

Turning a large lecture into a seminar: Using Peer Instruction to Promote Deep Understanding



Student Education Conference 2022
University of Leeds
6 January 2022



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@eric_mazur

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1. The first step in the synthesis of a new drug is the identification of a target molecule.

2. The second step is the design of a molecule that is capable of interacting with the target.

3. The third step is the synthesis of the molecule.

4. The fourth step is the evaluation of the molecule's activity.

5. The fifth step is the optimization of the molecule's properties.

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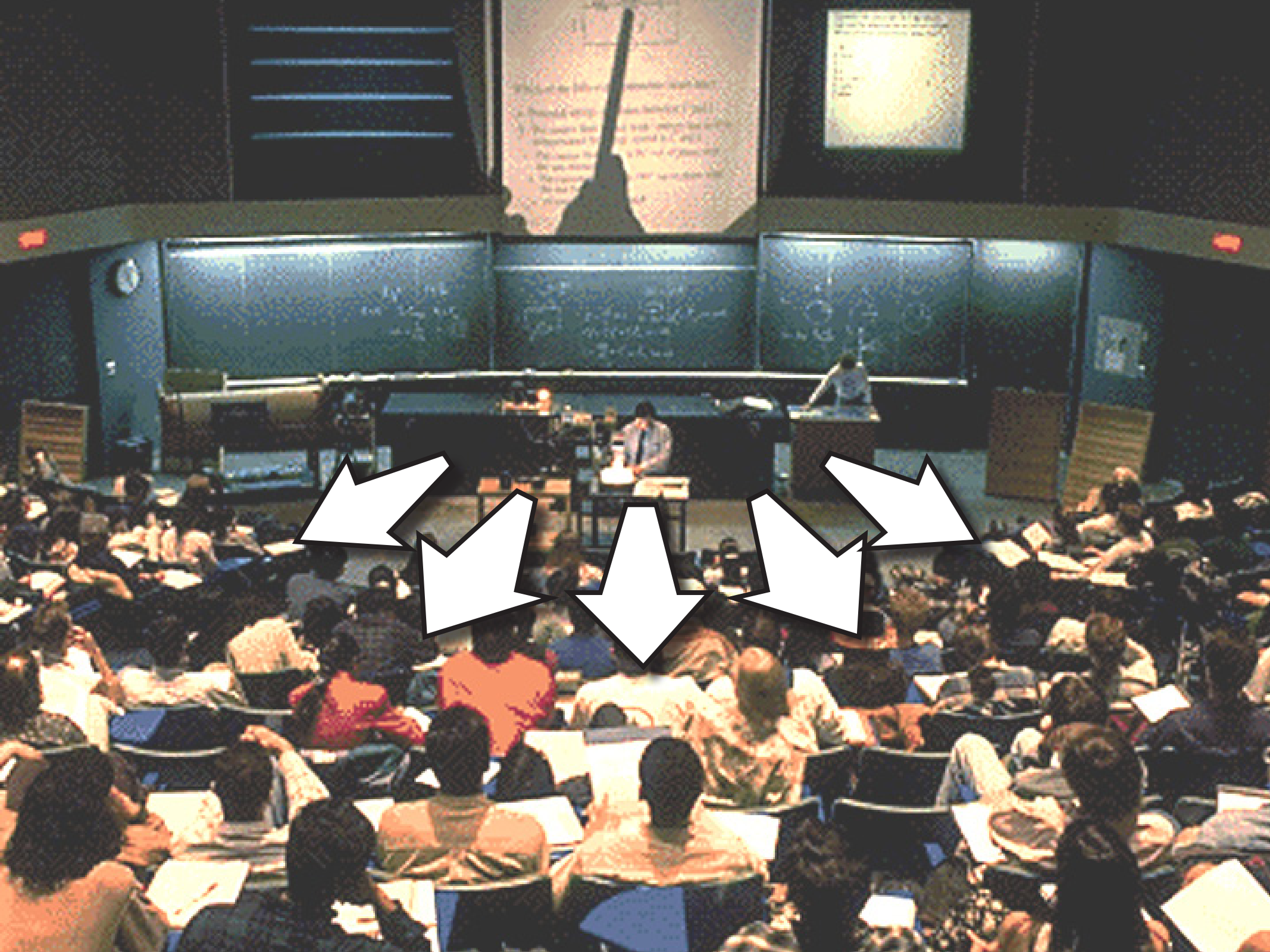


1. The first step in the process of learning is to identify the learning objectives. This involves understanding the goals of the course and the specific skills and knowledge that students are expected to acquire.

2. The second step is to design the learning experience. This involves selecting the appropriate teaching methods and materials that will effectively deliver the content and engage the students.

3. The third step is to implement the learning experience. This involves delivering the content and facilitating the learning process, ensuring that students are actively engaged and able to apply the knowledge and skills.

4. The fourth step is to evaluate the learning experience. This involves assessing the effectiveness of the teaching methods and materials, and gathering feedback from students to improve the learning process.







an illusion. . .





1. transfer of information



1. transfer of information

2. assimilation of that information



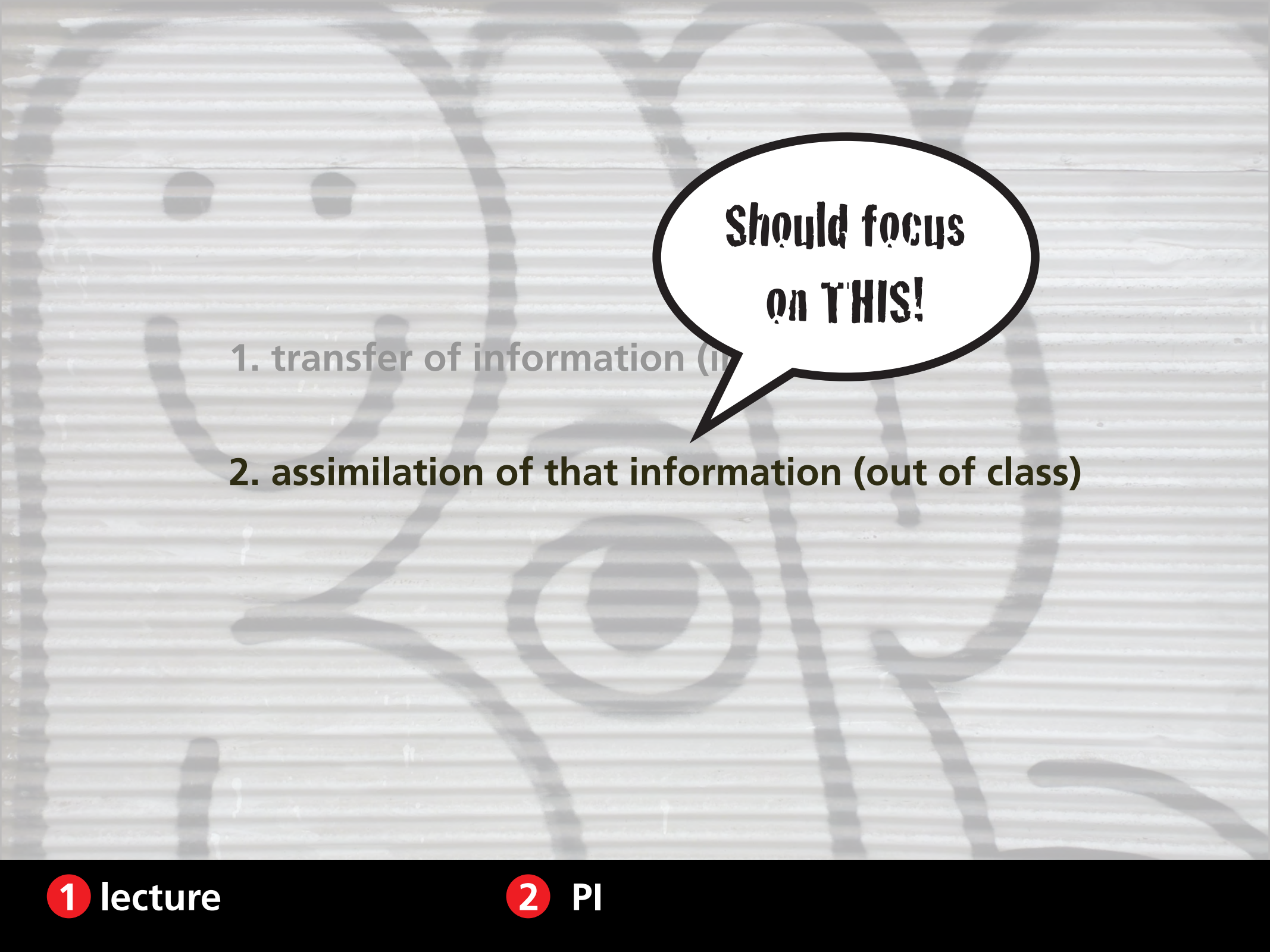
1. transfer of information (in class)

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 word and points towards 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 at an angle. 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



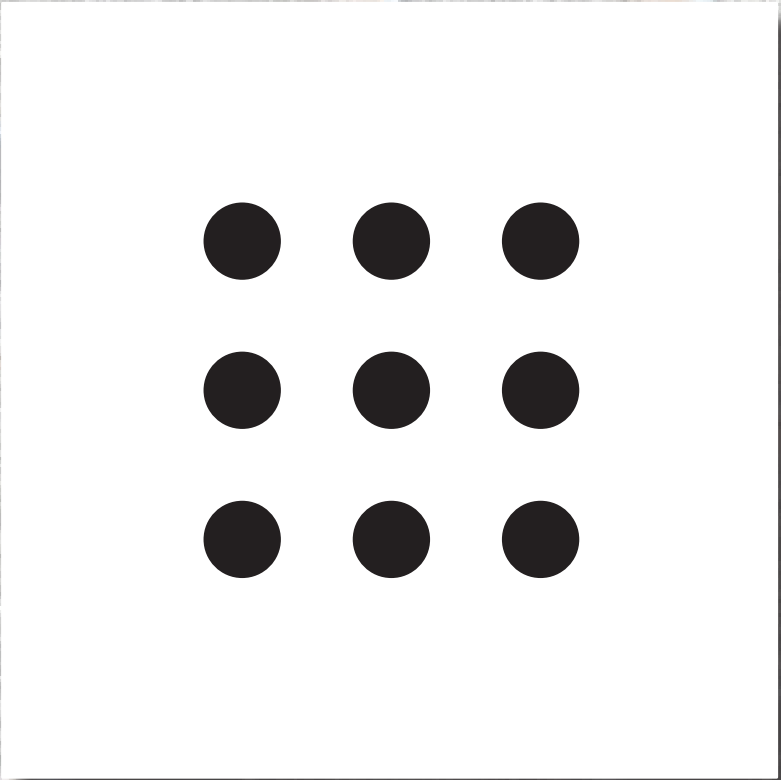
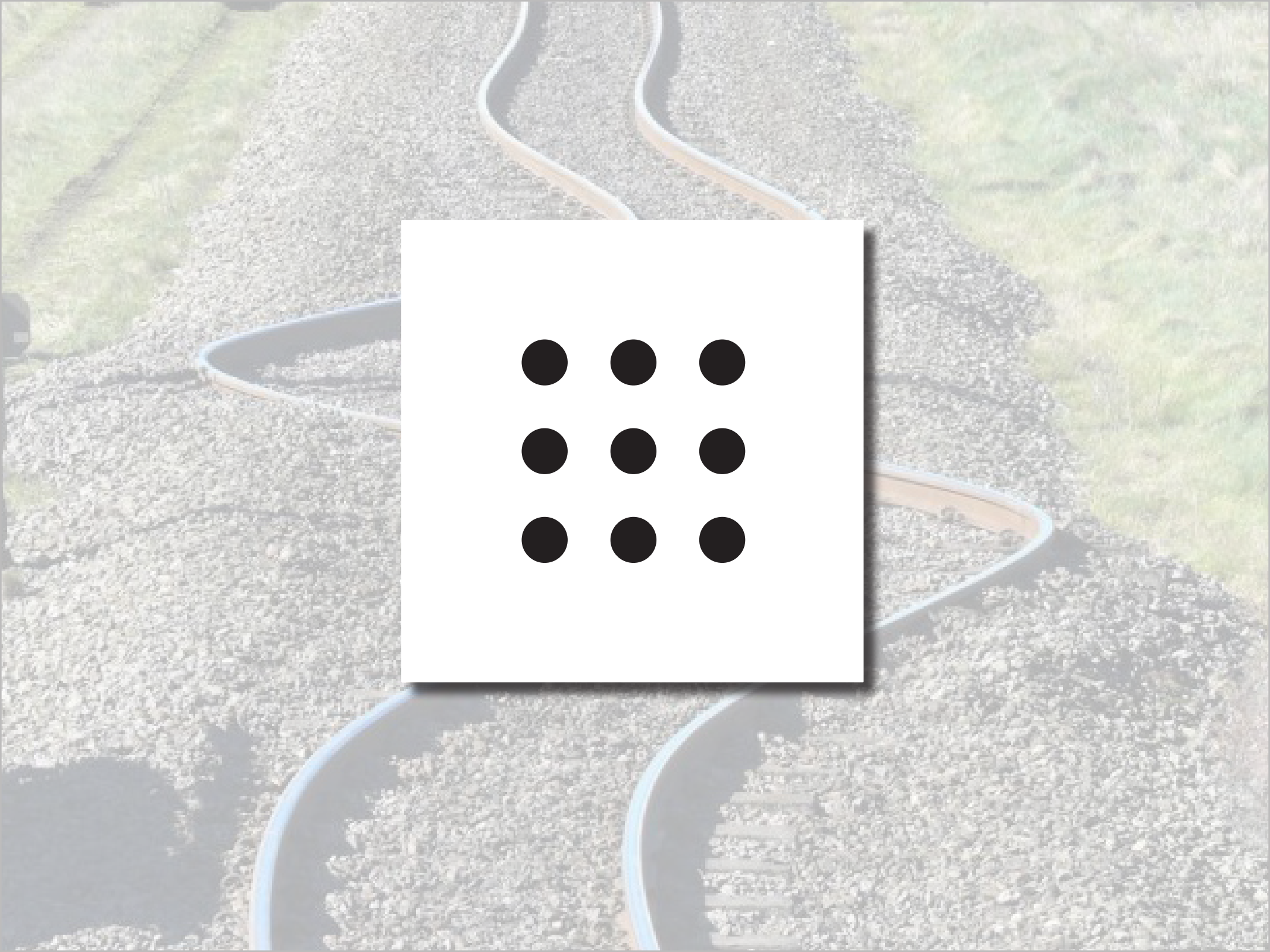
explain

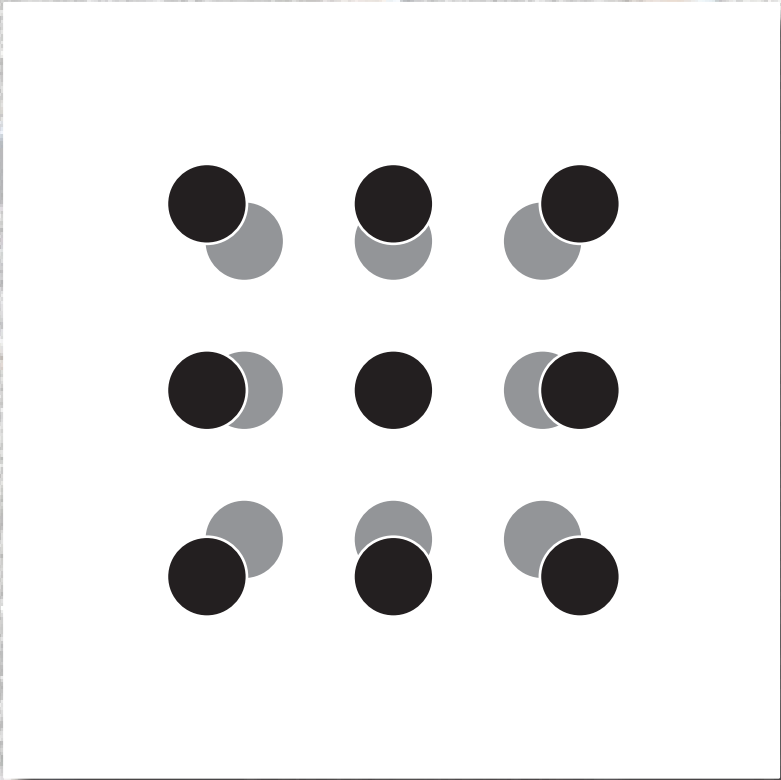
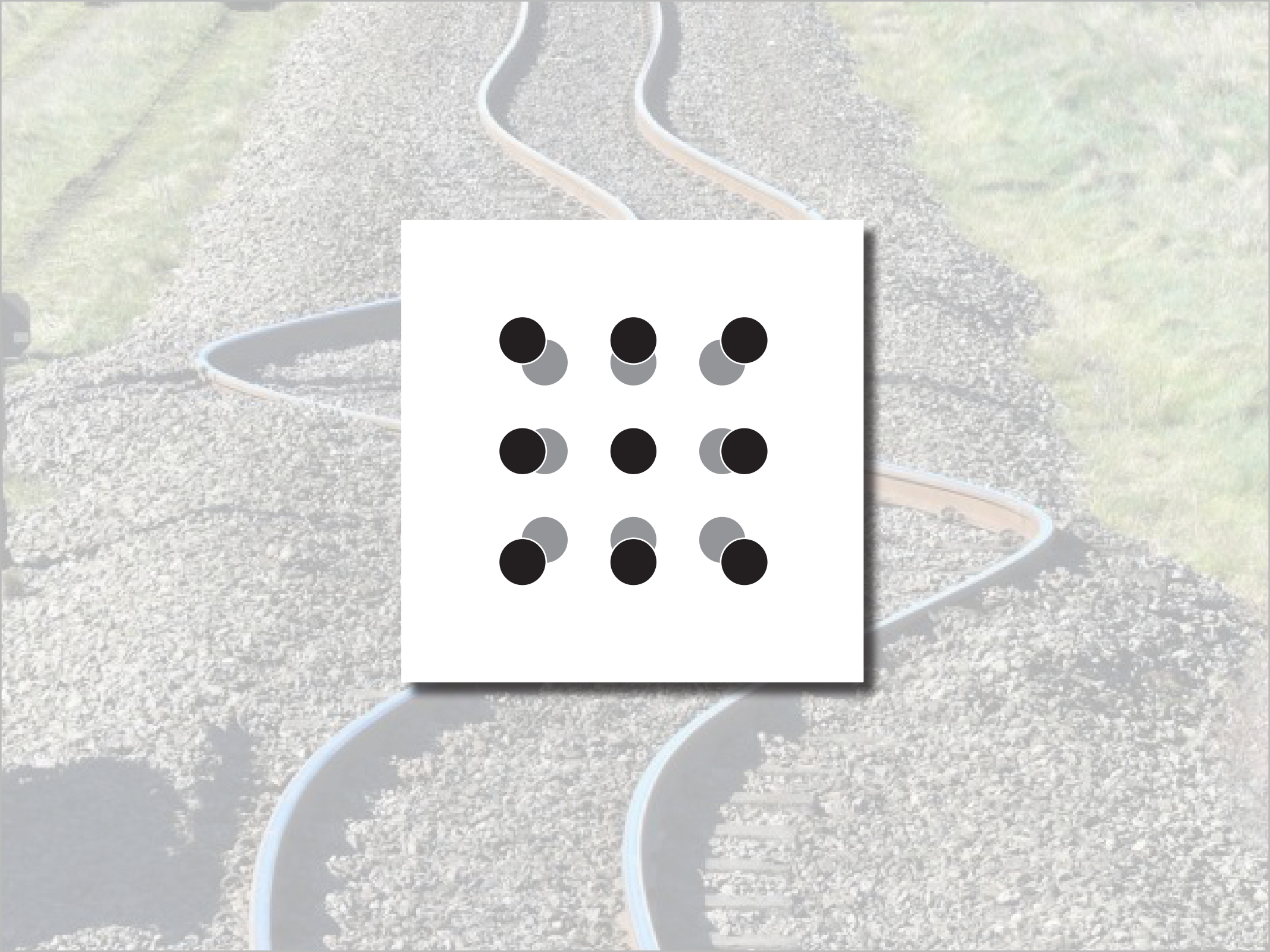




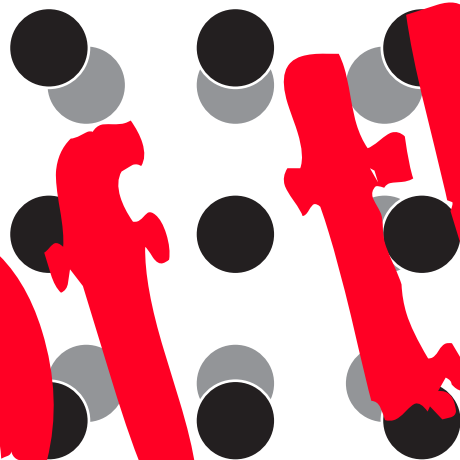
A photograph of a railway track with a wavy, undulating path, illustrating the concept of thermal expansion. The track is composed of gravel and wooden sleepers, and the rails are curved in a series of S-shapes. The text "thermal expansion" is overlaid on the image.

thermal expansion





all of them

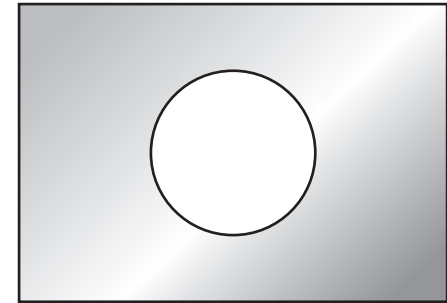


**Consider a rectangular metal plate
with a circular hole in it.**



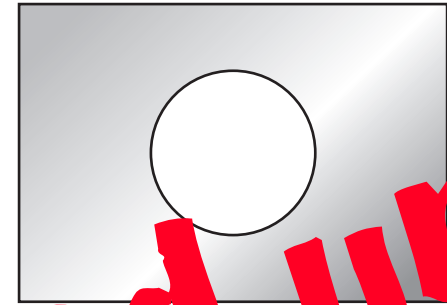
Consider a rectangular metal plate with a circular hole in it.

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.



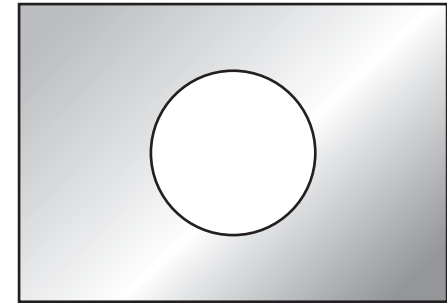
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www.menti.com
8682 6567

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**

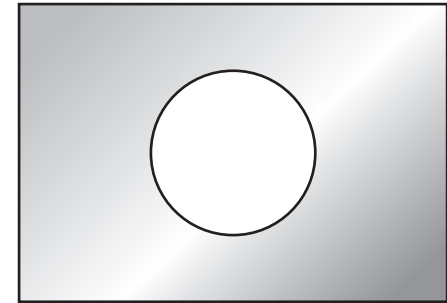
Before I tell you the answer, let's analyze what happened.

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**

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

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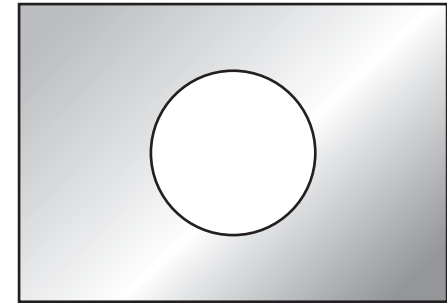


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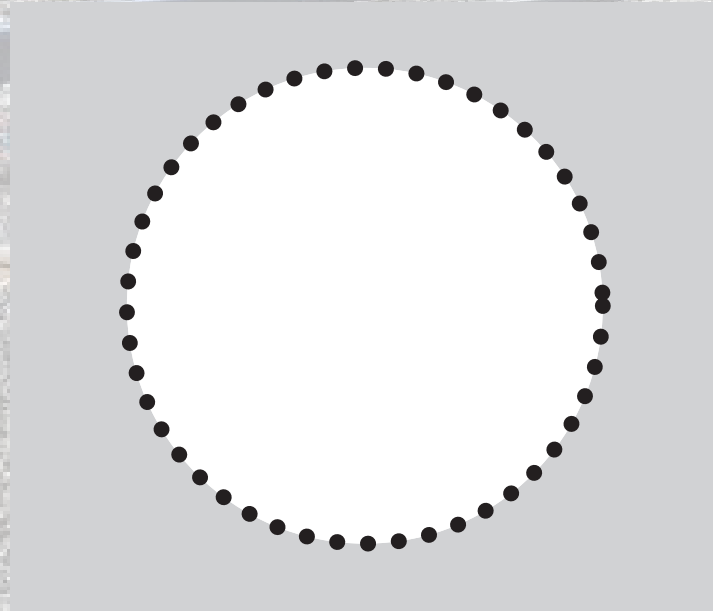
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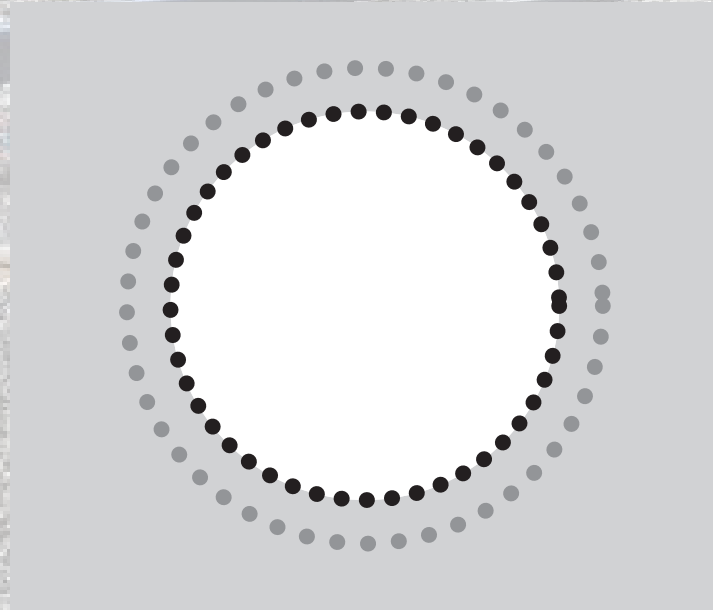
When the plate is uniformly heated, the diameter of the hole

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

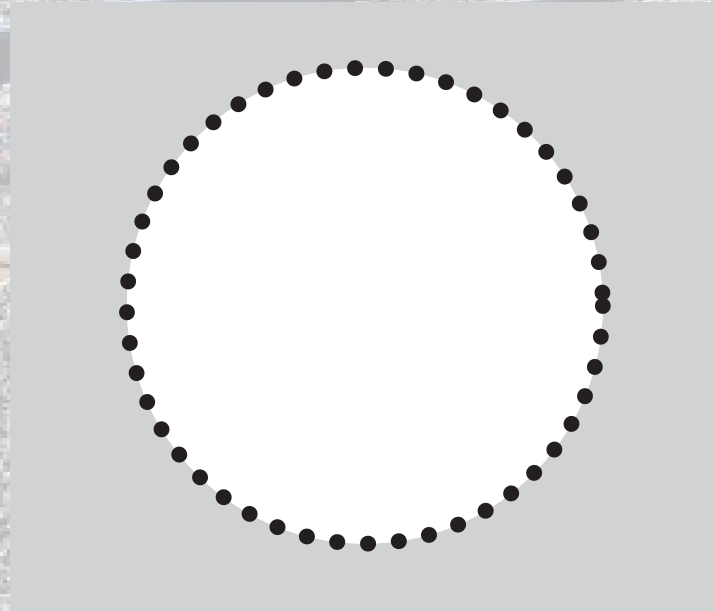
consider atoms at rim of hole



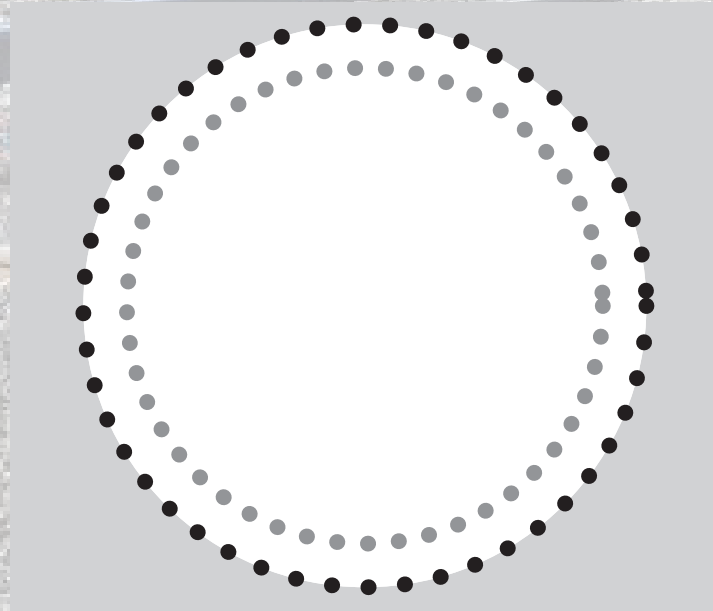
consider atoms at rim of hole



consider atoms at rim of hole



consider atoms at rim of hole



consider atoms at rim of hole

you won't forget this

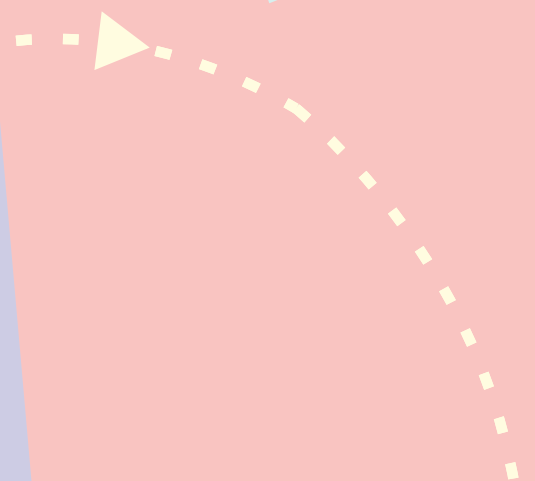
Peer

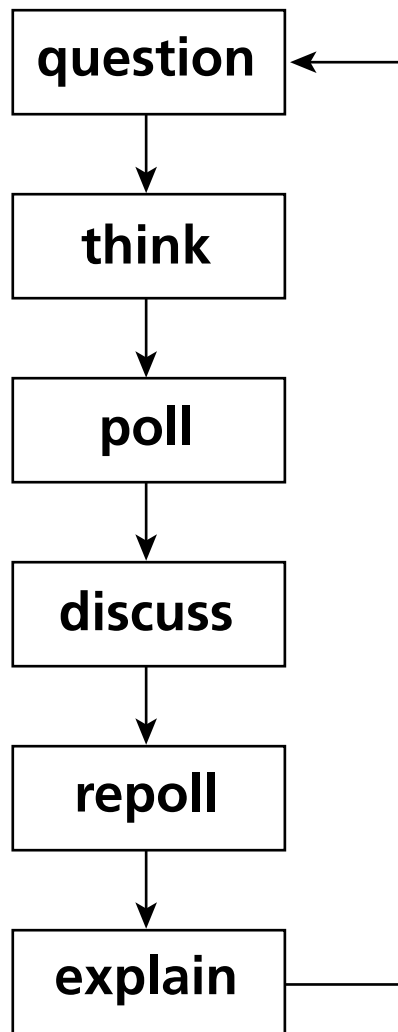
A decorative dashed yellow line with arrows at both ends, curving around the word "Peer". Small blue dots are scattered along the path of the dashed line.

back to pl

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

INSTRUCTION

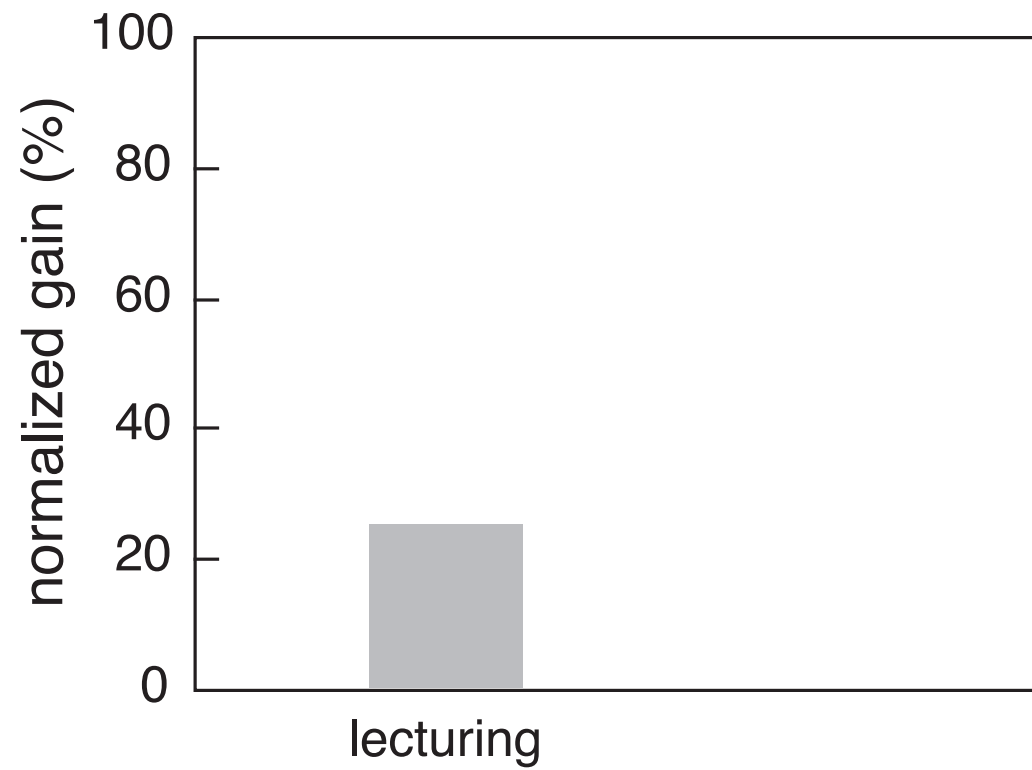
A decorative dashed yellow line with an arrow pointing towards the word "INSTRUCTION".

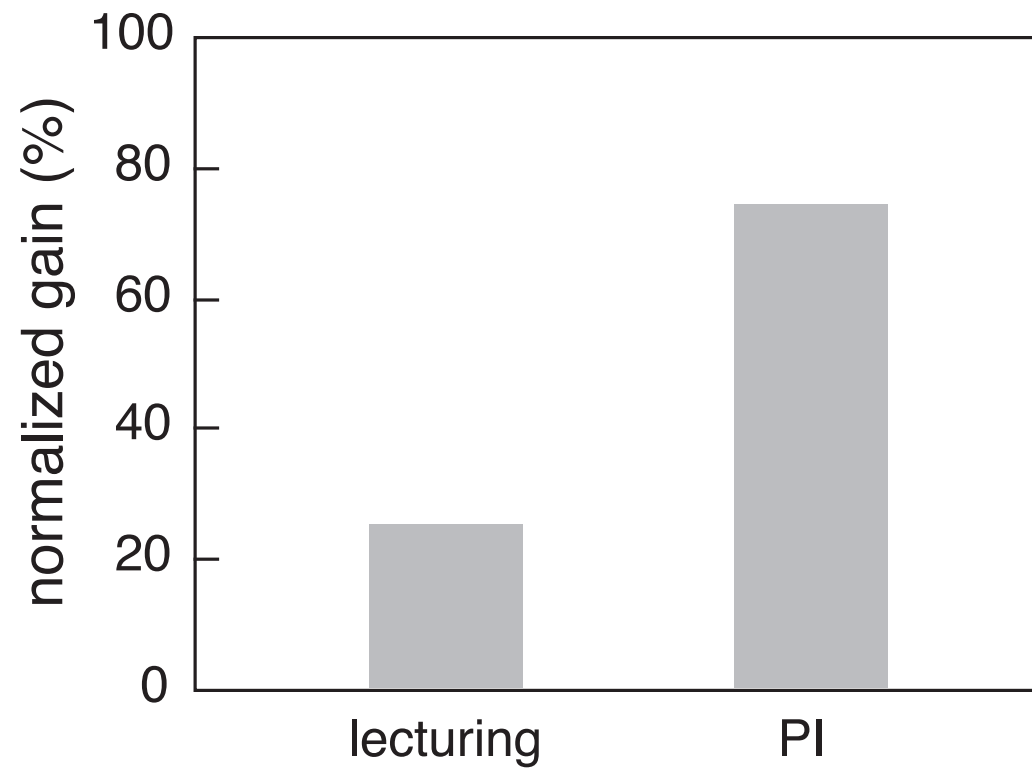




Higher learning gains

INSTRUCTION





Higher learning gains

Better retention

INSTRUCTION

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 background of the illustration consists of vertical stripes in shades of yellow and red. 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 dark hair and a beard, looking slightly to the side. The text 'quick reflection' is visible at the top of the cover. The book is bound in a light-colored material, possibly leather or cloth, with visible stitching and a dark spine.

quick reflection

how did you become good at that?



Education is not just about:

- **transferring information**
- **getting students to do what we do**



Education is not just about:

- **transferring information**
- **getting students to do what we do**

active engagement/social interaction a must!

for a copy of these slides

mazur.harvard.edu

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