

# Confessions of a converted lecturer



Fall 2013 NEFDC Conference  
College of the Holy Cross  
Worcester, MA, November 15, 2013



# Confessions of a converted lecturer



@eric\_mazur

Fall 2013 NEFDC Conference  
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- no ON/OFF button
- only last “click” counts
- display shows recorded answer





**Or use your web-enabled device!**

- go to <http://rwpoll.com>
- enter session ID: **EMAZUR**





[www.TurningTechnologies.com](http://www.TurningTechnologies.com)





unique ID on back of clicker



**Think of something you are good at**

**EDUCACION**



**Think of something you are good at**

***How did you become good at this?***

**EDUCACION**



**Became good at it by:**

- 1. trial and error**
- 2. lectures**
- 3. practicing**
- 4. apprenticeship**
- 5. other**



















1 education

2 PI

3 test






1 education

2 PI

3 test





**What happens  
in a lecture?**



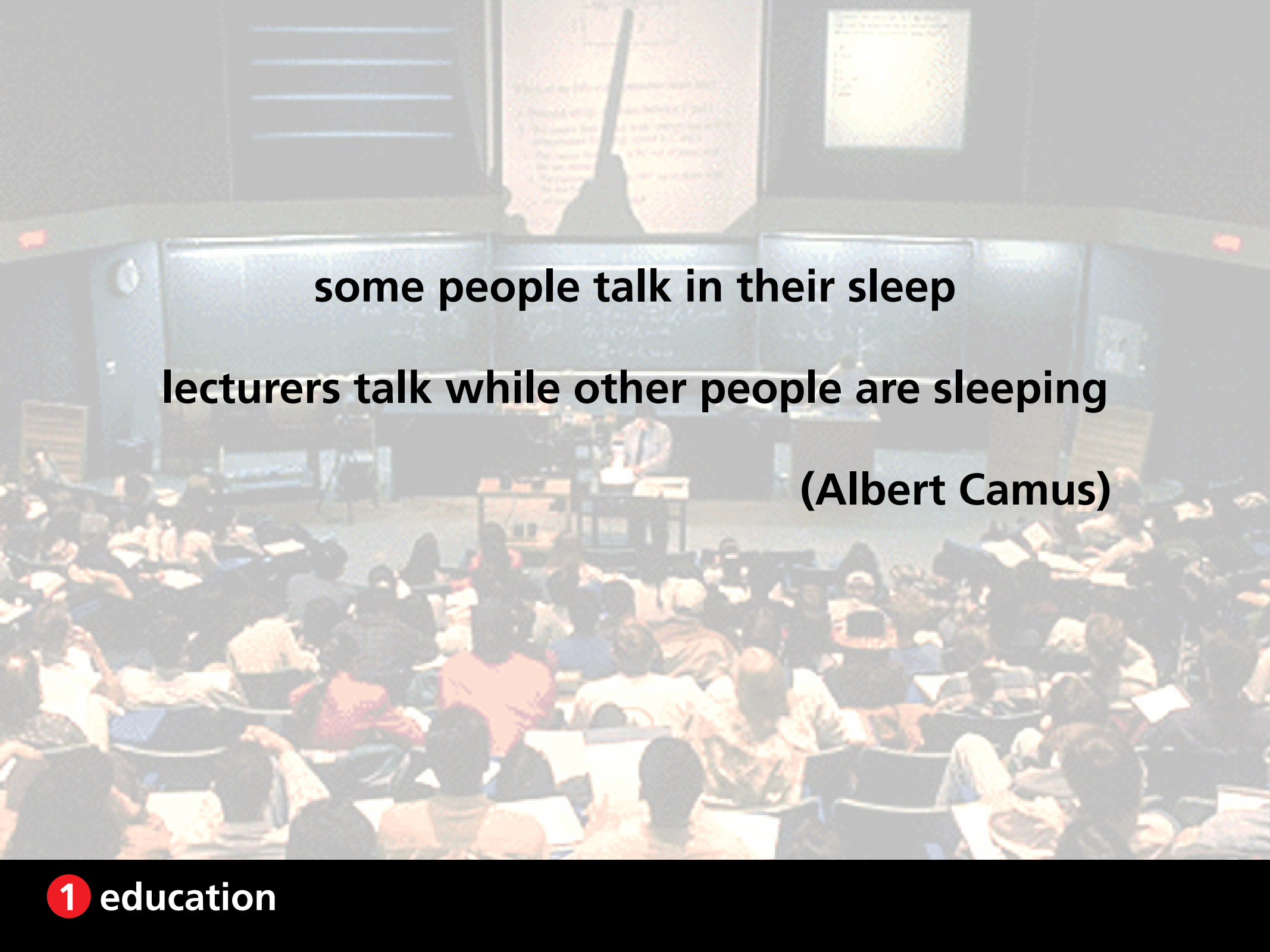




A wide-angle photograph of a large lecture hall. In the foreground, many students are seated at desks, many of whom appear to be sleeping or resting with their heads down. The room is filled with rows of students, creating a sense of a large audience. At the front of the hall, a lecturer is standing near a podium, addressing the class. Behind the lecturer are several large projection screens displaying text and diagrams. The overall atmosphere is one of a typical lecture where many students are disengaged or tired.

**some people talk in their sleep**



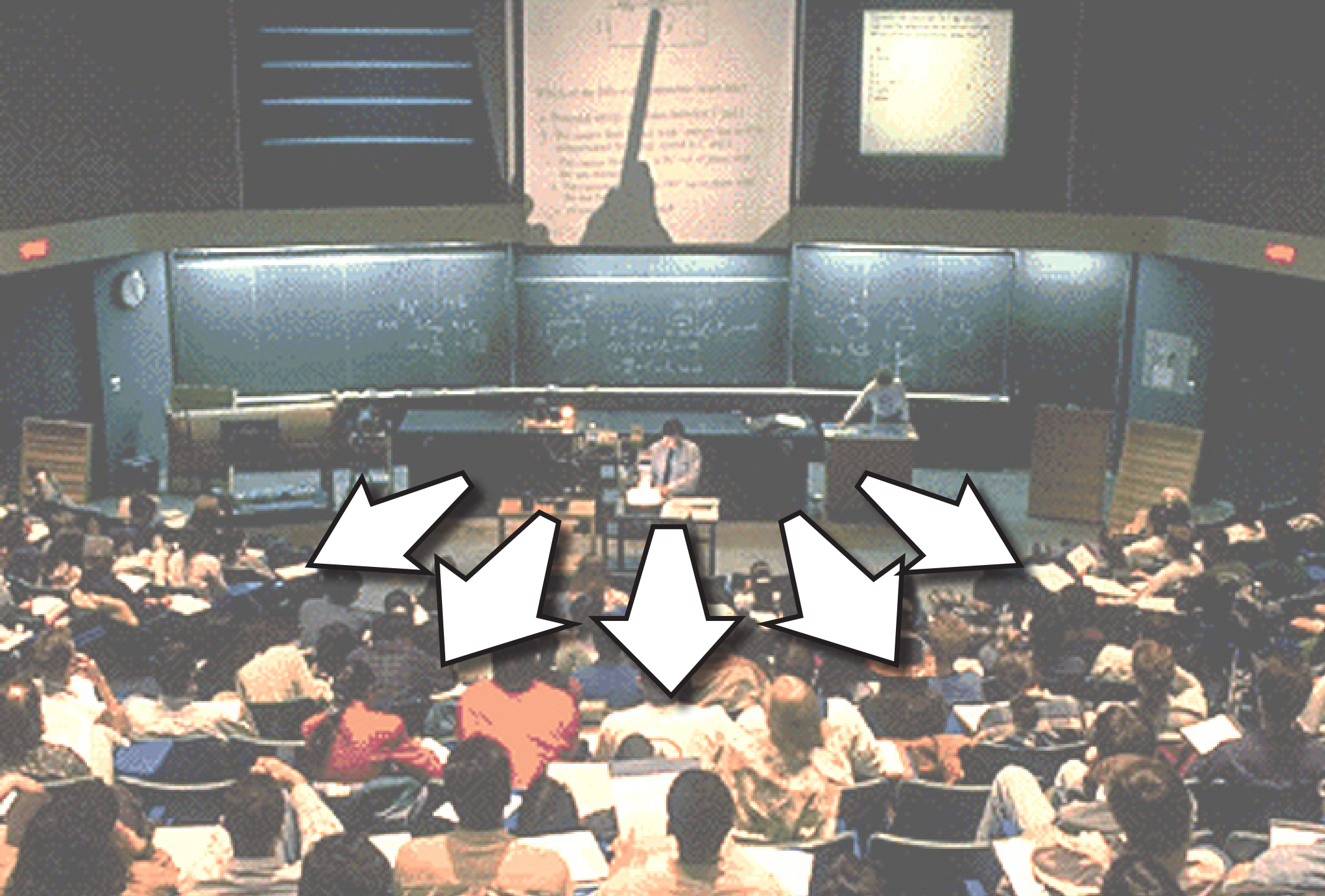
A large lecture hall filled with students. Many students are sleeping, with their heads resting on their desks or hands. The room has a curved wall with several large screens or whiteboards at the front. A lecturer is visible at a podium in the center of the front. The overall atmosphere is one of a lecture where many students are not paying attention.

**some people talk in their sleep**  
**lecturers talk while other people are sleeping**  
**(Albert Camus)**











The result?

EDUCACION



**Lack of learning**

EDUCACION



**Lack of learning**

**Lack of retention**



**not transfer but assimilation of information is key**









## 1. transfer of information





**1. transfer of information**

**2. assimilation of that information**





**1. transfer of information (in class)**

**2. assimilation of that information**

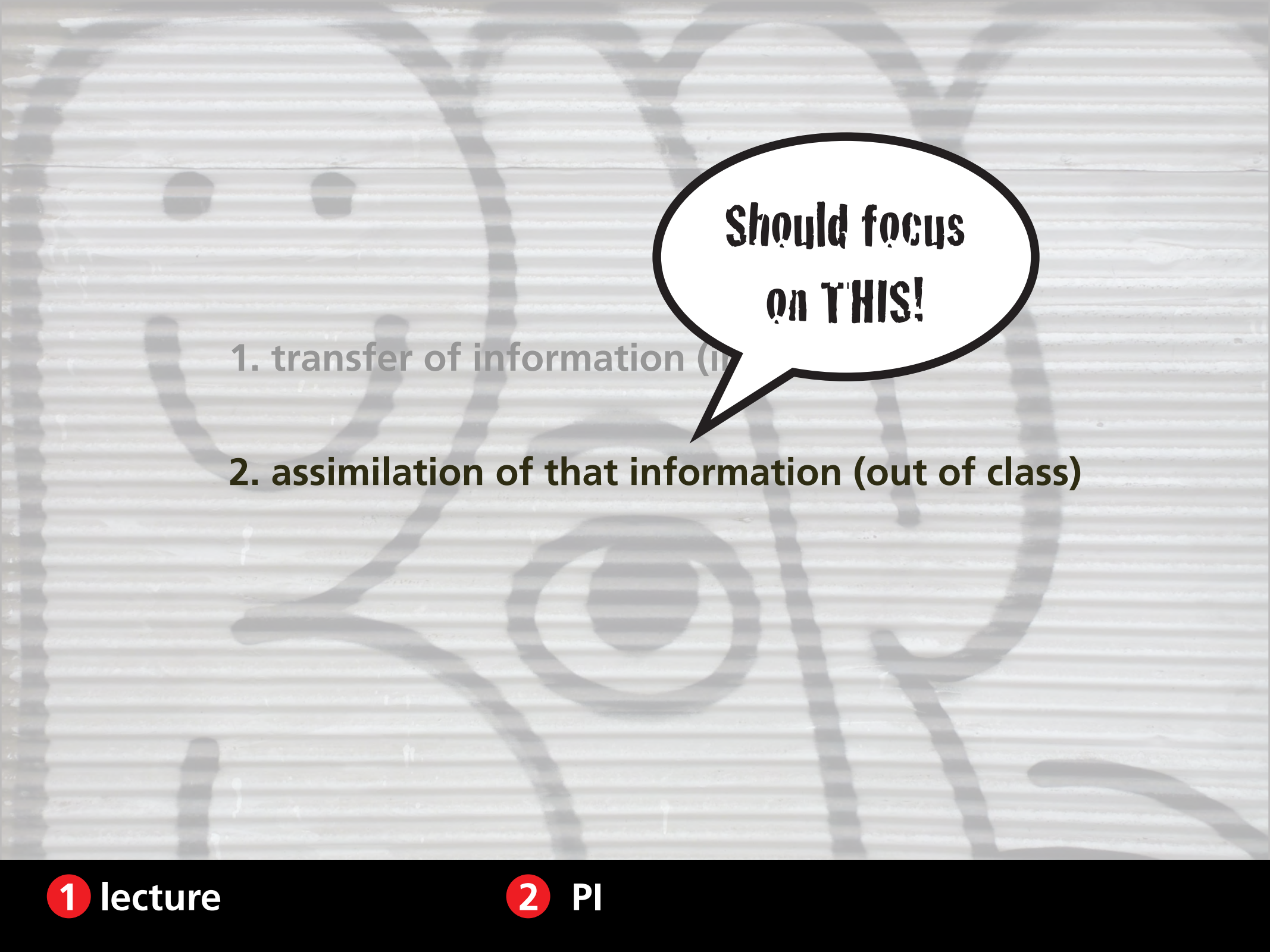




1. transfer of information (in class)

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)**





# Peer

1. transfer of information (out of class)

2. assimilation of that information (in class)



question

1 education

2 PI



**question**



**think**



**question**



**think**



**poll**



**question**



**think**



**poll**



**discuss**



**question**



**think**



**poll**



**discuss**



**repoll**



**question**



**think**



**poll**



**discuss**



**repoll**



**explain**











**1** education

**2** PI

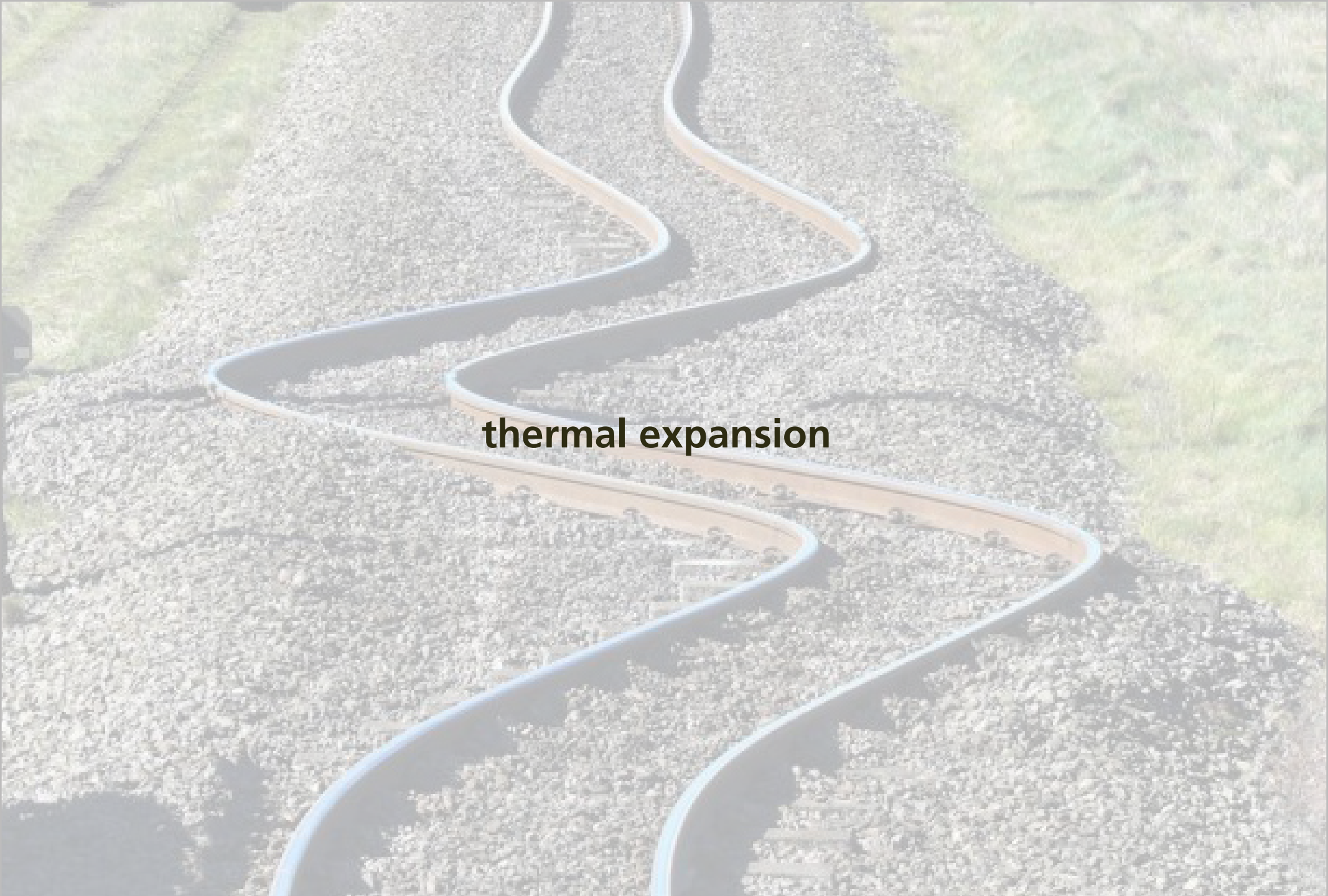




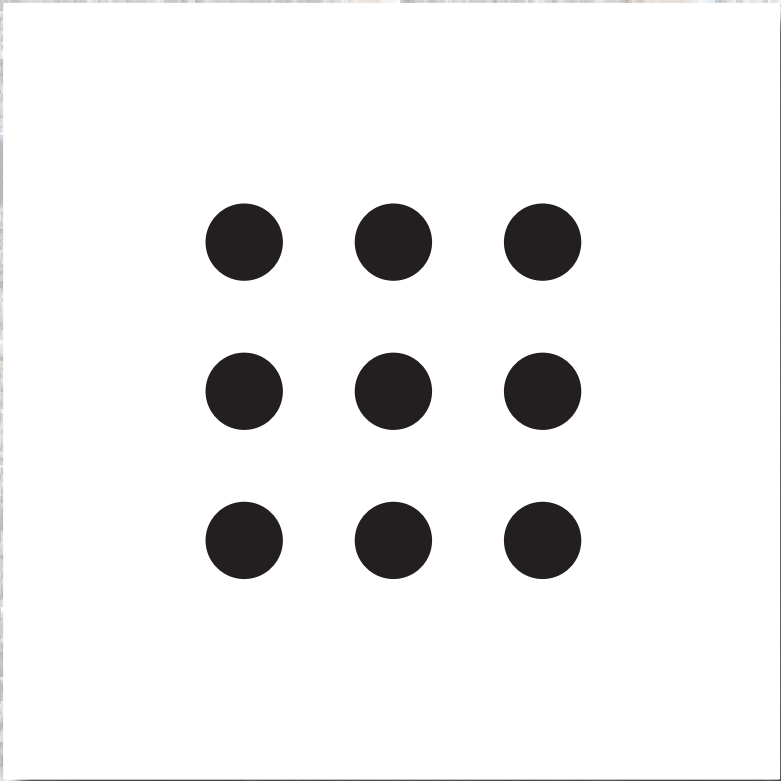
1 education

2 PI

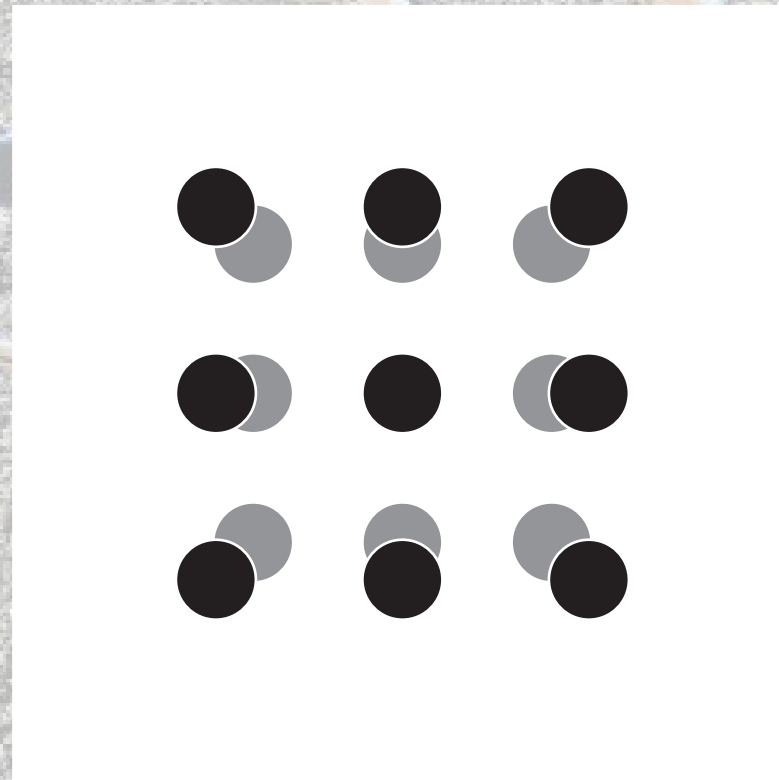


An aerial photograph of a railway track. The track is composed of two parallel rails, which are slightly wavy, set on a bed of dark gravel. The surrounding area is green grass. The text "thermal expansion" is overlaid in the center of the image.

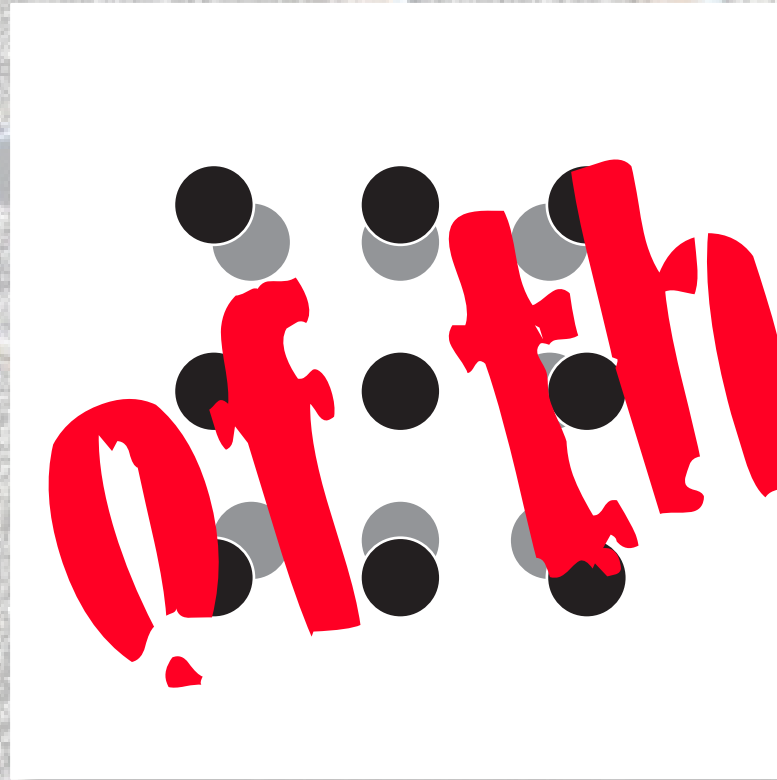
**thermal expansion**







**all of them**



**1** education

**2** PI



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



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

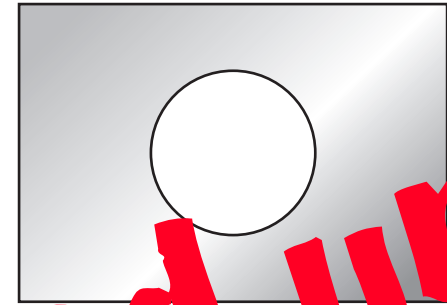


**When the plate is uniformly heated, the diameter of the hole**

- 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.

**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...**

**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.**



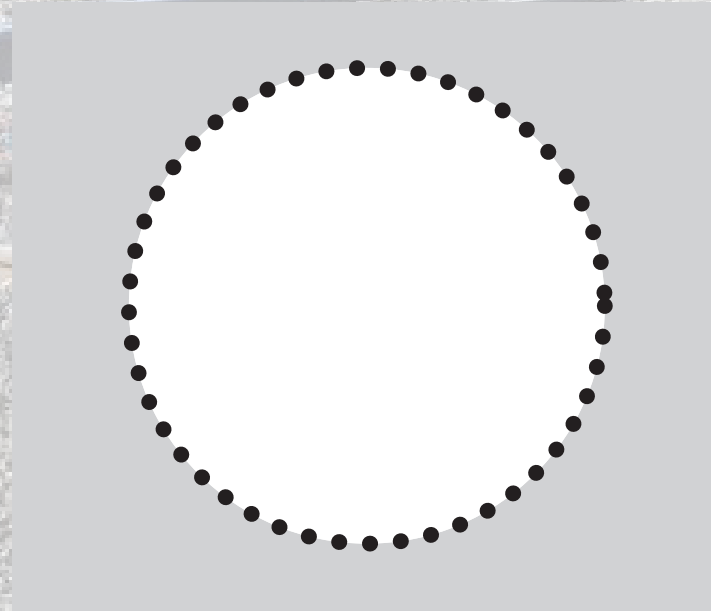
**Consider a rectangular metal plate with a circular hole in it.**



**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

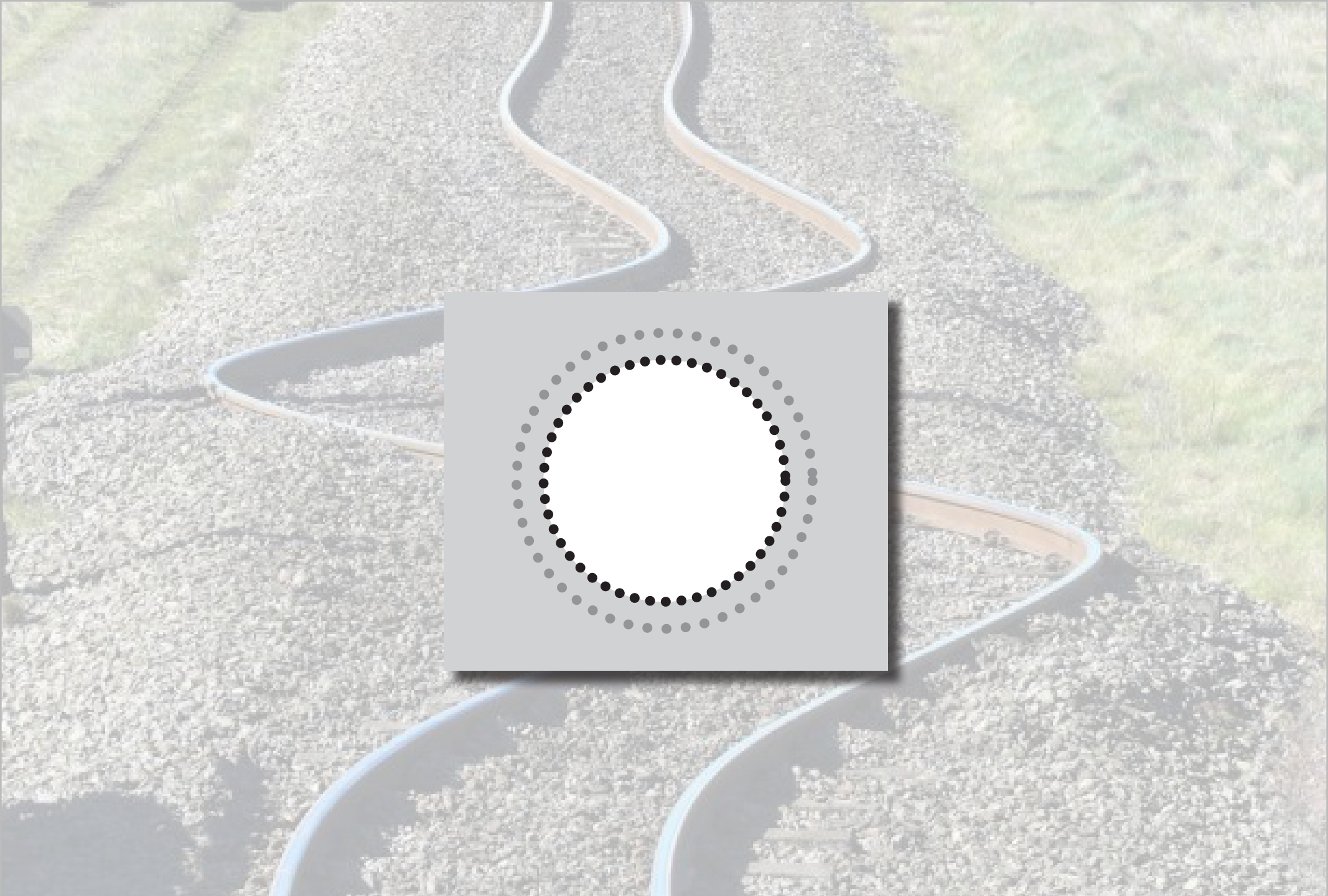


1 education

2 PI

3 test



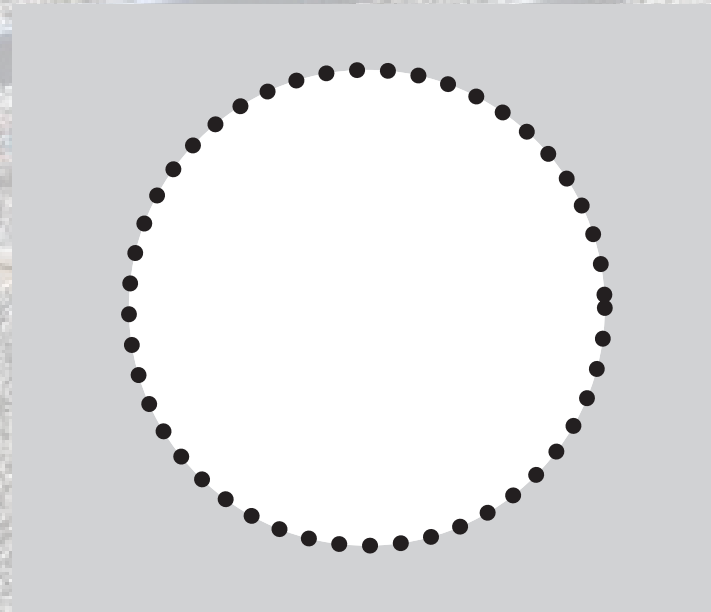


**1** education

**2** PI

**3** test

consider atoms at rim of hole



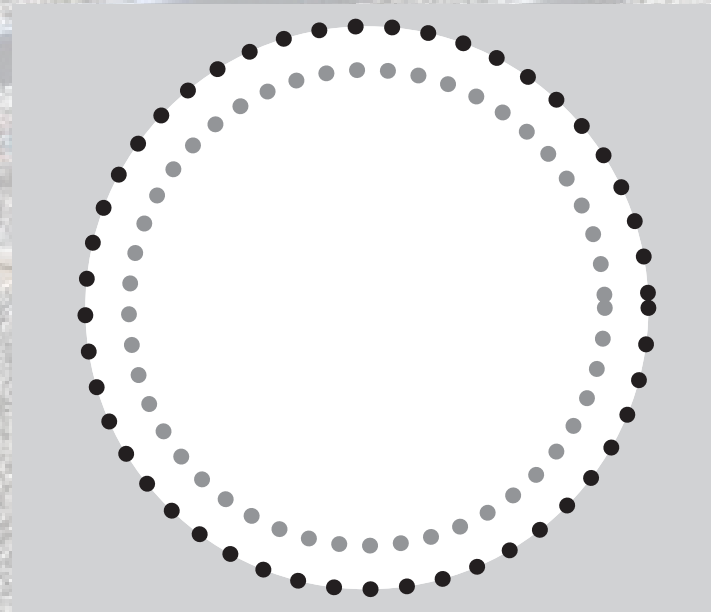
1 education

2 PI

3 test



consider atoms at rim of hole



consider atoms at rim of hole

you won't forget this

1 education

2 PI

3 test





Peer

back to PI

INSTRUCTION

1 education

2 PI

3 test



Peer

**Higher learning gains**

INSTRUCTION

1 lecture

2 PI



The background features a large, light blue 'P' and 'I' on the left. The word 'Peer' is written in large, white, outlined letters across the top. The word 'INSTRUCTION' is written in white, outlined letters at the bottom. Two red, bold, italicized phrases, 'Higher learning gains' and 'Better retention', are positioned diagonally across the center. A dashed yellow line with arrows connects the 'P' to the 'I', passing through the red text. A dotted blue line with arrows also connects the 'P' to the 'I', passing through the red text.

**Higher learning gains**

**Better retention**

INSTRUCTION





**1** education

**2** PI

**3** test



in a lecture, students...

**1** education

**2** PI

**3** test



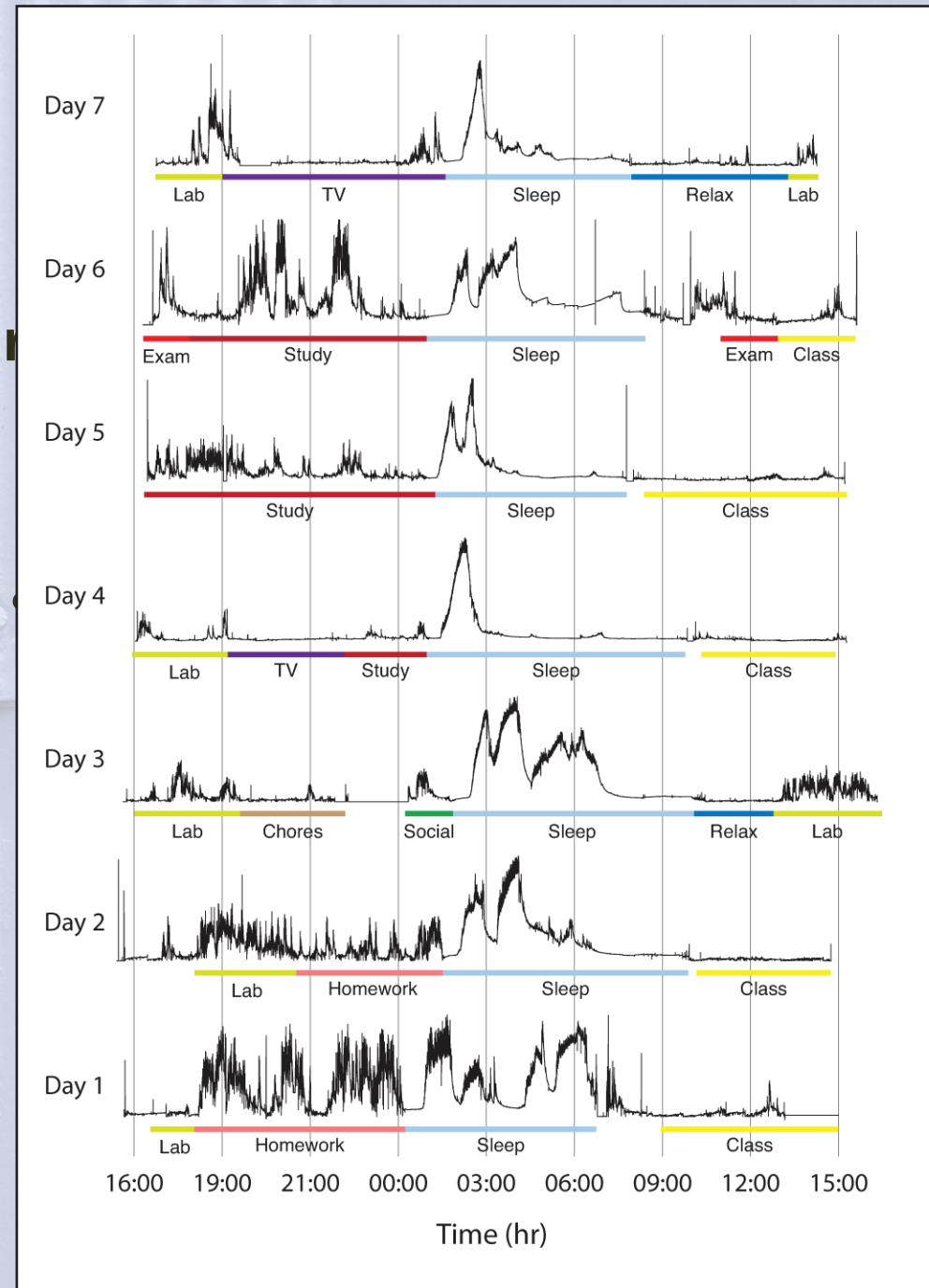
**in a lecture, students...**

**1. don't pay utmost attention**



in a lecture

1. don't pay utmost



doi: 10.1109/TBME.2009.2038487

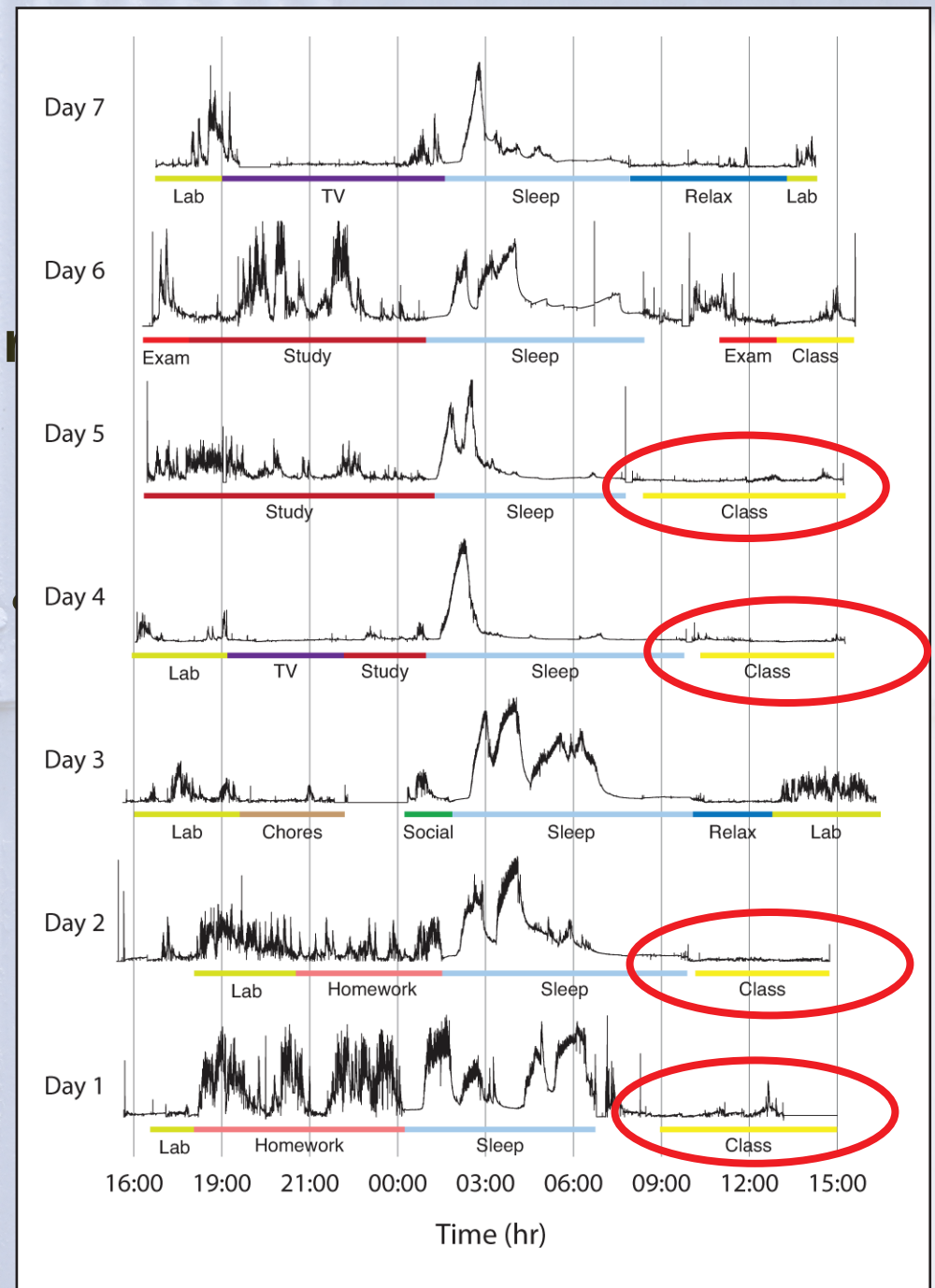
1 education

2 PI

3 test

in a lecture

1. don't pay utmost



doi: 10.1109/TBME.2009.2038487

1 education

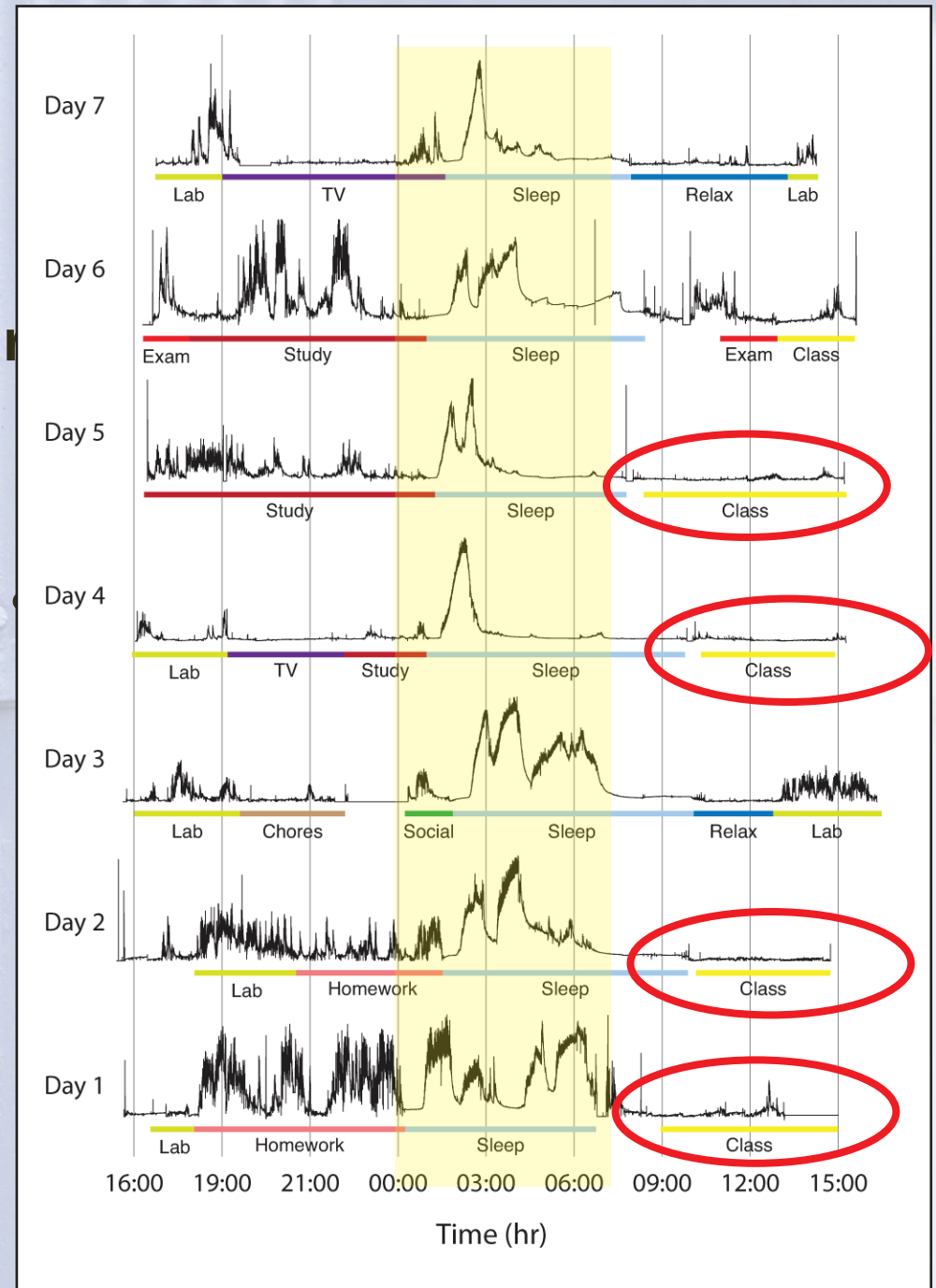
2 PI

3 test



in a lecture

1. don't pay utmost



doi: 10.1109/TBME.2009.2038487

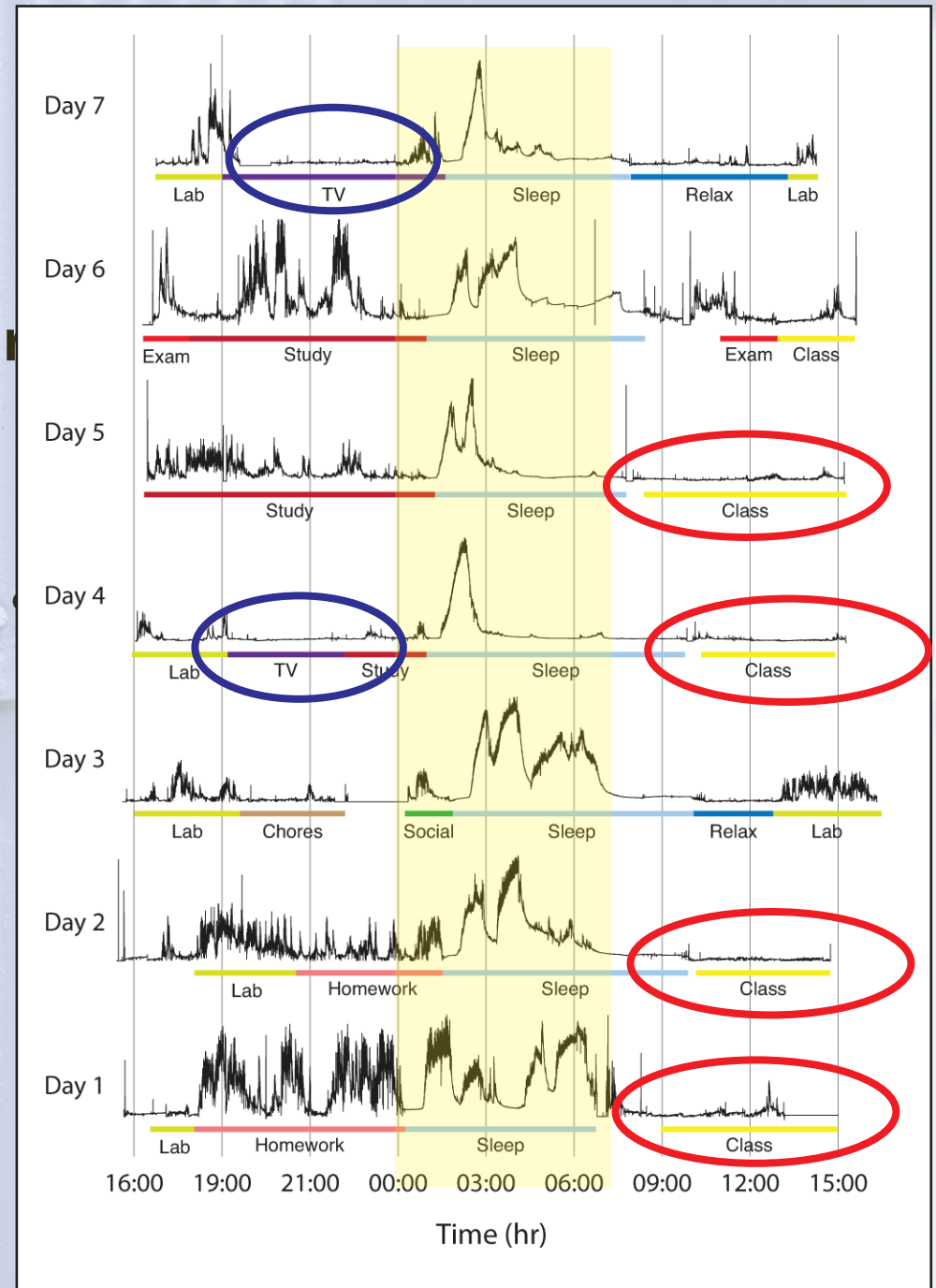
1 education

2 PI

3 test

in a lecture

1. don't pay utmost



doi: 10.1109/TBME.2009.2038487

1 education

2 PI

3 test



**in a lecture, students...**

**1. don't pay utmost attention**

**2. think they know it**





<http://www.babble.com>

**1** education

**2** PI

**3** test



## 2 short video lectures on calico cats, same content

doi: 10.3758/s13423-013-0442-z

**1** education

**2** PI

**3** test

**2 short video lectures on calico cats, same content**

**fluent video**



**speaks fluidly w/o notes**

**upright**

**maintains eye contact**

doi: 10.3758/s13423-013-0442-z

**1 education**

**2 PI**

**3 test**



## 2 short video lectures on calico cats, same content

**fluent video**



**speaks fluidly w/o notes  
upright  
maintains eye contact**

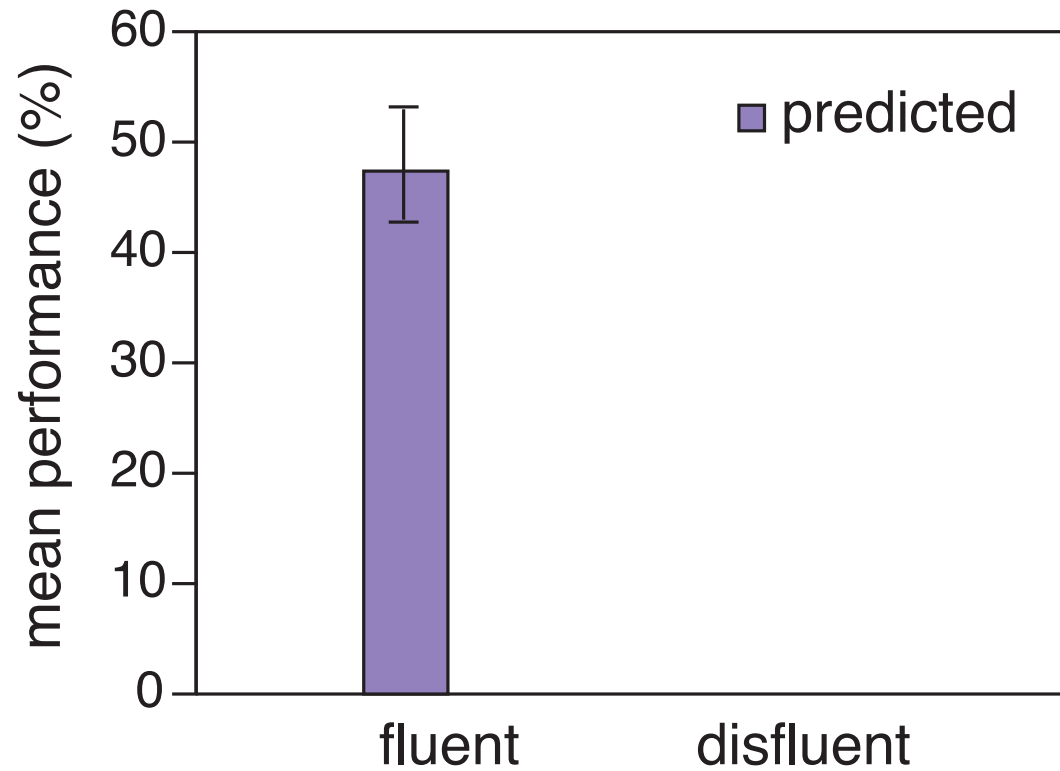
**disfluent video**



**speaks haltingly from notes  
slumped  
looks away**

doi: 10.3758/s13423-013-0442-z

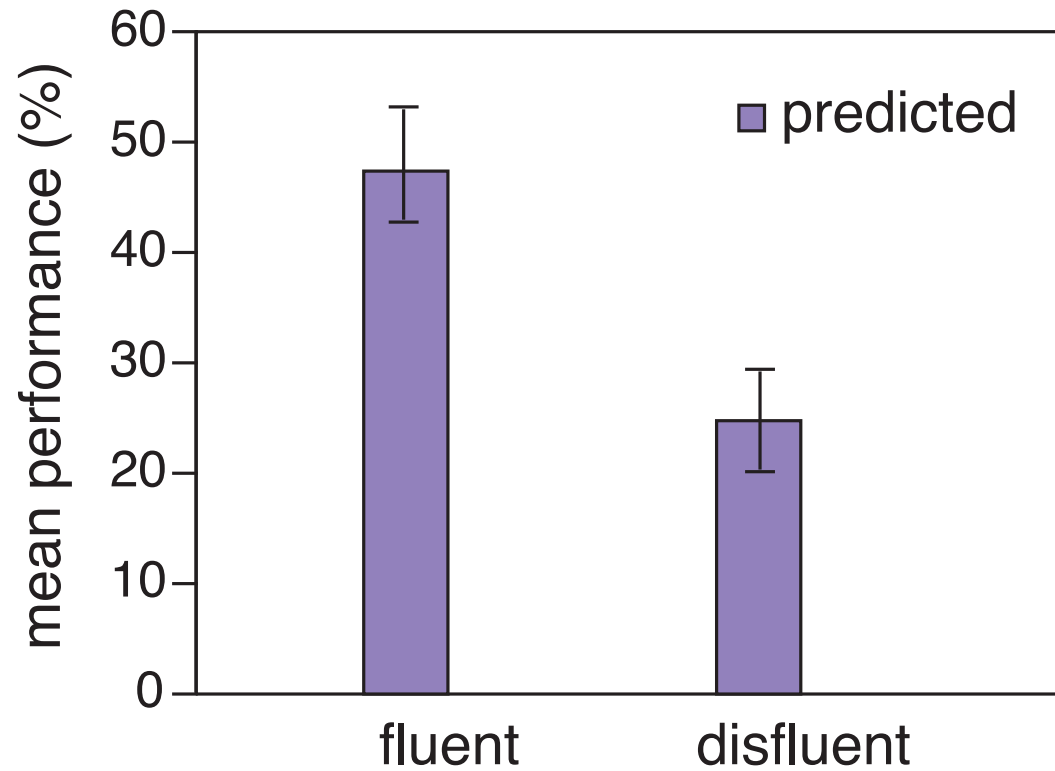
## judgement of learning



doi: 10.3758/s13423-013-0442-z

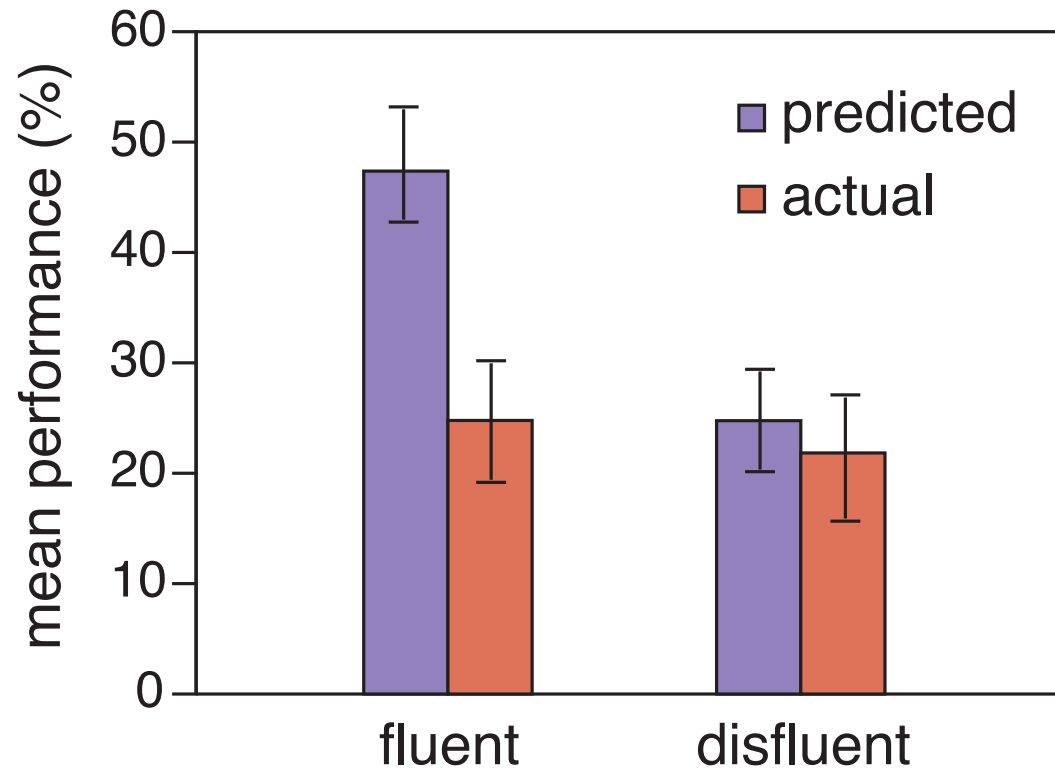


## judgement of learning



doi: 10.3758/s13423-013-0442-z

## judgement of learning



doi: 10.3758/s13423-013-0442-z



**in a lecture, students...**

- 1. don't pay utmost attention**
- 2. think they know it**
- 3. are not confronted with misconceptions**



in a lecture, students...

1. don't pay utmost attention

2. think they know it

3. are not confronted with misconceptions

false  
sense of security





**1** education

**2** PI

**3** test



The background is a faded, classical-style painting. It depicts a face, possibly a classical figure, with multiple eyes visible. The face is rendered in a pale, yellowish-tan color, and the eyes are large and detailed. The overall style is reminiscent of a classical portrait, but with a surreal twist of multiple eyes. The text 'an illusion...' is overlaid in a bold, red, serif font.

**an illusion. . .**

**1** education

**2** PI

**3** test





**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 participation a must!**





**not technology, but pedagogy matters**

**1** education

**2** PI

**3** test



**Join now!**

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**Funding:**

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