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- 4. Join session 1234567**
- 5. Pick your seat from the seat map**

Learning Catalytics and ConcepTest development



Encuentro Internacional de Docencia Universitaria
Universidad Técnica Federico Santa María
Valparaíso, Chile, 21 August 2012



Learning Catalytics and ConcepTest development



@eric_mazur

Encuentro Internacional de Docencia Universitaria
Universidad Técnica Federico Santa María
Valparaíso, Chile, 21 August 2012





1 lecture

2 PI

3 PI 2.0

feedback

1 lecture

2 PI

3 PI 2.0



1991



1 lecture

2 PI

3 PI 2.0



1993



1998



1 lecture

2 PI

3 PI 2.0



technology

1 lecture

2 PI

3 PI 2.0



How do I...

- design good questions?
- optimize the discussions?
- manage time?

learning | catalytics

1 lecture

2 PI

3 PI 2.0

learning | catalytics



Gary King



Brian Lukoff



Eric Mazur

1 lecture

2 PI

3 PI 2.0

Use intelligent algorithms and data analytics to...

- improve questioning
- manage discussions
- facilitate time management/flow

- lowest
- a. A 30-year fixed rate mortgage at 12%
 - b. A 15-year fixed rate mortgage at 12%
 - c. A 30-year fixed rate mortgage at 12%
 - d. A 15-year fixed rate mortgage at 12%
2. The biggest factor that leads American companies to manufacture their products overseas in India is:
- a. Higher quality of craftsmanship
 - b. Lower labor costs
 - c. Decreased transportation costs
 - d. Effective legal systems
3. Which of the following correctly summarizes the accounting equation for a sole proprietorship?
- a. $Assets = Liabilities + Owners' equity$
 - b. $Liabilities = Assets + Owners' equity$
 - c. $Owner's equity = Assets + Liabilities$
 - d. $Revenue = Assets - Liabilities$
4. In order to present a business plan to a group of potential investors, a businessperson would most likely use which of the following?
- a. Powerpoint
 - b. Quickbooks
 - c. Peoplesoft
 - d. Excel
5. In order to start an online business, and individual would need all but which of the following:
- a. business model
 - b. capital
 - c. a business plan
 - d. depreciation?

extensible plug-in architecture for question types

- a. A 30-year fixed rate mortgage at 12%
- b. A 15-year fixed rate mortgage at 12%
- c. A 30-year fixed rate mortgage at 12%
- d. A 15-year fixed rate mortgage at 12%

2. The biggest factor that leads American companies to manufacture their products over India is:

- a. Higher quality of craftsmanship
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3. Which of the following correctly summarizes the accounting equation for a sole proprietorship?

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4. In order to present a business plan to a group of potential investors, a businessperson should most likely use which of the following?

- a. Powerpoint
- b. Quickbooks
- c. Peoplesoft
- d. Excel

5. In order to start an online business, an individual would need all but which of the following:

business model

Sample question types:

- direction
- expression
- long answer, short answer, word cloud (fill in text)
- multiple-choice, many-choice
- numerical (enter a number)
- ranking
- region (select point on image)
- sketch

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:

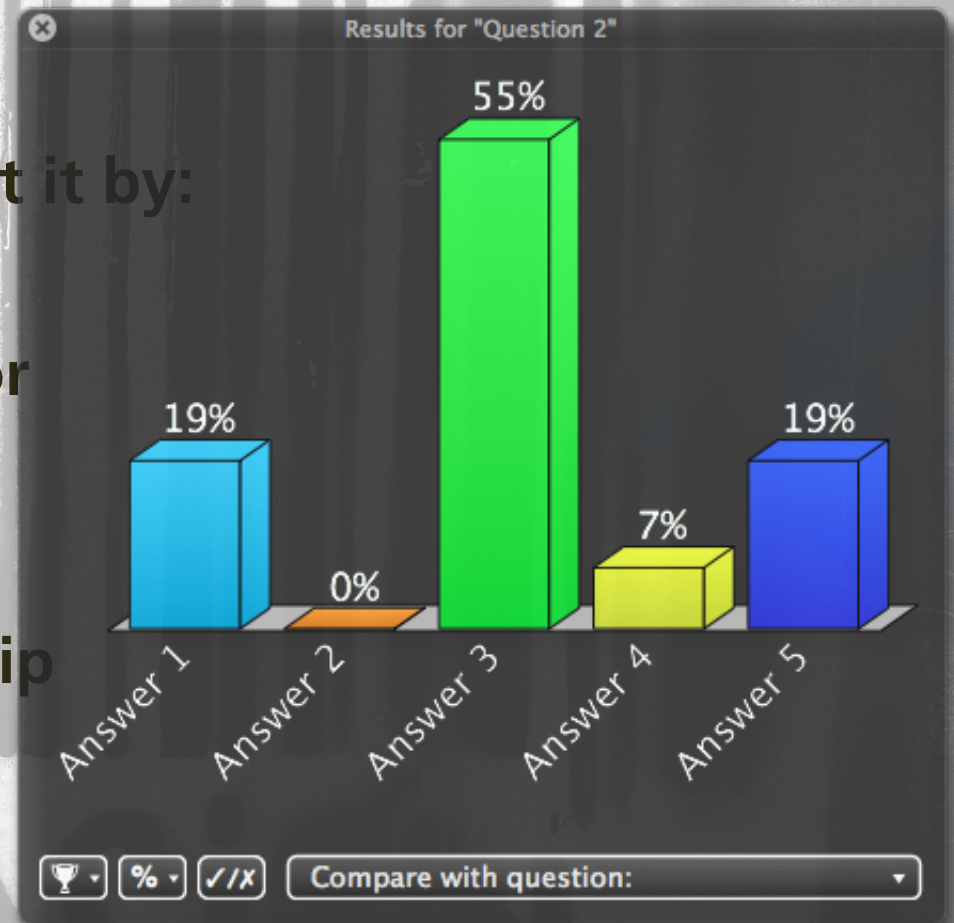
- 1. trial and error**
- 2. lectures**
- 3. practicing**
- 4. apprenticeship**
- 5. other**

EDUCACION



Became good at it by:

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





Carrier



10:24 PM



Leave

session 123456

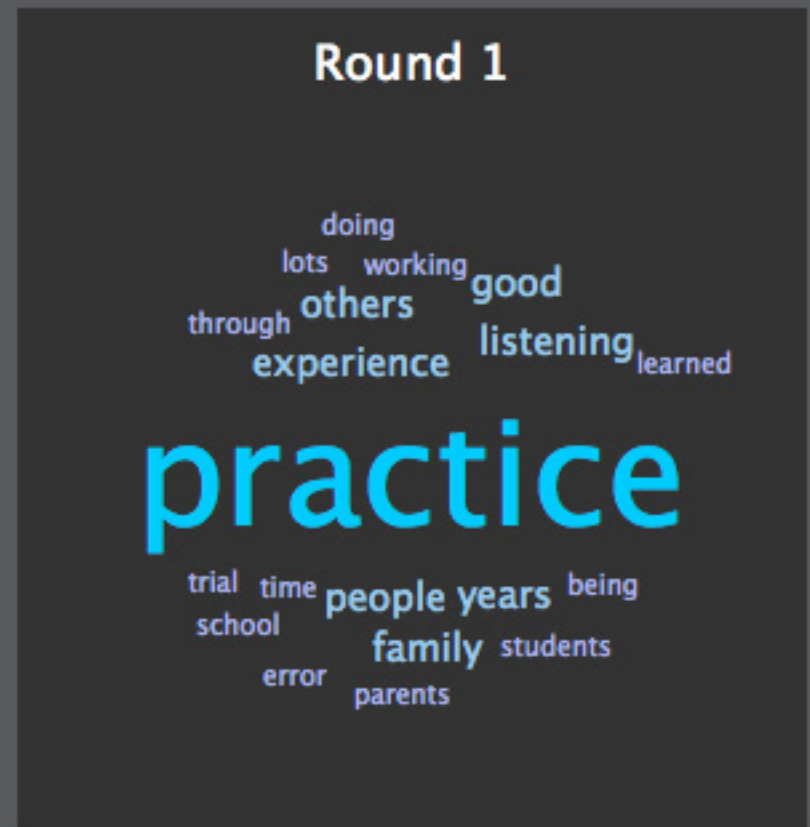
Logout

Now describe in a couple of words how you became good at whatever it is you entered in the previous question.

Submit response

Class session: 123456

Now describe in a couple of words how you became good at whatever it is you entered in the previous question.



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1 lccatalytics.com 2 create instructor account 3 ID 123456

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4. direction This image shows Oahu as seen from the Space Shuttle. The image provides several clues about the direction of prevailing winds in Oahu. Indicate this direction by drawing an arrow on your screen. [Deliver](#) [Show all results](#)

1 education

2 PI



3 PI 2.0

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4. direction
prevailing

...le. The image provides several clues about the direction of
...on your screen.

 [Deliver](#)  [Show all results](#)



1 educa

3 PI 2.0

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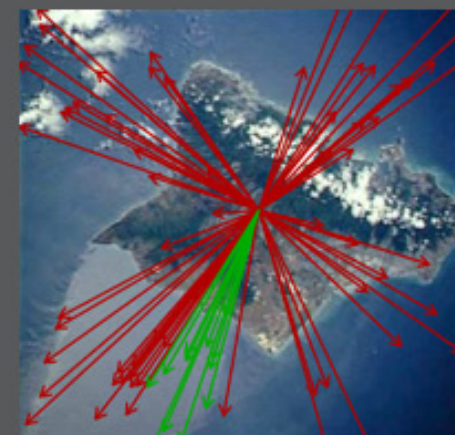
4. direction
prevailing

...le. The image provides several clues about the direction of
...on your screen.

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Round 1

77 responses, 16% correct



✓ 17 get it now
✗ 3 still don't get it



1 educa

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optics i

current session: 766079 | 69 students

[Back to all lectures](#) [Stop session](#) [Review results](#) [Seat map](#) [Show floating session ID](#) [Edit](#) [Delete](#)



Jump to ▾

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15



4. direction Light enters horizontally into the combination of two perpendicular mirrors as shown below.

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Indicate the direction of the incident light after it reflects off of both mirrors.



feedback & support

1 education

2 PI

3 PI 2.0

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current session: **766079** | 69 students

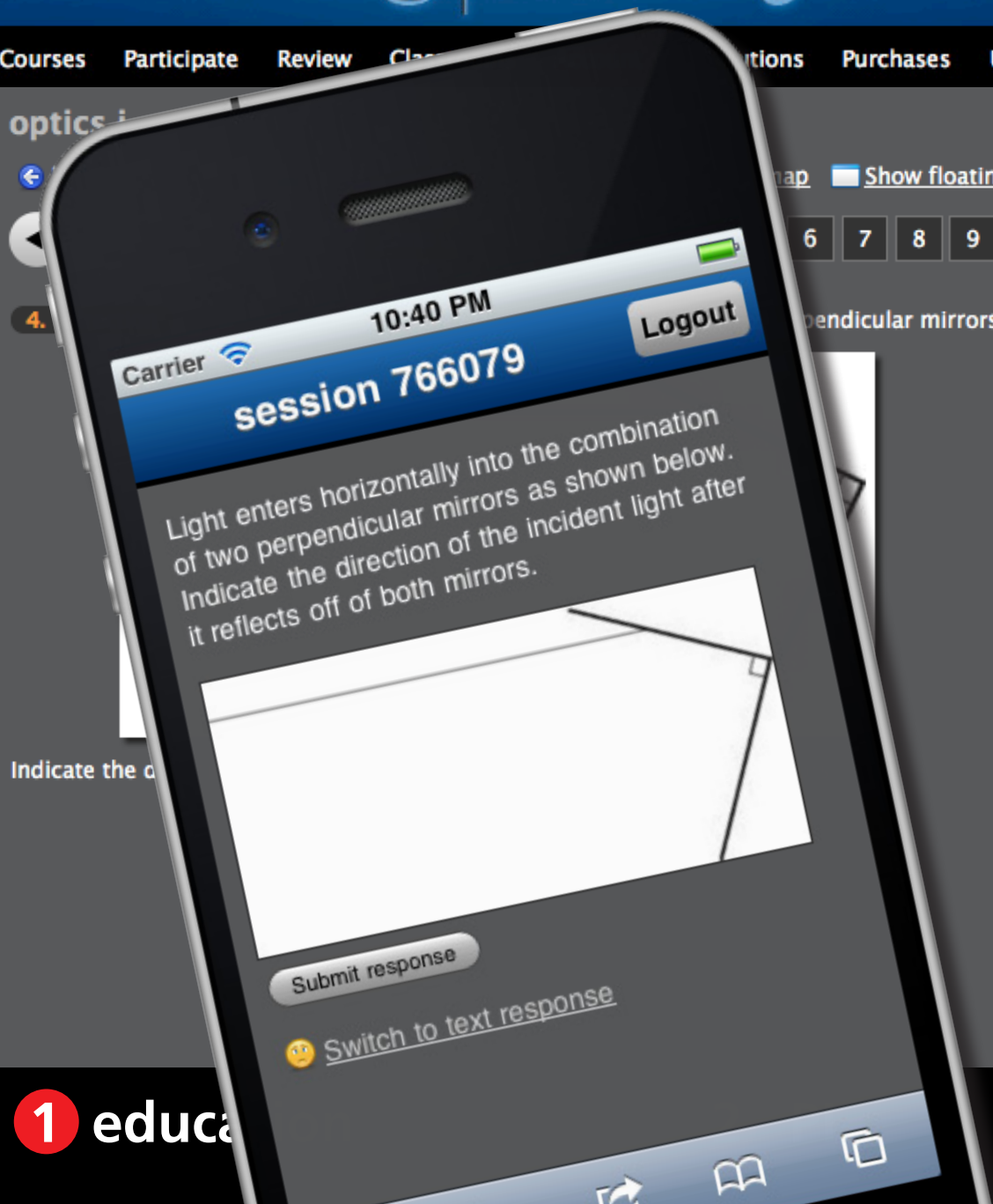
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6 7 8 9 10 11 12 13 14 15

perpendicular mirrors as shown below.

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current session: **766079** | 69 students

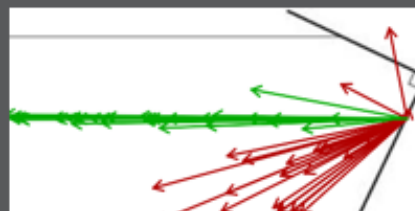
[Map](#) [Show floating session ID](#) [Edit](#) [Delete](#)

6 7 8 9 10 11 12 13 14 15

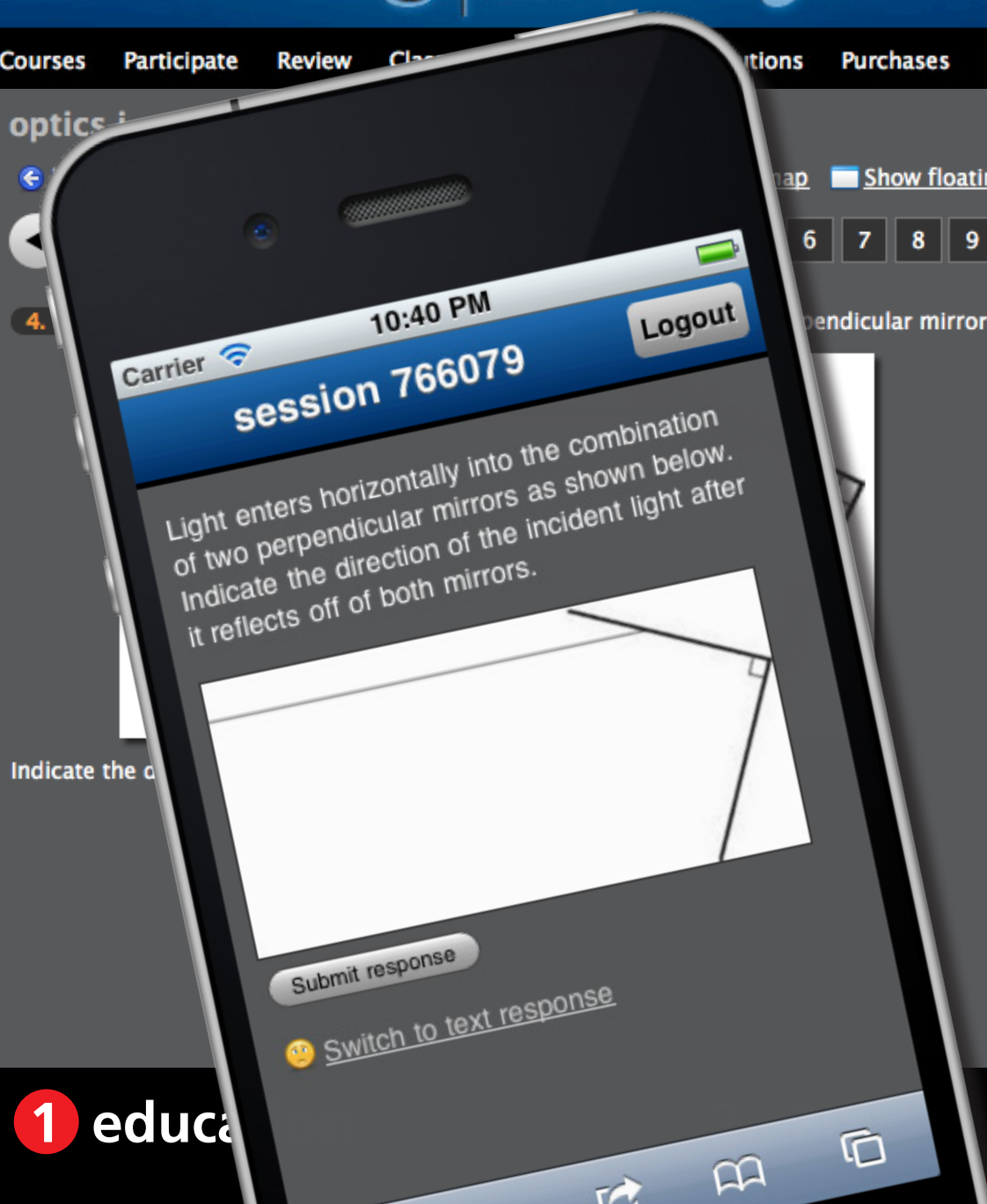
perpendicular mirrors as shown below.

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Round 1   
● 57 responses, 58% correct



 [feedback & support](#)



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current session: **766079** | 69 students

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6 7 8 9 10 11 12 13 14 15

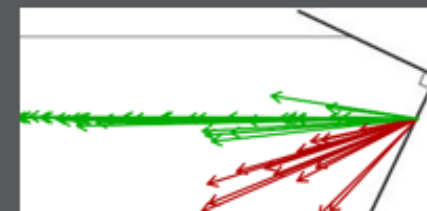
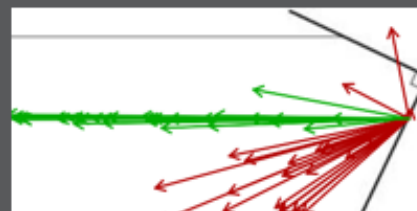


perpendicular mirrors as shown below.

[Deliver](#) [Show all results](#)

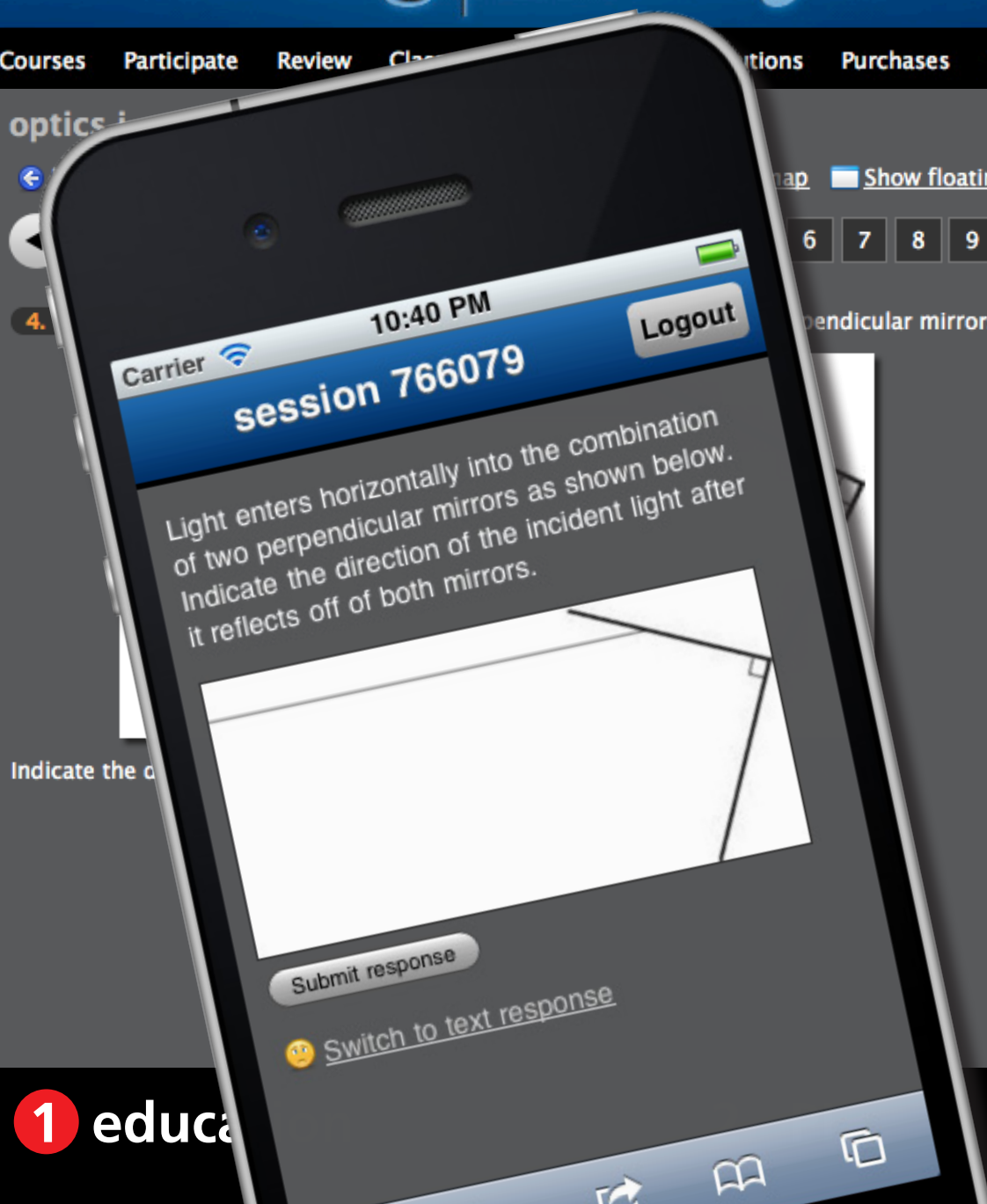
Round 1 [✖](#) [📊](#) [📄](#)
● 57 responses, 58% correct

Round 2 [✖](#) [📊](#) [📄](#)
● 51 responses, 73% correct



✓ 8 get it now
✗ 0 still don't get it

[📢 feedback & support](#)



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arlington school district

current session: **48222** | 24 students

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Jump to ▾ **1** 2 3 4 **5**



5. region Where is Tanzania?

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1 education

2 PI

3 PI 2.0

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arlington school district

current session: **48222** | 24 students

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Jump to 1 2 3 4 5

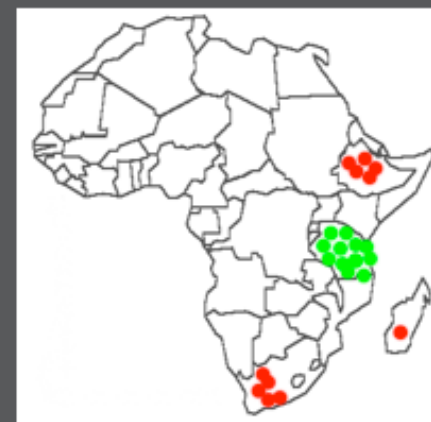


5. region Where is Tanzania?

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Round 1 ✕
24 responses, 75% correct



feedback & support

1 education

2 PI

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transformations of parabolas

current session: **773885** | 9 students

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Jump to ▾

1

2

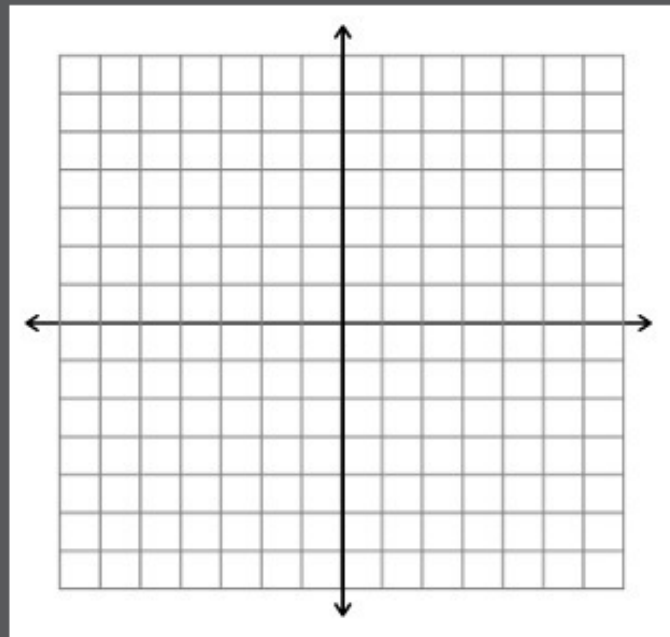
3

4



4. sketch Sketch a graph of the function $f(x) = (x - 3)^2 + 2$.

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1 education

2 PI

3 PI 2.0

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transformations of parabolas

current session: **773885** | 9 students

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1

2

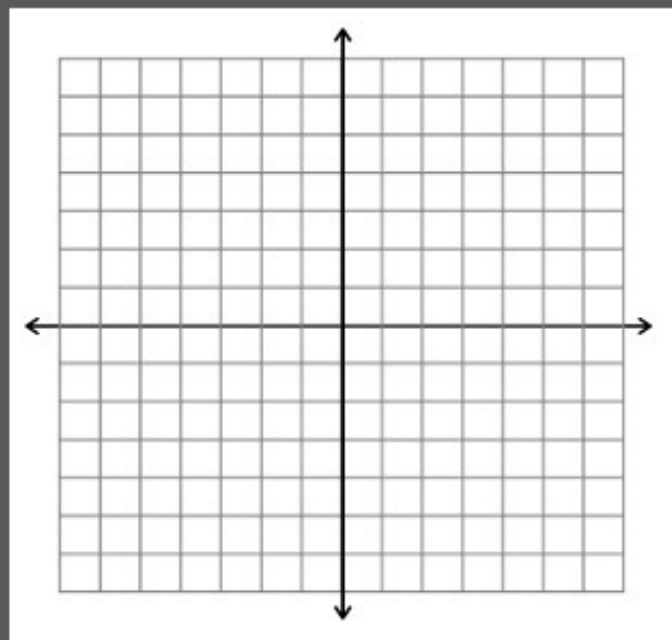
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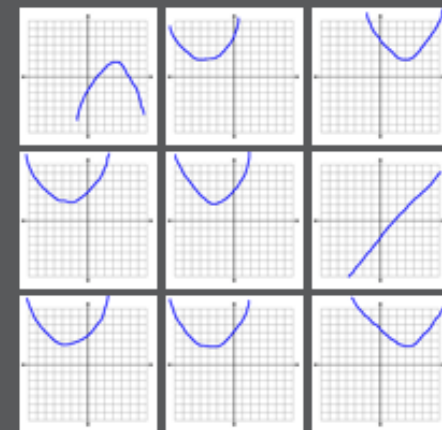
4. sketch Sketch a graph of the function $f(x) = (x - 3)^2 + 2$.

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Round 1

9 responses



1 education

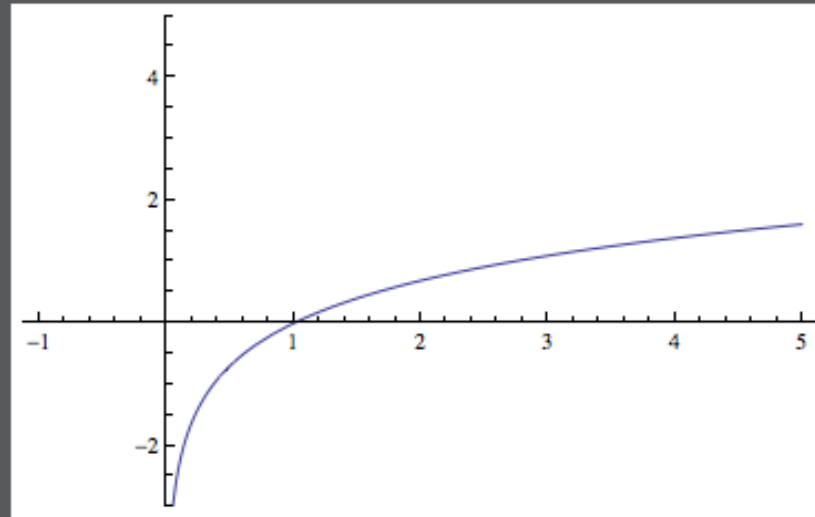
2 PI

3 PI 2.0

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This is a graph of $f(x) = \ln x$. Sketch a graph of the derivative $f'(x)$.



1 education

2 PI

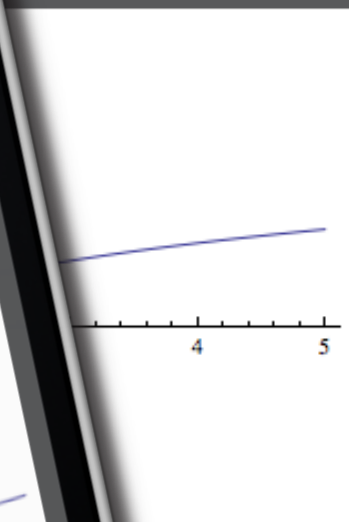
3 PI 2.0

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This is a graph of $f(x) =$



1 education

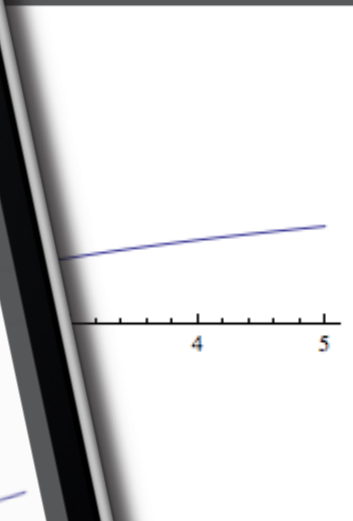
3 PI 2.0

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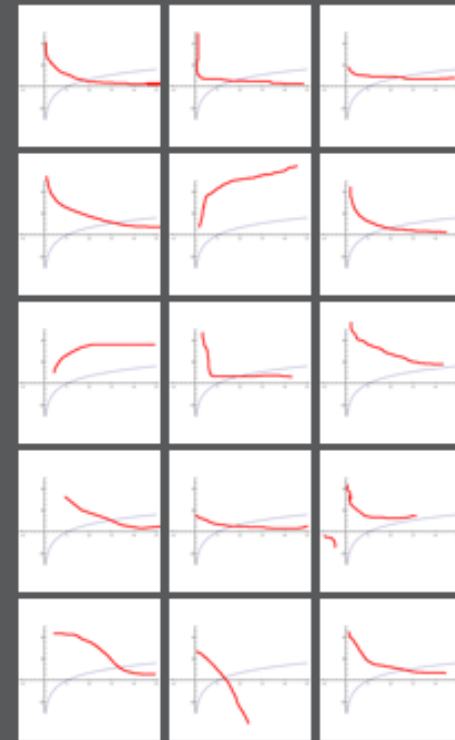
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This is a graph of $f(x) =$



Round 1

15 responses



✓ 6 get it now
✗ 0 still don't get it

1 education

3 PI 2.0

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1. highlighting What do you see as the most important part of this Shakespeare sonnet? [Stop delivery](#) [Deliver again](#) [Assign groups](#) [Show all results](#)

For shame! deny that thou bear'st love to any,
Who for thyself art so unprovident.
Grant, if thou wilt, thou art beloved of many,
But that thou none lovest is most evident;
For thou art so possess'd with murderous hate
That 'gainst thyself thou stick'st not to conspire.
Seeking that beauteous roof to ruinate
Which to repair should be thy chief desire.
O, change thy thought, that I may change my mind!
Shall hate be fairer lodged than gentle love?
Be, as thy presence is, gracious and kind,
Or to thyself at least kind-hearted prove:
Make thee another self, for love of me,
That beauty still may live in thine or thee.

1 education

2 PI

3 PI 2.0

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1. highlighting
sonnet?

this Shakespeare

[Stop delivery](#)

[Deliver again](#)

[Assign groups](#)

[Show all results](#)



For shame
Who for t
Grant, if t
But that th
For thou a
That 'gainst
Seeking that
Which to rep
O, change th
Shall hate be
Be, as thy pres
Or to thyself a
Make thee ano
That beauty stil

What do you see as the most important part of this Shakespeare sonnet?

Highlight the passage below by clicking or tapping once to set the beginning of your highlight, and then clicking or tapping again to set the end.

For shame! deny that thou bear'st love to any,
Who for thyself art so unprovident.
Grant, if thou wilt, thou art beloved of many,
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That 'gainst thyself thou stick'st not to
conspire.

Seeking that beauteous roof to ruinate
Which to repair should be thy chief desire.
O, change thy thought, that I may change my
mind!

1 educa

3 PI 2.0




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1. highlighting
sonnet?

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



Round 1   
3 responses

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Be, as thy presence is, gracious
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Sample question types:

- direction
- expression
- long answer, short answer, word cloud (fill in text)
- multiple choice, many choice
- numerical (enter a number)
- ranking
- region (select point on image)
- sketch

data analytics



1 lecture

2 PI

3 PI 2.0



human interaction

1 lecture

2 PI

3 PI 2.0

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review results for session 399757 in electrostatic work and energy ii

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Round 1 74 responses, 61% correct

A. 61%
B. 4%
C. 35%
D. 0%
E. 0%

Round 2 75 responses, 83% correct

A. 83%
B. 0%
C. 17%
D. 0%
E. 0%

A positively charged rod is held near a neutral conducting sphere as illustrated below. A positively charged particle is moved from point A to point B



A. positive
B. zero
C. negative
D. depends on the path taken from A to B
E. cannot be determined without knowing more about the polarization induced in the sphere

Search: _____

1 lecture

2 PI

3 PI 2.0

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Search: _____

1 lecture

2 PI

3 PI 2.0

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review results for session 399757 in electrostatic work and energy ii

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A. 61%
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E. 0%

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C. negative
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Search: _____

1 lecture

2 PI

3 PI 2.0

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 E. 0%

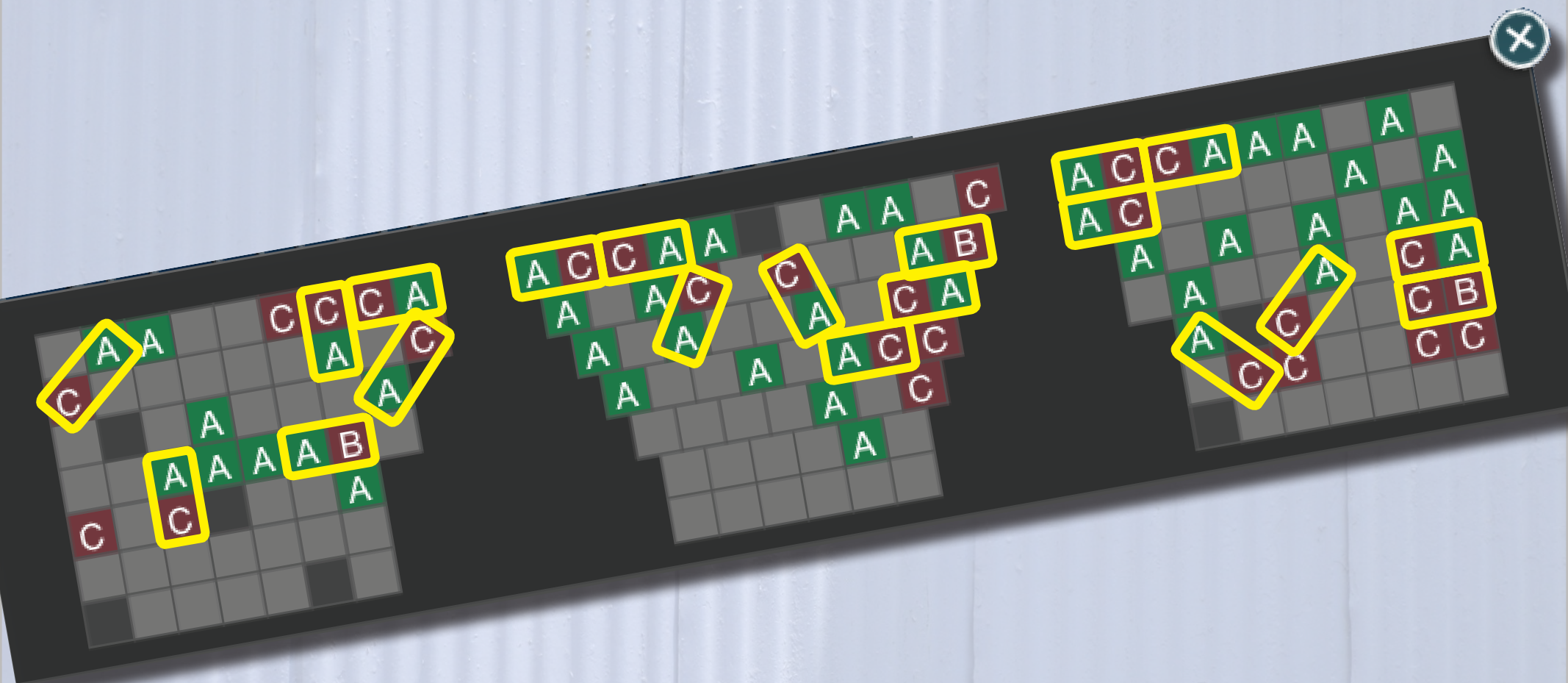
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1 lecture

2 PI

3 PI 2.0

let system manage pairing



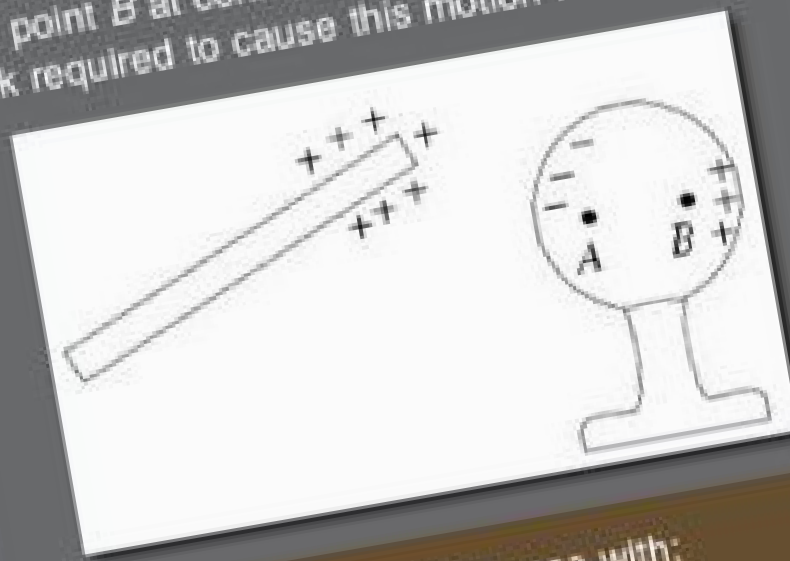
1 lecture

2 PI

3 PI 2.0

Leave

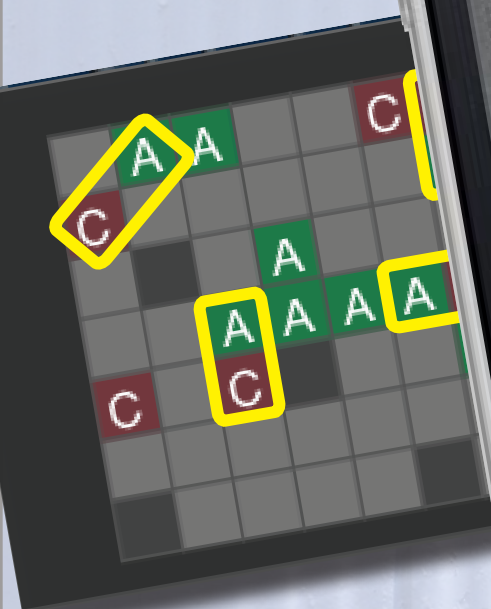
A positively charged rod is held near a neutral conducting sphere as illustrated below. A positively charged particle is moved from point A to point B at constant speed. The mechanical work required to cause this motion is



Please discuss your response with:

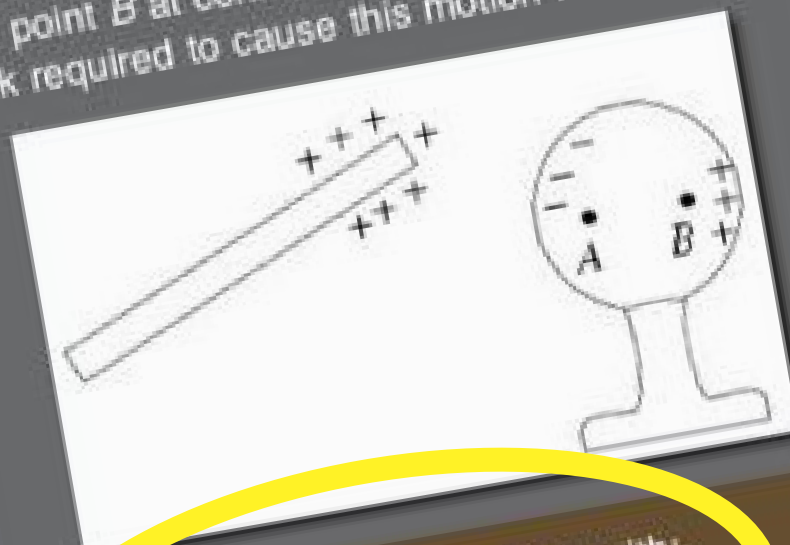
- Brian Lukoff (to your left)

I am talking to this person/people



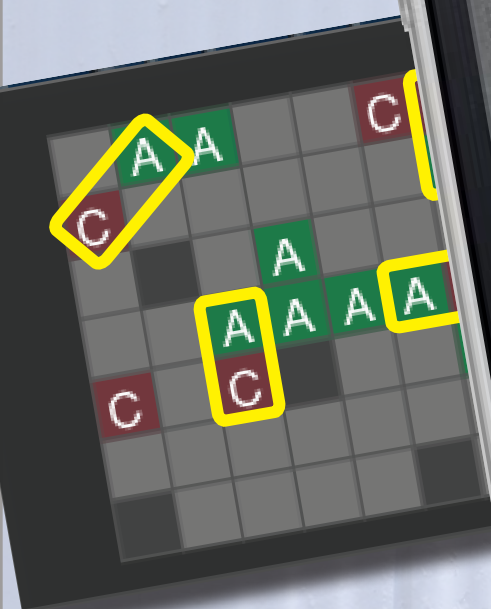
Leave

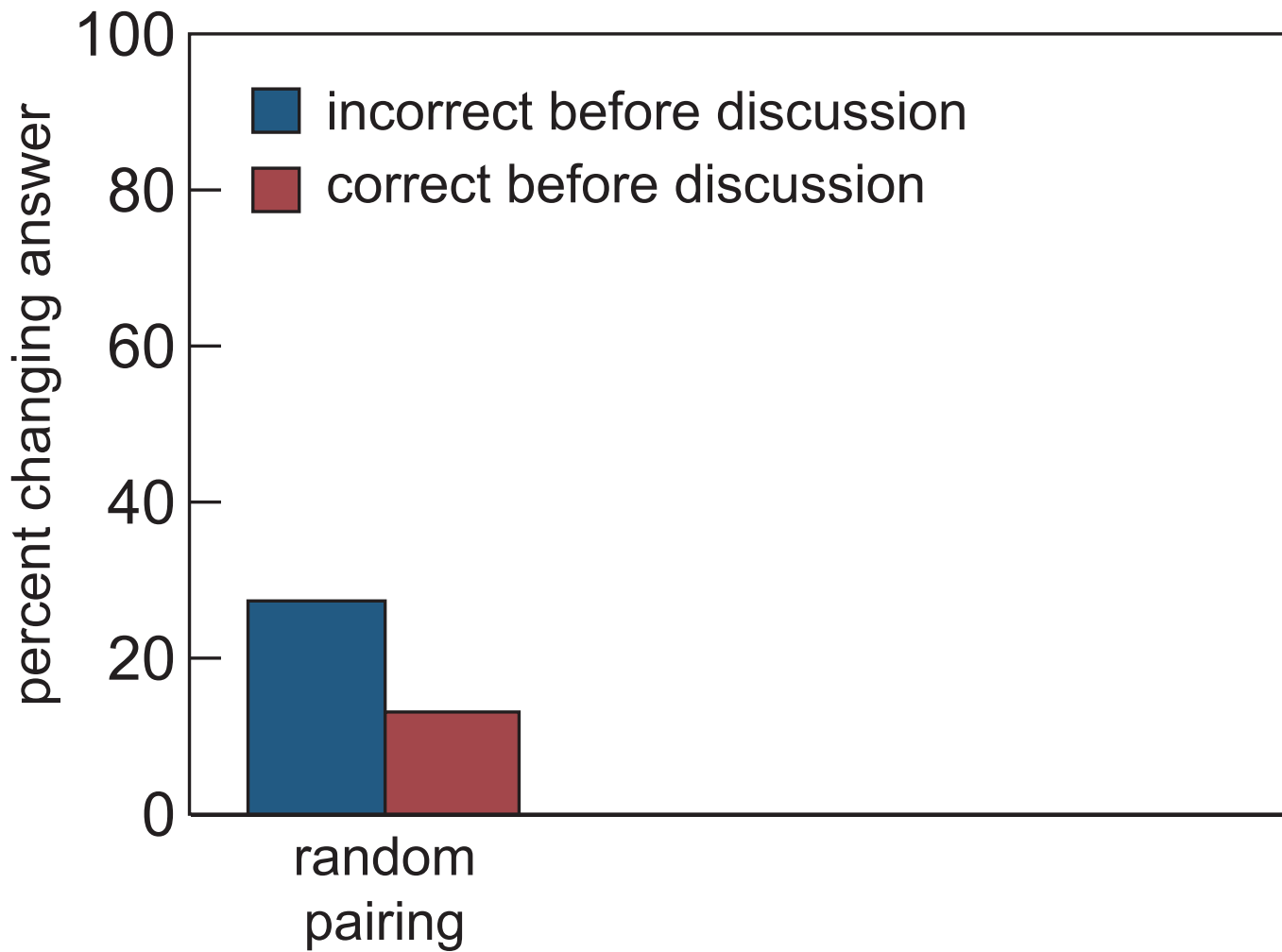
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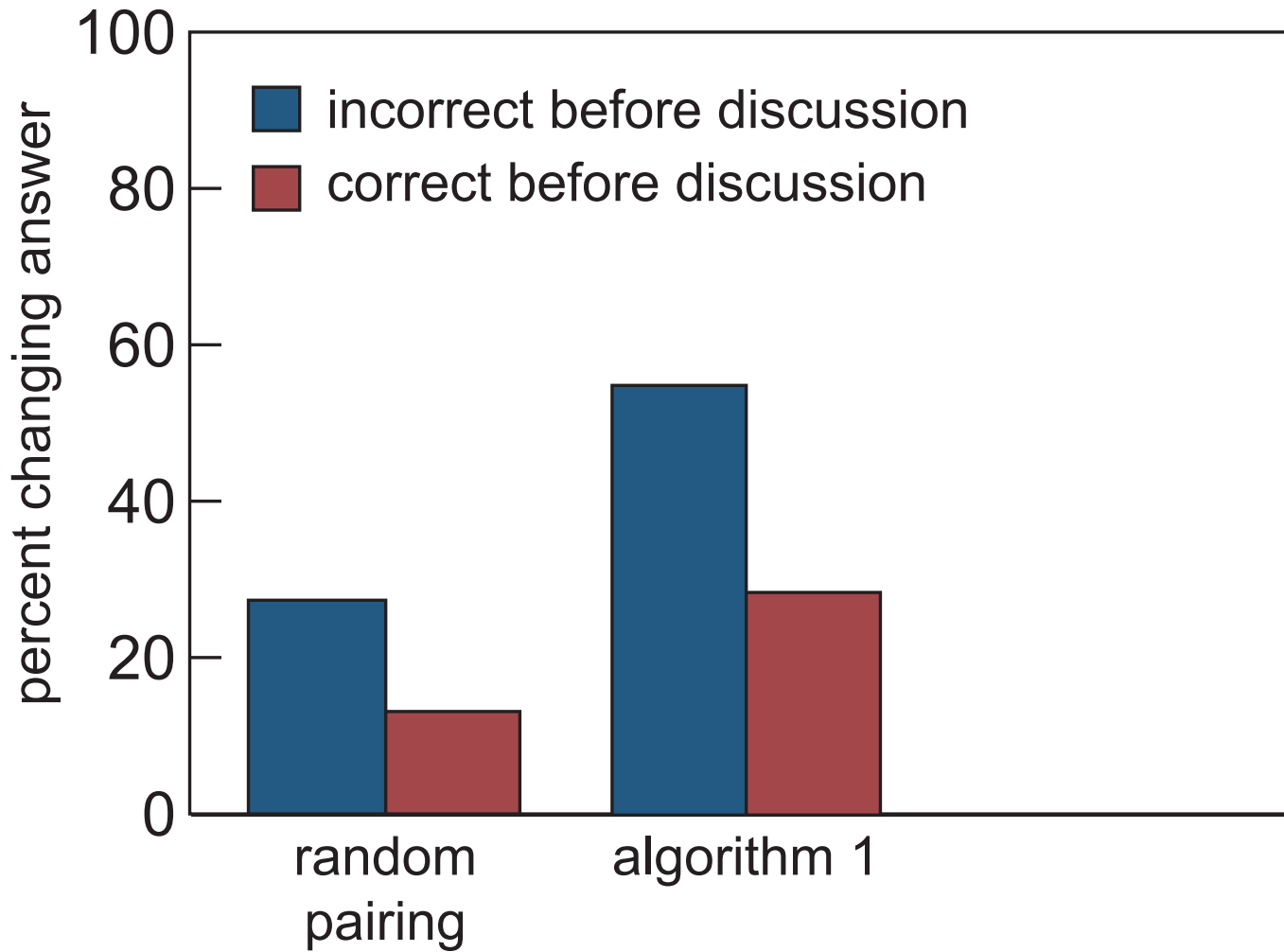


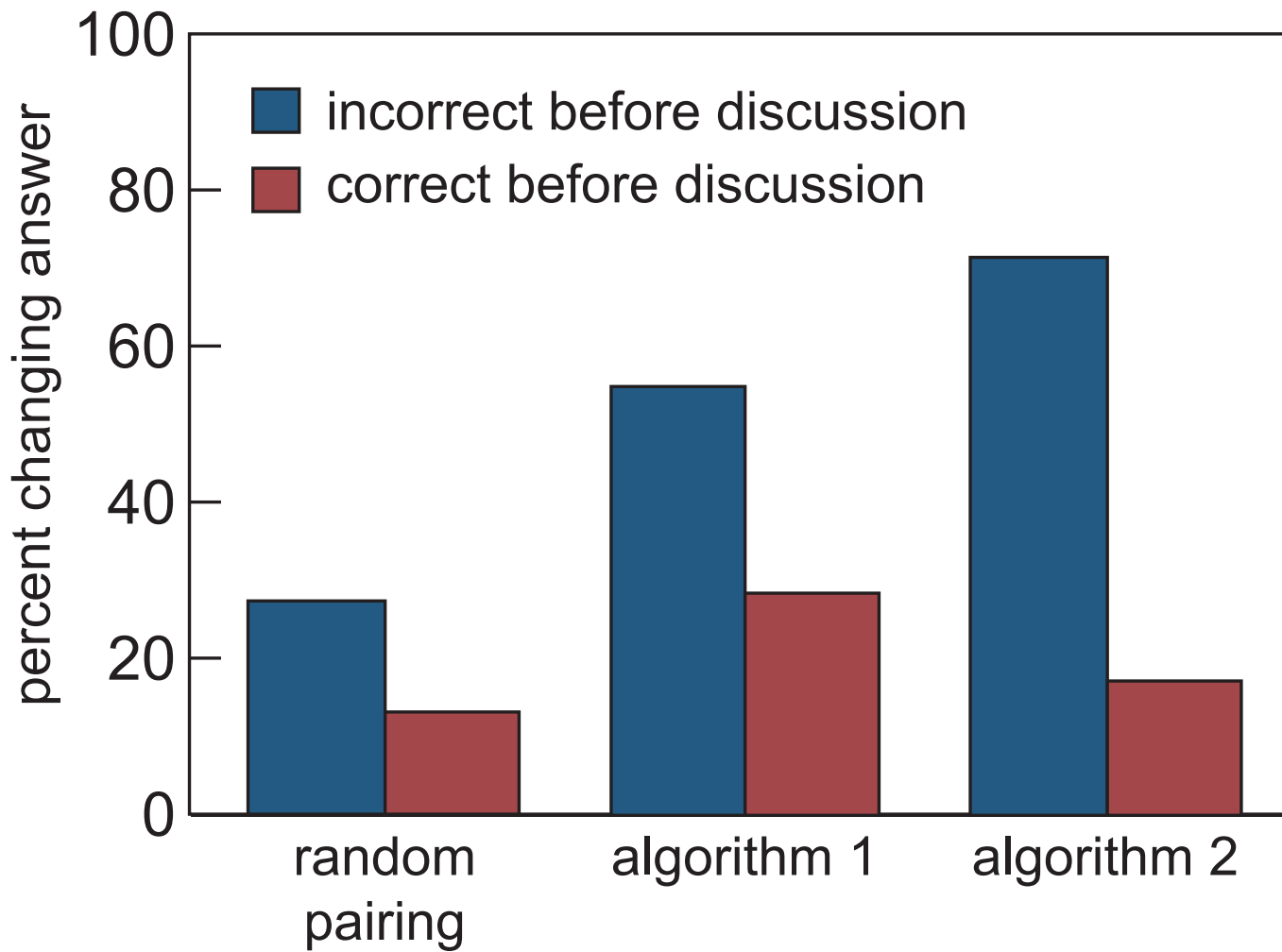
Please discuss your response with:

- Brian Lukoff (to your left)











1 lecture

2 PI

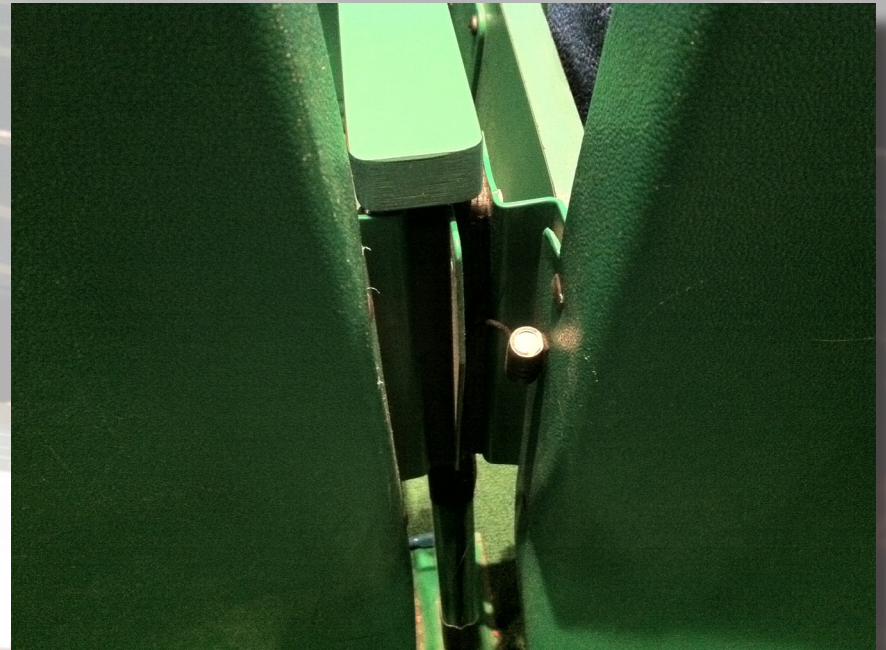
3 PI 2.0



1 lecture

2 PI

3 PI 2.0



1 lecture

2 PI

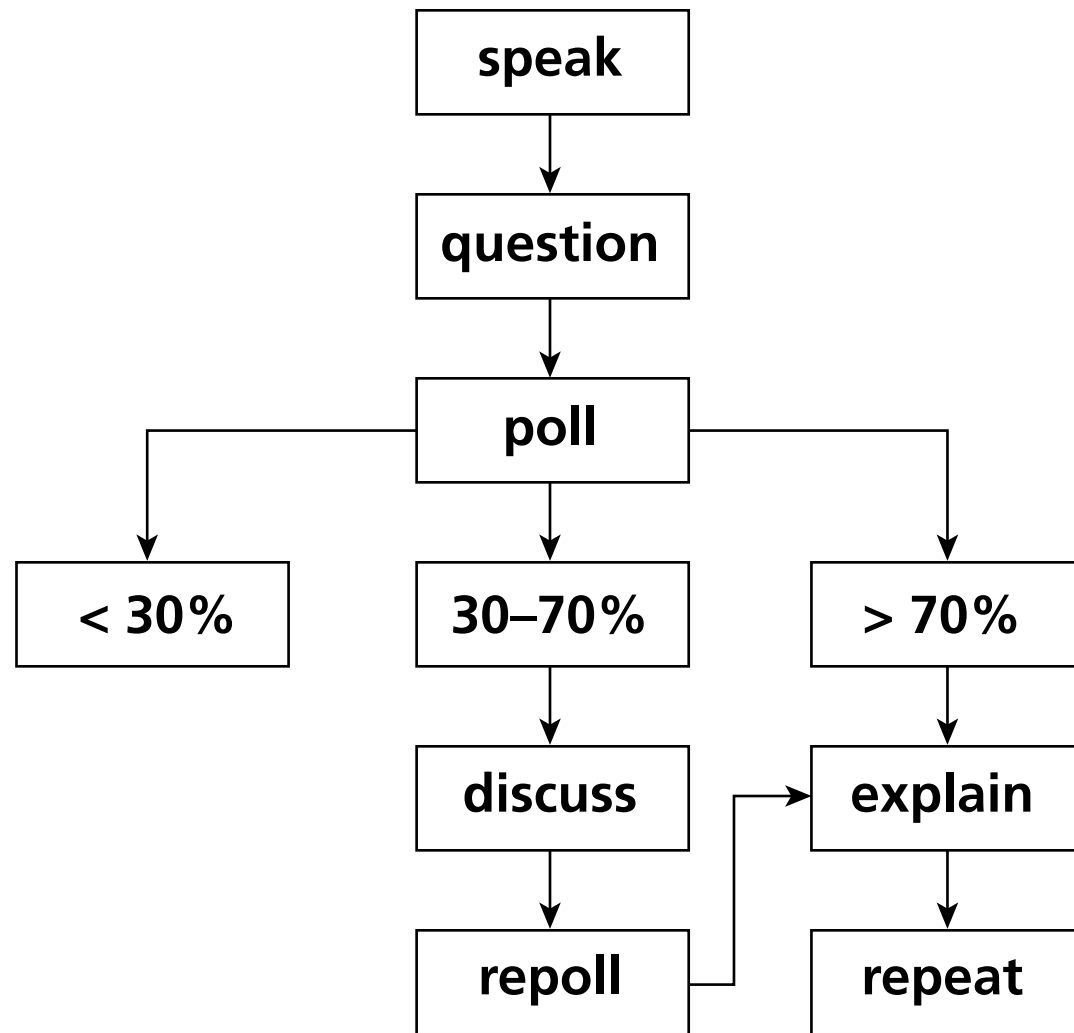
3 PI 2.0

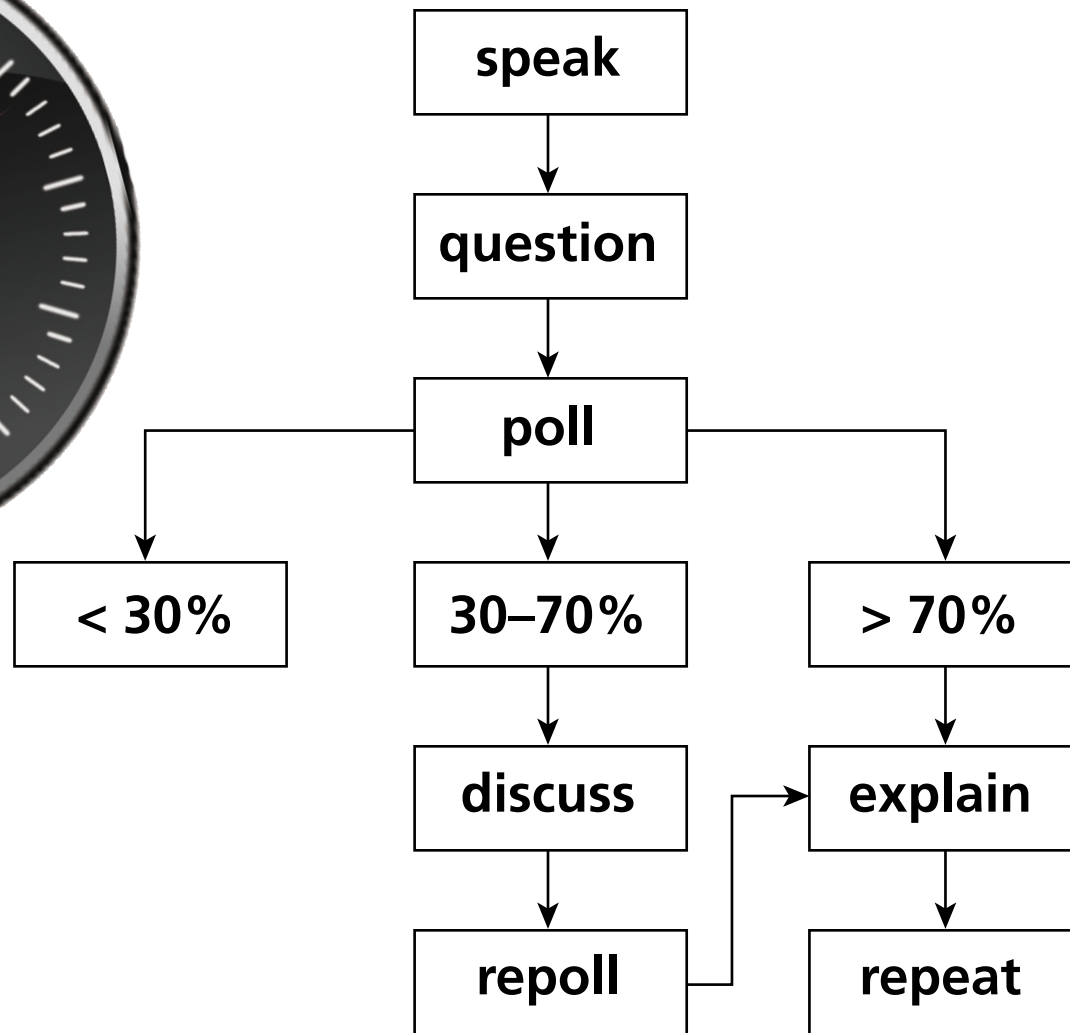
1 lecture

2 PI

3 PI 2.0









1 lecture

2 PI

3 PI 2.0



1 education

2 PI

3 PI 2.0



Learning Catalytics:

- implement proven, researched pedagogy

Learning Catalytics:

- implement proven, researched pedagogy
- use consumer devices

Learning Catalytics:

- **implement proven, researched pedagogy**
- **use consumer devices**
- **avoid pitfalls of MC assessment**

Learning Catalytics:

- implement proven, researched pedagogy
- use consumer devices
- avoid pitfalls of MC assessment
- create a smart classroom *anywhere*

- 1. Point your browser at <http://bit.ly/LCwrkshp> to download Word document**
- 2. In Learning Catalytics, click on Courses**