

Flipping the Classroom: How to turn your students' worlds right side up



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5

4

3

2

1

5

4

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1

After taking this workshop you will be able to answer the following questions from a colleague!

1. Why should I flip my class?
2. What is a flipped classroom?
3. What are innovative ways to engage my students outside of class?
4. What are innovative ways to engage my students in class?
5. What do I do next?

1

Why should I flip my class?

Think of something you are very good at, something you know you do well and write that down.

How did you get good at that
something?

Also jot that down.

Which option best matches how you got good at it?

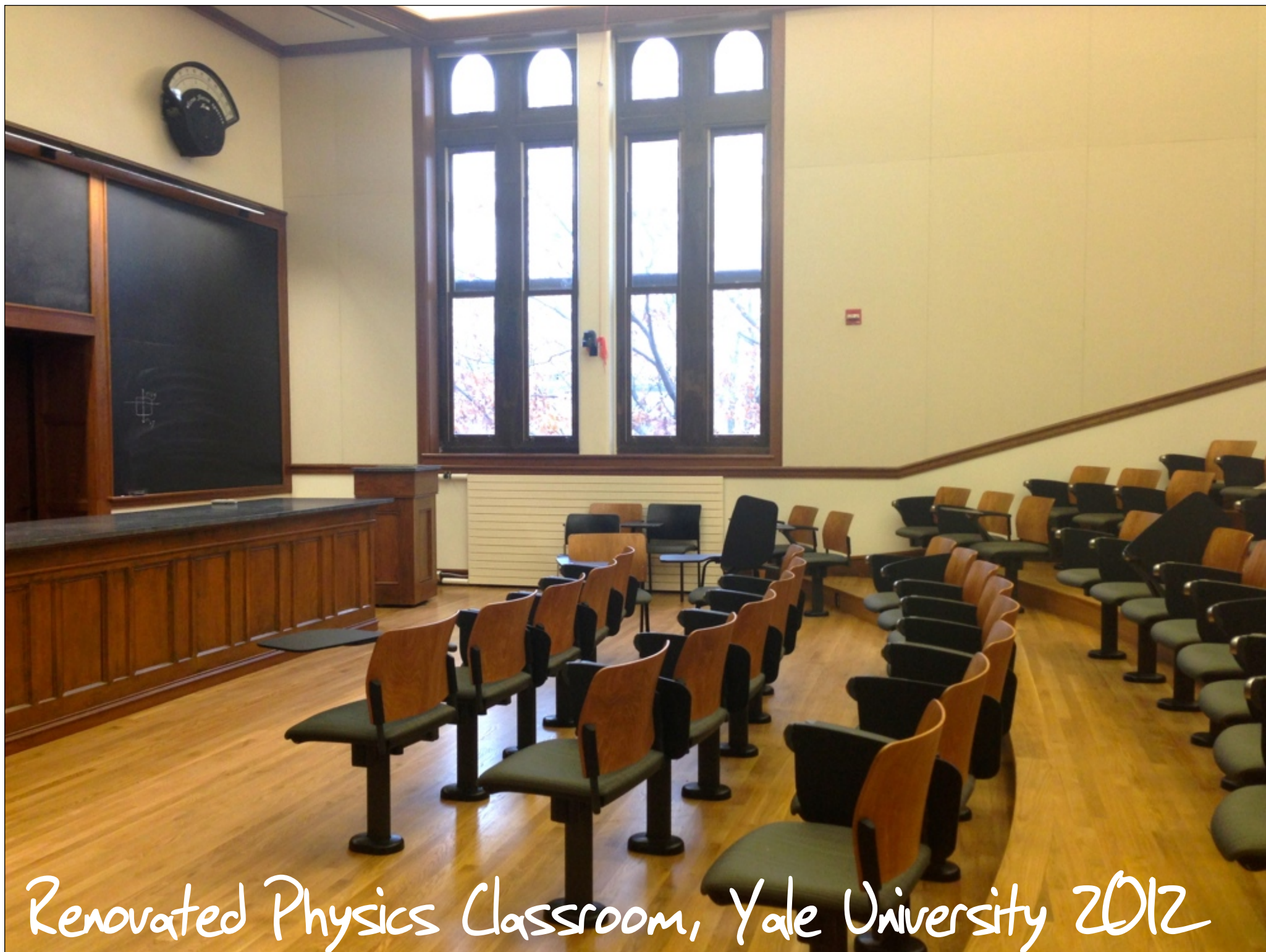
- A. listening to someone else talk
- B. practice or trial & error
- C. taught myself
- D. other

What is the model of education in most classrooms?

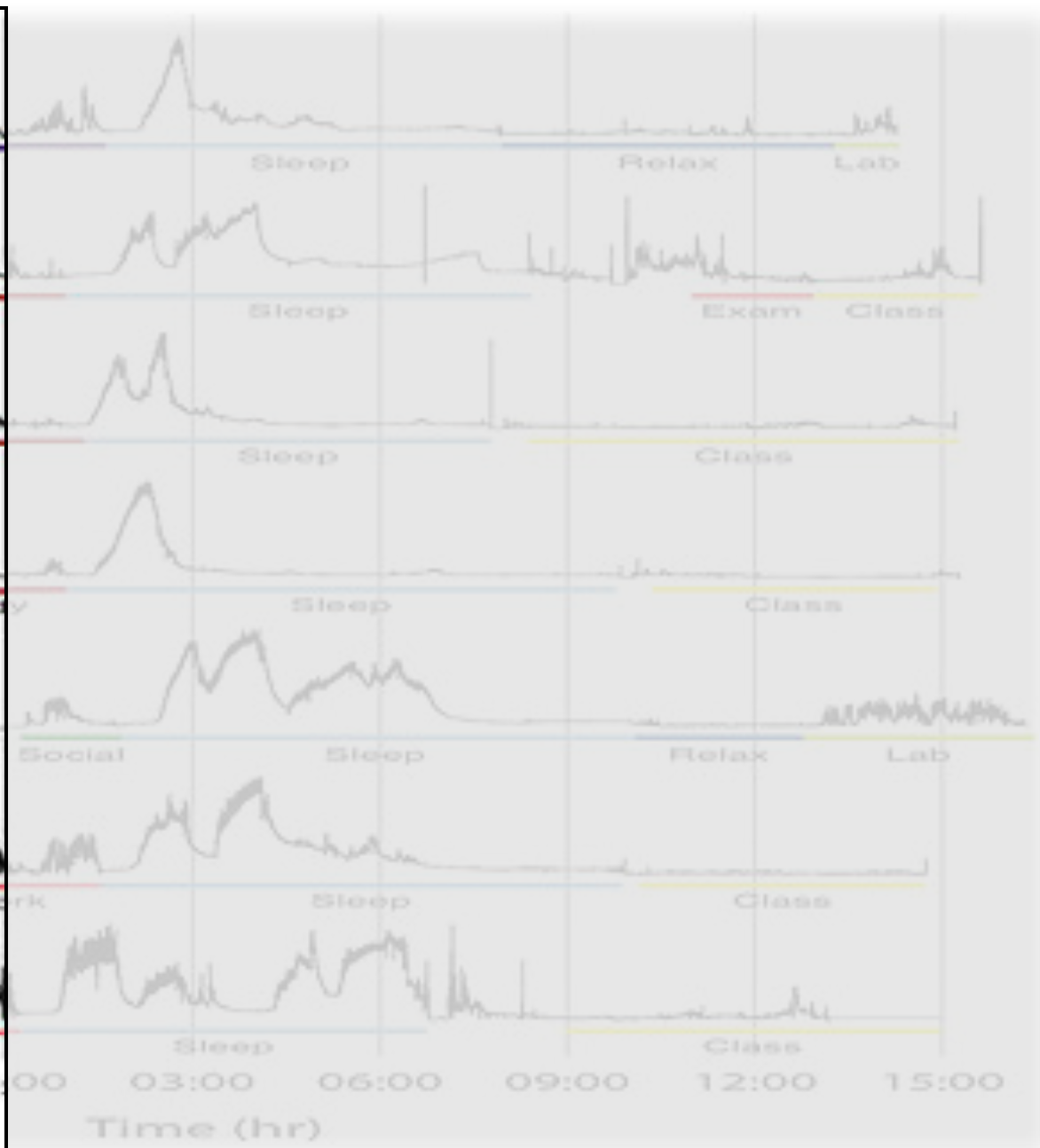
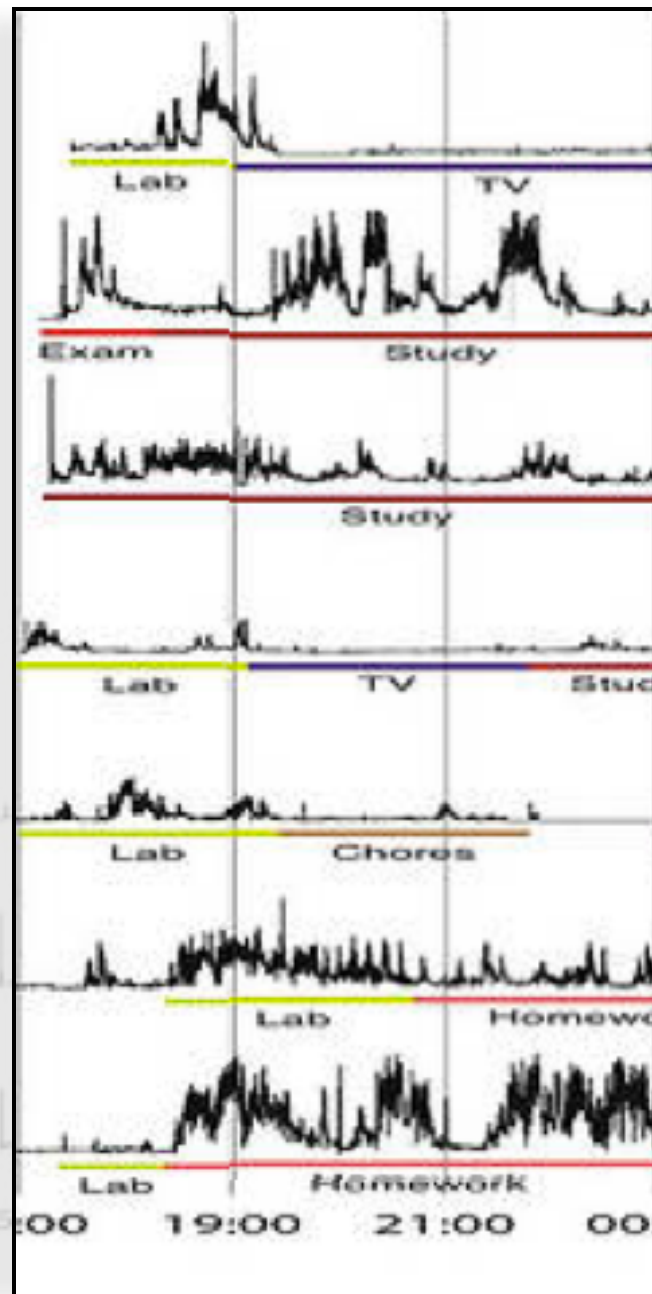
The primary model of education is
knowledge delivery or information
transfer.

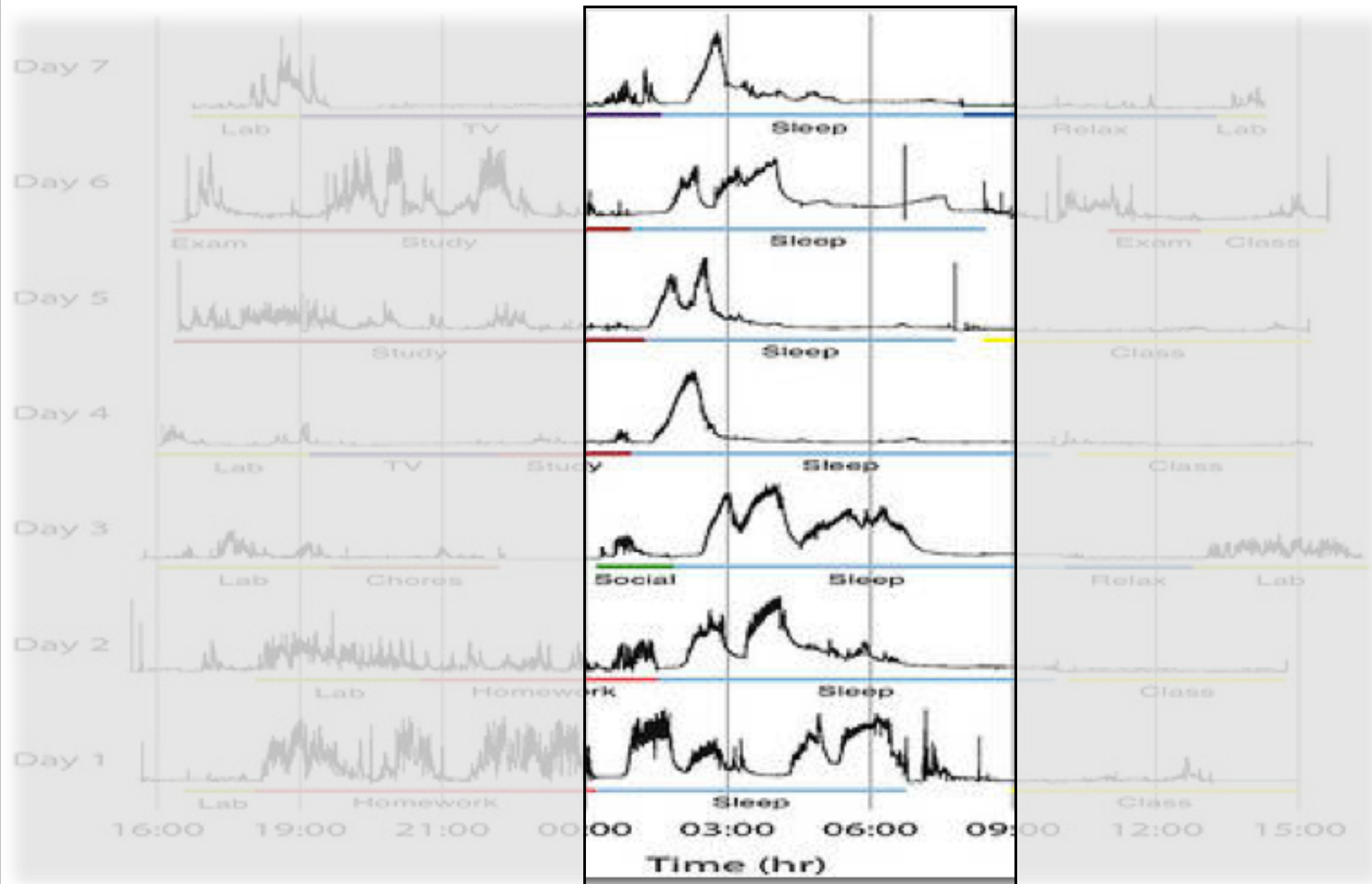
Greek amphitheater, 4th Century BC

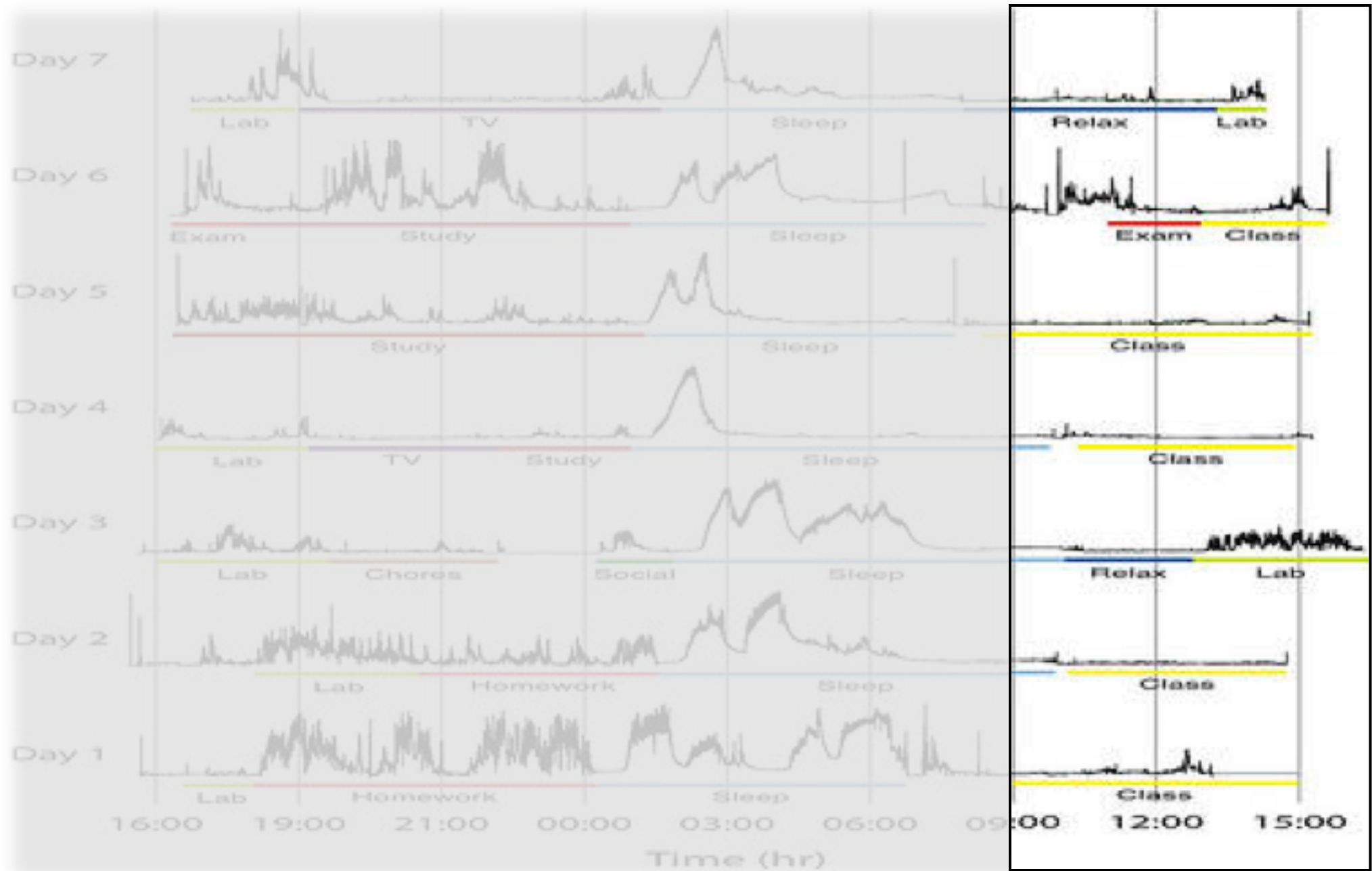


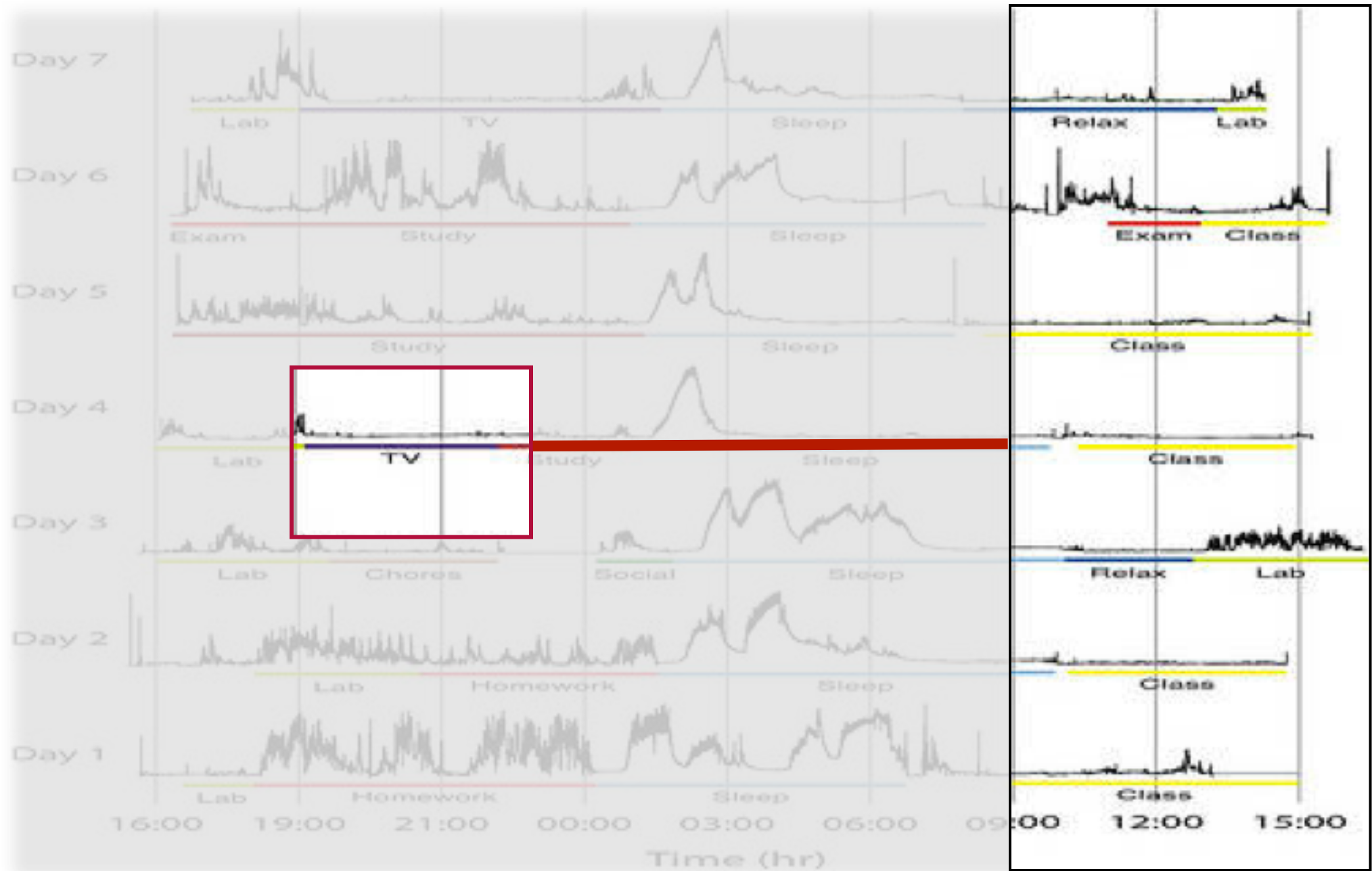


Renovated Physics Classroom, Yale University 2012

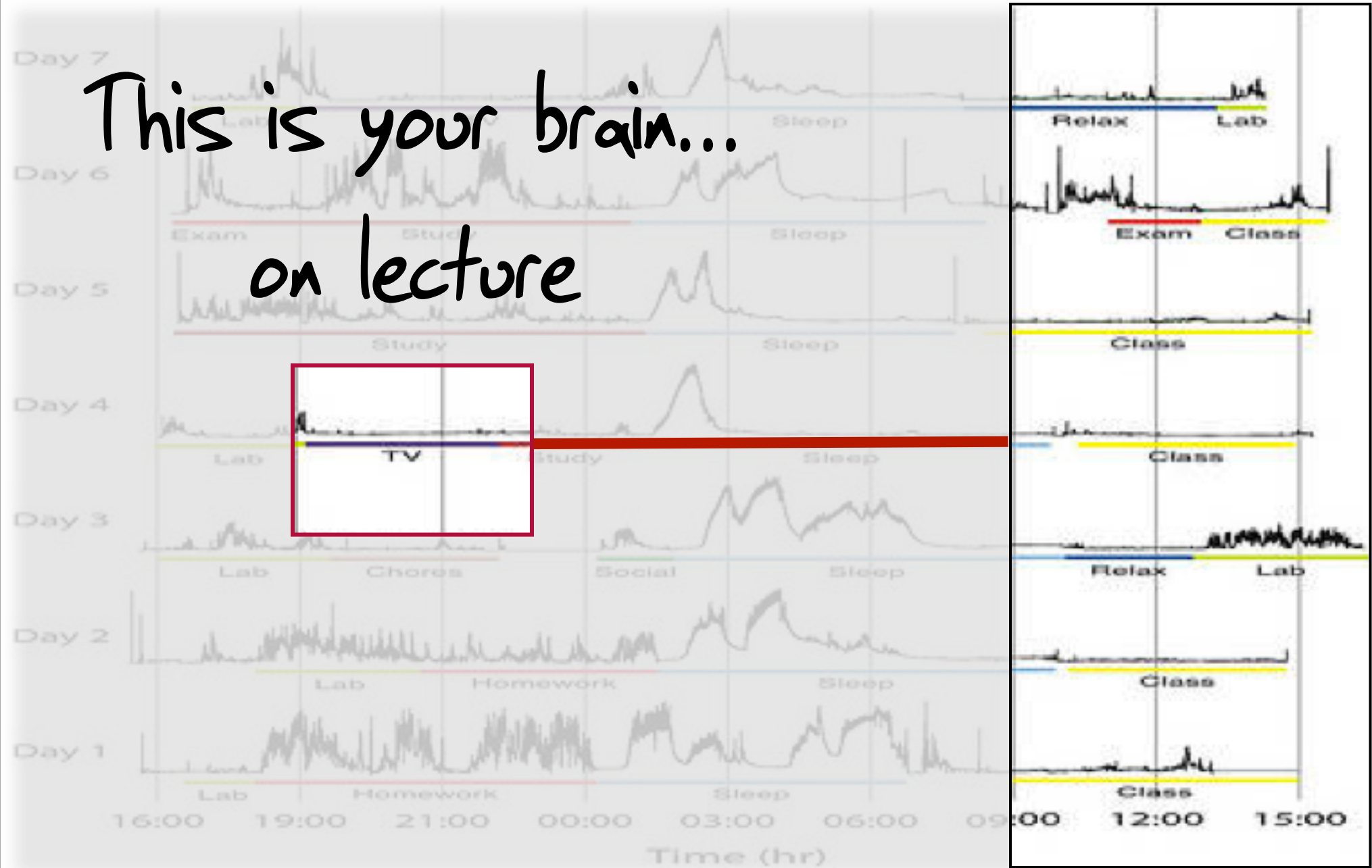


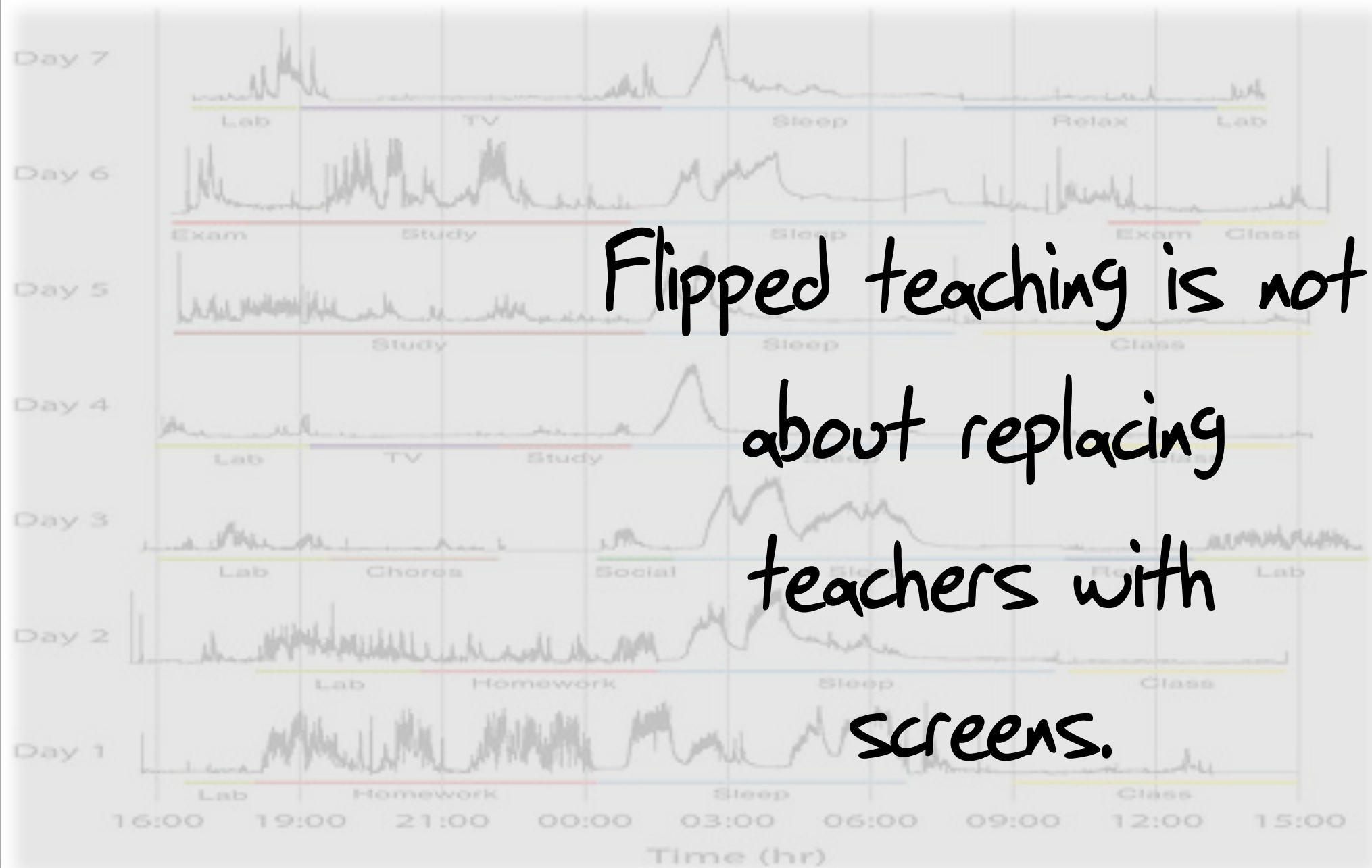




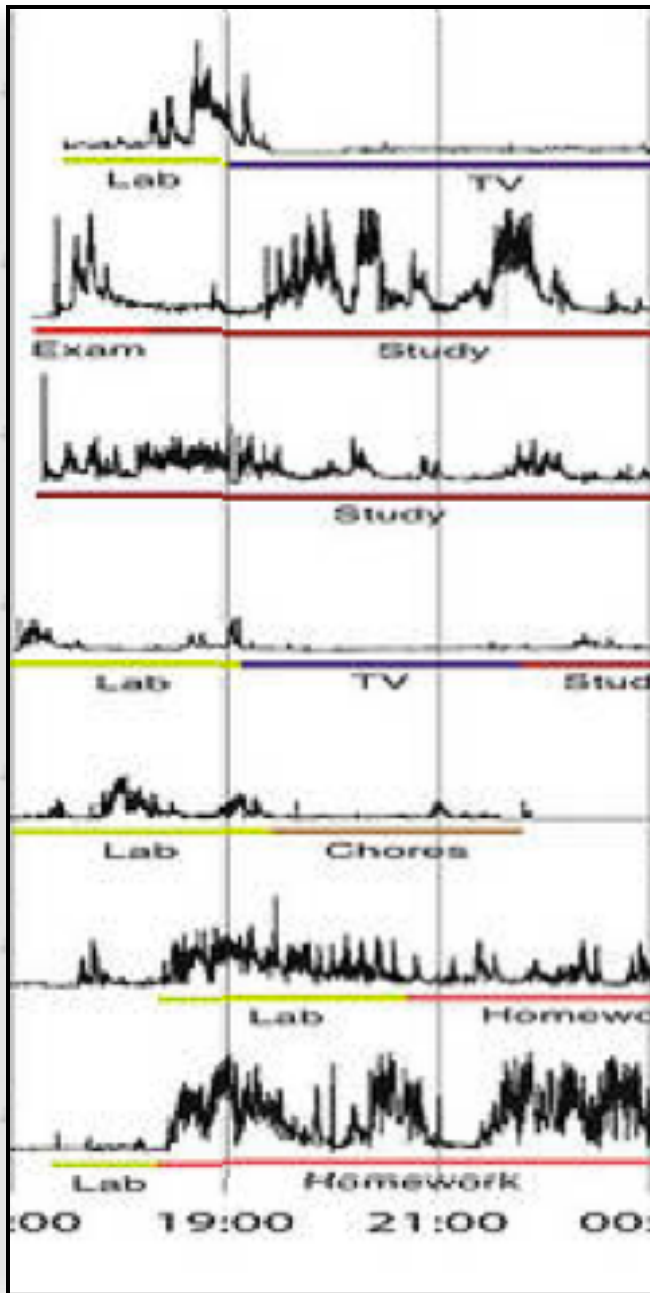


This is your brain...
on lecture





It's about creating
classroom
environments that can
engage students like
this...



What keeps you up at night?

"How boring I am and how little
will be retained by the student."

To get from his high school to his home in an rural area with no buildings, Martin travels 5.0 miles east and then 4.0 miles north. When Veronica goes to her home from that same high school, she travels 8.0 miles east and 2.0 miles south.

What is the approximate measure of the shortest distance, between Martin's home and Veronica's home?

To get from his high school to his home in an rural area with no buildings, Martin travels 5.0 miles east and then 4.0 miles north. When Veronica goes to her home from that same high school, she travels 8.0 miles east and 2.0 miles south.

What is the approximate measure of the shortest distance, between Martin's home and Veronica's home?

- A. ~ 3 miles
- B. ~ 6 miles
- C. ~ 9 miles
- D. ~ 17 miles

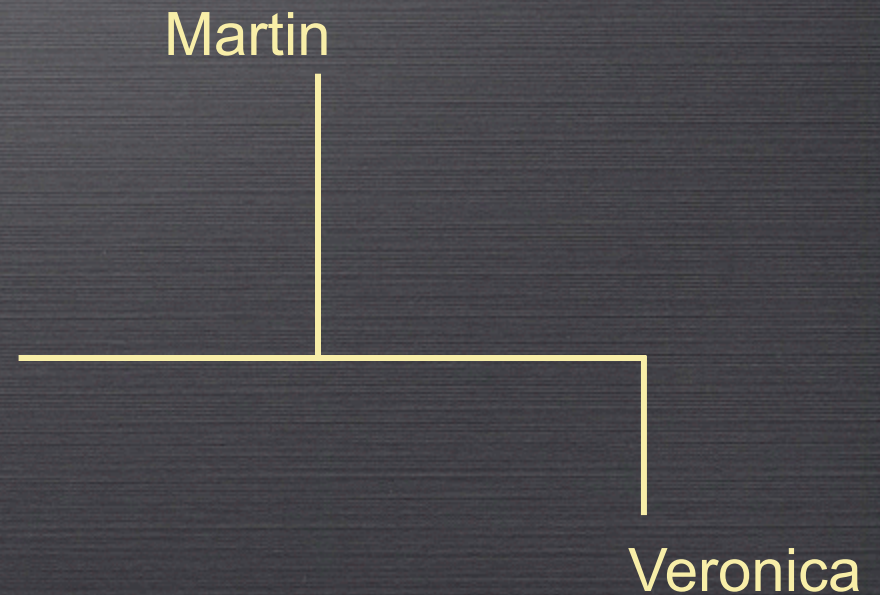
What do you need to know and be able to do to solve this problem?

What do you need to know and be able to do to solve this problem?

$$a^2 + b^2 = c^2$$

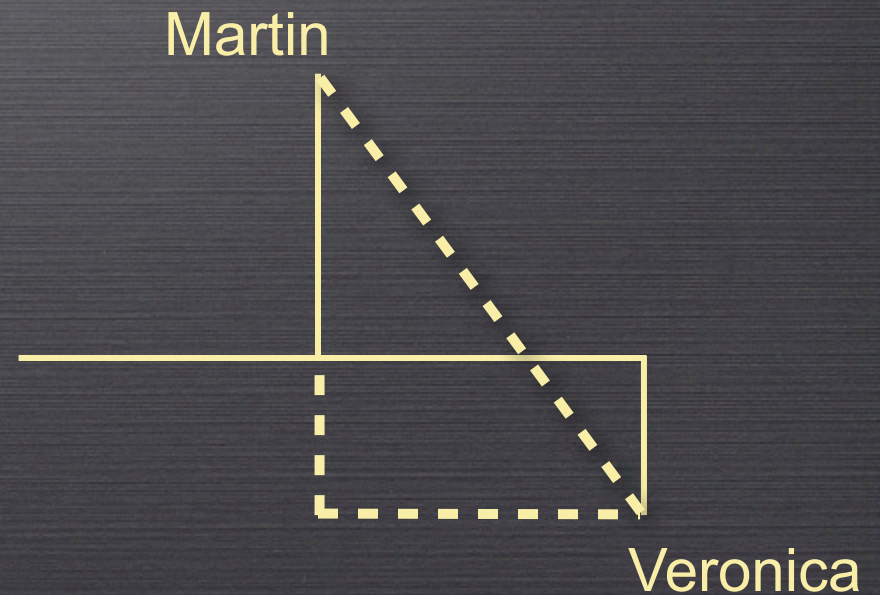
What do you need to know and be able to do to solve this problem?

$$a^2 + b^2 = c^2$$



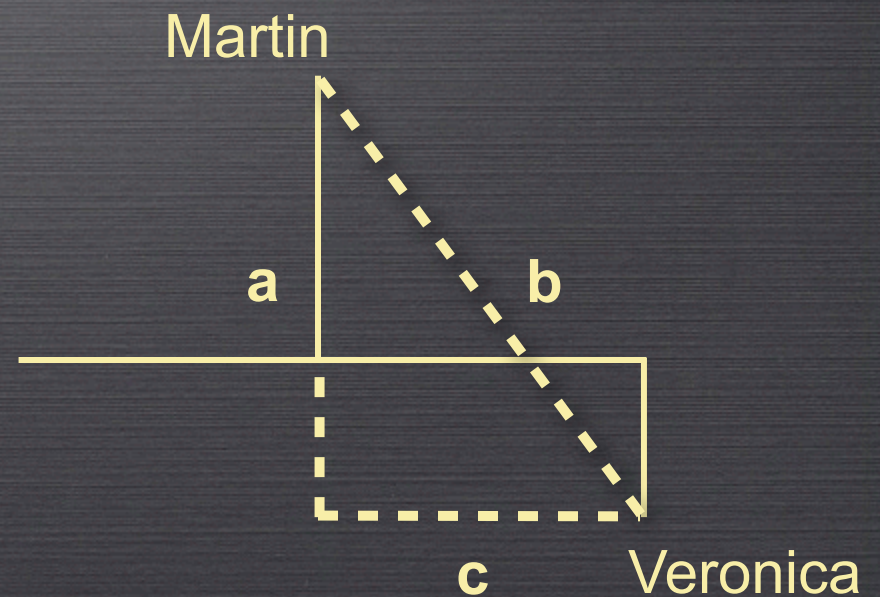
What do you need to know and be able to do to solve this problem?

$$a^2 + b^2 = c^2$$



What do you need to know and be able to do to solve this problem?

$$a^2 + b^2 = c^2$$



What percentage of US 10th grade students get Pythagorean theorem problems right on standardized tests?

- A. 25%
- B. 33%
- C. 50%
- D. 66%

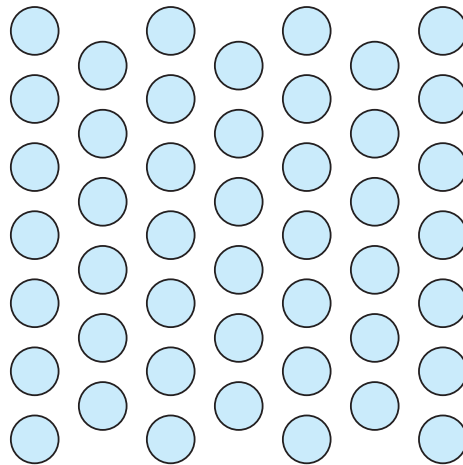
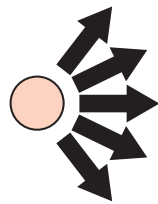
What percentage of 10th grade MA
students got this problem right?

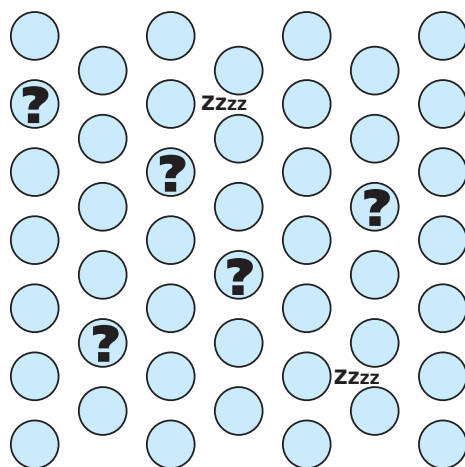
33%

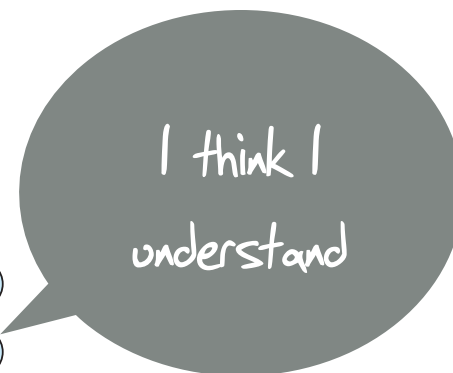
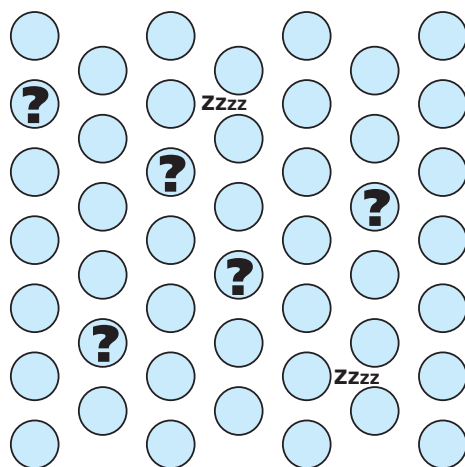
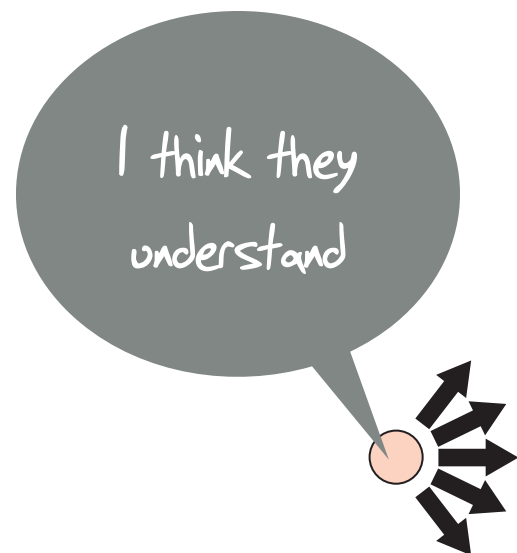
Students cannot transfer knowledge
across contexts.

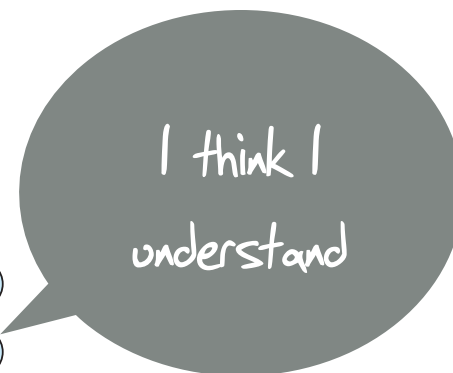
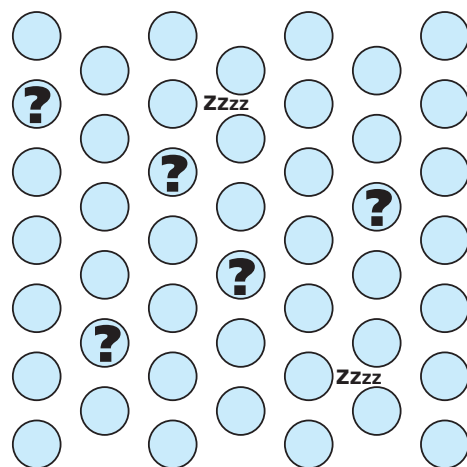
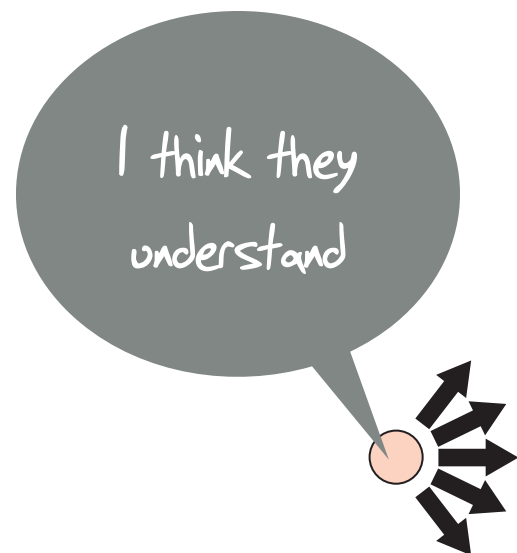
Why is this happening?

we tell
 $a^2 + b^2 = c^2$



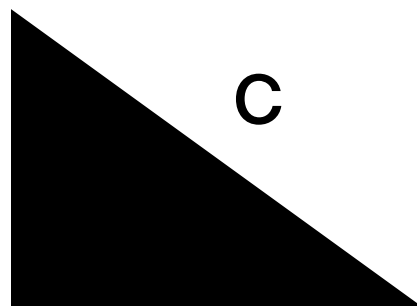






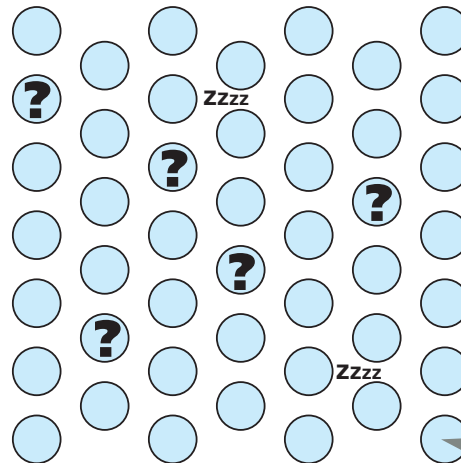
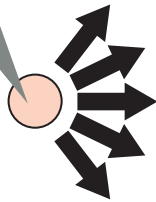
we test

90



90

I think they understand

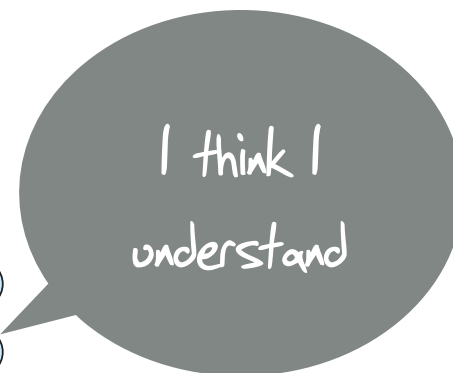
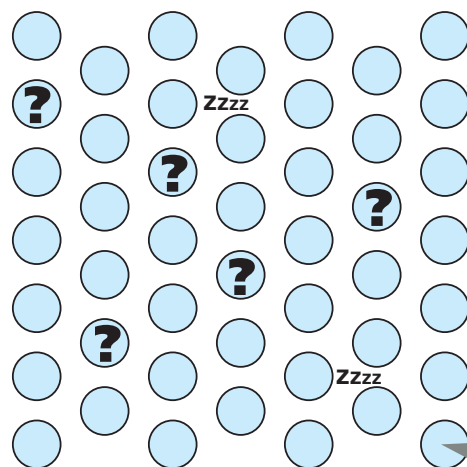


I think I understand

I did awesome on my exam!



I think they
understand



I think I
understand



I did awesome
on my exam!

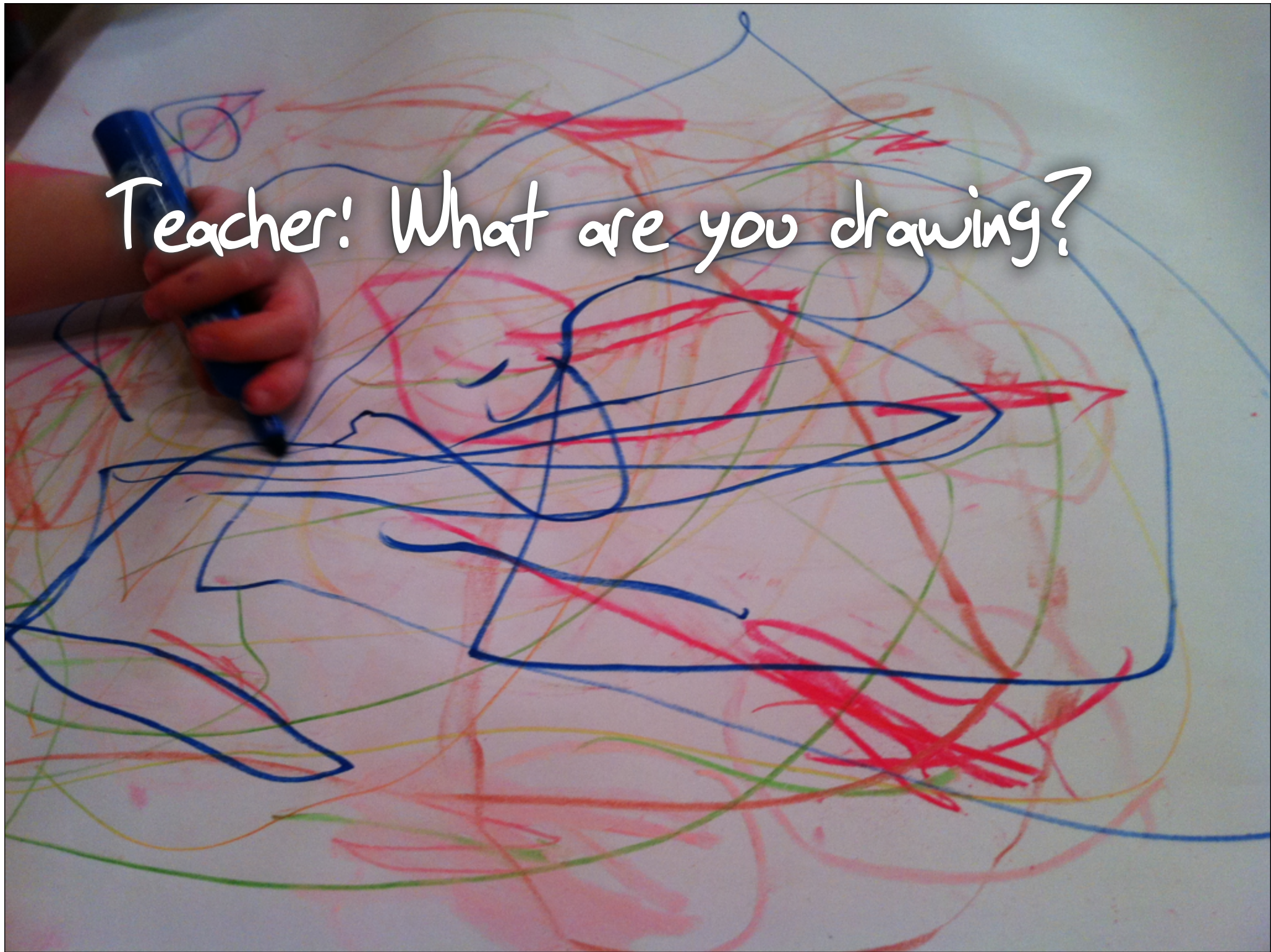
Lecture's Lullaby

6 symptoms of an education pandemic

1. Students are resistant to learning on their own
2. Cannot tolerate having to think outside the box
3. Lack perseverance
4. Cannot transfer knowledge across contexts
5. Unwilling or unable to risk failure
6. Don't retain what they learn, lack of basics



Teacher! What are you drawing?





Teacher: What are you drawing?

Jane: A picture of God

A hand holding a blue marker is shown in the upper left corner, actively drawing a chaotic scribble on a white surface. The scribble consists of numerous overlapping, swirling lines in blue, red, green, and yellow, creating a complex, abstract pattern that fills most of the frame. The text is overlaid on this background.

Teacher: What are you drawing?

Jane: A picture of God

Teacher: But no one knows what
God looks like.

A hand holding a blue marker is shown in the upper left corner, actively drawing a chaotic scribble on a whiteboard. The scribble consists of numerous overlapping, swirling lines in blue, red, and green, filling most of the frame. The text is overlaid on this background.

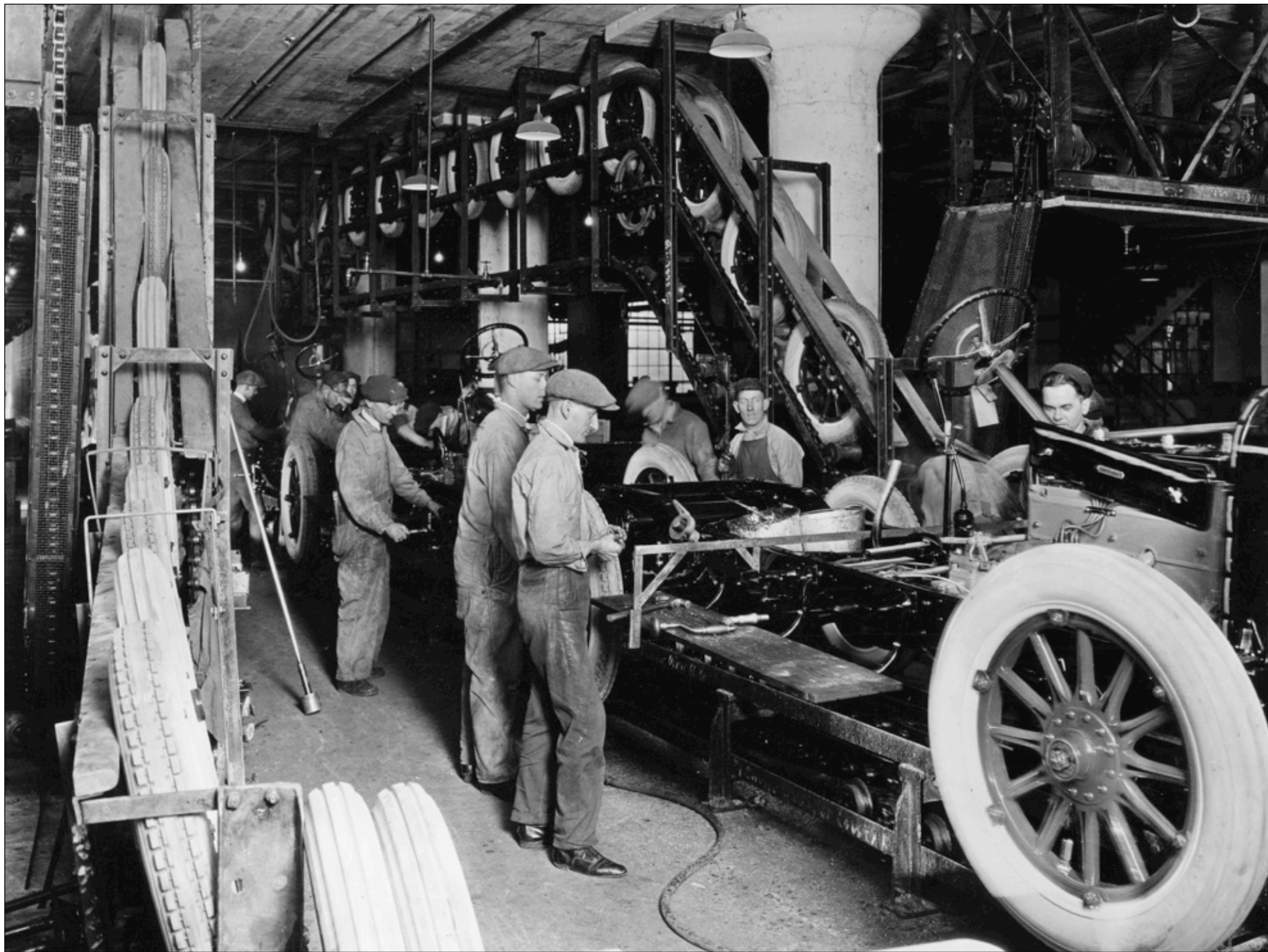
Teacher: What are you drawing?

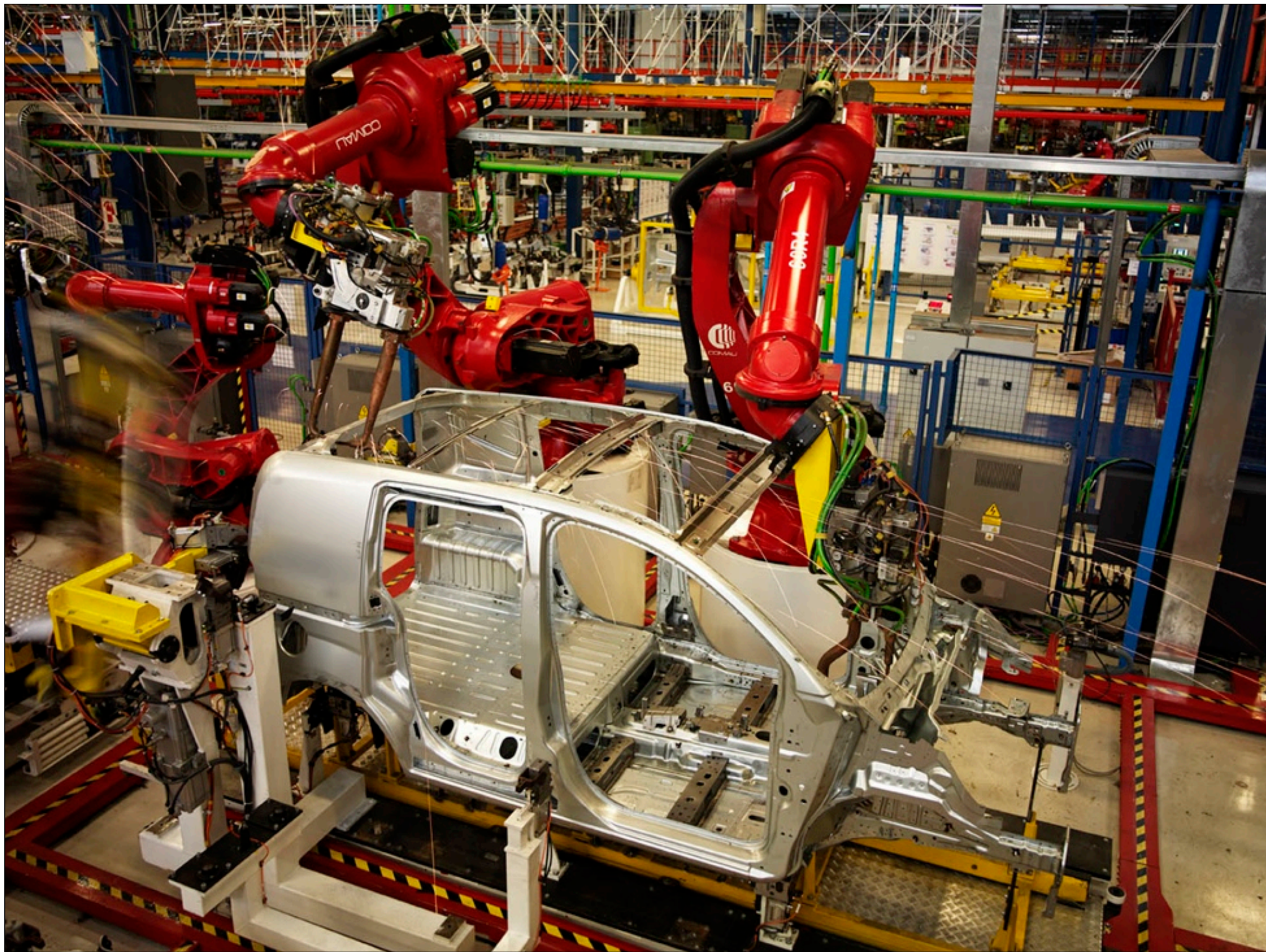
Jane: A picture of God

Teacher: But no one knows what
God looks like.

Jane: Well, they will in a minute!

*Sir Ken Robinson, Ted Talk on Creativity





Why should I flip my classroom?

"Our current classroom models are doing an incredible job of preparing students for the 21st Century!"

My Message



My Message



Education
doesn't have to
be this way!

My Message



Flipped teaching
offers one way
to change the
education
experience.

2

What is a flipped classroom?

Flipped classrooms are mostly about putting lectures online...

A. True

B. False

Flipped classrooms replace faculty
with computers...

- A. True
- B. False

There are many ways to flip a
class...

- A. True
- B. False

Flipped teaching follows a
prescriptive technique...

- A. True
- B. False

You can't flip just a few concepts...

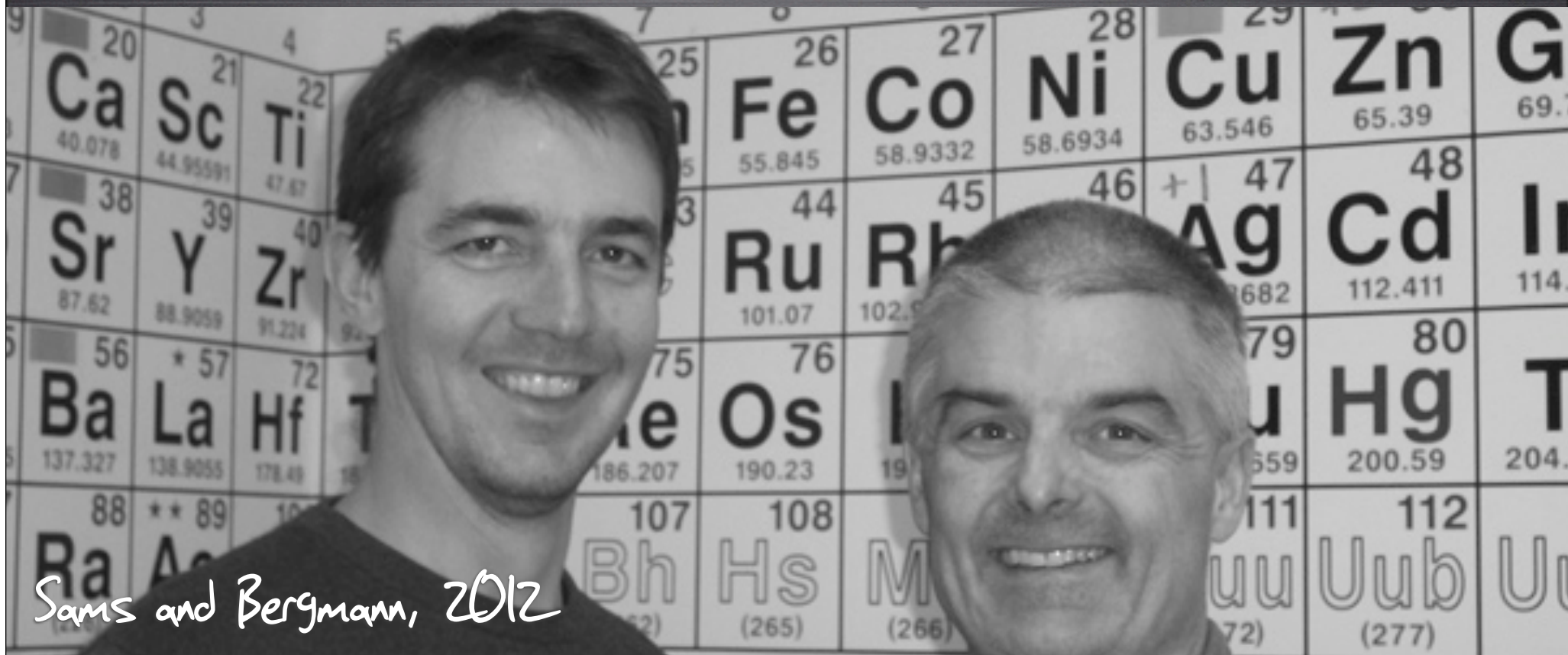
A. True

B. False

Flipped teaching is the latest
edutrend...

- A. True
- B. False

"Flipping the classroom is...[a] mindset
redirecting attention away from the teacher and
putting attention on the learner and the learning."

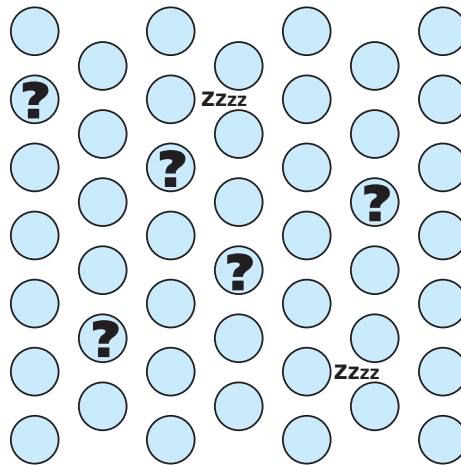
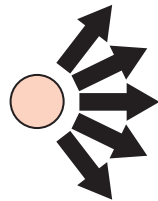


Sams and Bergmann, 2012

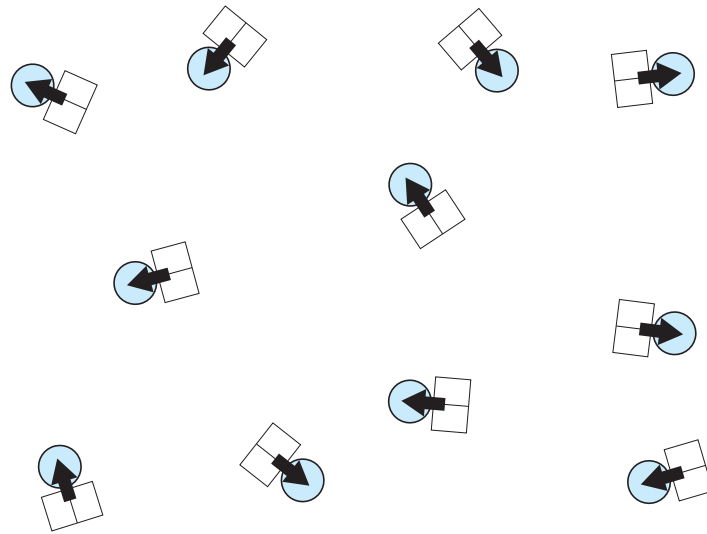
2 key characteristics of a flipped classroom

1. More information delivery happens out of class
2. Guided practice or assimilation happens in class

Flipped classrooms moves coverage out

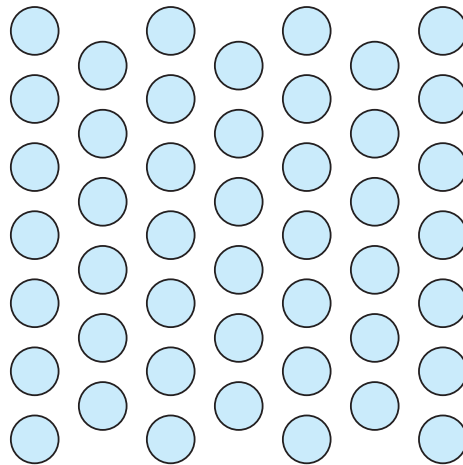
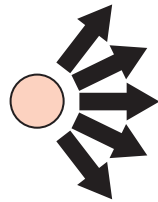


Flipped class basics



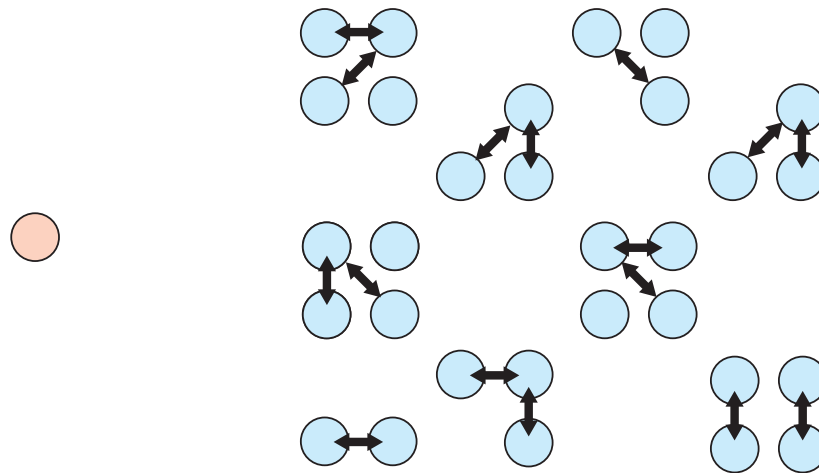
students do coverage outside of class

In class

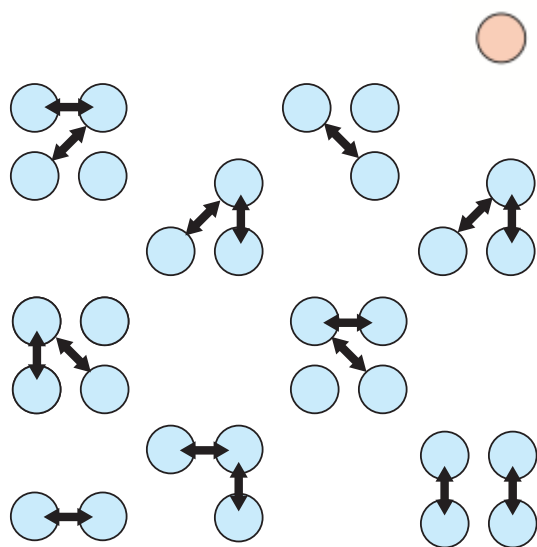


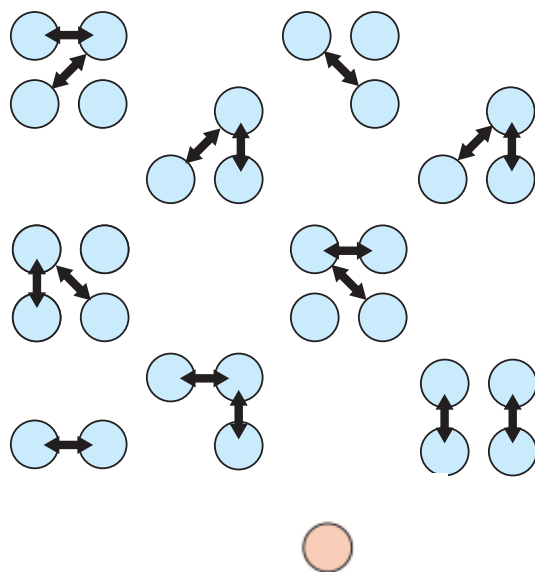
you, lecture a little

you help students

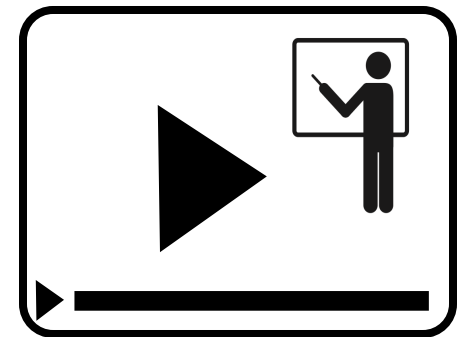
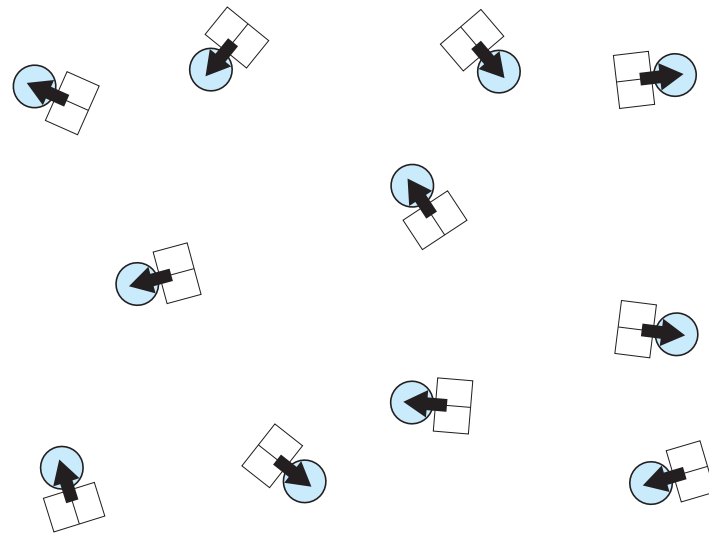


uncover meaning a lot



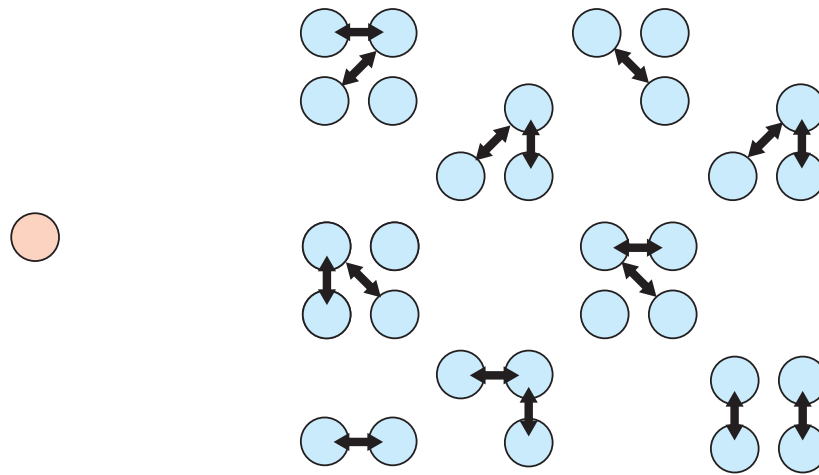


Flipped IOI Model



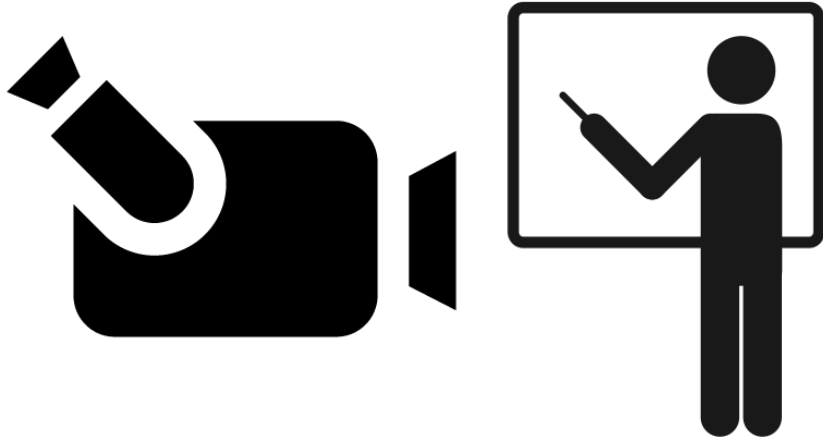
Out of class activity is lecture video

Flipped IOI Model



Homework problems in class

Screencasting



1 Record Lesson



2 Provide Access

Screencasting

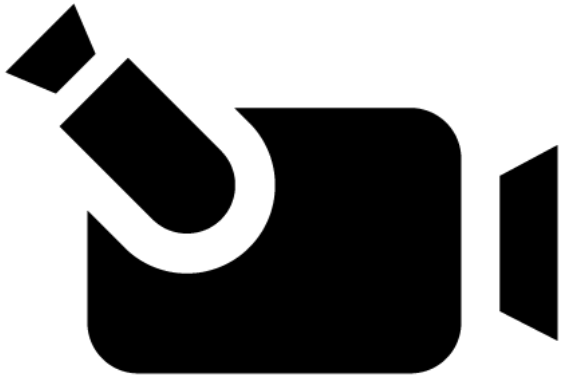
Tips for making videos!



1. Keep videos short - 7 min chunks
2. Give students a lesson on how to effectively watch videos
3. Embed or include assessments
4. Include materials from lecture videos on assessments

Screencasting

My quick start guide for flipping your
classroom with screencasting!



blog.peerinstruction.net



Flipped classrooms can be just putting videos online and doing homework in class, but they can and should be much more than that...

What are innovative tools for engaging students outside of class?

My students do at least 30 mins
of reading before coming to class...

a. true

b. false

c. depends

I would like my students to do at least 30 mins of reading before coming to class...

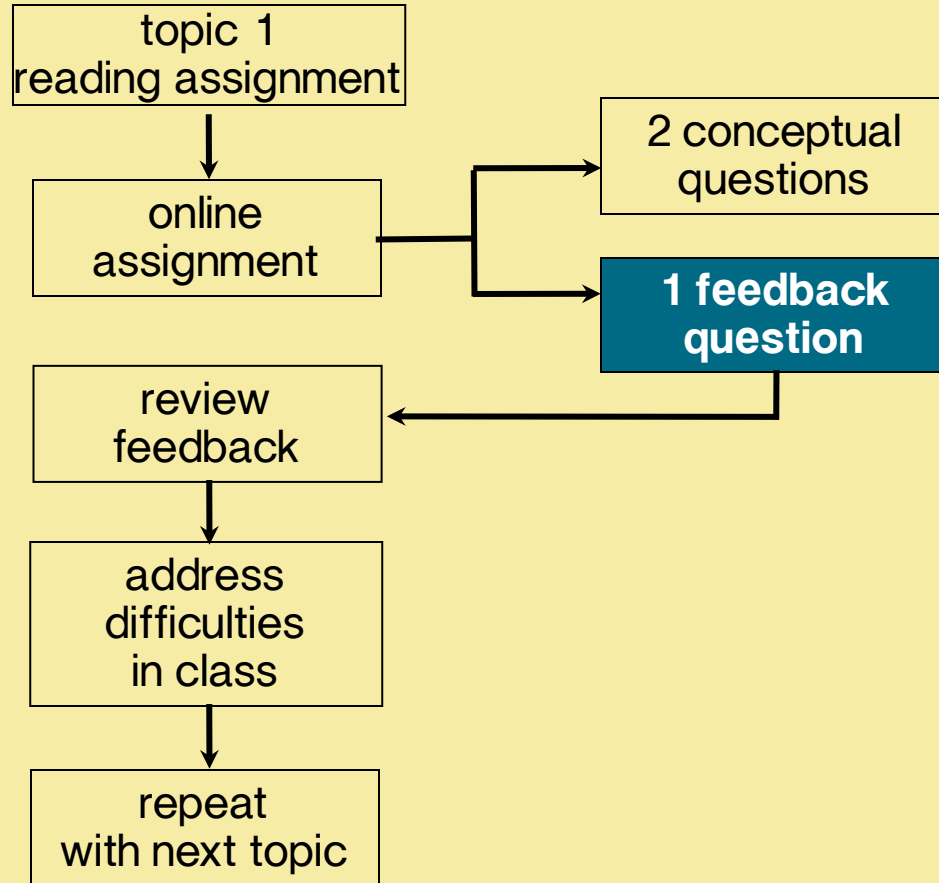
a. true

b. false

c. depends

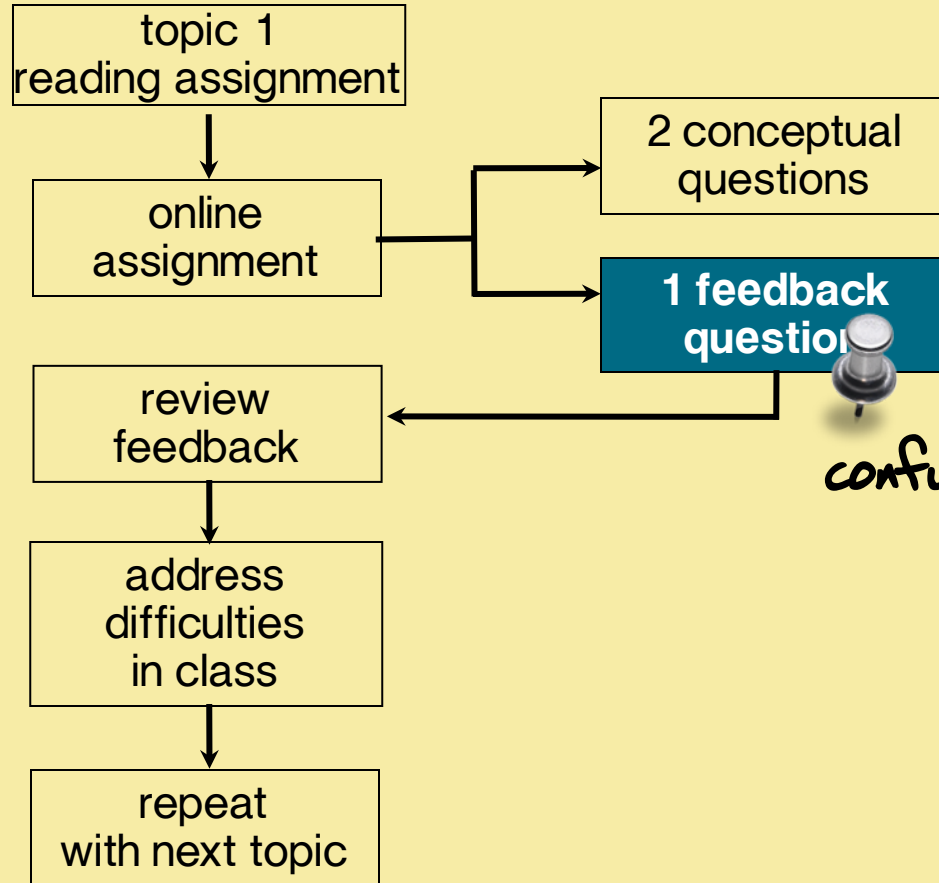
Out of Class Tools

Just-in-Time Teaching



Out of Class Tools

Just-in-Time Teaching

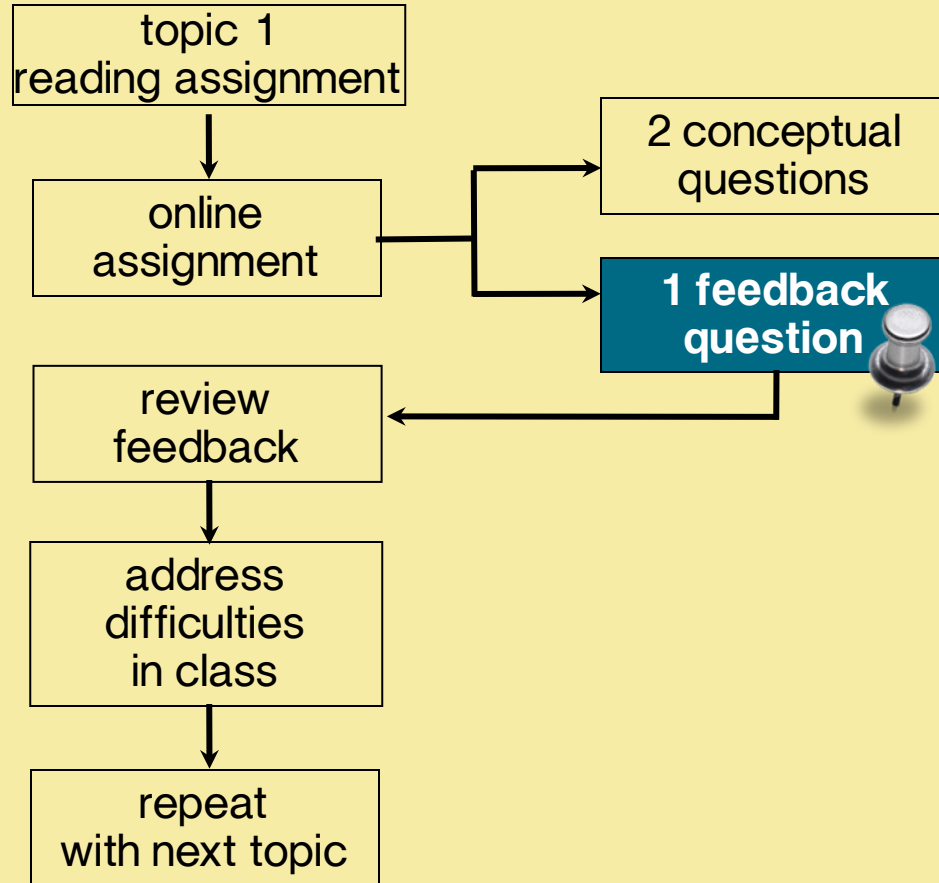


What do you find most
confusing about what you read?

Muddiest Point Technique

Out of Class Tools

Just-in-Time Teaching



What do you wonder about this topic? *Wonder Question*

“My reasons for marrying are, first, that I think it a right thing for every clergyman in easy circumstances (like myself) to set the example of matrimony in his parish. Secondly, that I am convinced it will add very greatly to my happiness; and thirdly — which perhaps I ought to have mentioned earlier, that it is the particular advice and recommendation of the very noble lady whom I have the honour of calling patroness.”

Pride and Prejudice

What is Collins' profession?

Hypothesize Collins' perception of the purpose of marriage.

What do you wonder about Collins' proposal?

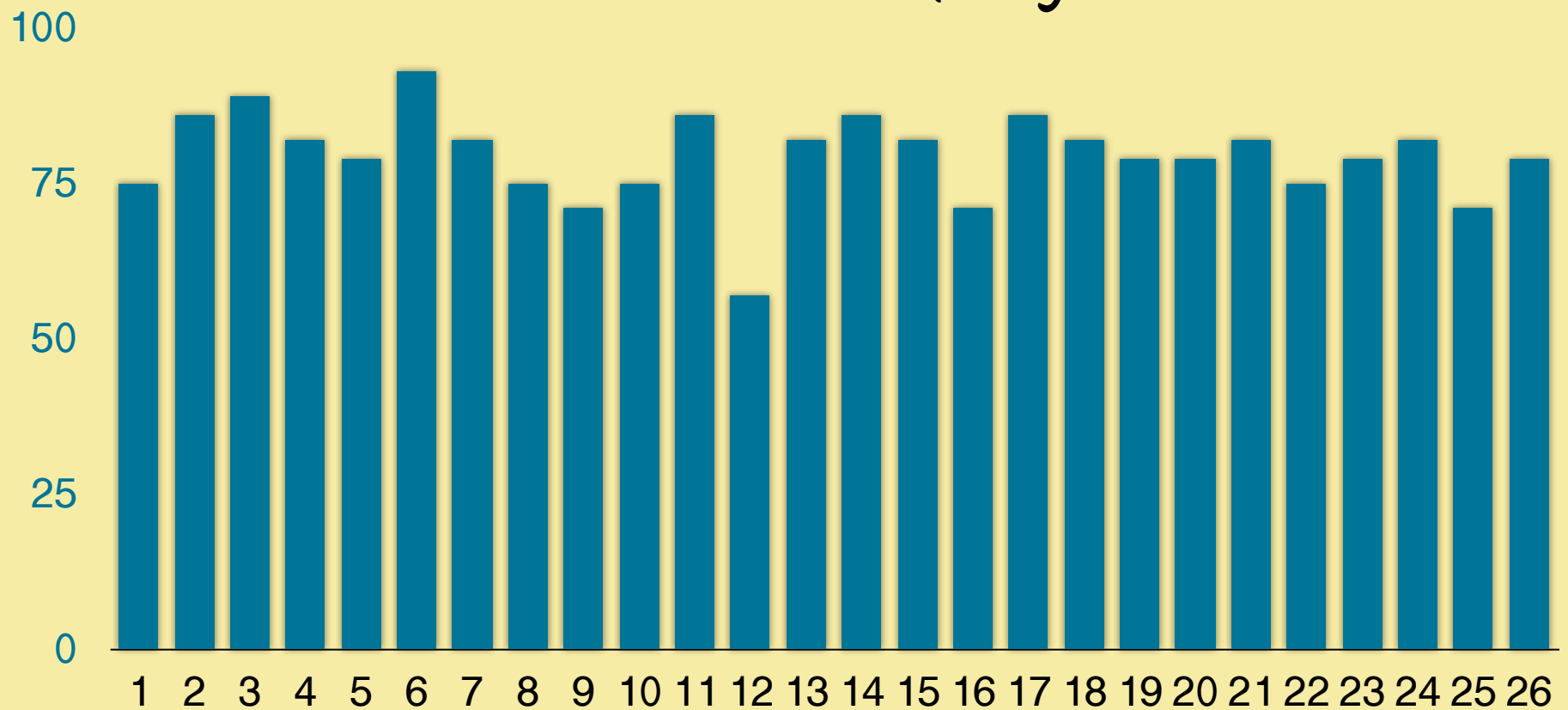
Out of Class Tools

Just-in-Time Teaching

"It is important to cite achievement data & research about student engagement not just perceptions."

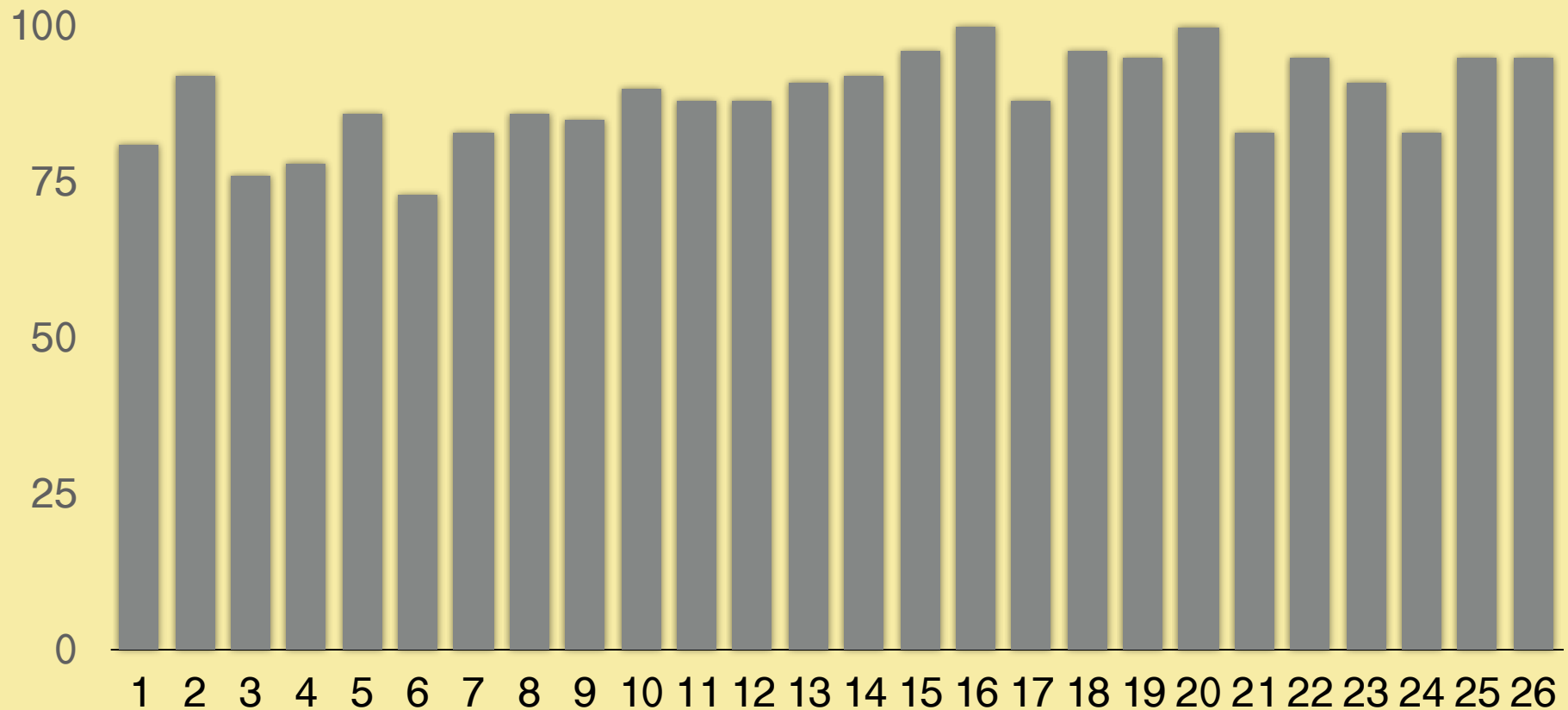
Out of Class Tools

Just-in-Time Teaching



% of students (n=28) completing reading assignment (n=26)

Out of Class Tools Just-in-Time Teaching



% of students (n=28) reading assignment engagement (n=26)

Tips for JiTT

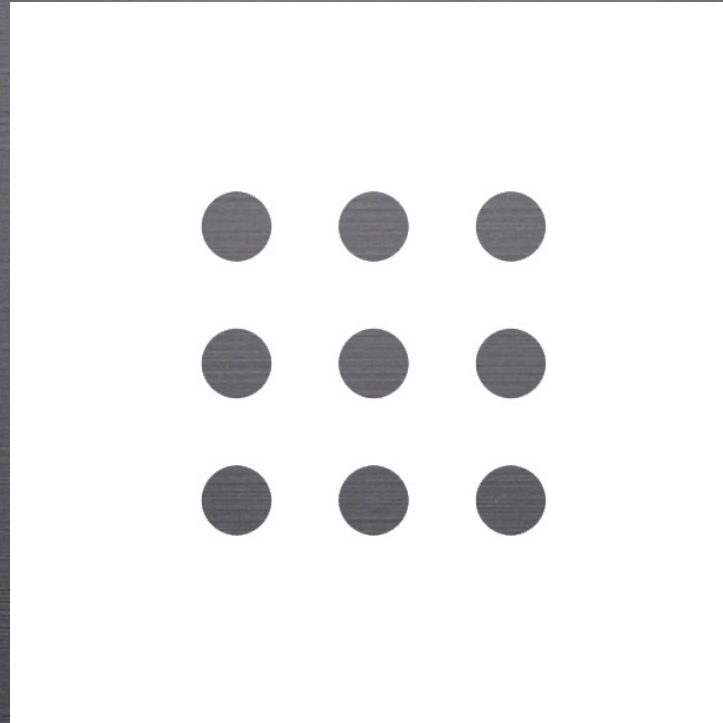
- give students points for doing reading assignments
- organize class time around results of feedback
 - display their comments anonymously in class
- put content covered in assignments on formal assessments
 - find a colleague doing it on campus

What are innovative tools for engaging students in class?

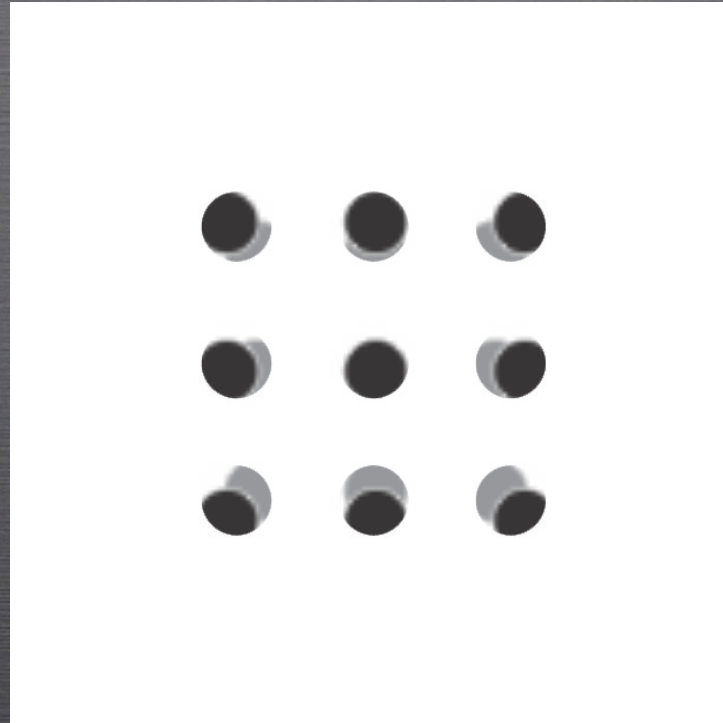
Thermal Expansion



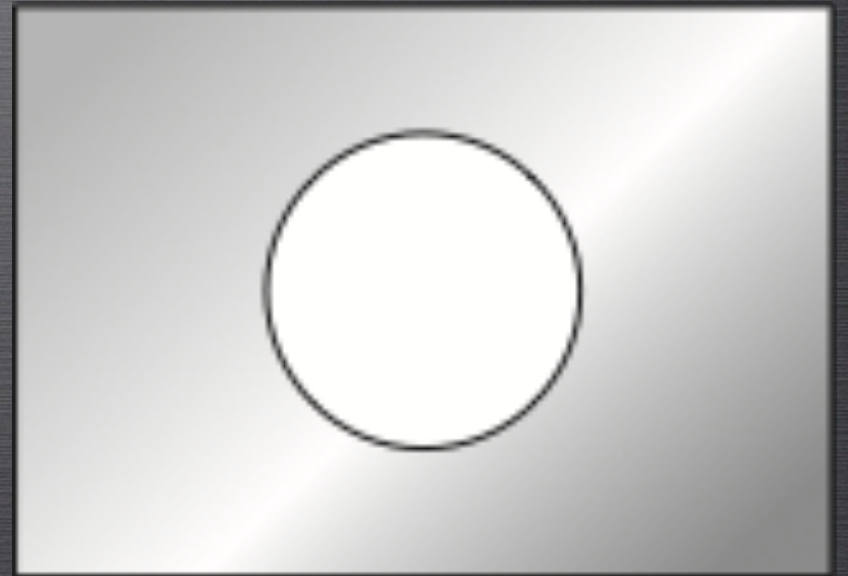
When metals heat up, they expand



When metals heat up, they expand

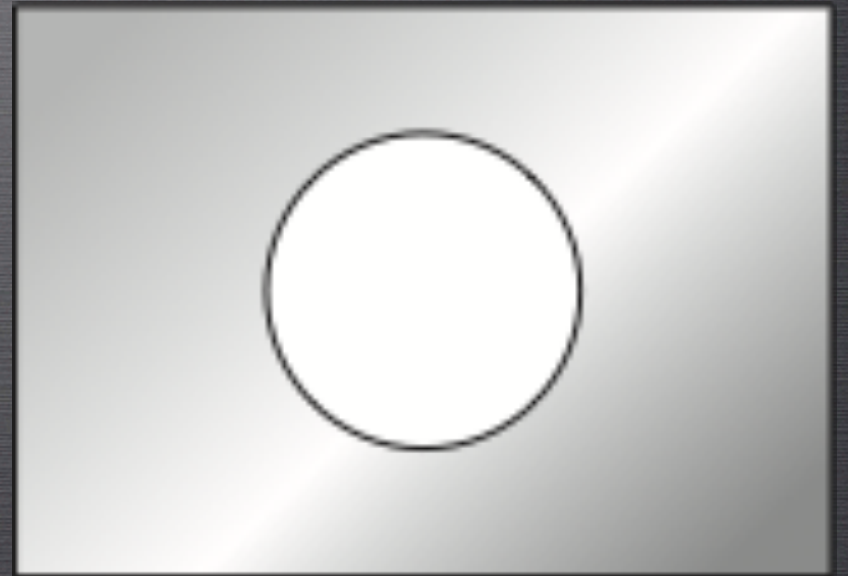


Consider a metal plate with a hole
in it

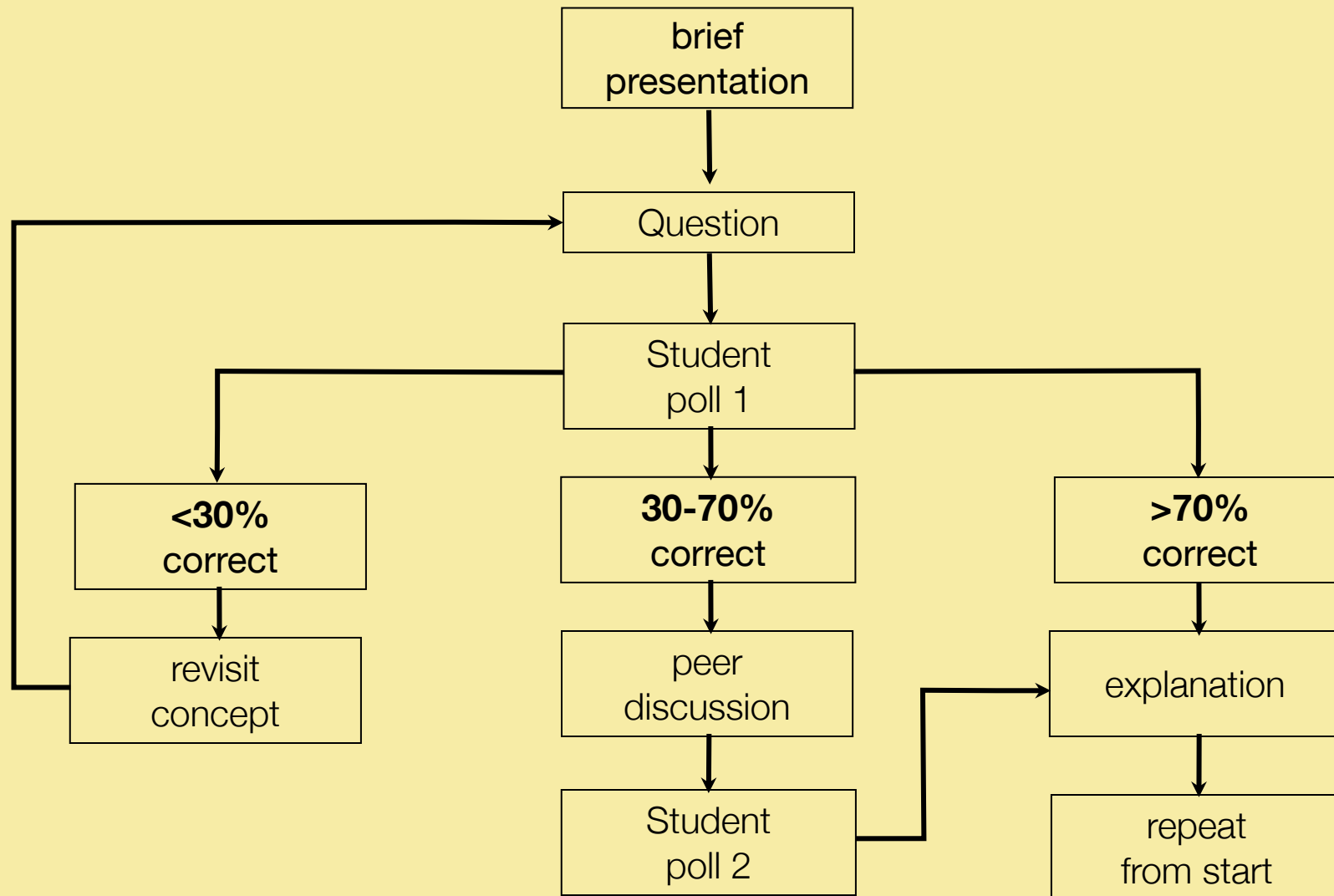


If you heat it uniformly, what happens to the hole?

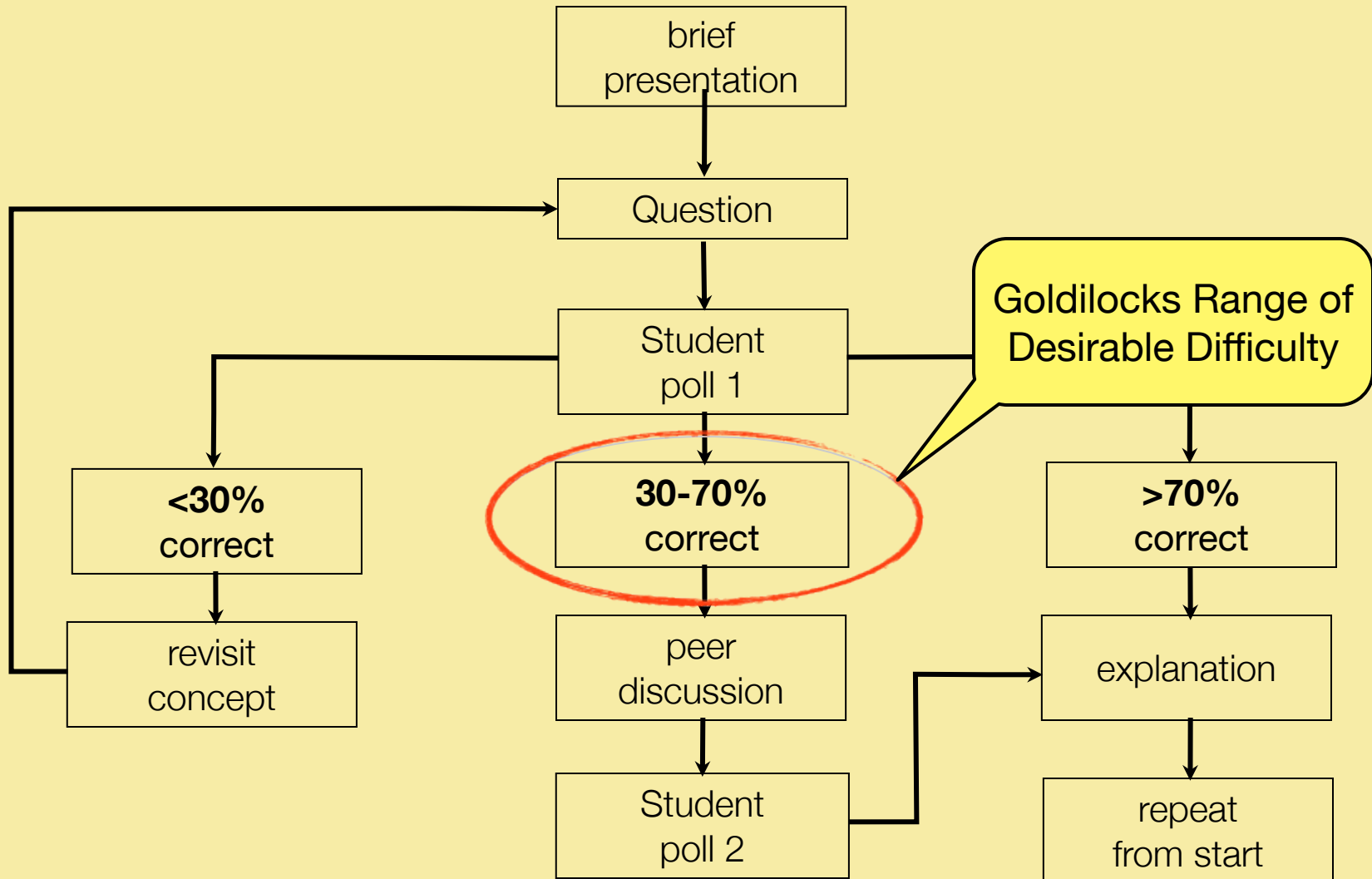
- A. increases
- B. stays the same
- C. decreases



Peer Instruction



Peer Instruction



Systematic Moral Analysis



Gert's Moral Rules

Everyone must follow!

1. Do not kill.
2. Do not cause pain.
3. Do not disable.
4. Do not deprive of freedom.
5. Do not deprive of pleasure.
6. Do not deceive.
7. Keep your promises.
8. Do not cheat.
9. Obey the law.
10. Do your duty.

Heinz's wife was near death, and her only hope was a drug that had been discovered by a pharmacist who was selling it for an exorbitant price. The drug cost \$20,000 to make, and the pharmacist was selling it for \$200,000. Heinz could only raise \$50,000 and insurance wouldn't make up the difference. He offered what he had to the pharmacist, and when his offer was rejected, Heinz said he would pay the rest later. Still the pharmacist refused. In desperation, Heinz broke into the store and stole the drug.

Should Heinz have broken into the store to steal the drug for his wife?

- A. Yes
- B. No

In Peer Instruction – is it always necessary to give students time to answer on their own first?

A. Yes

B. No

C. It depends

Should I show the histogram to students before they vote?

A. Yes

B. No

C. It depends

What are alternatives to clickers?





A pink square containing the letter 'A' in a white, bold, sans-serif font with a black outline.

A

A green square containing the letter 'B' in a white, bold, sans-serif font with a black outline.

B

A yellow square containing the letter 'C' in a white, bold, sans-serif font with a black outline.

C

A blue square containing the letter 'D' in a white, bold, sans-serif font with a black outline.

D

<http://bit.ly/TgzlcQ>



<http://bit.ly/VnXtNS>

learning | catalytics

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current session: **766079** | 69 students

[Stop session](#) [Review results](#) [Seat map](#) [Show floating session ID](#) [Edit](#) [PDF](#) [Delete](#)

Jump to [1](#) [2](#) [3](#) [4](#) [5](#) [6](#) [7](#) [8](#) [9](#) [10](#) [11](#) [12](#) [13](#) [14](#) [15](#)

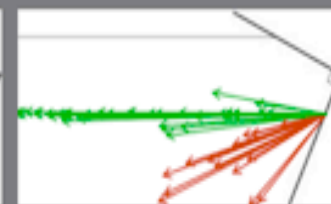
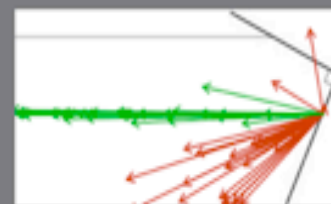


Light enters horizontally into the combination of two perpendicular

[Stop delivery](#) [Deliver again](#) [Assign groups](#) [Show all results](#)

Round 1
57 responses, 58% correct

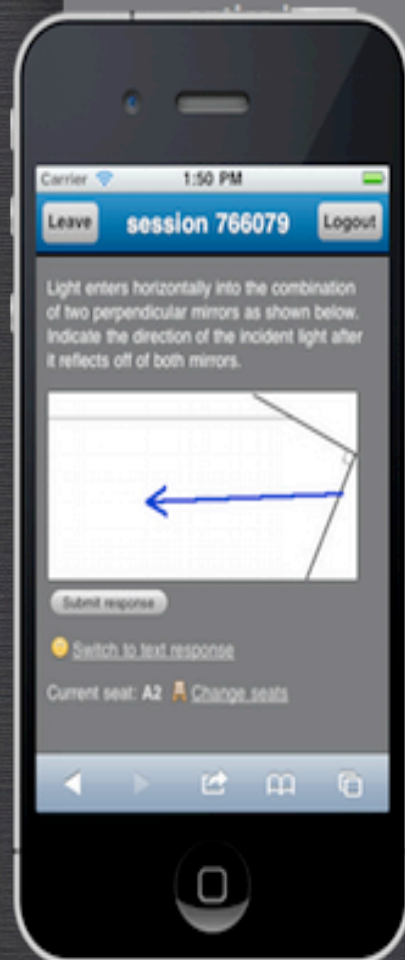
Round 2
51 responses, 73% correct



8 get it now
0 still don't get it

the incident light after it reflects off of both mirrors.

[feedback & support](#)



In Class Tools

Peer Instruction



My quick start guide for flipping your
classroom with Peer Instruction!

blog.peerinstruction.net



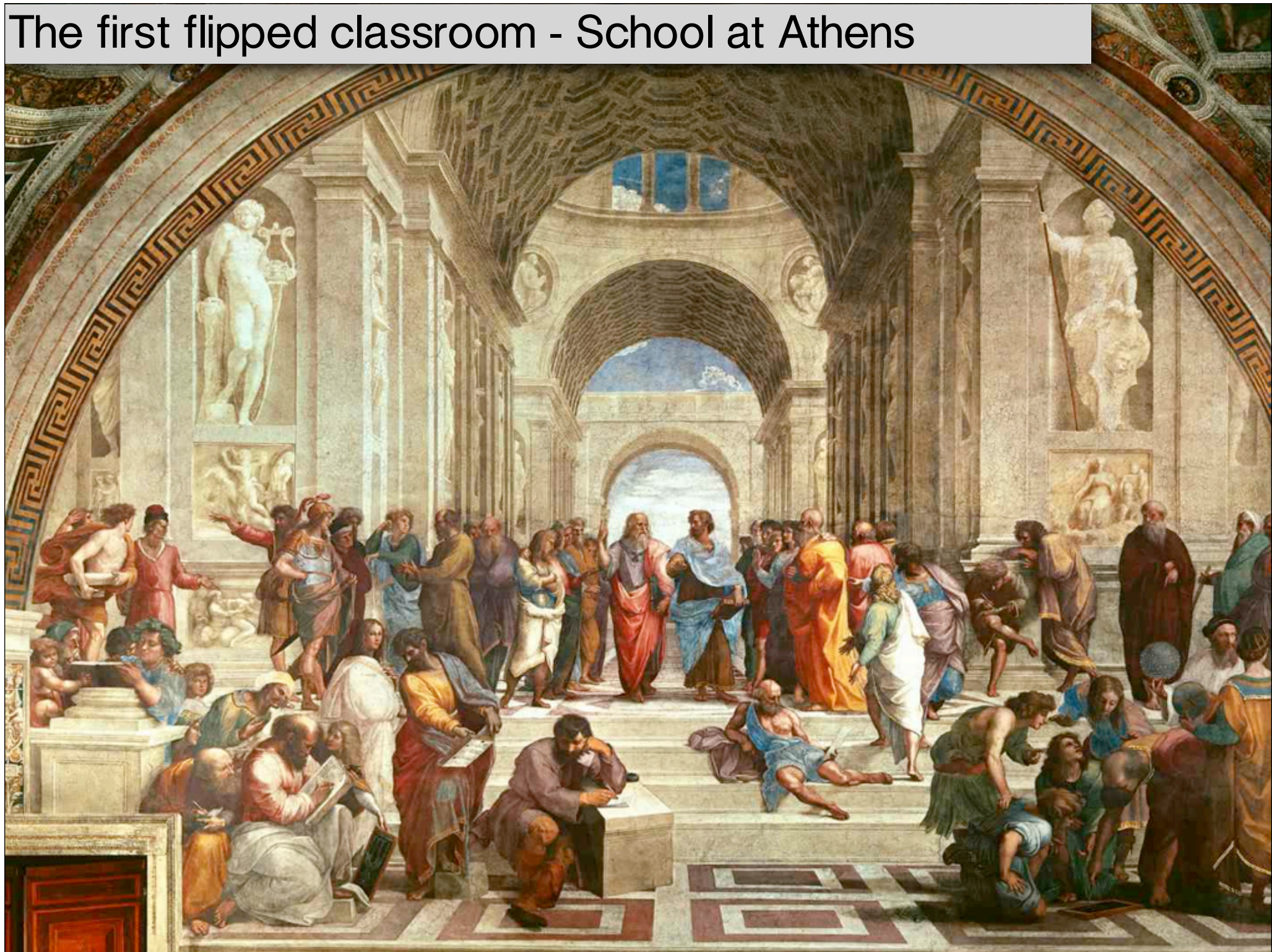
Tips for PI

- can use with just one concept in a course
- always give students a chance to vote first before discussion
- have students give explanations of different responses as closure activity
- don't show histogram after first vote if there is a correct answer

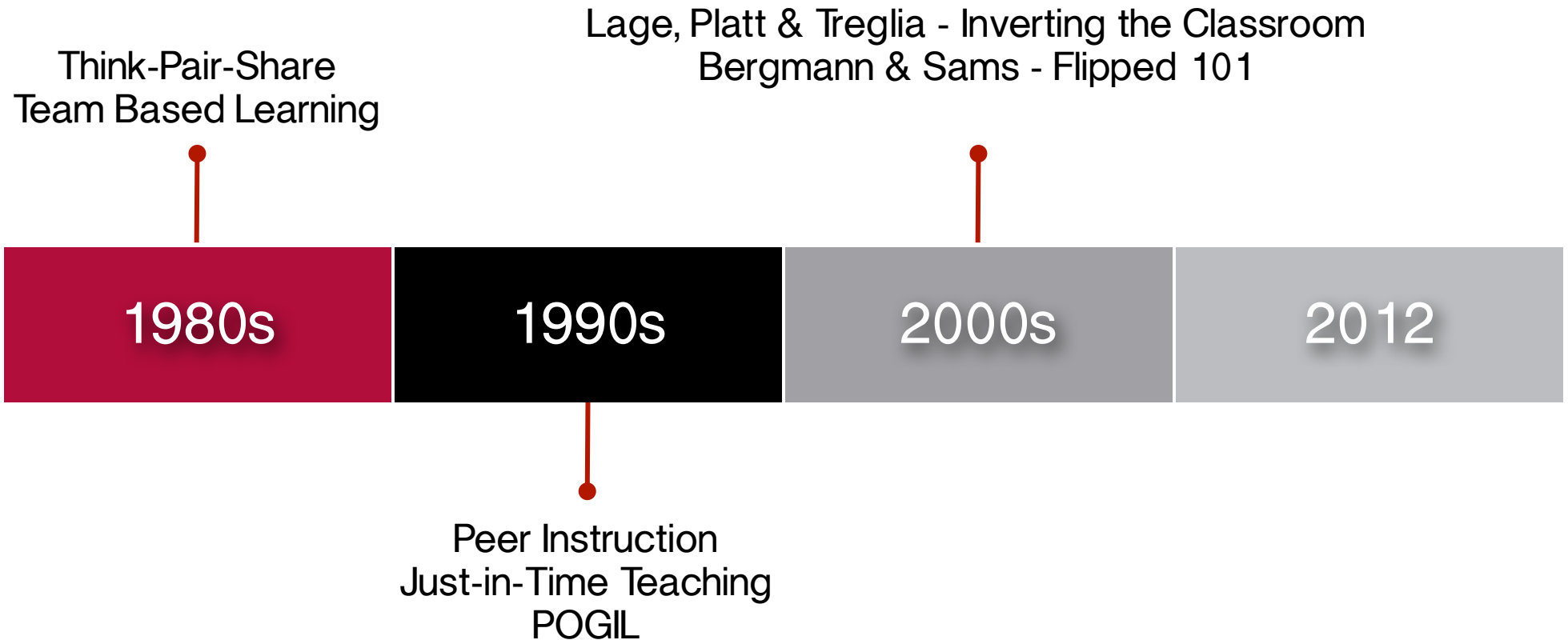


When do you think we first
heard the modern call for
flipped classrooms?

The first flipped classroom - School at Athens



One Possible Timeline of Calls for Flipped Classrooms



Moore Method

1910s

Discovery Learning
Problem-Based learning

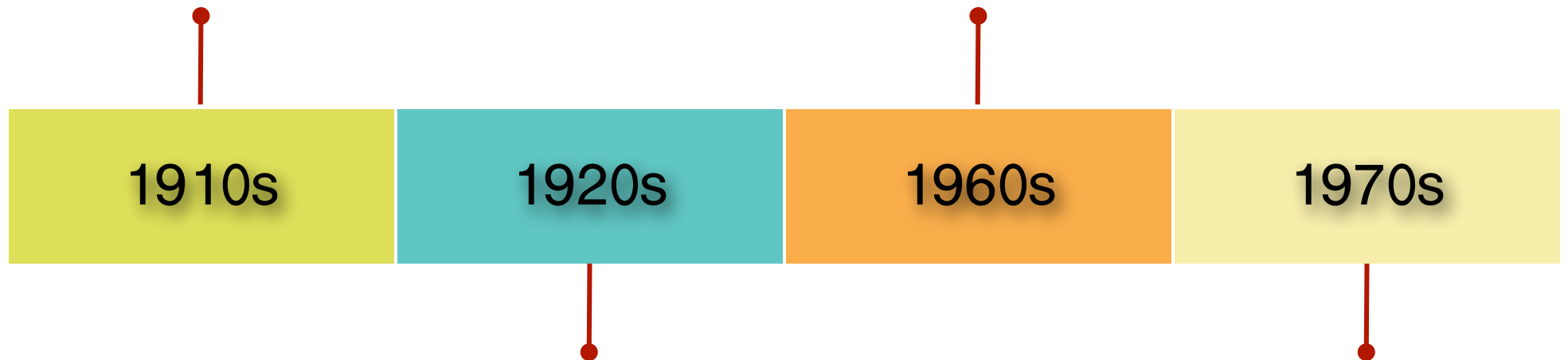
1960s

Experiential Learning

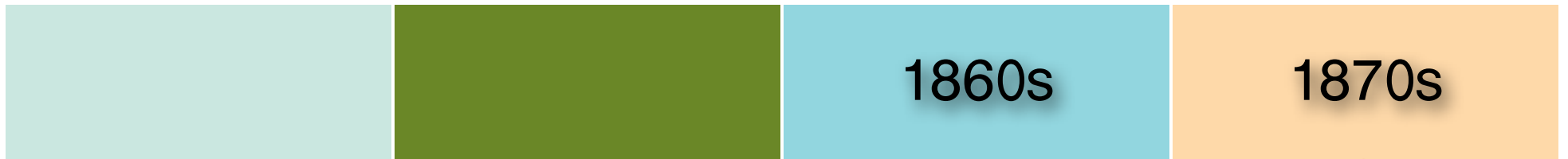
1920s

Pedagogy of
the Oppressed

1970s



Practical education



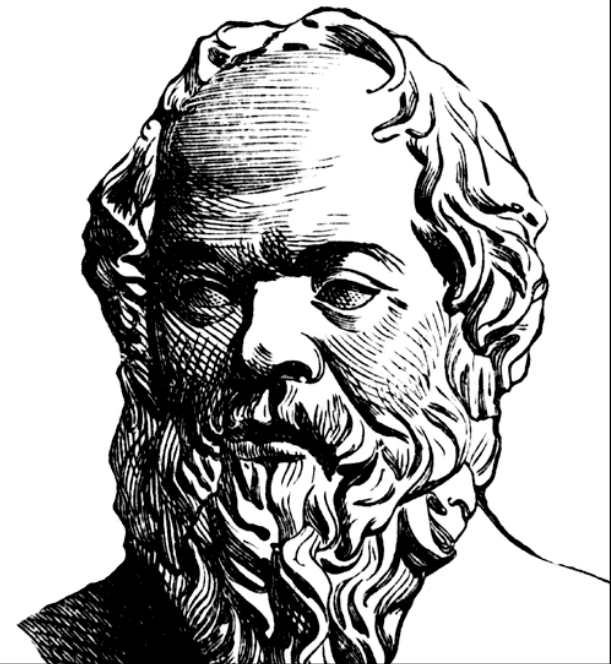
1860s

1870s

Casebook Method

~460 BC

Dialogue,
Questioning





"Given that students are asked to evaluate us as instructors, how do you avoid giving the impression that you are largely absent in a flipped class?"





5

What do I do next?

#1 Tip for Getting Started

Find a mentor

hero

mentor



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Try flipping your classroom, it
may just turn your students'
worlds right side up.





Acknowledgements

PEOPLE

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Peter Newbury

Dan Meyer

Nancy Duarte

BOOKS

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