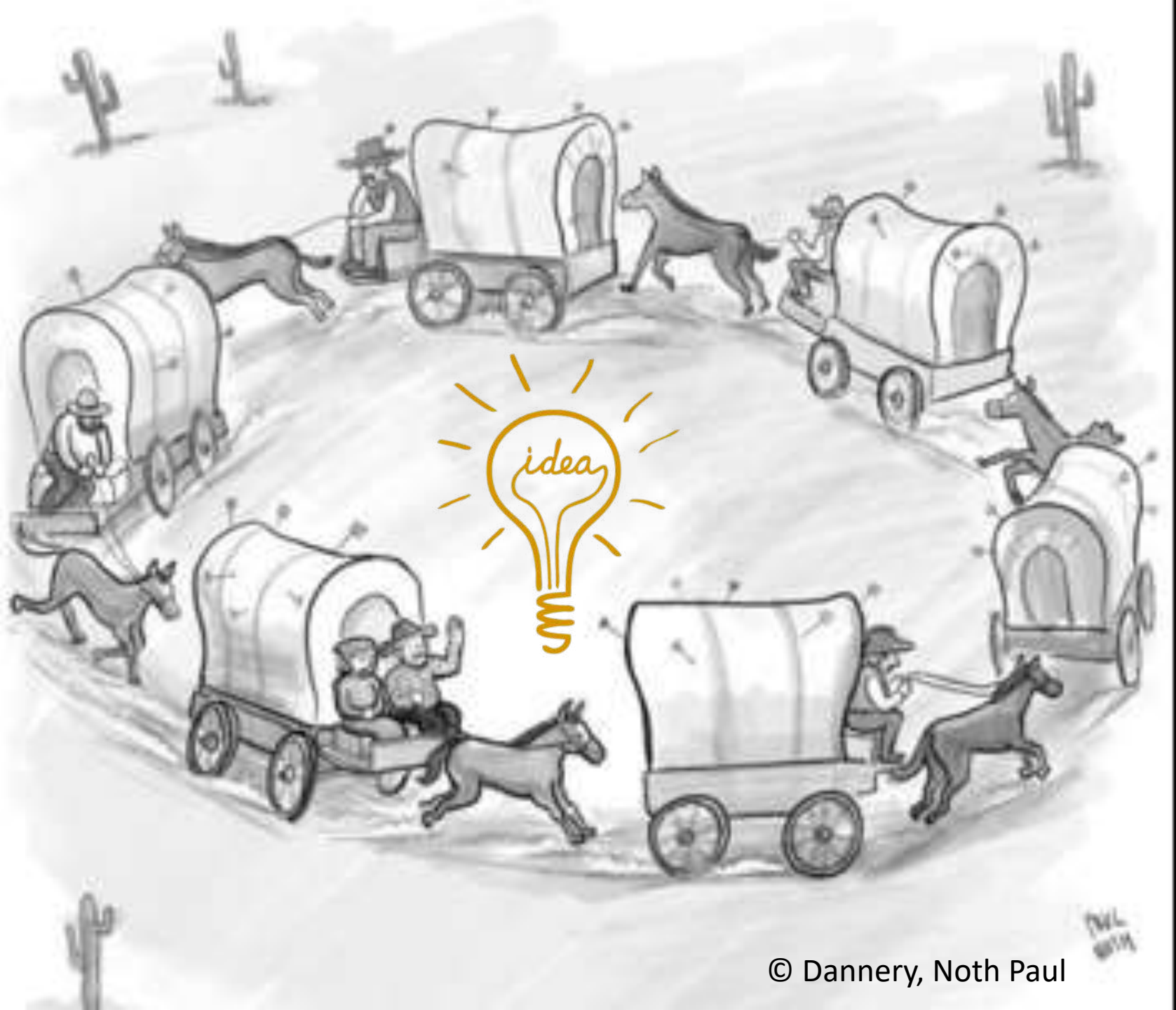

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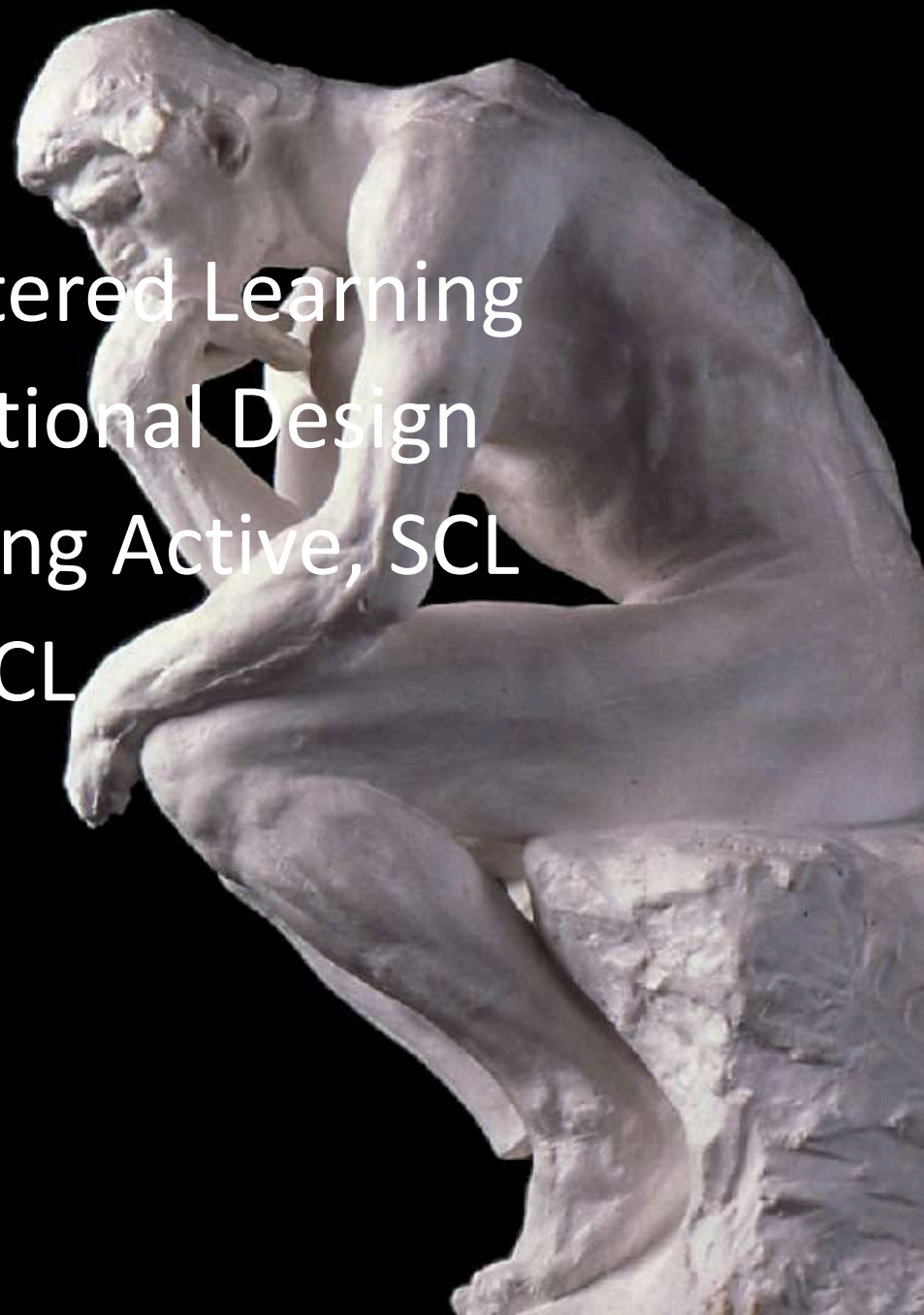
- Protect innovation and innovators
- Enable small successes
- Build infrastructure and align system to support change overtime

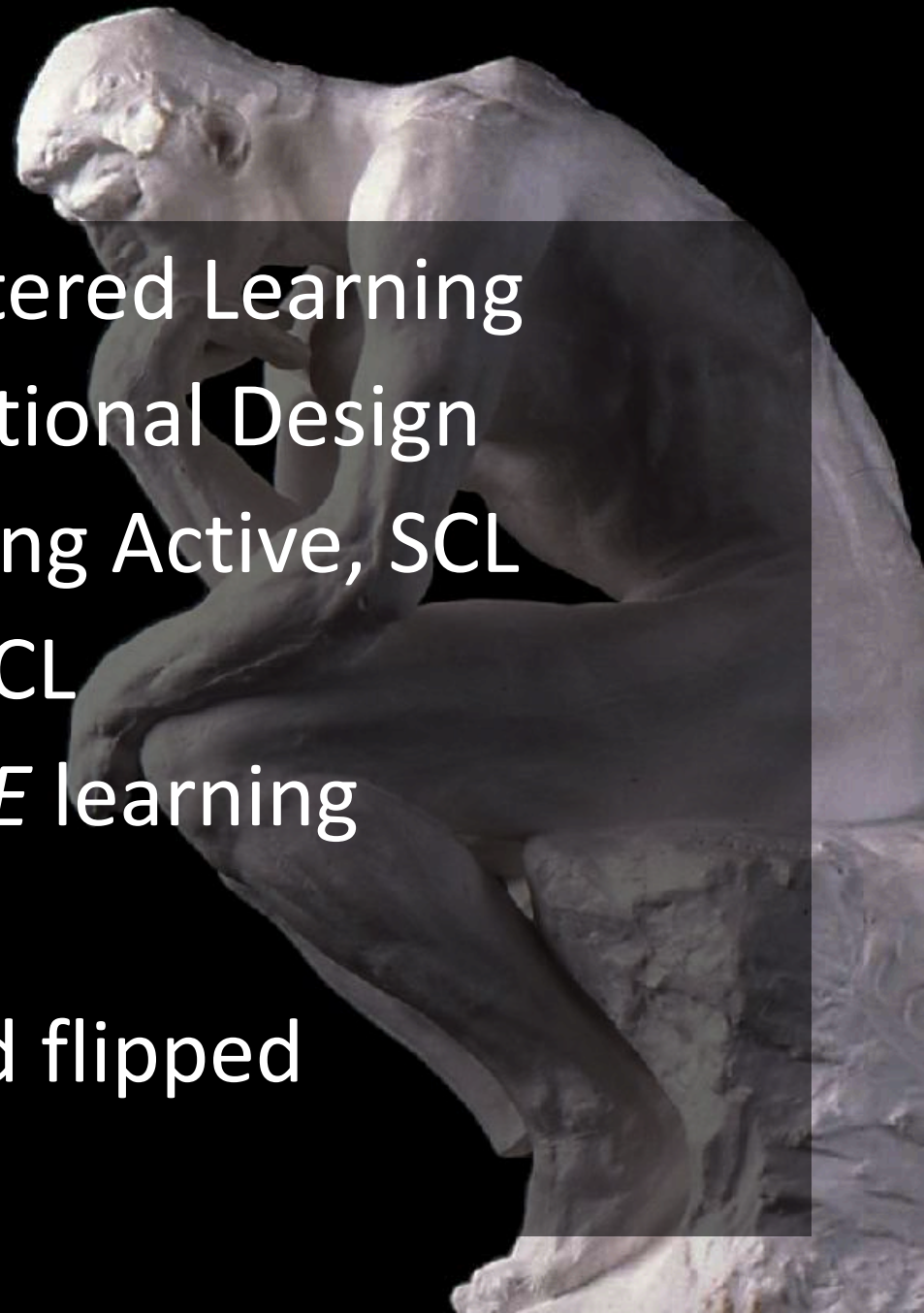
Webinar II Summary

1. Teacher-Directed vs. Student-Centered Learning
2. Craft-Based vs. Systematic Instructional Design
3. Tactics and Strategies for Facilitating Active, SCL
4. ITP to apply and facilitate active SCL



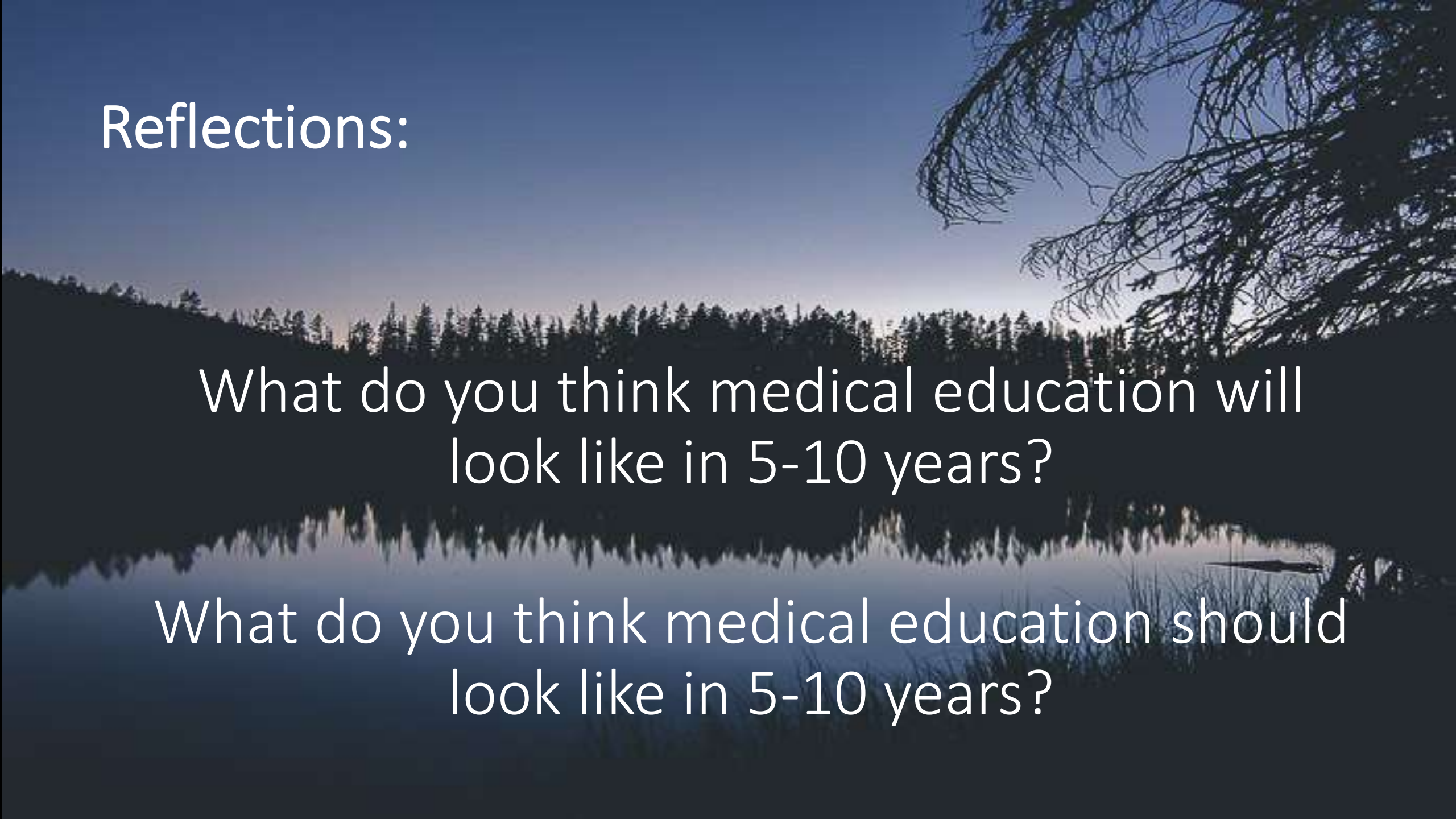
Webinar II Summary

1. Teacher-Directed vs. Student-Centered Learning
2. Craft-Based vs. Systematic Instructional Design
3. Tactics and Strategies for Facilitating Active, SCL
4. ITP to apply and facilitate active SCL
5. Learning Platforms for inter*ACTIVE* learning
6. Blended and Flipped approaches
7. Learning Platforms in blended and flipped environment



Polling questions?

1. To what extent does your school use a student-centric structure for learning?
2. How many of your faculty use a flipped classroom approach?
3. To what extent do you think medical education should be conducted in a blended or flipped fashion?



Reflections:

What do you think medical education will look like in 5-10 years?

What do you think medical education should look like in 5-10 years?

Demonstrate active, Student-Centered-Learning
in flipped fashion to facilitate
Webinar III: Re-envisioning the Future of Medical Education

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