

- 1. Go to [learningcatalytics.com/demo](https://learningcatalytics.com/demo)**
- 2. Enter info, click "Start"**
- 3. Join session 123456789**

**EDUCACION**

# Confessions of a converted lecturer



Making the Large Classroom Small: The Flipped Classroom  
Winona University  
Winona, MN, 21 August 2014



# Confessions of a converted lecturer



@eric\_mazur

Making the Large Classroom Small: The Flipped Classroom  
Winona University  
Winona, MN, 21 August 2014



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- 2. Enter info, click "Start"**
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**EDUCACION**

**Think of something you are really good at**

**EDUCACION**

Now think how you became good at it



GACiON



What are the following...  
1. Personal...  
2. The...  
3. The...  
4. The...  
5. The...

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1 education

2 PI



1 education

2 PI

3 test



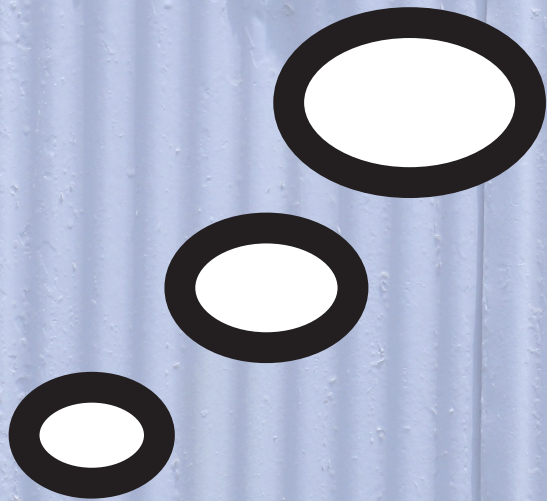
**better pay  
attention!**

**1** education

**2** PI

**3** test

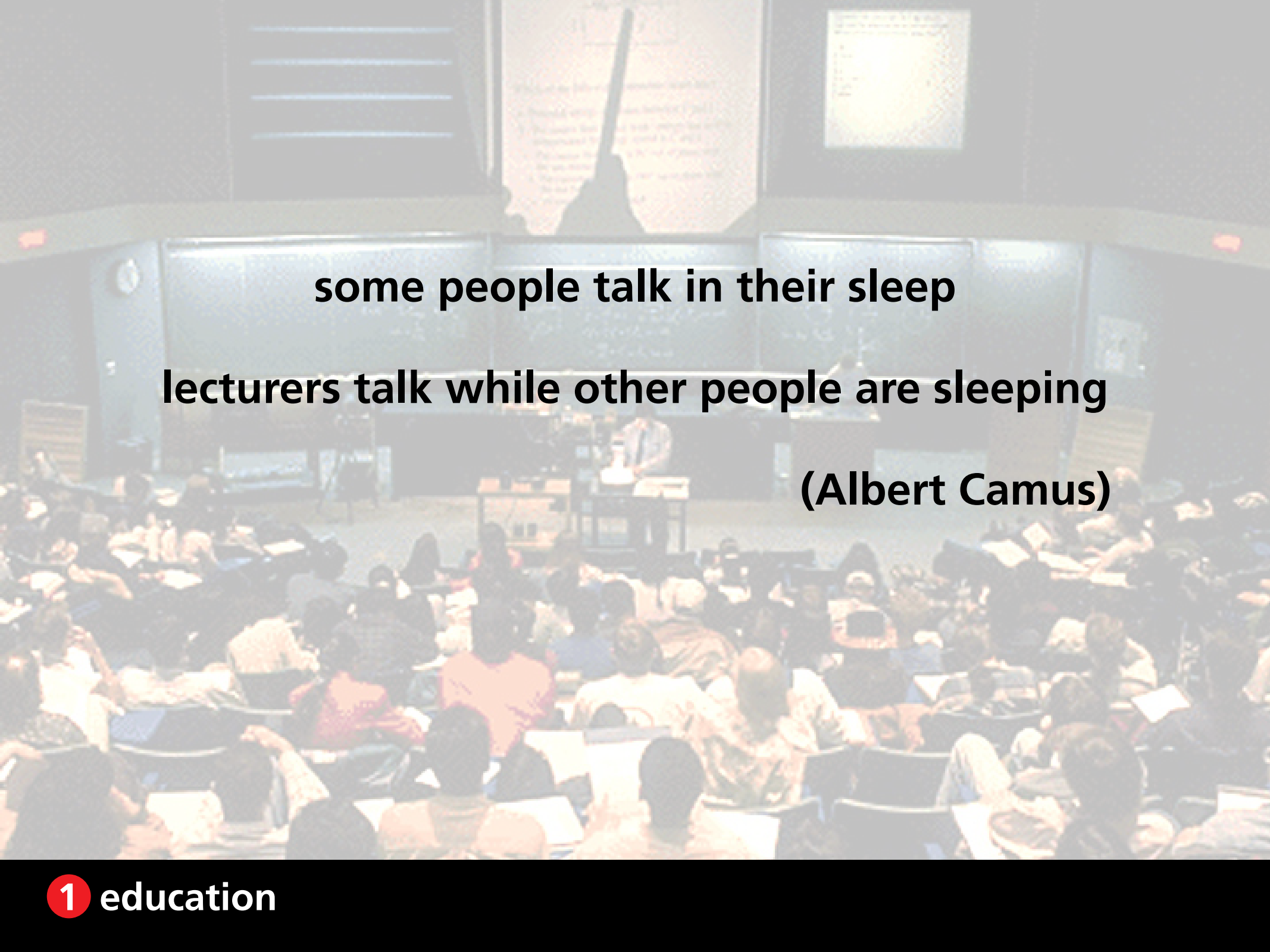
**What happens  
in a lecture?**





A large lecture hall with a professor at a podium and students in the audience. The professor is standing at a podium on the stage, facing the audience. The audience is seated in rows of chairs, filling the lecture hall. The stage has a large screen behind the professor displaying text. The text on the screen is partially legible and appears to be a list of items or a document. The overall scene is a typical classroom or lecture hall setting.

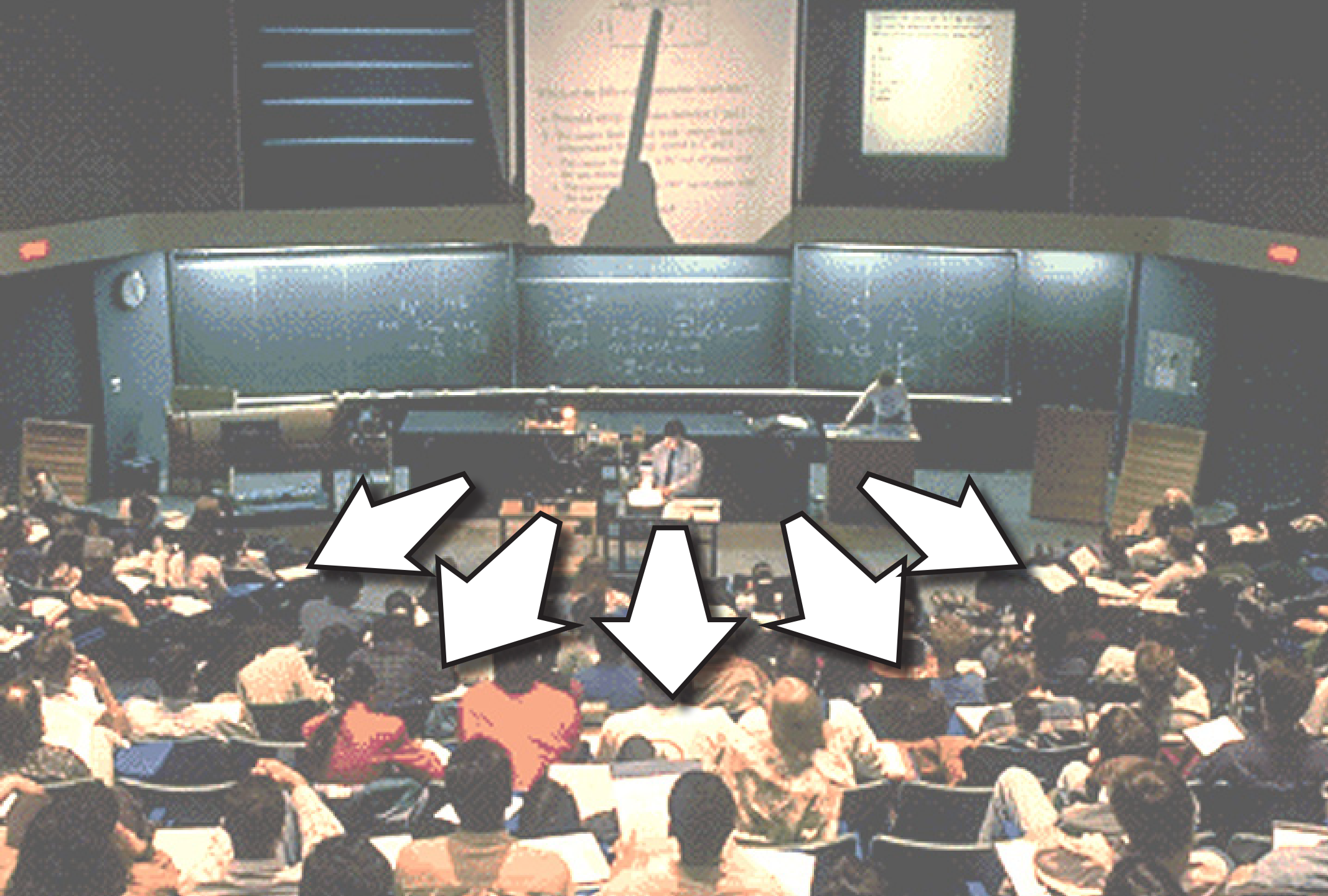
**some people talk in their sleep**

A large lecture hall with a lecturer at a podium and an audience of students. The room is filled with people sitting at desks, facing the front where a lecturer is standing at a podium. The room has a curved wall and several large screens or whiteboards. The lighting is dim, and the overall atmosphere is that of a formal educational setting.

**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**

**EDUCACION**



1 education

2 PI



# 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!**

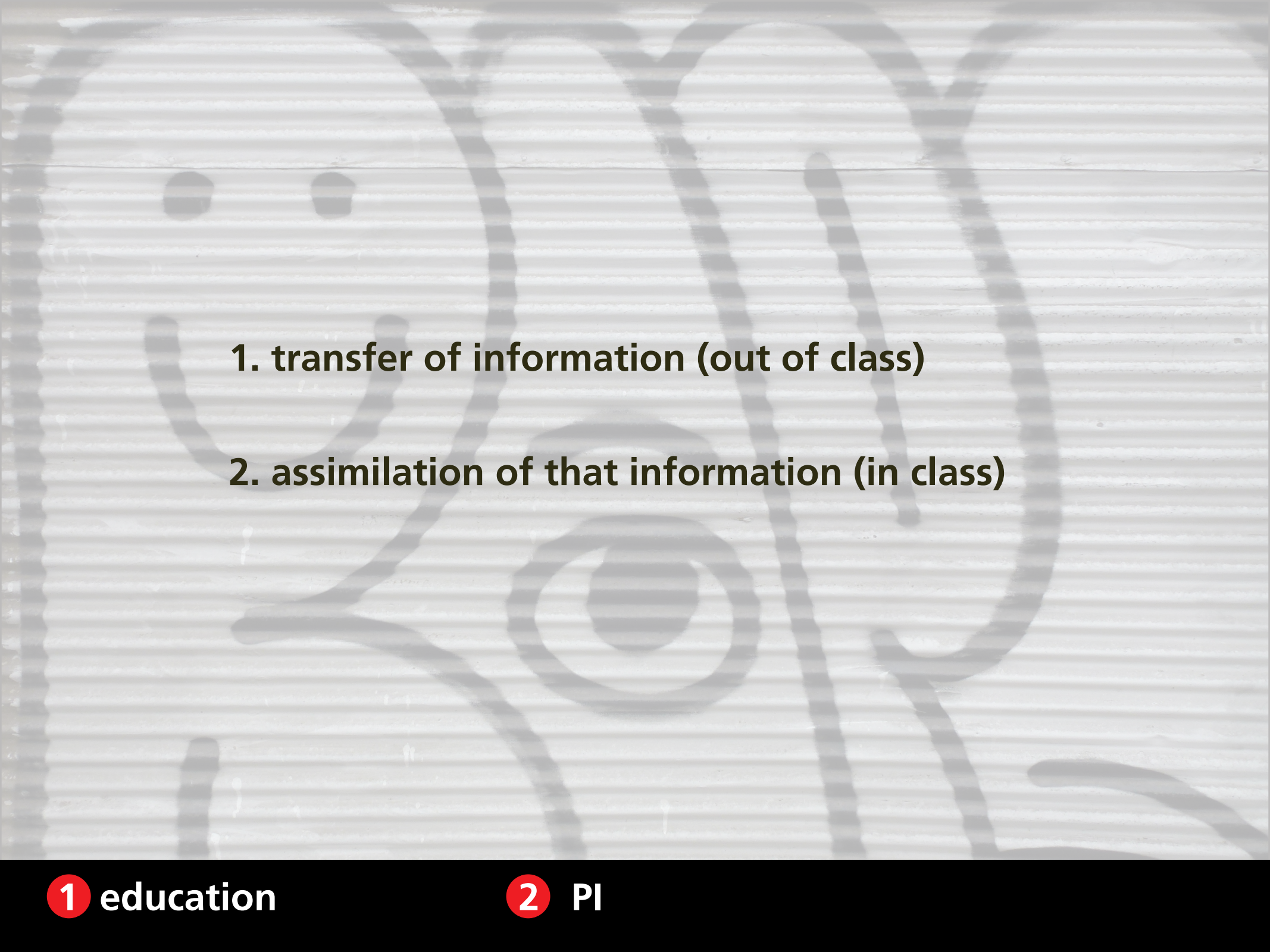
1. transfer of information (in class)

**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)

INSTRUCTION

question

1 education

2 PI

question



think



question



think



poll

**question**



**think**



**poll**



**discuss**

**question**



**think**



**poll**



**discuss**



**repoll**

**question**



**think**



**poll**



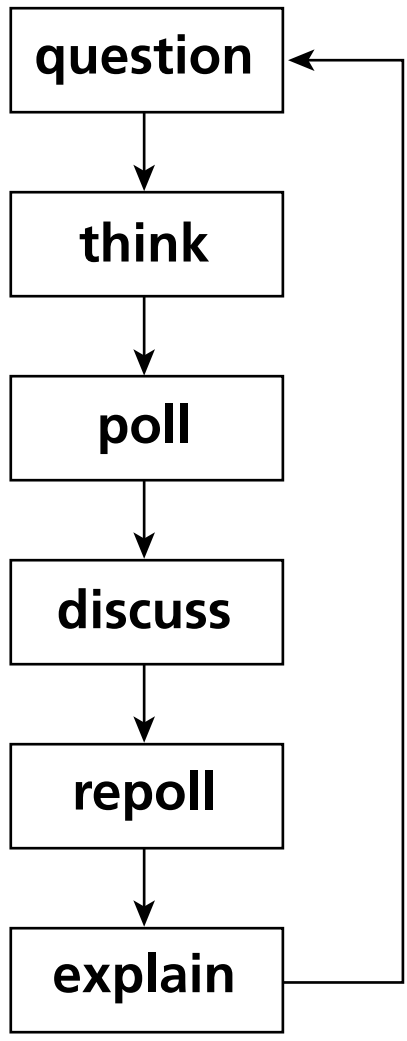
**discuss**

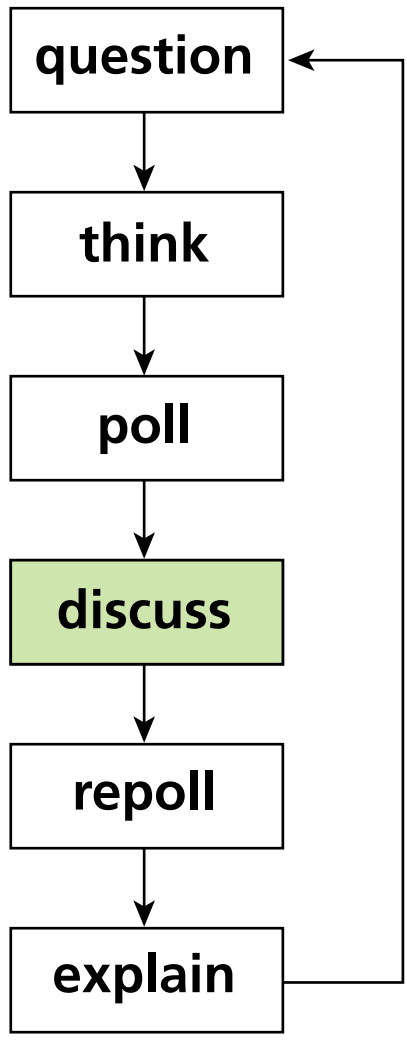


**repoll**



**explain**





**1** education

**2** PI

Let's try it!

QUESTION

think

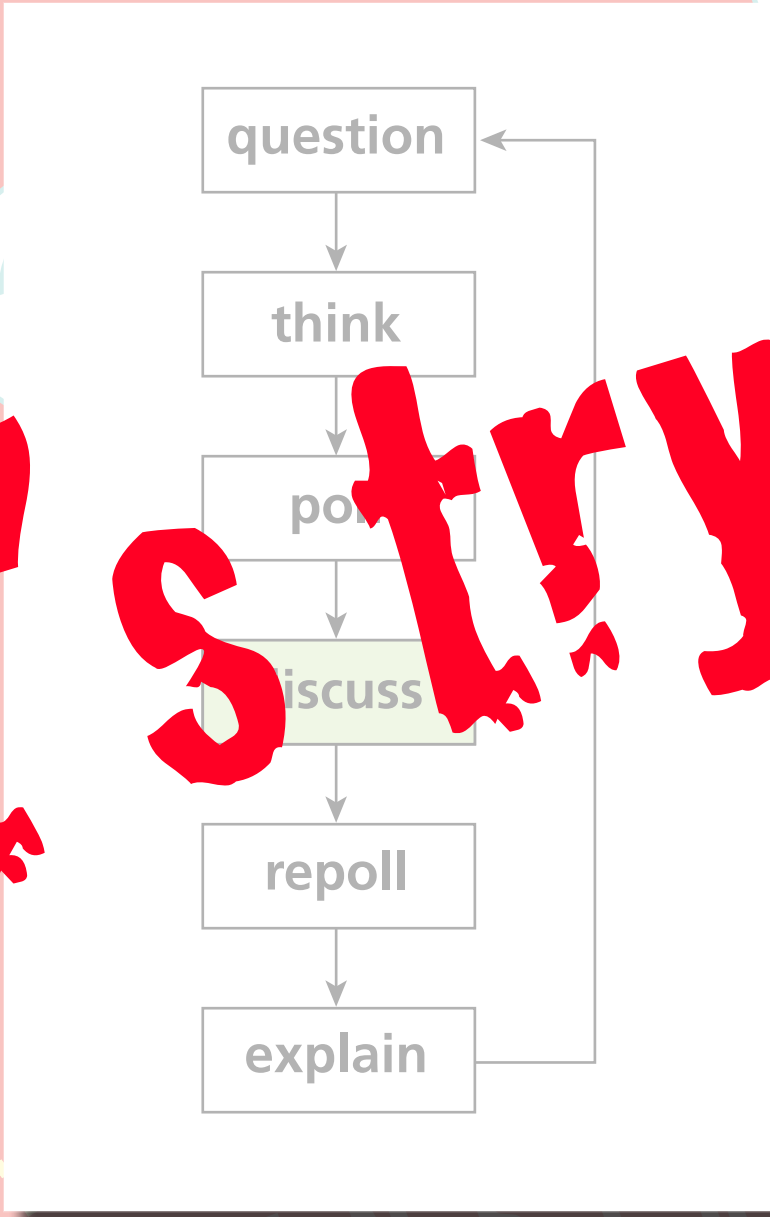
poll

discuss

repoll

explain

ACTION



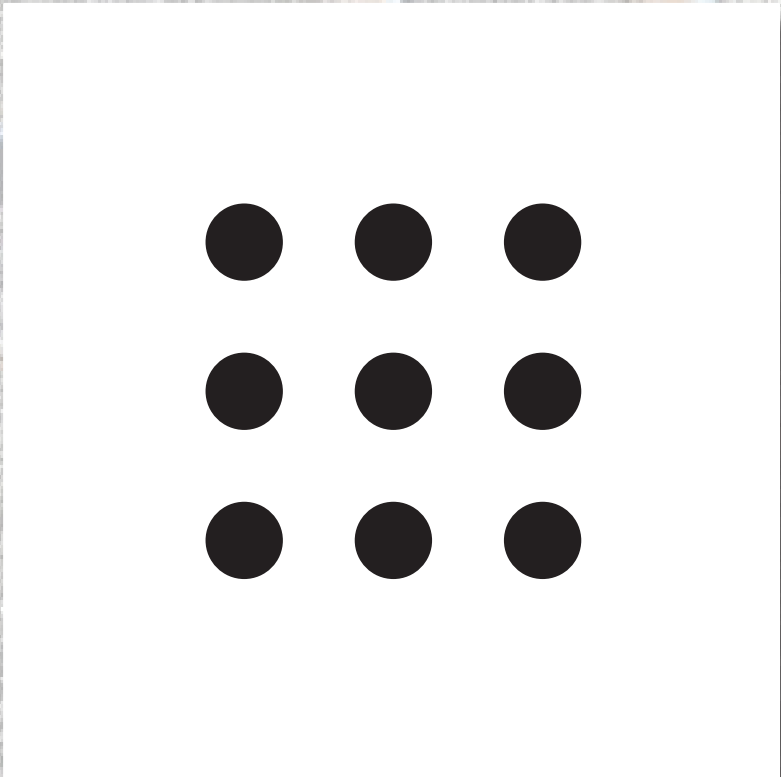
1 education

2 PI



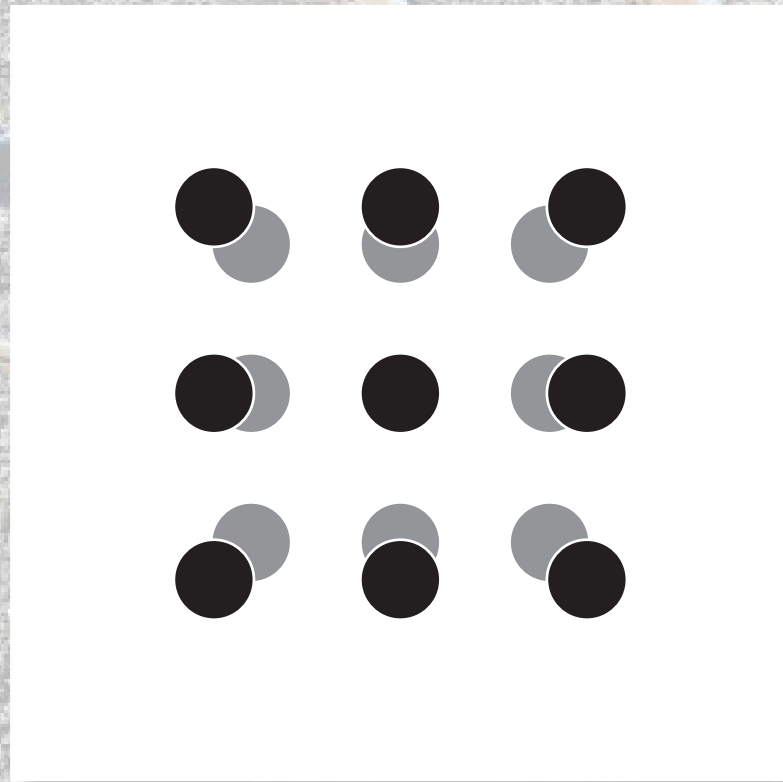


**thermal expansion**

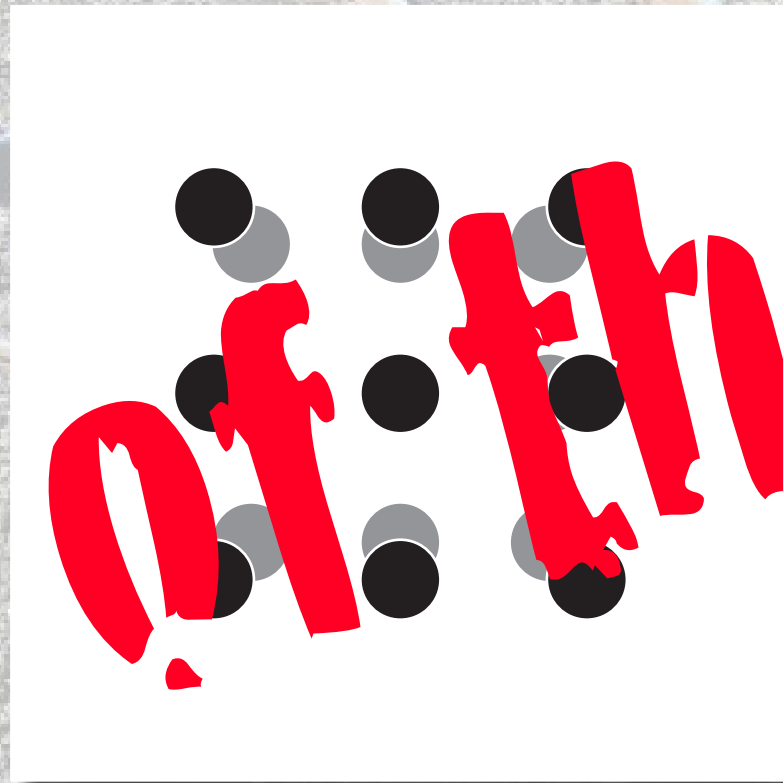


**1** education

**2** PI



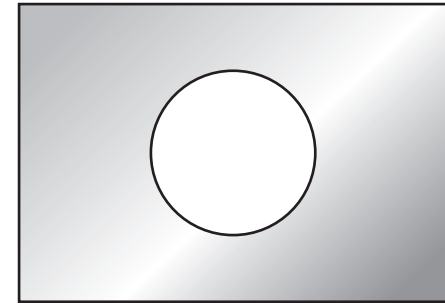
**all of them!**



**1** education

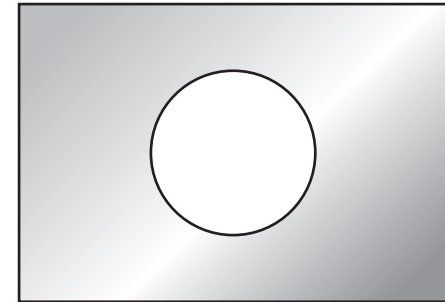
**2** PI

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



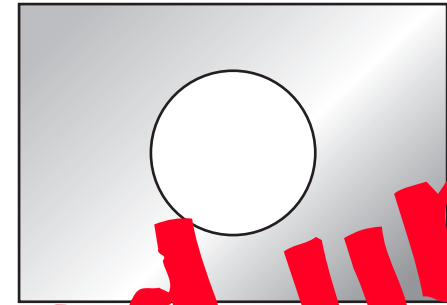
**Consider a rectangular metal plate with a circular hole in it.**

**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.



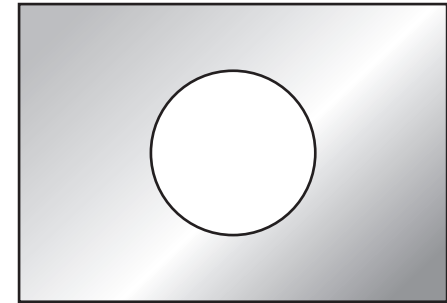
When the plate is uniformly heated, the diameter of the hole

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

**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...**

**1** education

**2** PI

**3** test

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

**1** education

**2** PI

**3** test

**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**

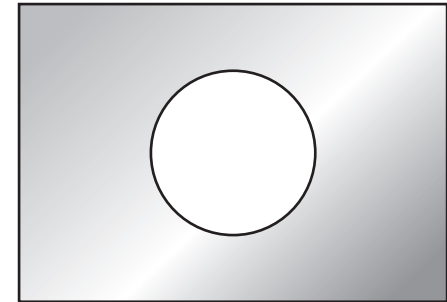
**Before I tell you the answer, let's analyze what happened.**

**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.**

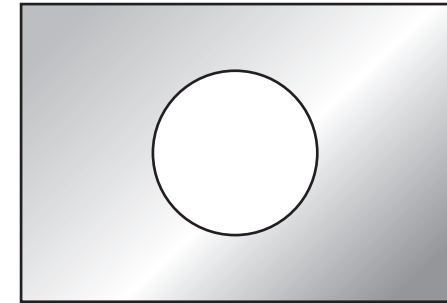
**When the plate is uniformly heated, the diameter of the hole**



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



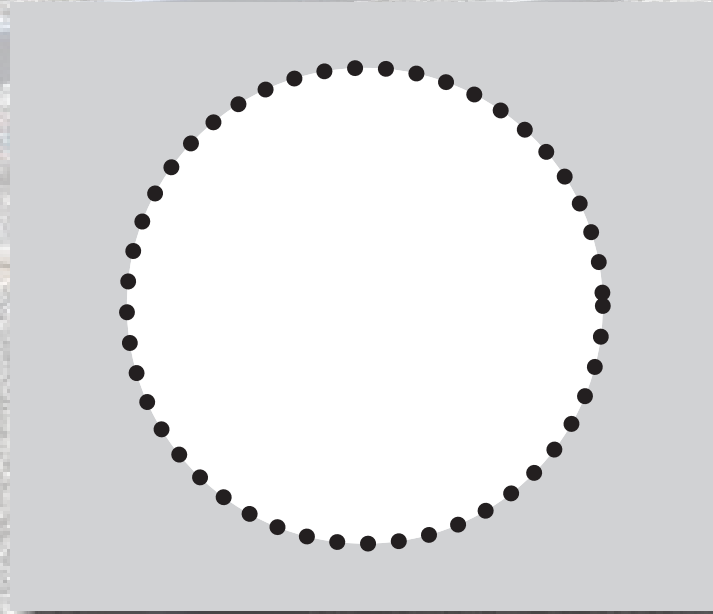
Consider a rectangular metal plate with a circular hole in it.



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

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

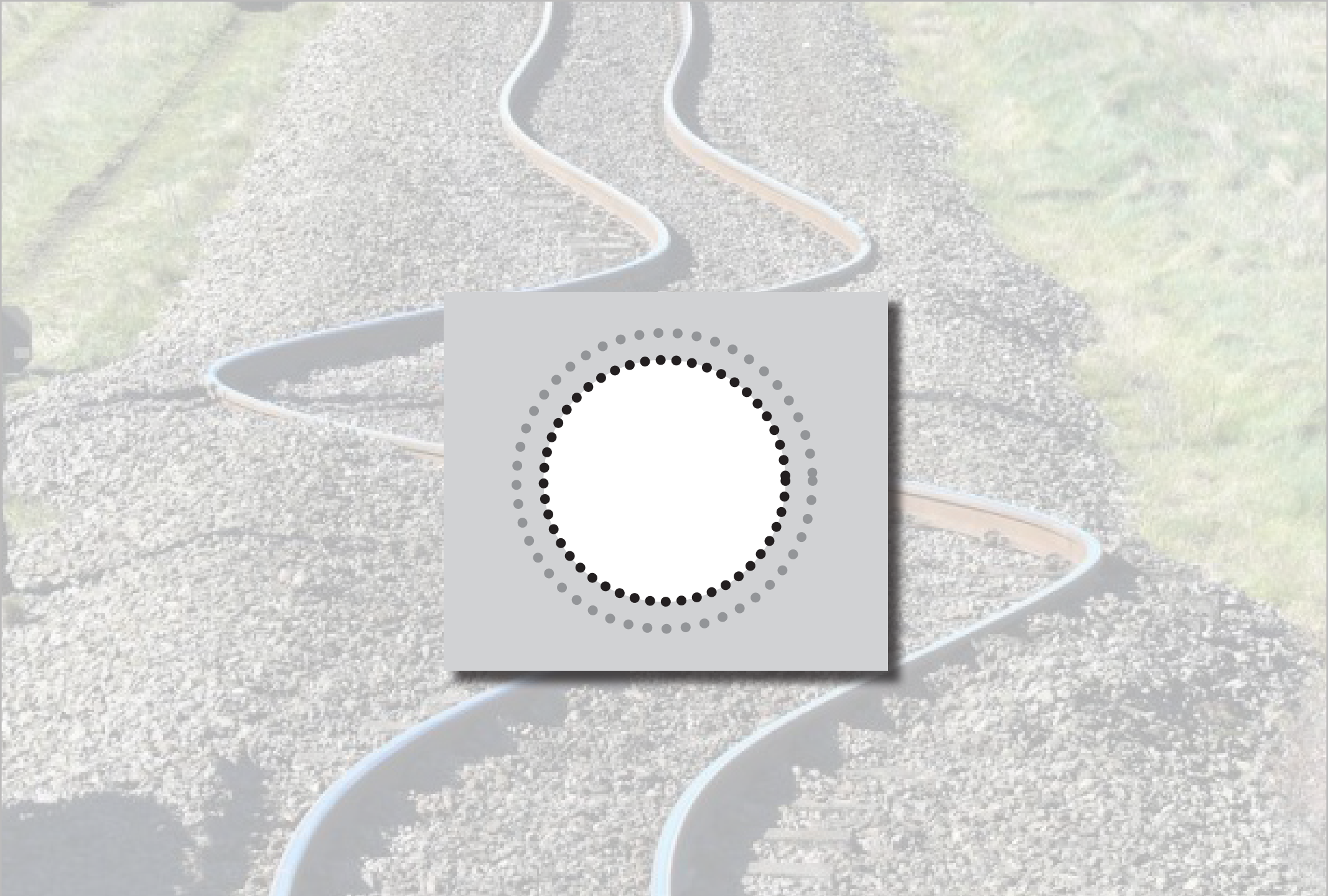
consider atoms at rim of hole



1 education

2 PI

3 test

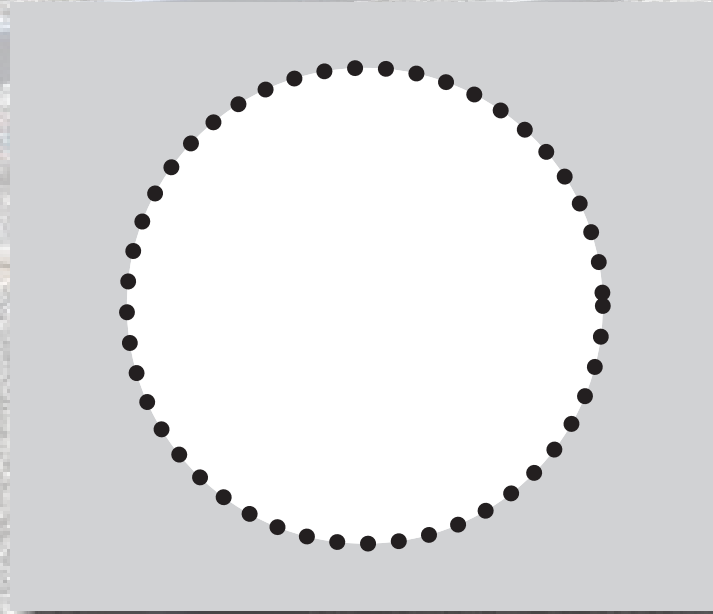


**1** education

**2** PI

**3** test

consider atoms at rim of hole

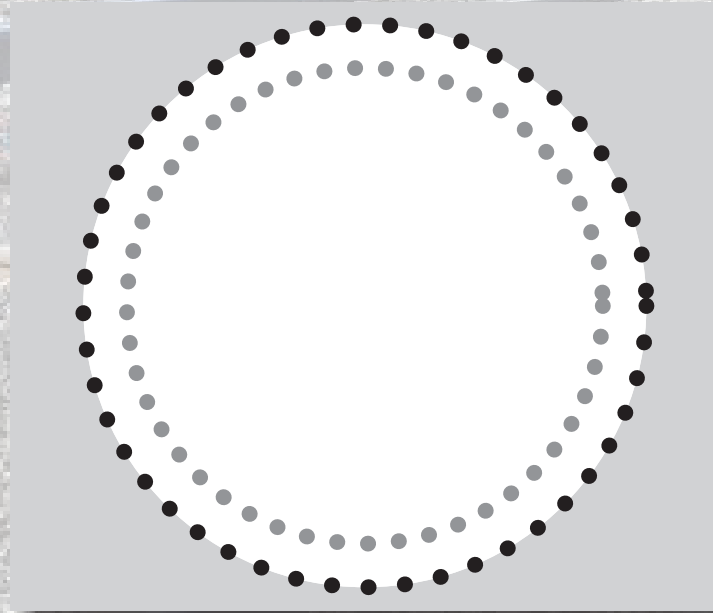


1 education

2 PI

3 test

consider atoms at rim of hole



1 education

2 PI

3 test

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

is it any good?

# INSTRUCTION

1 education

2 PI

3 test



Peer  
Greater learning gains

INSTRUCTION

1 education

2 PI

3 test

**Peer**  
**Greater learning gains**

**Better retention**

**INSTRUCTION**

**1 education**

**2 PI**

**3 test**



**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**

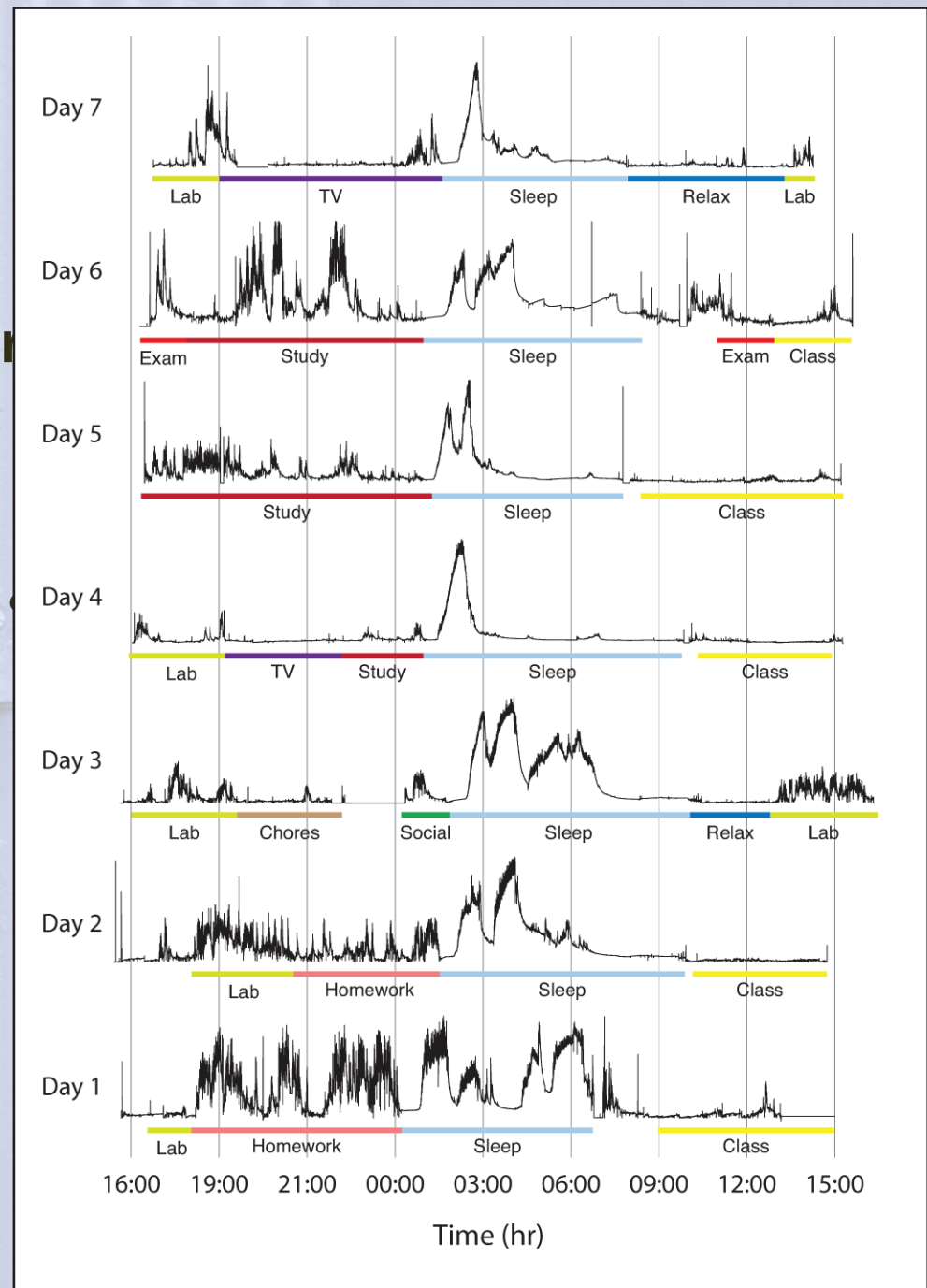
**1** education

**2** PI

**3** test

in a lecture

1. don't pay utmost



doi: 10.1109/TBME.2009.2038487

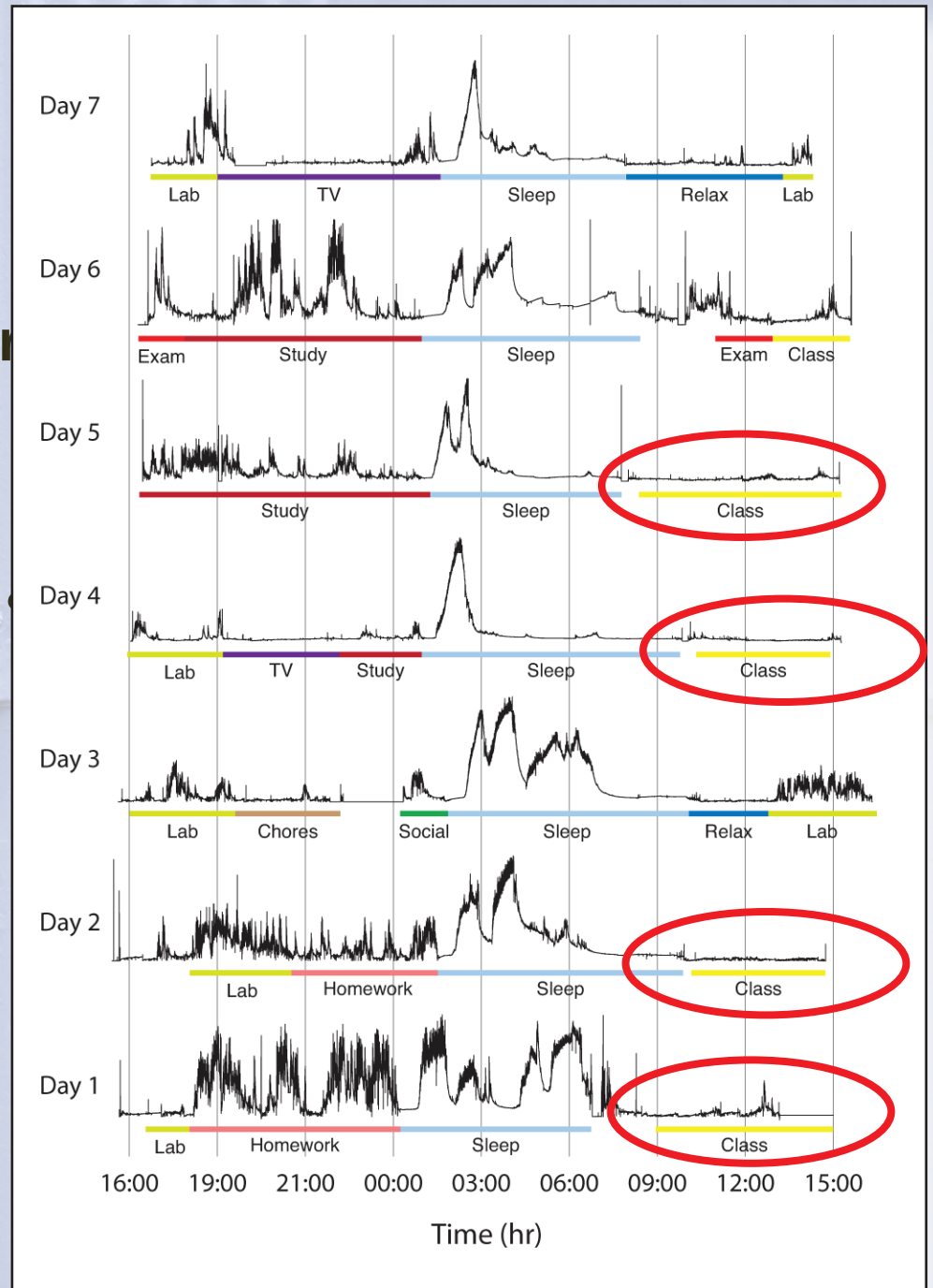
1 education

2 PI

3 test

in a lecture

1. don't pay utmost



doi: 10.1109/TBME.2009.2038487

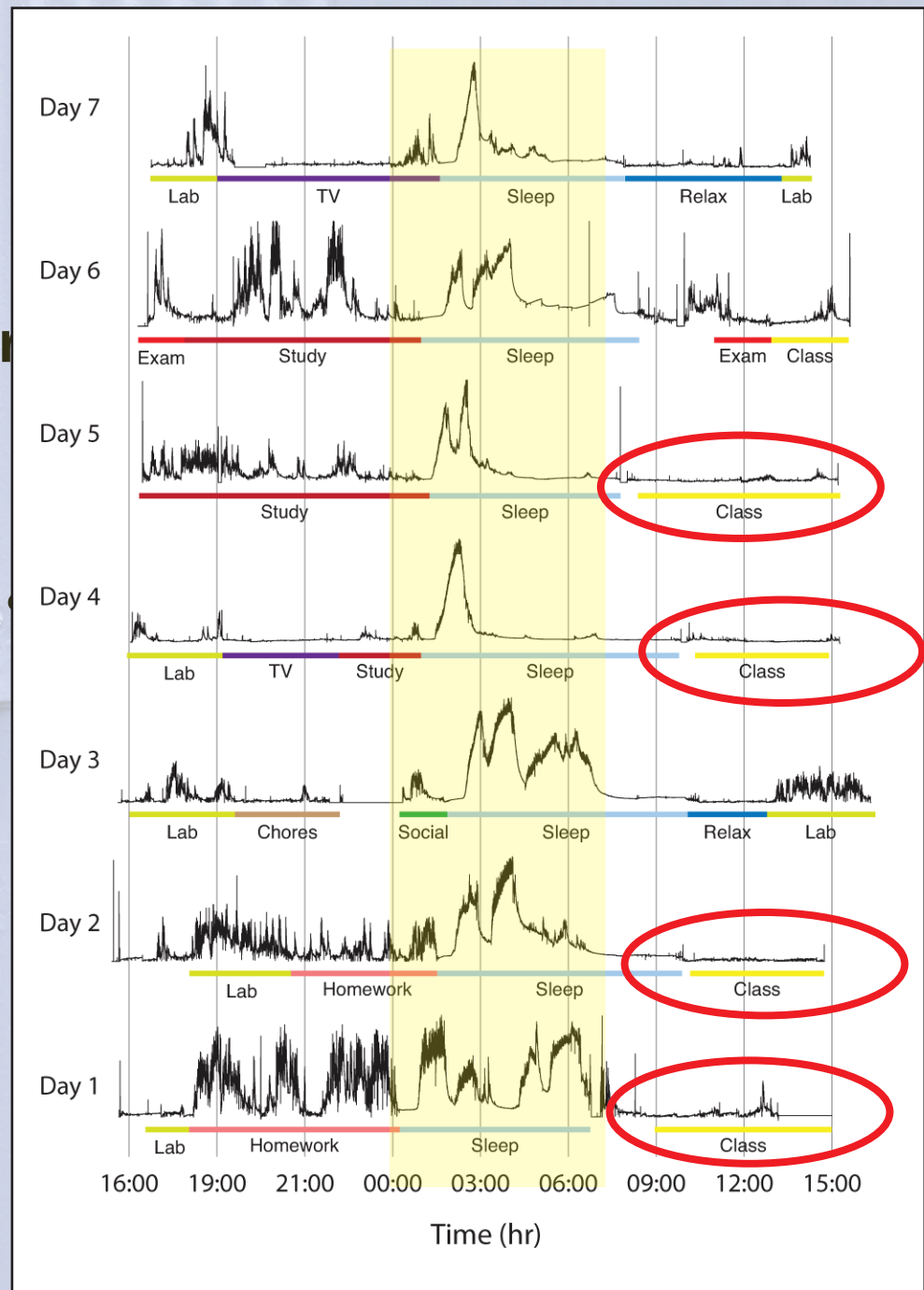
1 education

2 PI

3 test

in a lecture

1. don't pay utmost



doi: 10.1109/TBME.2009.2038487

1 education

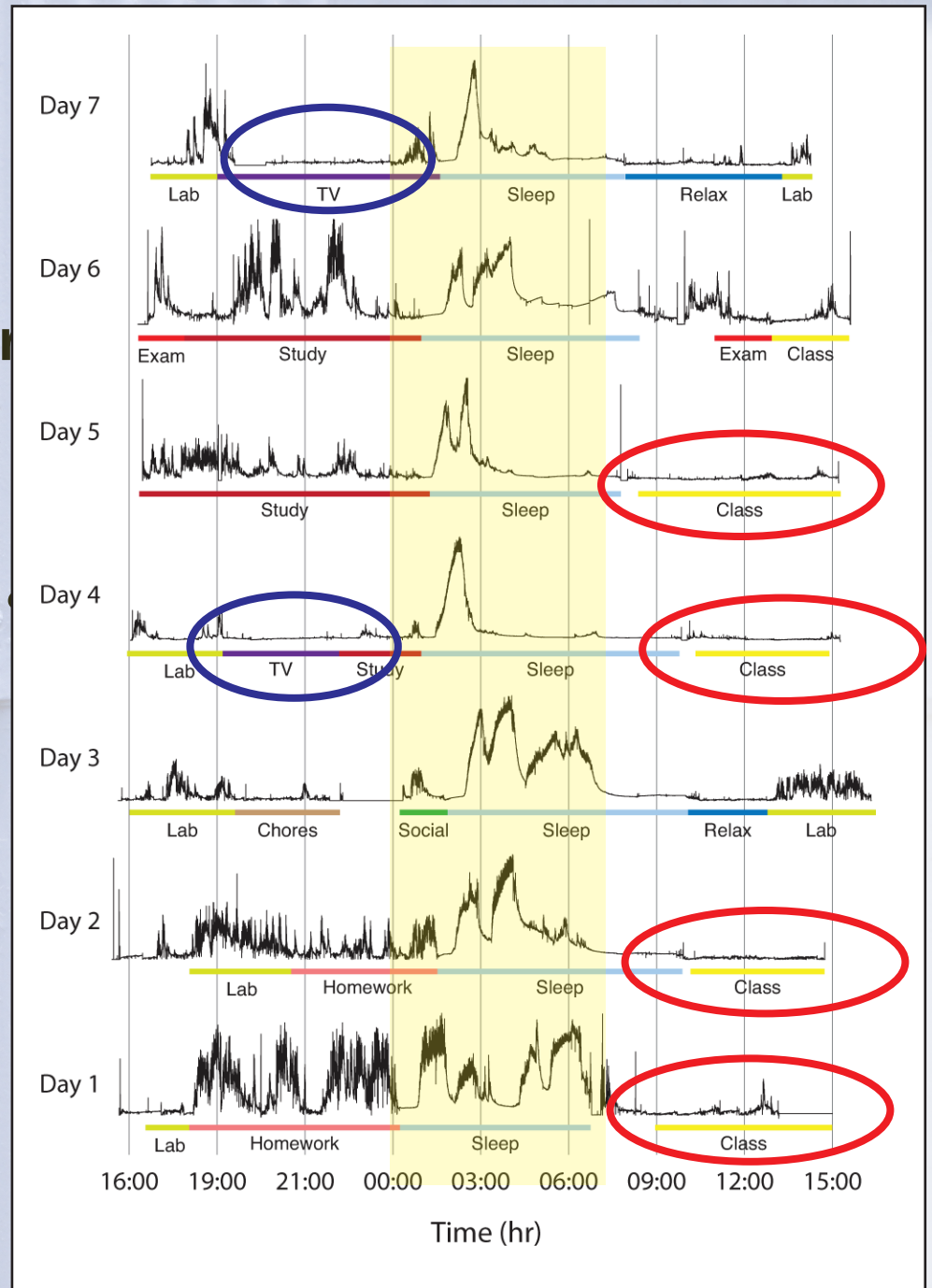
2 PI

3 test



in a lecture

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

A close-up photograph of a calico cat's face, showing its green eyes and orange, white, and black fur. The image is slightly faded to allow text to be overlaid.

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

doi: [10.3758/s13423-013-0442-z](https://doi.org/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](https://doi.org/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**

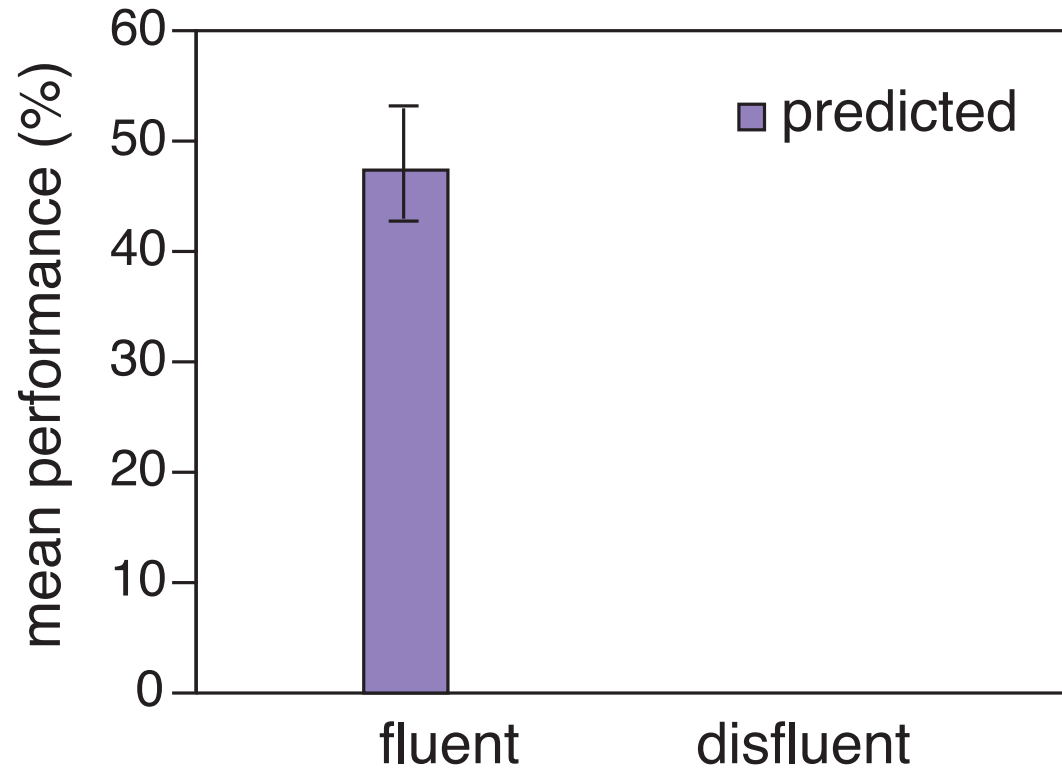
**disfluent video**



**speaks haltingly from notes  
slumped  
looks away**

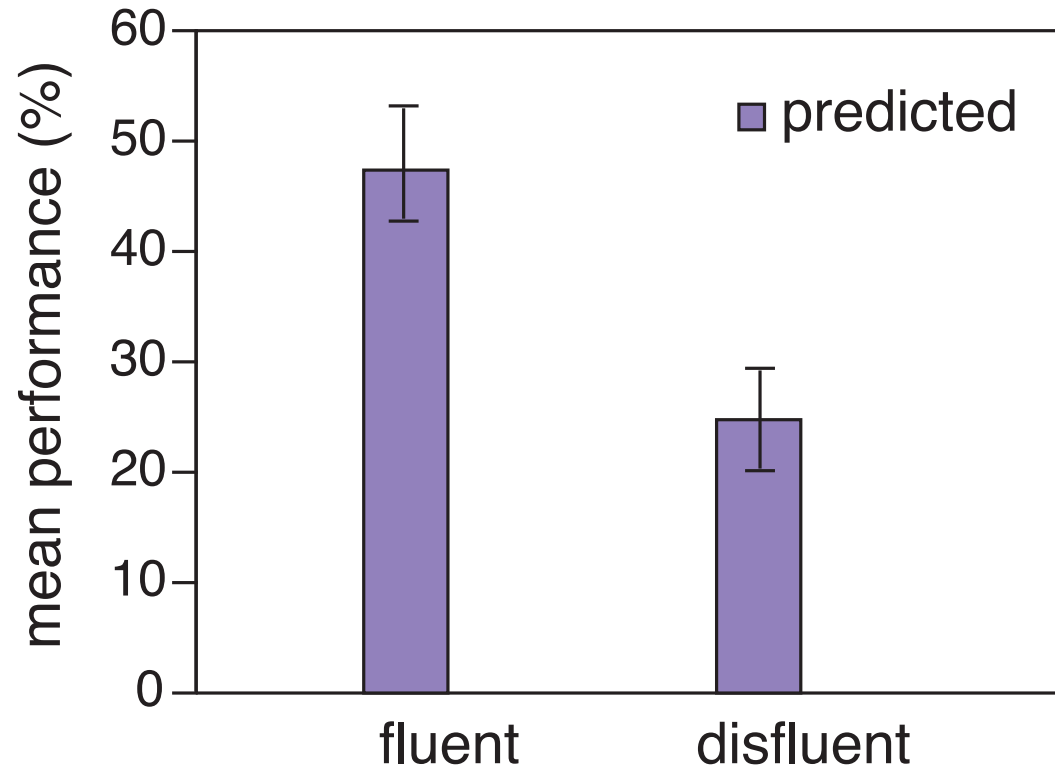
doi: 10.3758/s13423-013-0442-z

## judgement of learning



doi: 10.3758/s13423-013-0442-z

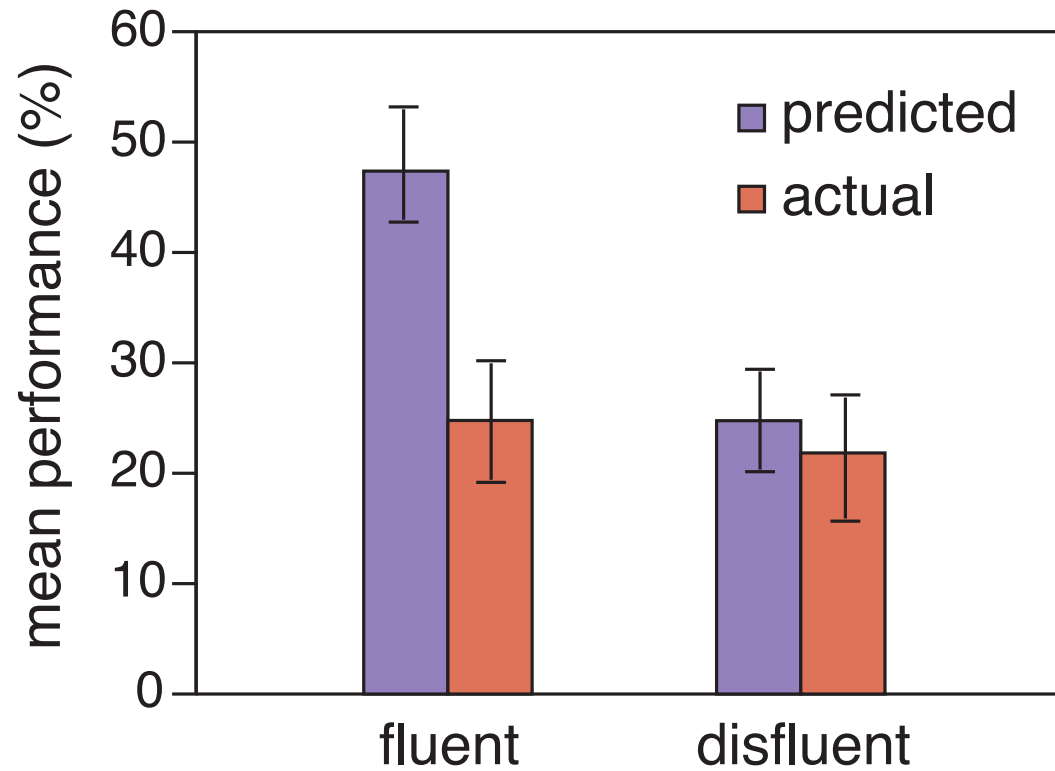
## judgement of learning



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



**an illusion. . .**

**1** education

**2** PI

**3** test



**Education is not just about:**

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

**1** education

**2** PI

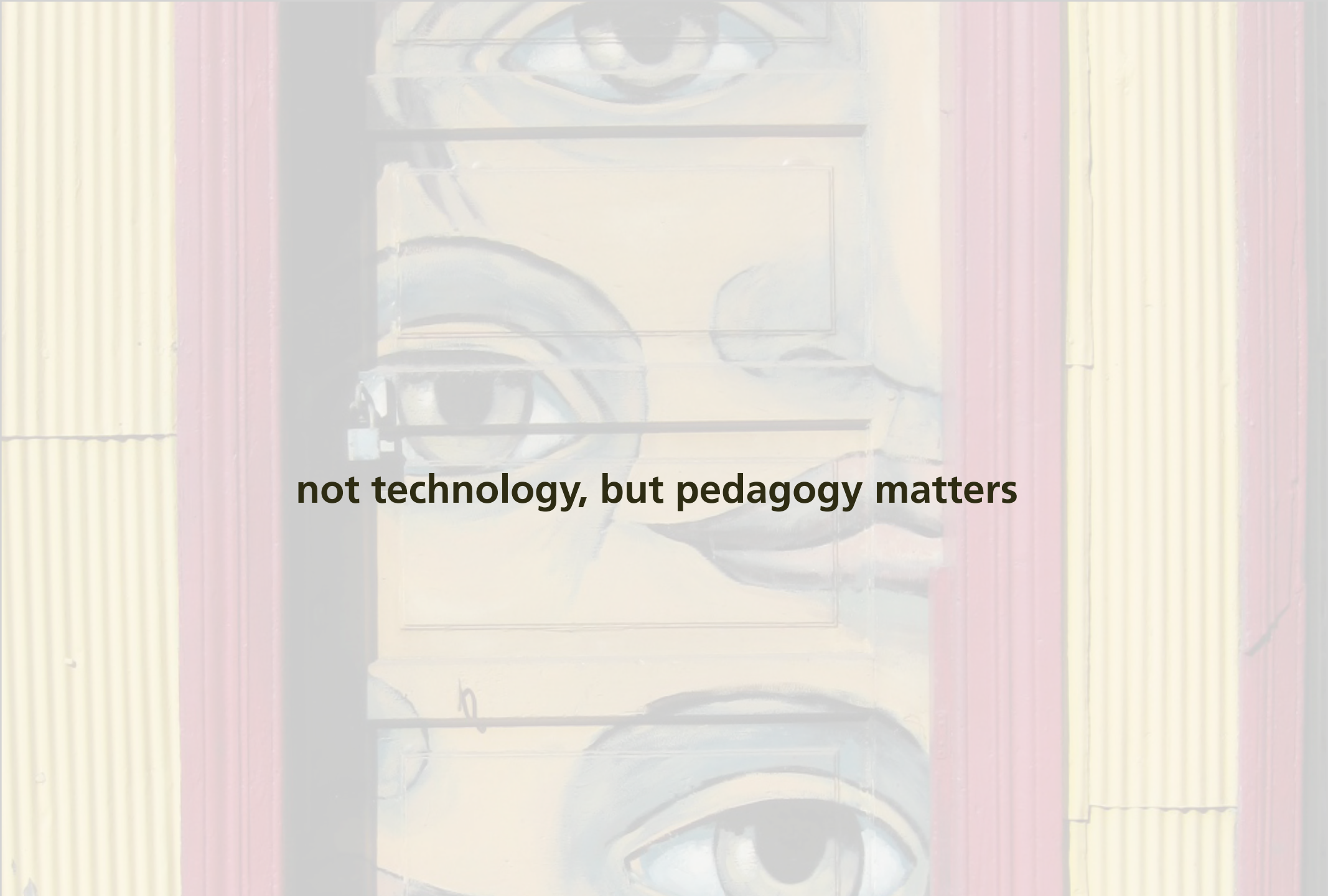
**3** test



**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!**

**PeerInstruction.net**

**Funding:**

**National Science Foundation**

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