

Twilight of the Lecture: Peer Instruction for Active Learning



Faculty Development Workshop
Touro College
New York, NY, 23 April 2021



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@eric_mazur

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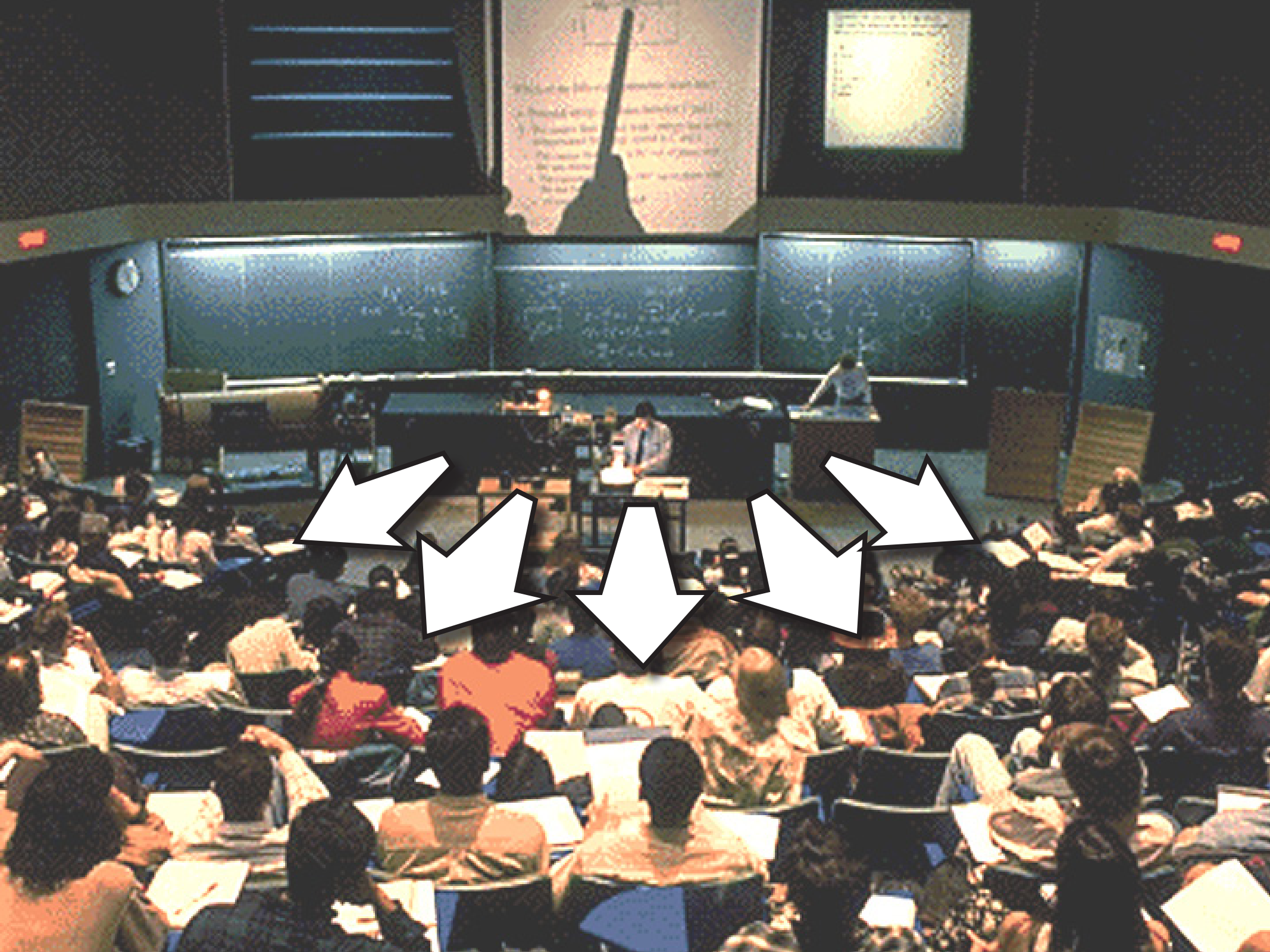
















an illusion. . .





1. transfer of information



1. transfer of information

2. assimilation of that information



1. transfer of information (in class)

2. assimilation of that information



1. transfer of information (in class)

2. assimilation of that information (out of class)



**Should focus
on THIS!**

1. transfer of information (in class)

2. assimilation of that information (out of class)



1. transfer of information (in class)

2. assimilation of that information (out of class)



1. transfer of information (out of class)

2. assimilation of that information (in class)

The word "Peer" is written in a large, white, sans-serif font with a light blue outline. A dashed yellow line with an arrow at the end forms a circle around the two 'e's. A dotted blue line with an arrow at the end starts from the right side of the 'e's and points towards the word "INSTRUCTION" at the bottom right.

Peer

1. transfer of information (out of class)

2. assimilation of that information (in class)

The word "INSTRUCTION" is written in a white, sans-serif font, tilted upwards from left to right. A dotted blue line with an arrow at the end starts from the bottom left and points towards the word.

INSTRUCTION

question

question



think

question



think



poll

question



think



poll



discuss

question



think



poll



discuss



repoll

question



think



poll



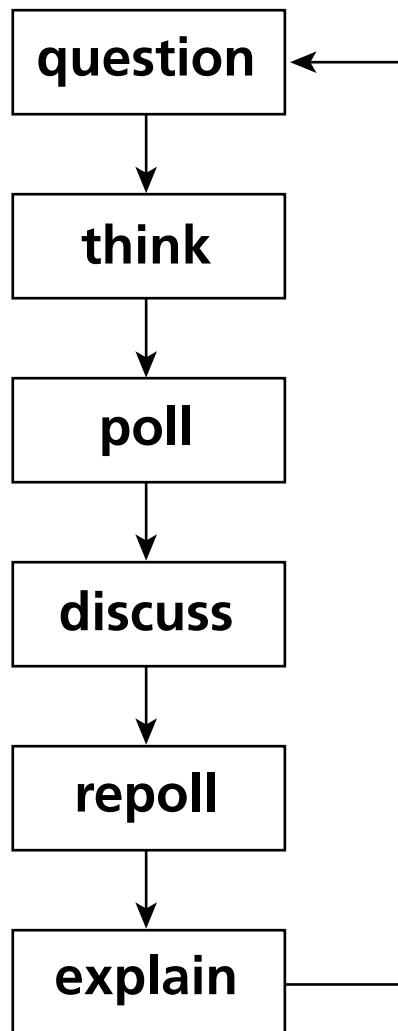
discuss



repoll



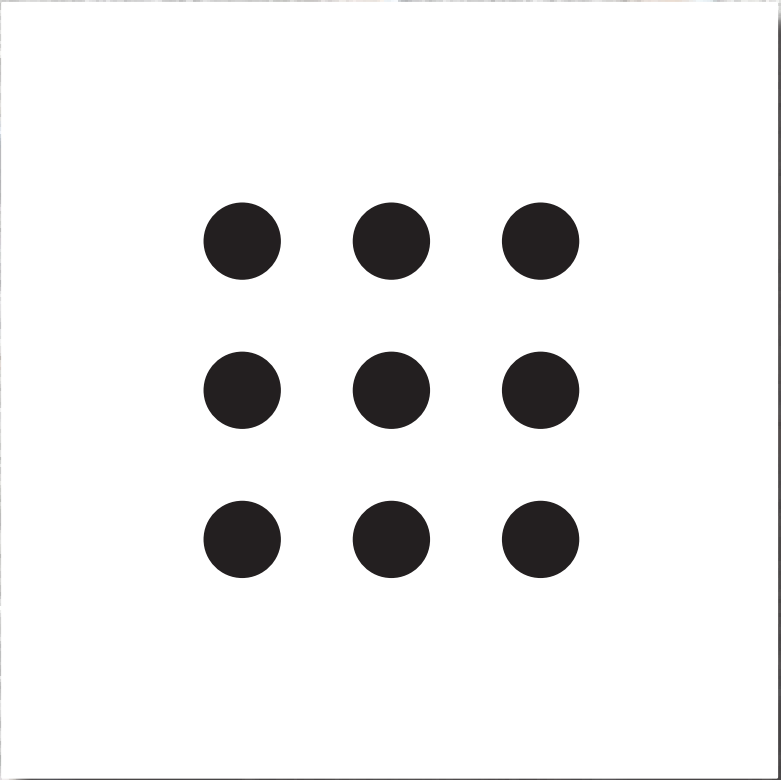
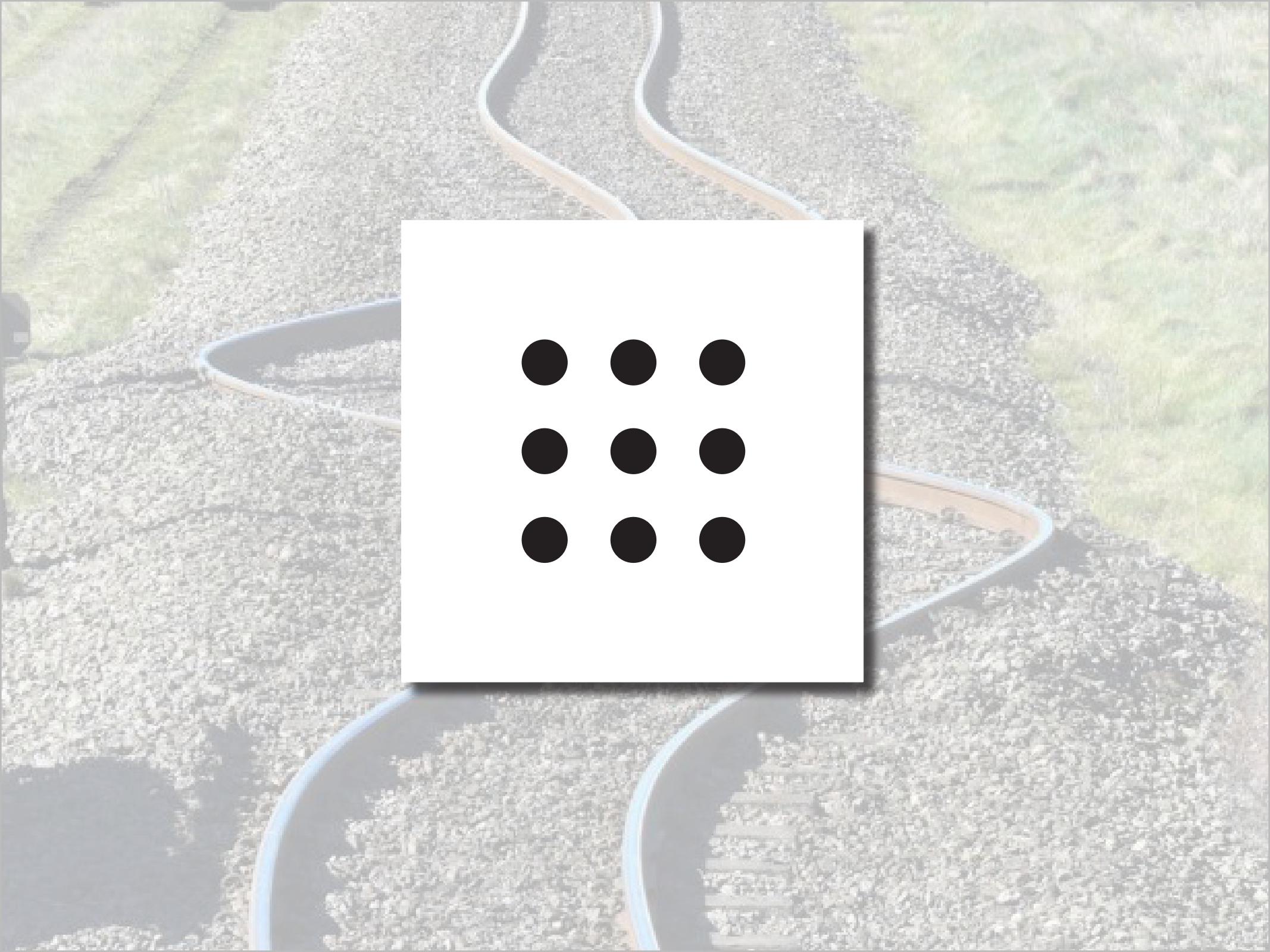
explain

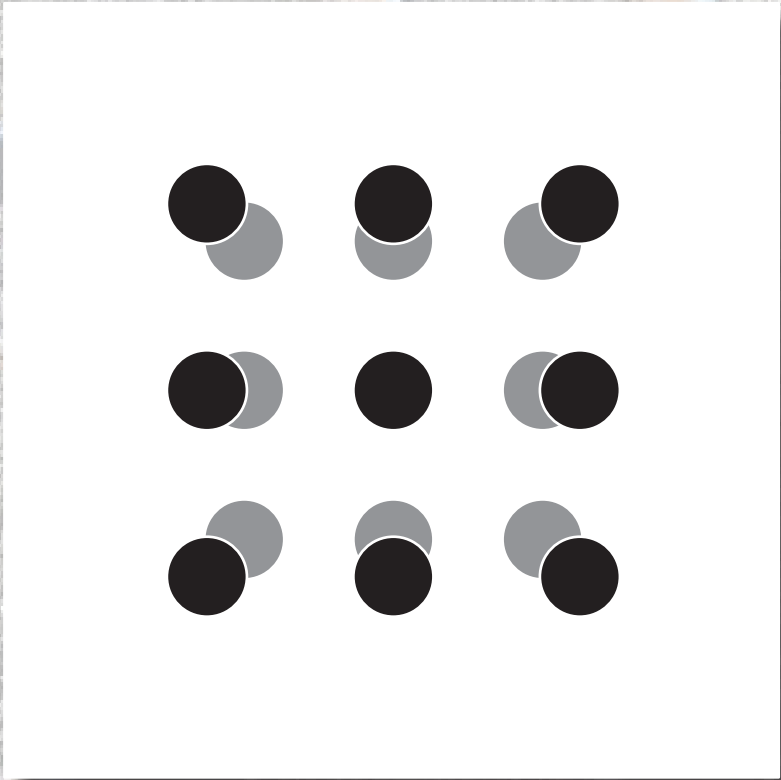
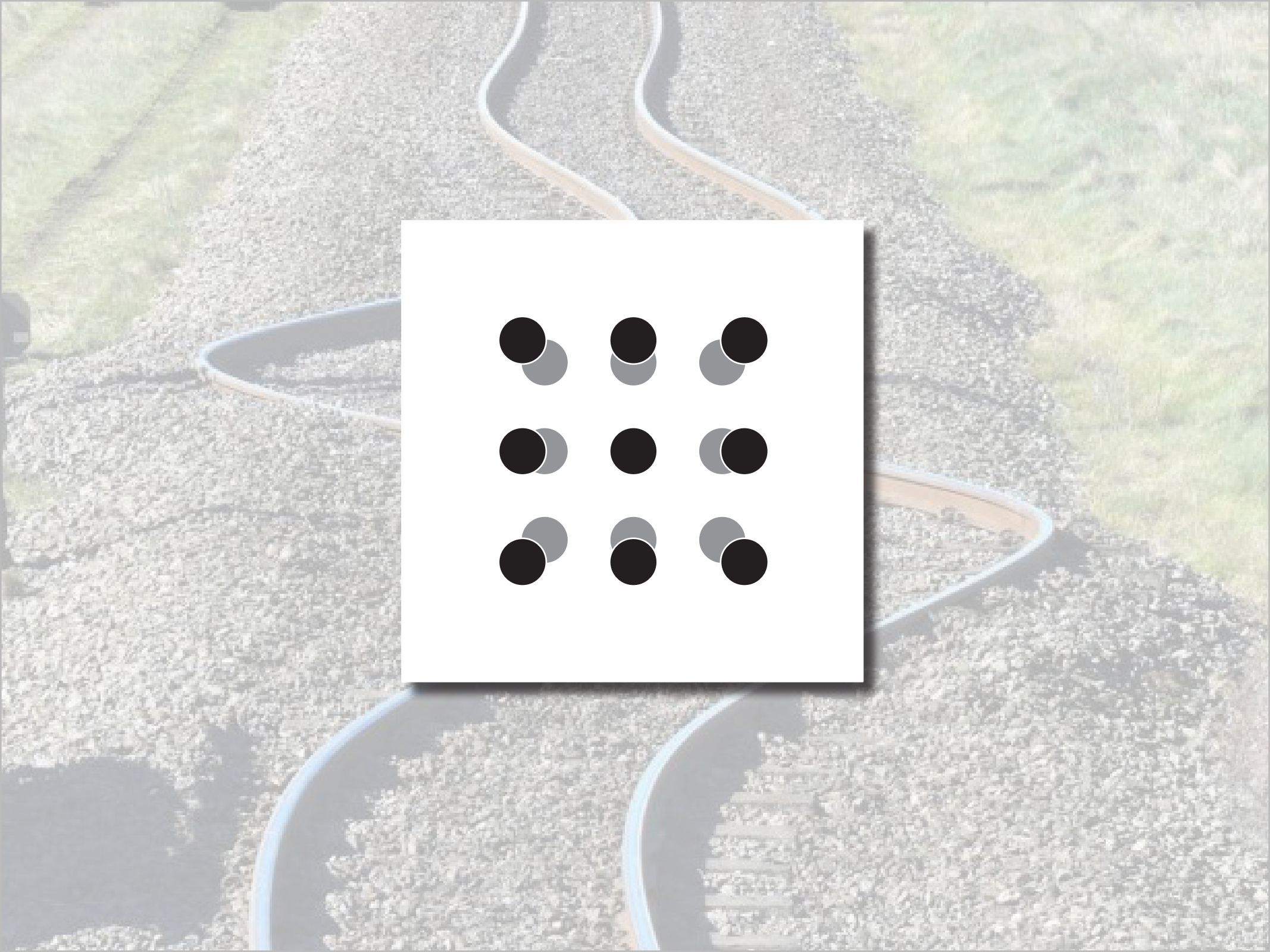




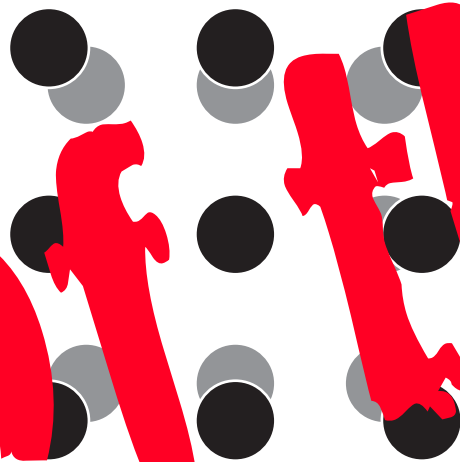
A photograph of a railway track with a wavy, undulating path, illustrating the concept of thermal expansion. The track is composed of gravel and wooden sleepers, and the rails are curved in a series of S-shapes. The text "thermal expansion" is overlaid on the image.

thermal expansion





all of them



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



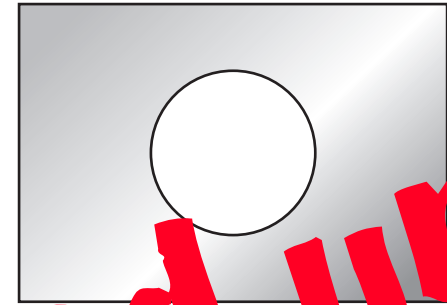
Consider a rectangular metal plate with a circular hole in it.



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.



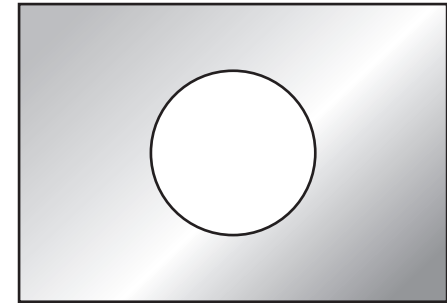
When the plate is uniformly heated, the diameter of the hole

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.

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

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**

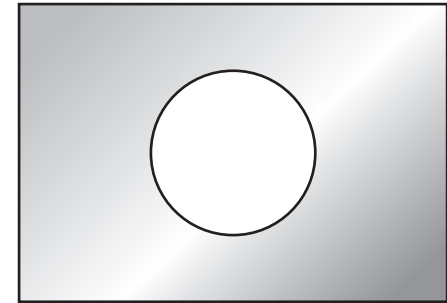
Before I tell you the answer, let's analyze what happened.

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**

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.**

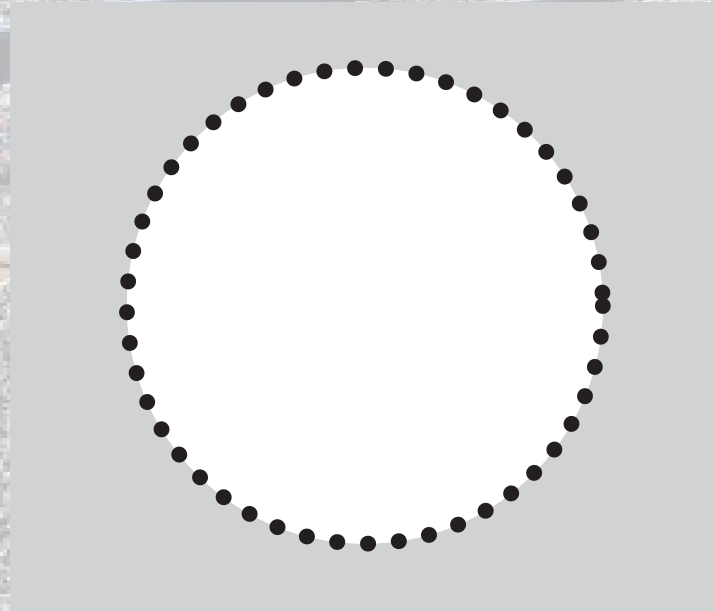
Consider a rectangular metal plate with a circular hole in it.



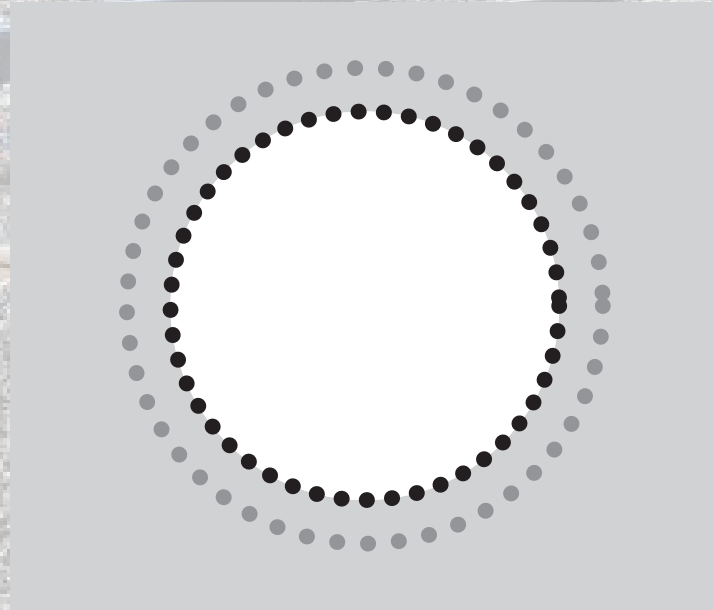
When the plate is uniformly heated, the diameter of the hole

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

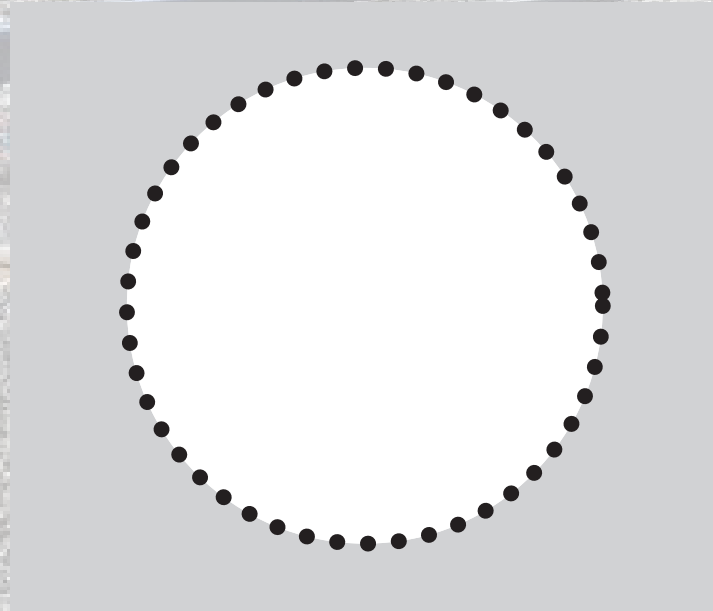
consider atoms at rim of hole



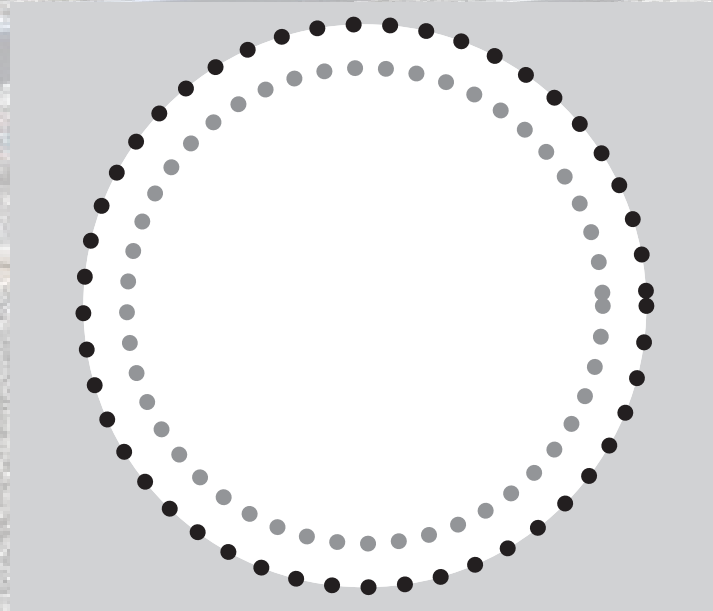
consider atoms at rim of hole



consider atoms at rim of hole



consider atoms at rim of hole



consider atoms at rim of hole

you won't forget this

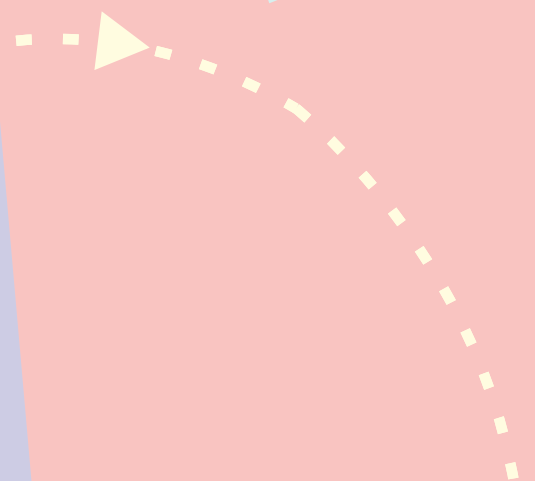
Peer

A decorative dashed yellow line with arrows at both ends, curving around the word "Peer". Small blue dots are scattered along the path of the dashed line.

back to pl

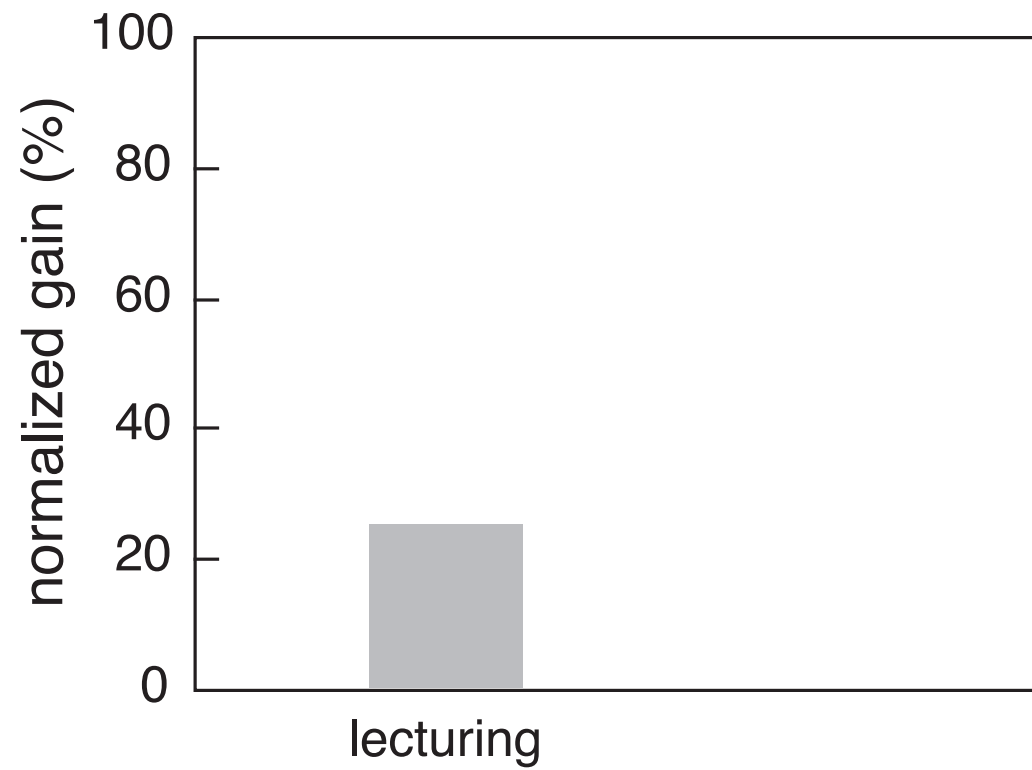
A decorative dotted blue line that starts near the word "back" and extends diagonally downwards towards the word "INSTRUCTION".

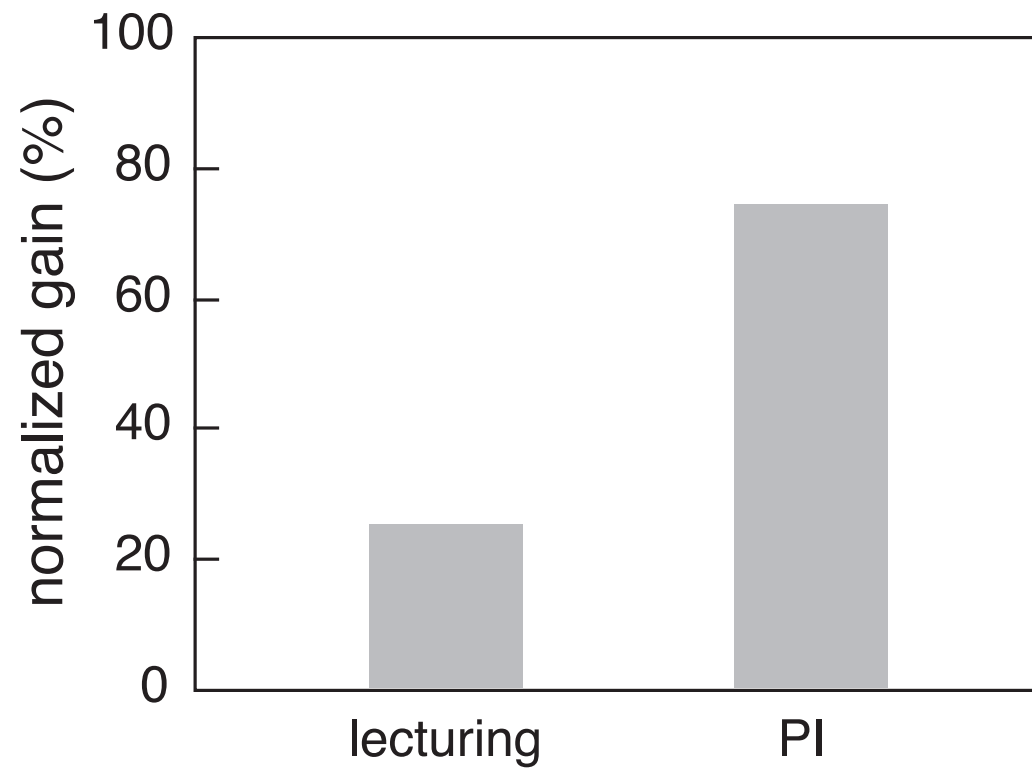
INSTRUCTION

A decorative dashed yellow line with an arrow pointing towards the word "INSTRUCTION".

Higher learning gains

INSTRUCTION





Higher learning gains

Better retention

INSTRUCTION



**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
home work/study

campus

information
transfer

instructor-paced
synchronous
lecture

home

information
transfer

instructor-paced
asynchronous
recorded lecture

home

sense-making

self-paced
asynchronous
home work/study

ALONE!

campus

sense-making

instructor-led
synchronous
peer instruction

home

**information
transfer**

self-paced
asynchronous
pre-class reading



online

**information
transfer**

self-paced
asynchronous

online

sense-making

instructor-led
synchronous



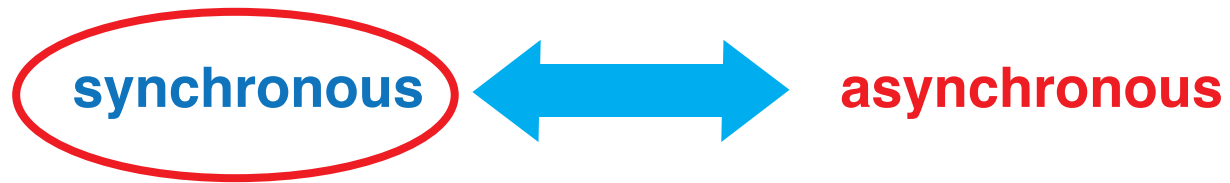
interactive

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

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



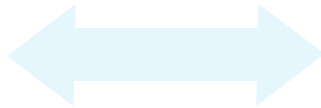
self-paced

everybody together
at the same *pace*

Improving education

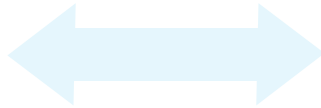
lecture

synchronous



asynchronous

instructor-paced

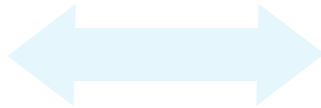


self-paced

Improving education

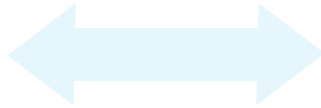
recorded lecture

synchronous



asynchronous

instructor-paced

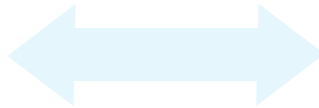


self-paced

Improving education

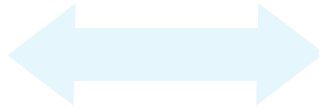
lab

synchronous



asynchronous

instructor-paced

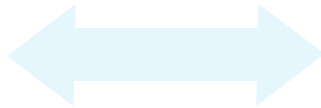


self-paced

Improving education

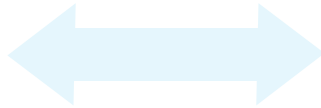
homework/study

synchronous



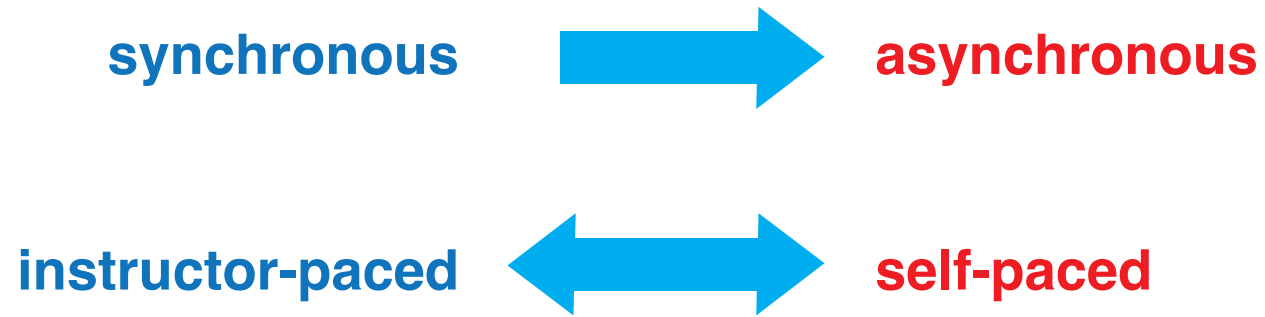
asynchronous

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!**

for a copy of this presentation:

mazur.harvard.edu

resource sheet: bit.ly/fliponline

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