

Workshop on Peer Instruction



Becas Santander Skills | Innovation in Teaching
Laspau
1 December 2021



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@eric_mazur

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quick reflection



The background of the slide is a faded, artistic illustration of a person's face, focusing on the eyes. The face is rendered in a sketchy, painterly style with muted colors. The eyes are large and expressive, looking directly forward. The overall tone is contemplative and artistic. The text is overlaid on this background.

quick reflection

think of something you are good at

The background is a faded image of a book cover. It features a portrait of a man with a beard and a turban, looking slightly to the side. The text 'quick reflection' is printed in a bold, black, sans-serif font at the top. The book's spine and cover are decorated with vertical stripes in shades of yellow and red.

quick reflection

how did you become good at that?





A group of people in a modern office setting, working on laptops and discussing projects. The scene is brightly lit with large windows in the background. Several individuals are seated at round white tables, focused on their work. One woman in the foreground is looking at a laptop screen, while others are engaged in conversation. The overall atmosphere is collaborative and professional.

Goal of this session

**demonstrate how to integrate
Peer Instruction in your teaching approach**



Getting to know each other

Did you have fun doing the pre-assignment?

A. It was fun!

B. Meh!

C. I hate preassignments

D. I hate to admit it, but I didn't do it

Getting to know each other

Did you gain a new insight from the pre-assignment?

- A. Yes, from the article or video**
- B. Yes, from the discussion with others**
- C. Both!**
- D. No**
- E. I already told you, I didn't do the pre-assignment**

Getting to know each other

When you were a student in college, averaging over all the classes you attended in all your courses, for what percentage of all these classes did you prepare yourself by reading the material ahead of class?

- A. Every single class of all of the classes I took**
- B. About 90% of the classes**
- C. Three quarters of the classes**
- D. Half the classes**
- E. One quarter of the classes**
- F. A few or none of the classes**

A group of students in a modern classroom setting, sitting at round tables with laptops, engaged in discussion. The image is faded and serves as a background for the text.

Icebreaker

Discuss pre-assignment on Perusall

A photograph of a modern classroom or office environment where students are working in groups. In the foreground, a woman with blonde hair is speaking to a group. To her right, a woman with dark hair is looking at a laptop. In the background, other students are working at desks with laptops. The room has large windows and a bright, open atmosphere.

75-student team & project based class!



**information
transfer**

sense-making



campus

**information
transfer**

instructor-paced
synchronous
lecture

home

sense-making

self-paced
asynchronous
home work/study

campus

**information
transfer**



home

sense-making

instructor-paced
synchronous
lecture

self-paced
asynchronous
home work/study

campus

information
transfer

instructor-paced
synchronous
lecture

home

information
transfer

instructor-paced
synchronous
online lecture

home

sense-making

self-paced
asynchronous
home work/study

campus

information
transfer

instructor-paced
synchronous
lecture

home

information
transfer

instructor-paced
asynchronous
recorded lecture

home

sense-making

self-paced
asynchronous
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campus

information
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synchronous
lecture

home

information
transfer

instructor-paced
asynchronous
recorded lecture

home

sense-making

self-paced
asynchronous
home work/study

ALONE!



online

**information
transfer**

self-paced
asynchronous

online

sense-making

instructor-led
synchronous



interactive

online	online
information transfer	sense-making
self-paced asynchronous	instructor-led synchronous



two evidence-based approaches

let's explore these two steps

online

**information
transfer**

self-paced
asynchronous

online

sense-making

instructor-led
synchronous

instructor-led interactive sense-making

online

information
transfer

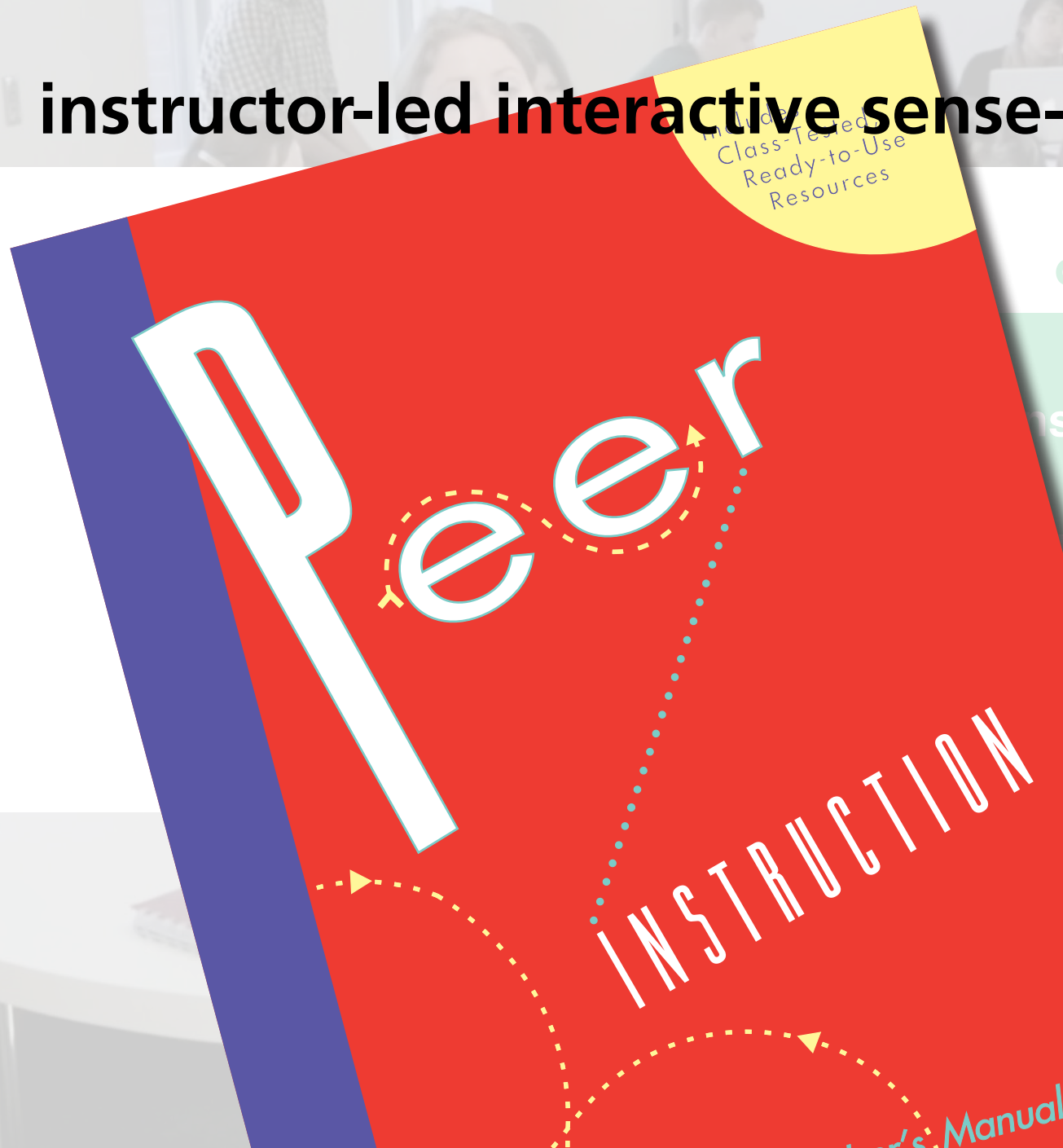
self-paced
asynchronous

online

sense-making

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synchronous

instructor-led interactive sense-making



online

se-making

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hronous

instructor-led interactive sense-making

Peer Instruction...

- interactive teaching method
- promotes meaningful thinking

online

information
transfer

online

sense-making

self-paced
asynchronous

instructor-led
synchronous

instructor-led interactive sense-making

You will experience Peer Instruction by...

- 1. answering question individually**
- 2. discussing question in breakout rooms**
- 3. reanswering question**

instructor-led interactive sense-making

online

information
transfer

online

sense-making

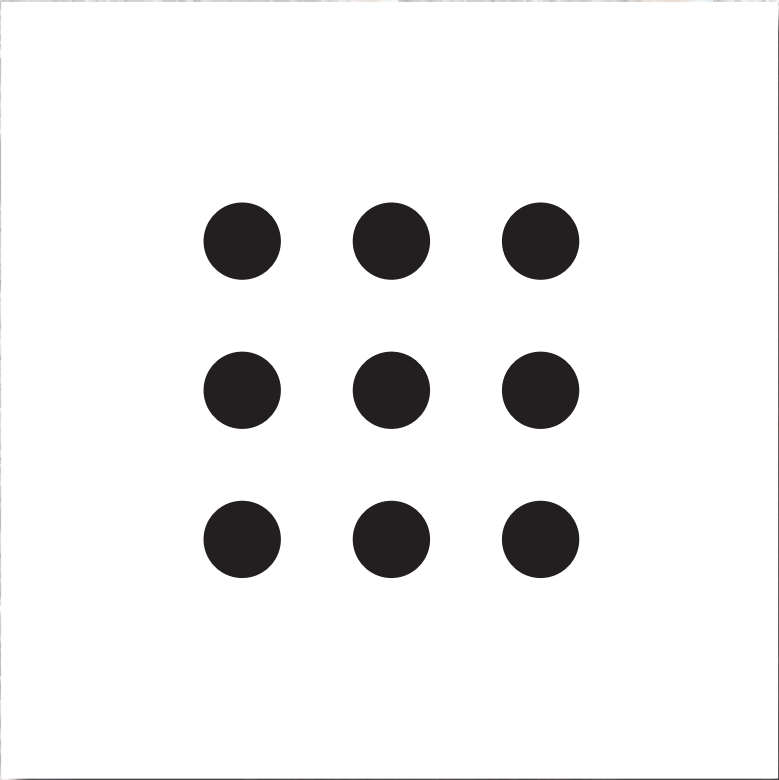
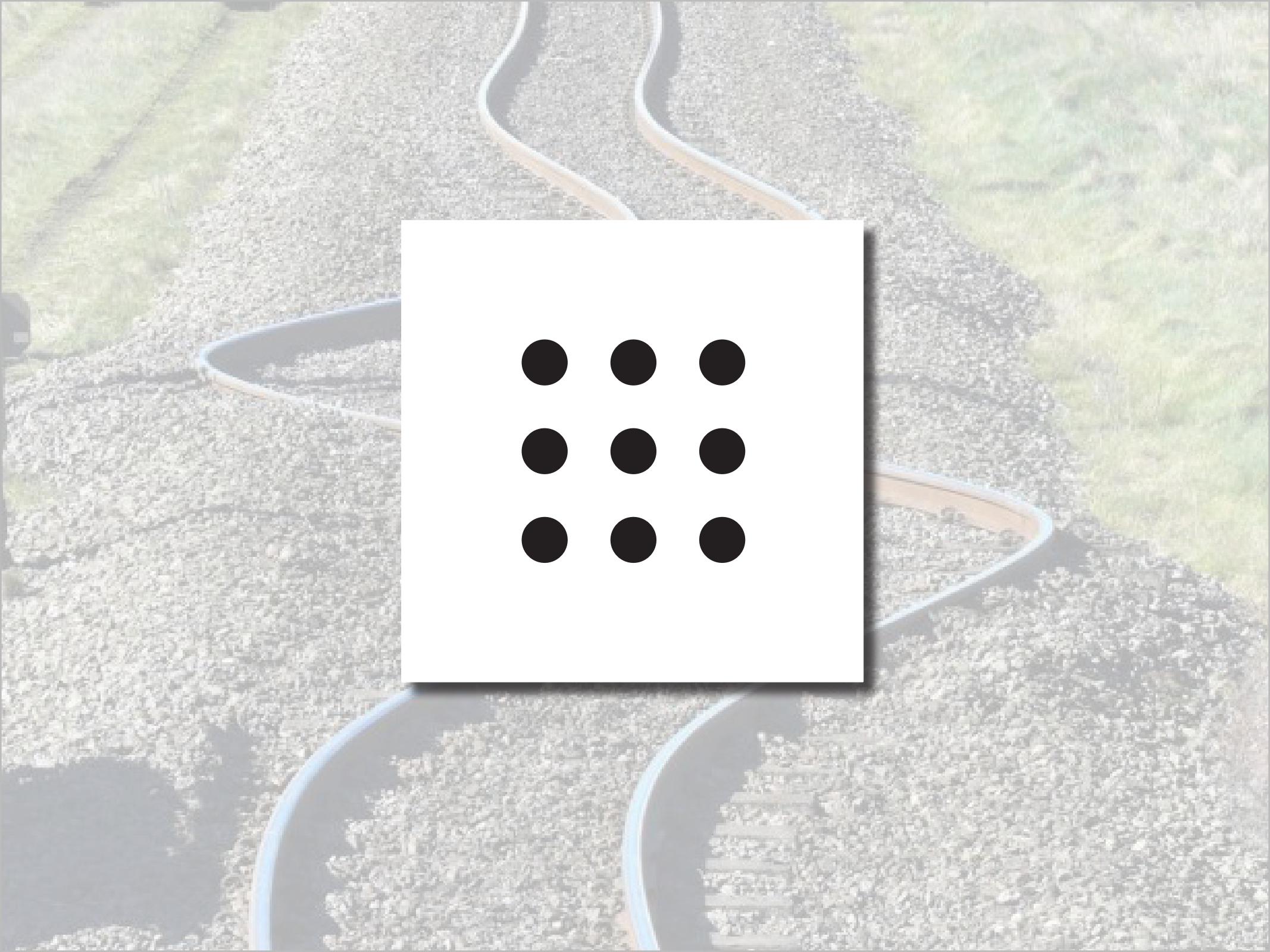
Go to: Pollev.com/ericmazur615

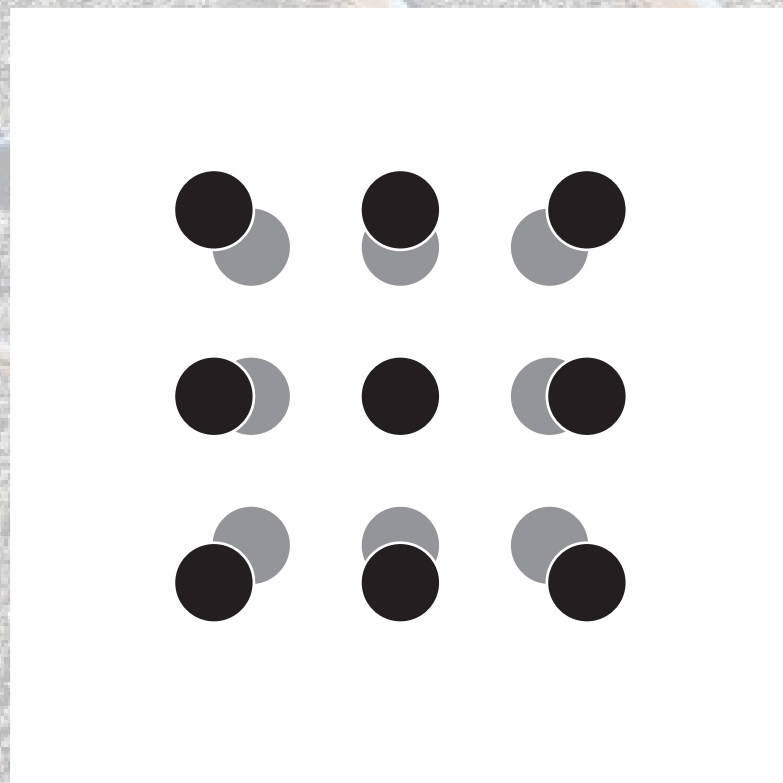
self-paced
asynchronous

instructor-led
synchronous

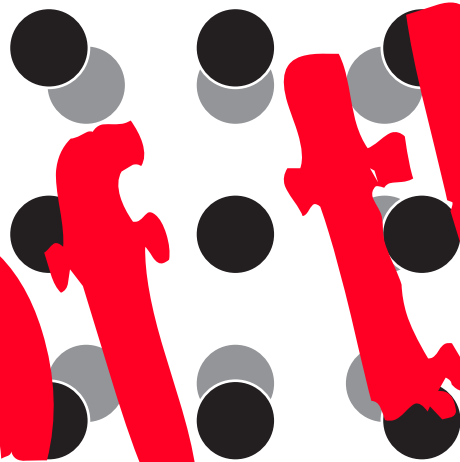
A photograph of a railway track with a wavy, undulating path, illustrating the concept of thermal expansion. The track is composed of gravel and wooden sleepers, and the rails are curved in a series of S-shapes. The text "thermal expansion" is overlaid on the image.

thermal expansion





all of them

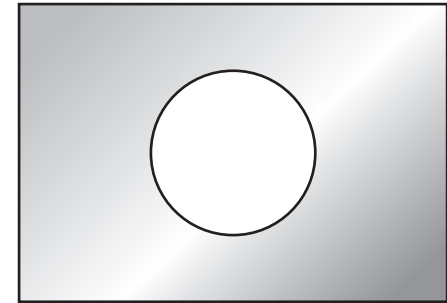


**Consider a rectangular metal plate
with a circular hole in it.**



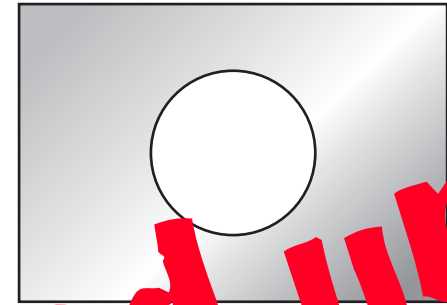
Consider a rectangular metal plate with a circular hole in it.

When the plate is uniformly heated, the diameter of the hole



- 1. increases.**
- 2. stays the same.**
- 3. decreases.**

Consider a rectangular metal plate with a circular hole in it.



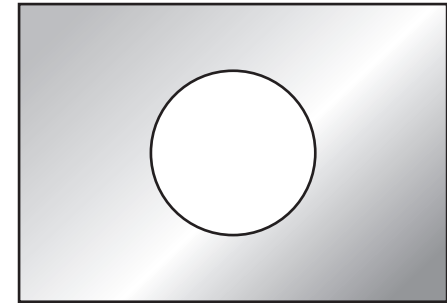
When the plate is uniformly heated, the diameter of the hole

1. increases.
2. stays the same.
3. decreases.

you got all fired up!

Consider a rectangular metal plate with a circular hole in it.

When the plate is uniformly heated, the diameter of the hole



- 1. increases.**
- 2. stays the same.**
- 3. decreases.**

Before I tell you the answer, let's analyze what happened.

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You...

Before I tell you the answer, let's analyze what happened.

You...

1. made a commitment

Before I tell you the answer, let's analyze what happened.

You...

- 1. made a commitment**
- 2. externalized your answer**

Before I tell you the answer, let's analyze what happened.

You...

- 1. made a commitment**
- 2. externalized your answer**
- 3. moved from the answer/fact to reasoning**

Before I tell you the answer, let's analyze what happened.

You...

- 1. made a commitment**
- 2. externalized your answer**
- 3. moved from the answer/fact to reasoning**
- 4. became emotionally invested in the learning process**

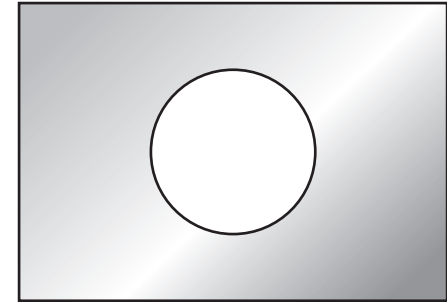
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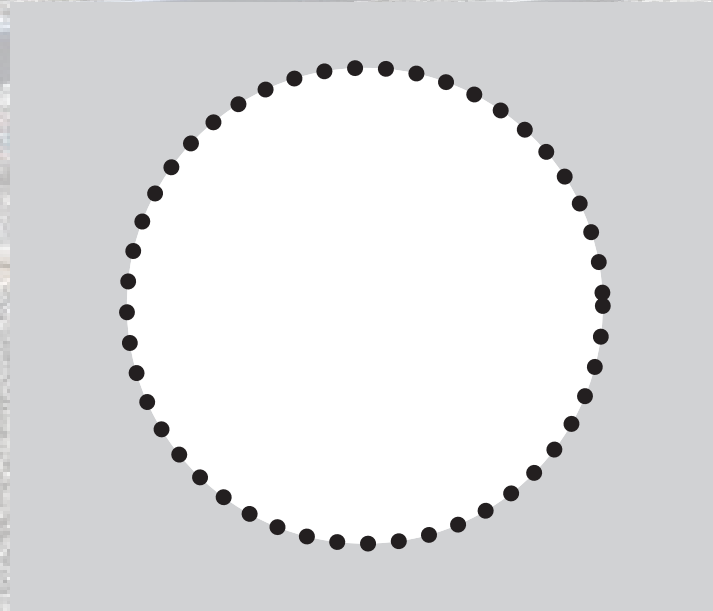
Consider a rectangular metal plate with a circular hole in it.



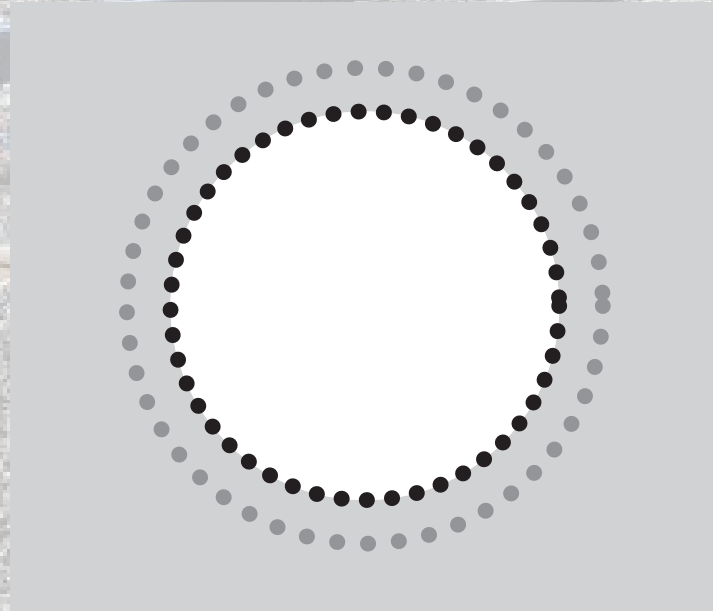
When the plate is uniformly heated, the diameter of the hole

- 1. increases. ✓**
- 2. stays the same.
- 3. decreases.

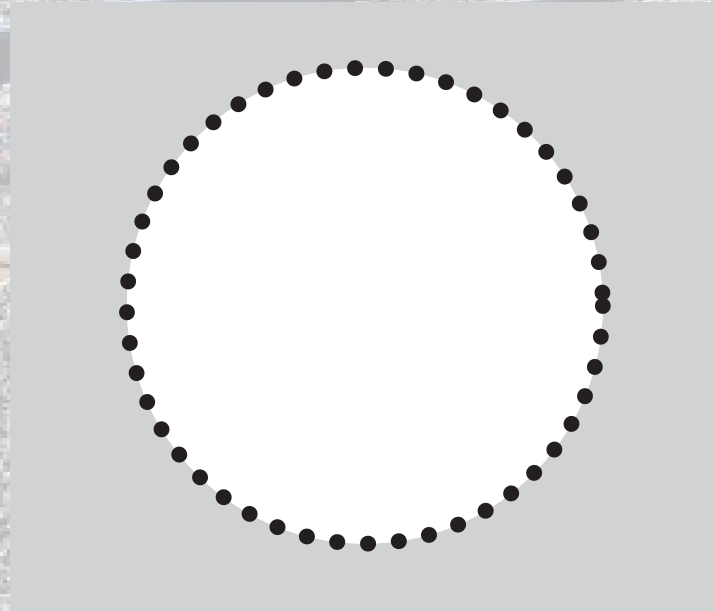
consider atoms at rim of hole



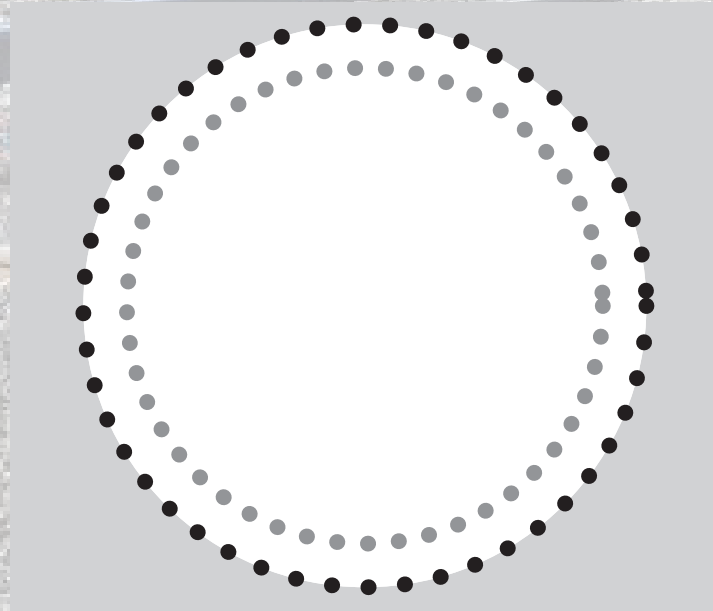
consider atoms at rim of hole



consider atoms at rim of hole



consider atoms at rim of hole



consider atoms at rim of hole

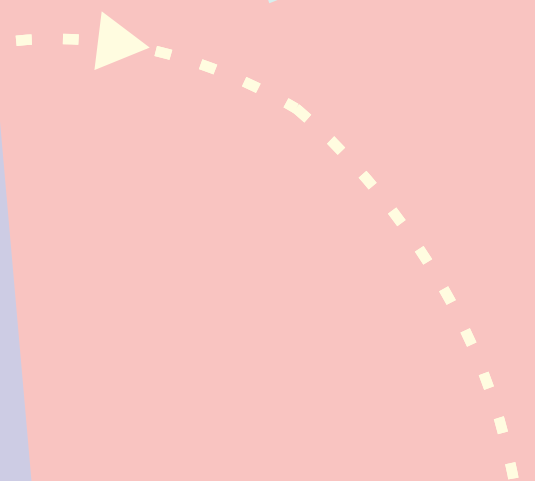
you won't forget this



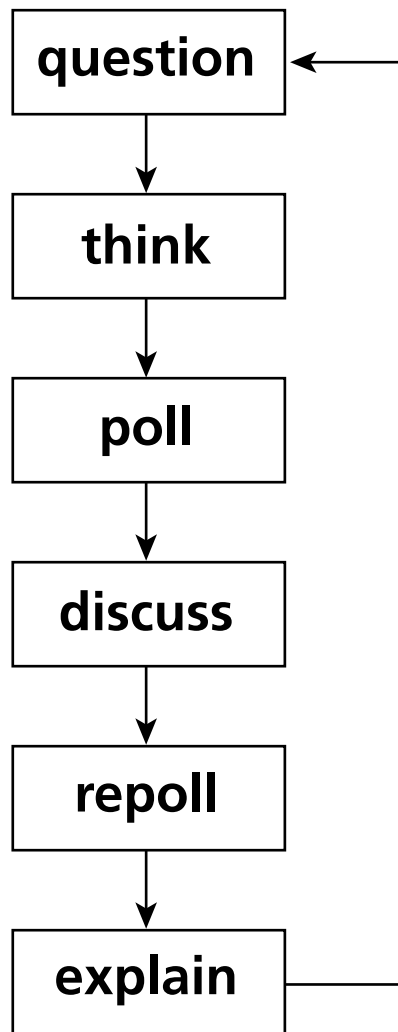
peer

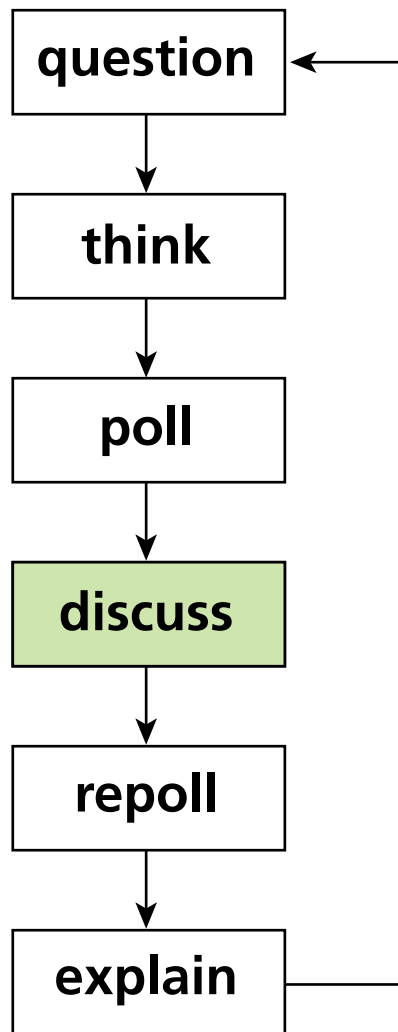


back to pl



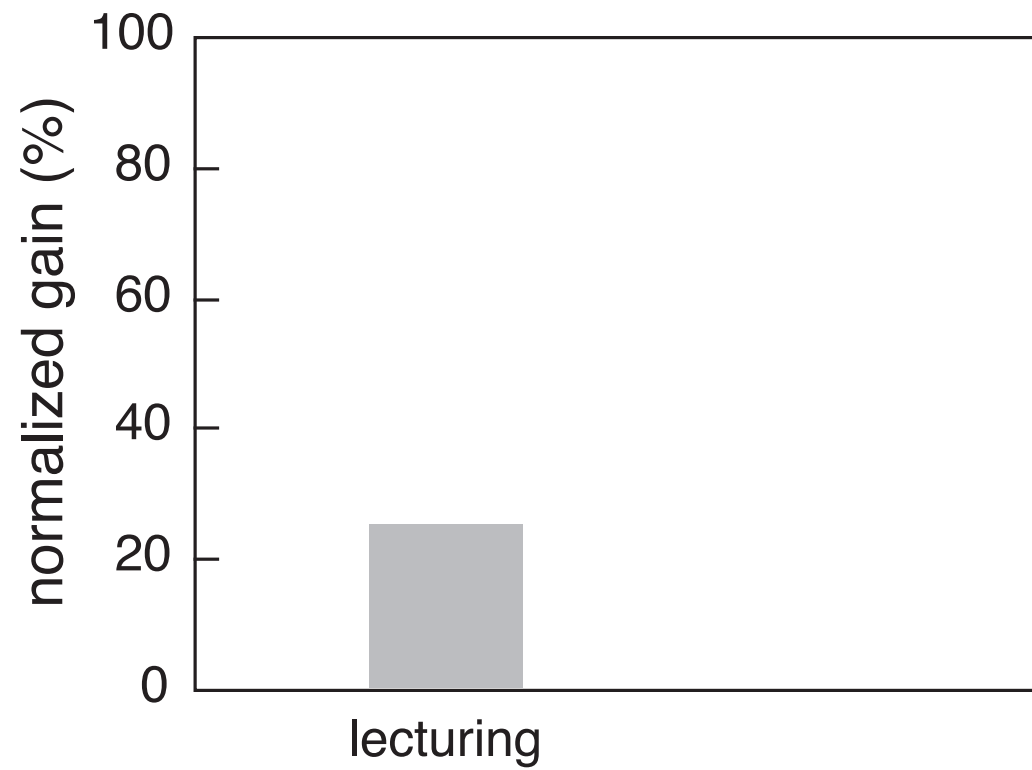
INSTRUCTION

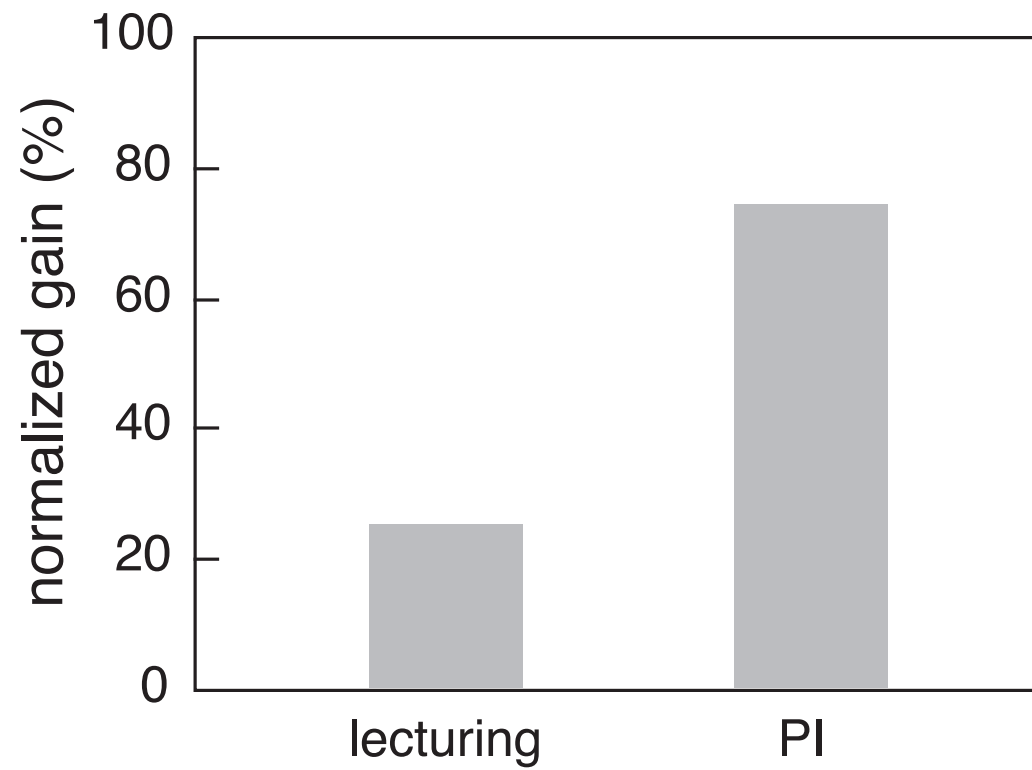




Higher learning gains

INSTRUCTION







Higher learning gains

Better retention

INSTRUCTION

question



think



poll



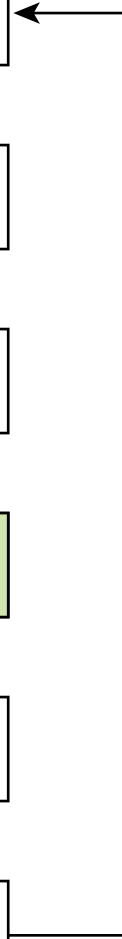
discuss



repoll



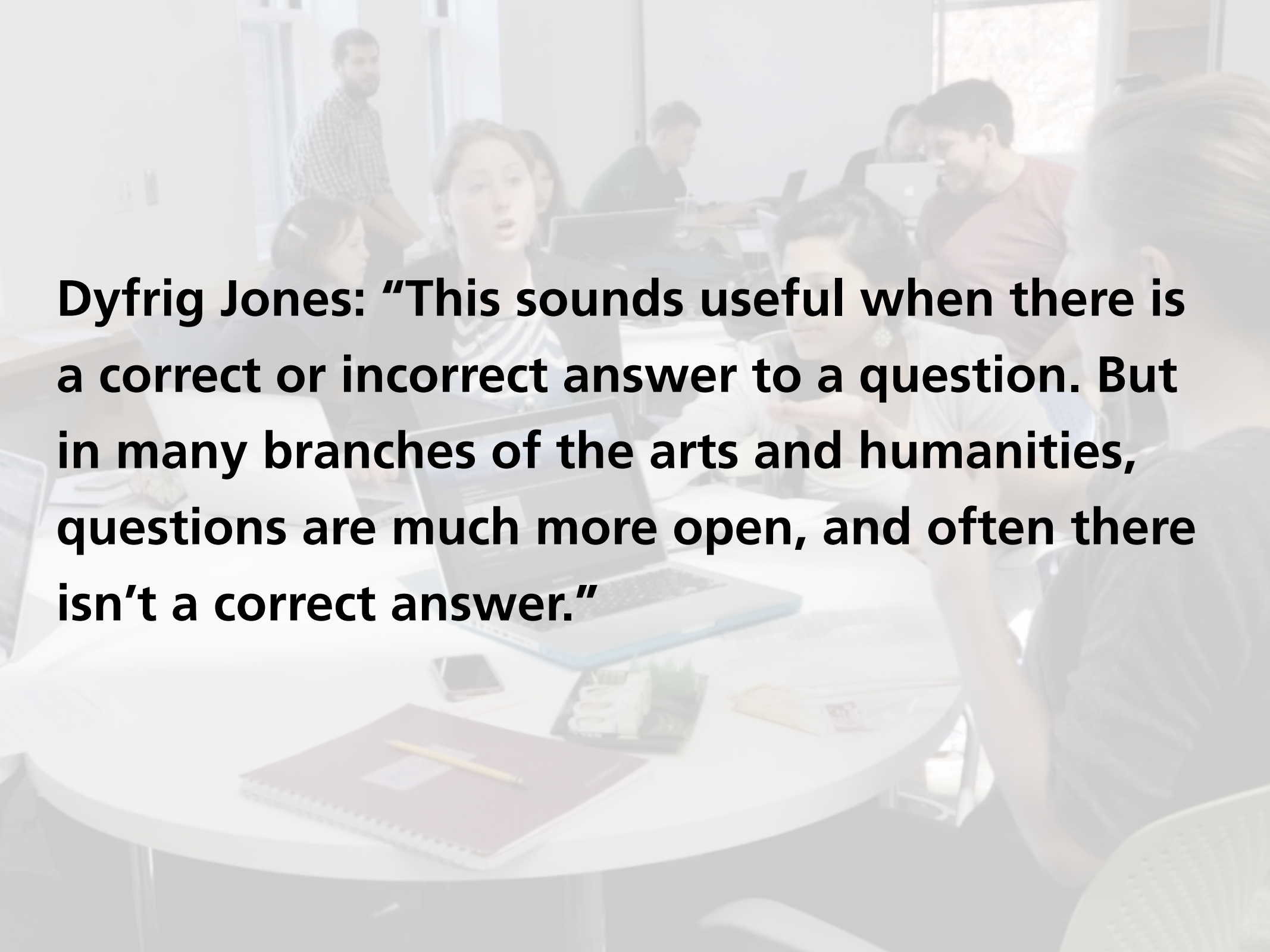
explain



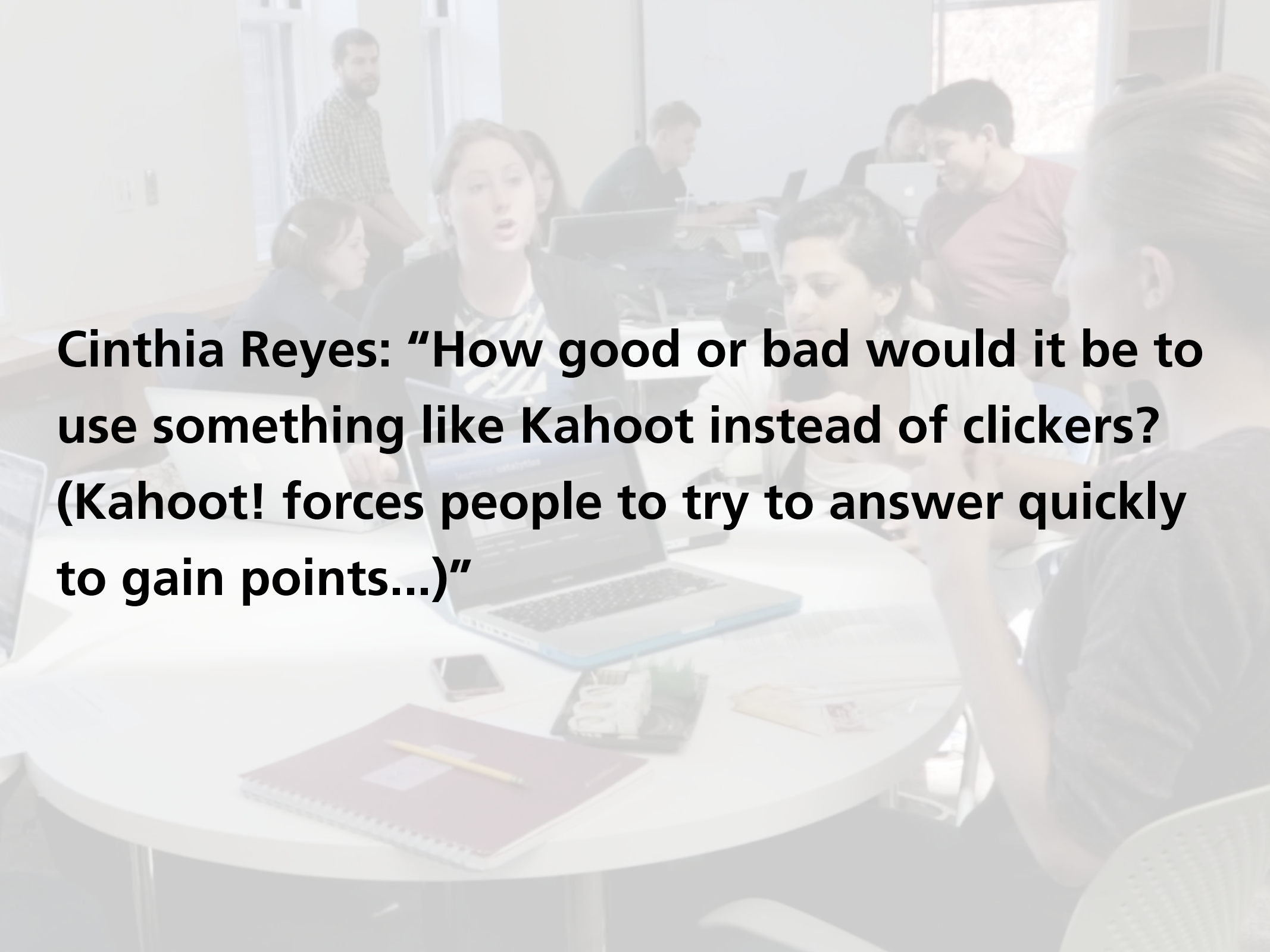
online

ense-making

instructor-led
synchronous



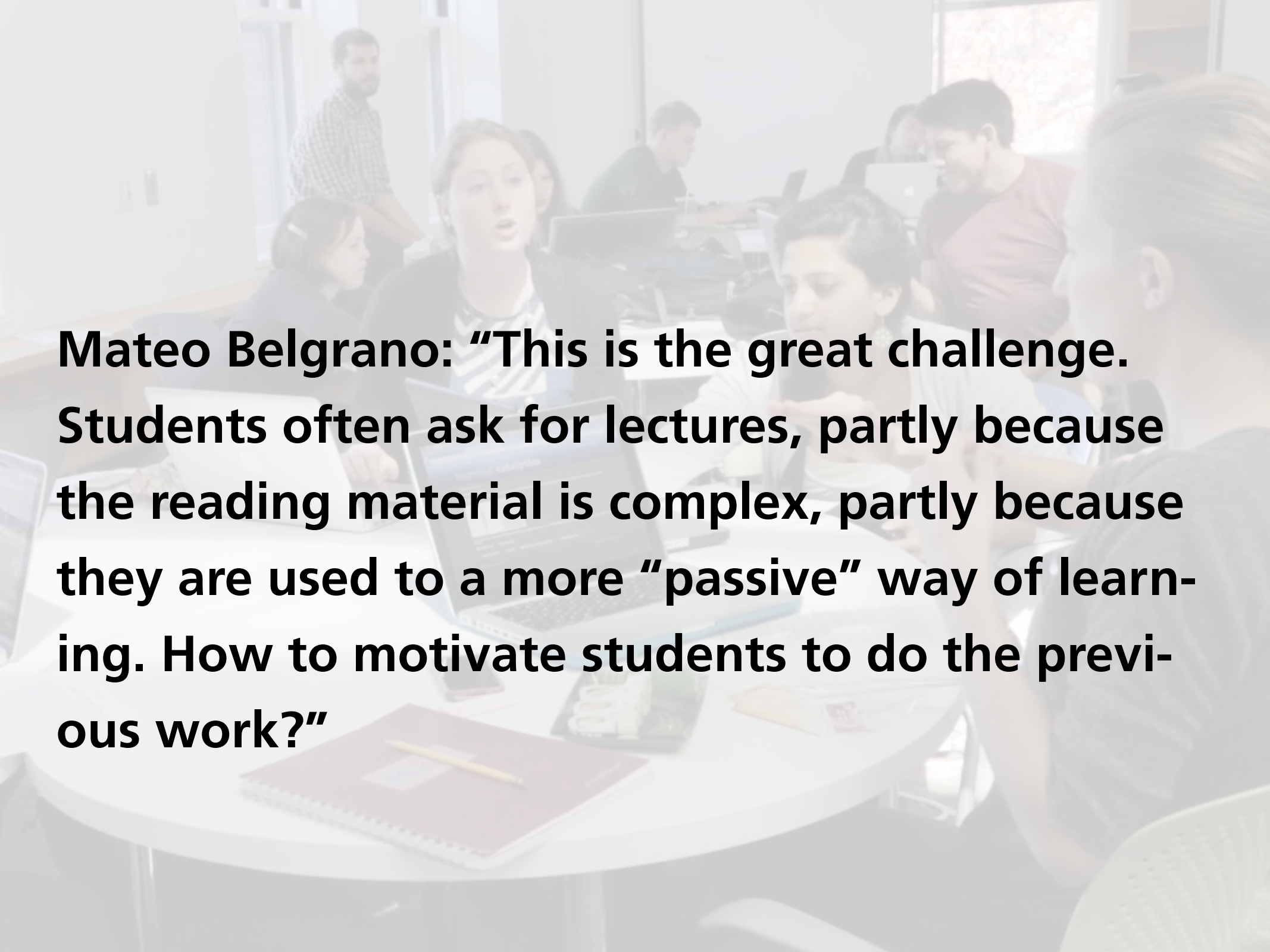
Dyfrig Jones: “This sounds useful when there is a correct or incorrect answer to a question. But in many branches of the arts and humanities, questions are much more open, and often there isn’t a correct answer.”

A group of students in a classroom setting, some using laptops, with a text overlay. The background is a faded image of a classroom with several students. In the foreground, a student is looking at a laptop screen. The text overlay is in the center of the image.

Cinthia Reyes: “How good or bad would it be to use something like Kahoot instead of clickers? (Kahoot! forces people to try to answer quickly to gain points...)”

Why Peer Instruction works

- engages students to think
- individualizes learning
- students use similar discourse
- helps avoid the “expert blind spot”



Mateo Belgrano: "This is the great challenge. Students often ask for lectures, partly because the reading material is complex, partly because they are used to a more "passive" way of learning. How to motivate students to do the previous work?"

asynchronous information transfer

online

**information
transfer**

self-paced
asynchronous

online

sense-making

instructor-led
synchronous

asynchronous information transfer

Perusall...

- is a social learning platform
- takes information transfer out of classroom

online

information
transfer

online

sense-making

self-paced
asynchronous

instructor-led
synchronous

Documents you can use with Perusall

- **PDF, Word, html, or ePub files (free)**
- **video—YouTube, Vimeo, Google Drive, Dropbox (free)**
- **open access material (free)**
- **source code with syntax highlighting (free)**
- **books (purchased by students or institution)**

online

**information
transfer**

self-paced
asynchronous

online

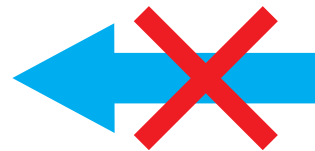
sense-making

instructor-led
synchronous

campus

online

online



**information
transfer**

sense-making

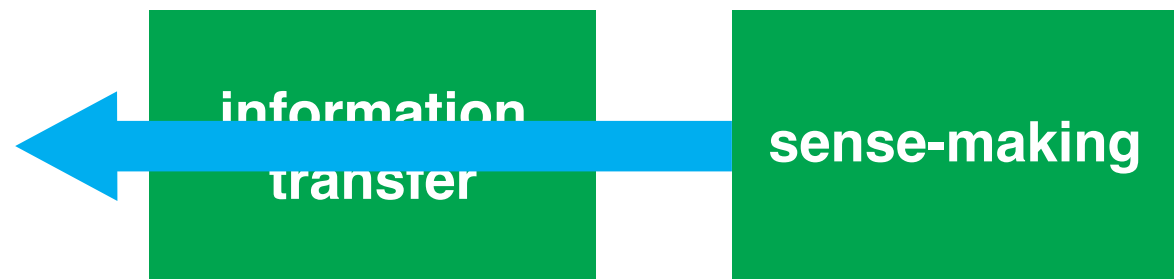
self-paced
asynchronous

instructor-led
synchronous

campus

online

online



self-paced
asynchronous

instructor-led
synchronous



campus

sense-making

instructor-led
synchronous
peer instruction

home

**information
transfer**

self-paced
asynchronous
pre-class reading

Compare with the “old” approach

campus

sense-making

instructor-led
synchronous
peer instruction

home

**information
transfer**

self-paced
asynchronous
pre-class reading

Compare with the “old” approach

campus

**information
transfer**

instructor-paced
synchronous
lecture

home

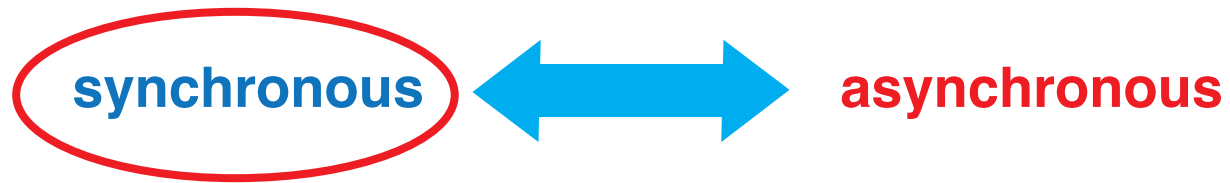
sense-making

self-paced
asynchronous
home work/study

Improving education

synchronous  **asynchronous**

Improving education



everybody together
at the same *time*

Improving education

synchronous



asynchronous

instructor-paced



self-paced

Improving education

synchronous



asynchronous

instructor-paced



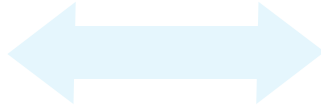
self-paced

everybody together
at the same *pace*

Improving education

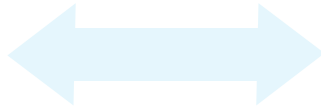
lecture

synchronous



asynchronous

instructor-paced

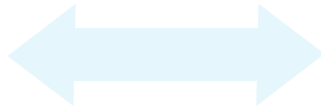


self-paced

Improving education

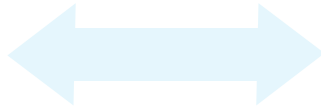
recorded lecture

synchronous



asynchronous

instructor-paced

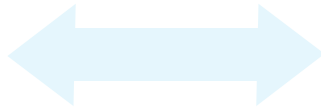


self-paced

Improving education

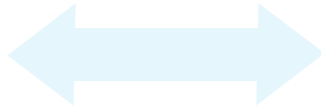
lab

synchronous



asynchronous

instructor-paced

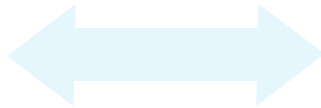


self-paced

Improving education

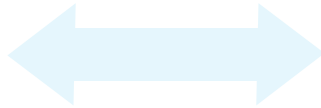
homework/study

synchronous



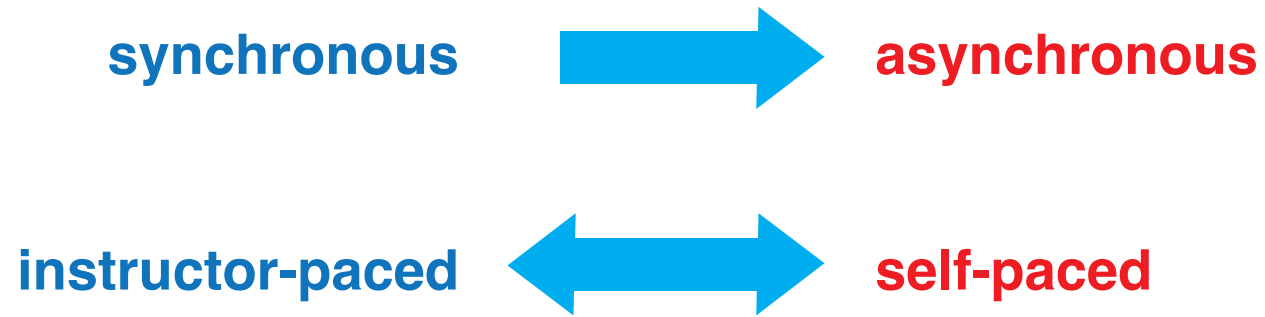
asynchronous

instructor-paced



self-paced

Improving education



Improving education

synchronous



asynchronous

instructor-paced



self-paced

Improving education

synchronous



asynchronous

instructor-paced



self-paced

**more time to help students
where it really matters!**

Reflection

- asynchronous preparation
- synchronous time for discussion



Reflection

- **asynchronous preparation**
- **synchronous time for discussion**
- **dig deeper post-session**

for a copy of this presentation:

mazur.harvard.edu

resource sheet: bit.ly/fliponline

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