1. Go to: http://LCatalytics.com

2. Create student account with signup code DEMO

3. Join session 1234567

4. Pick your seat from the seat map

Catalyzing Learning using Peer Instruction and Learning Catalytics

Université de Lausanne
Lausanne, Switzerland, 19 October 2012

Catalyzing Learning using Peer Instruction and Learning Catalytics

Université de Lausanne
Lausanne, Switzerland, 19 October 2012

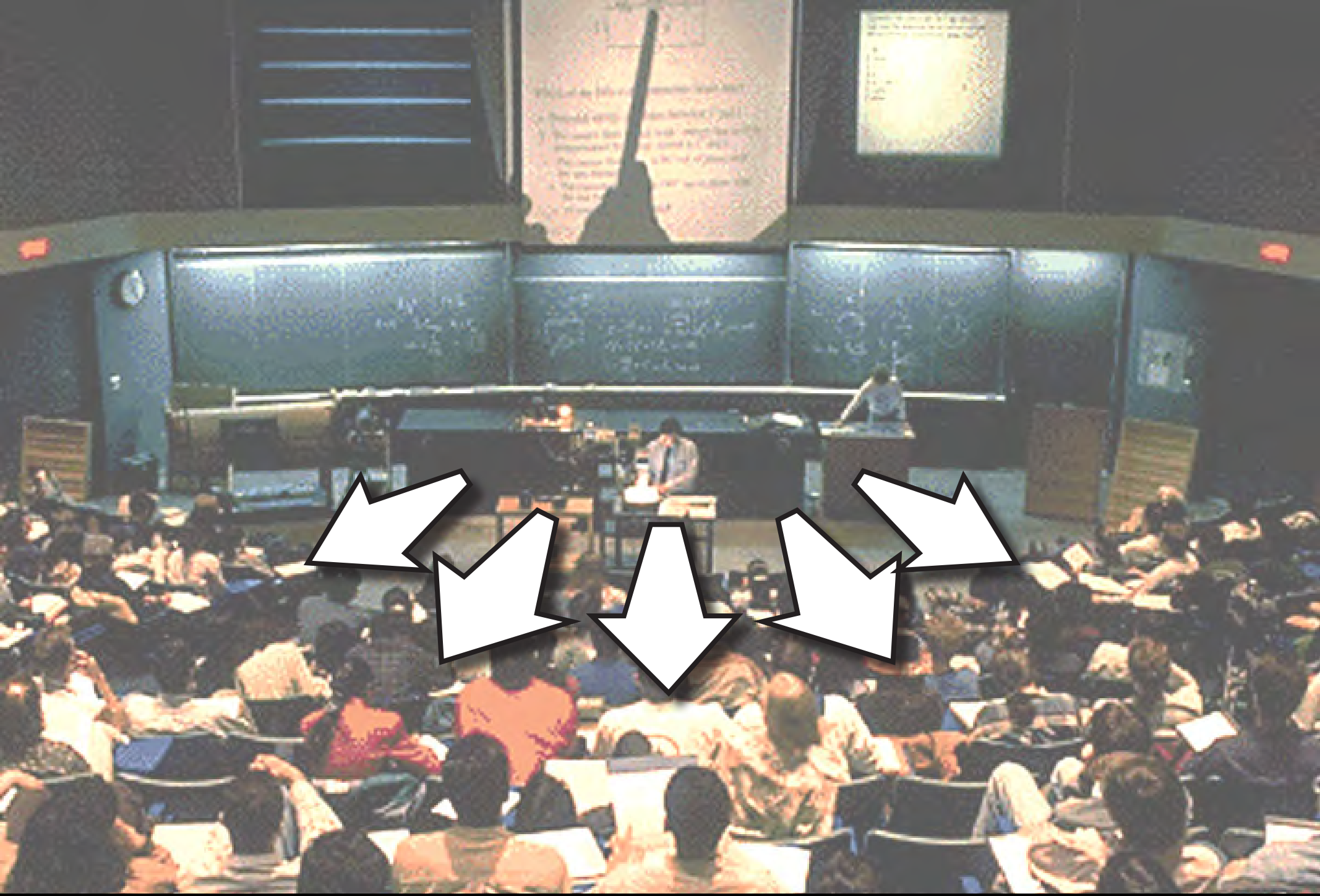
1 lecture

2 PI

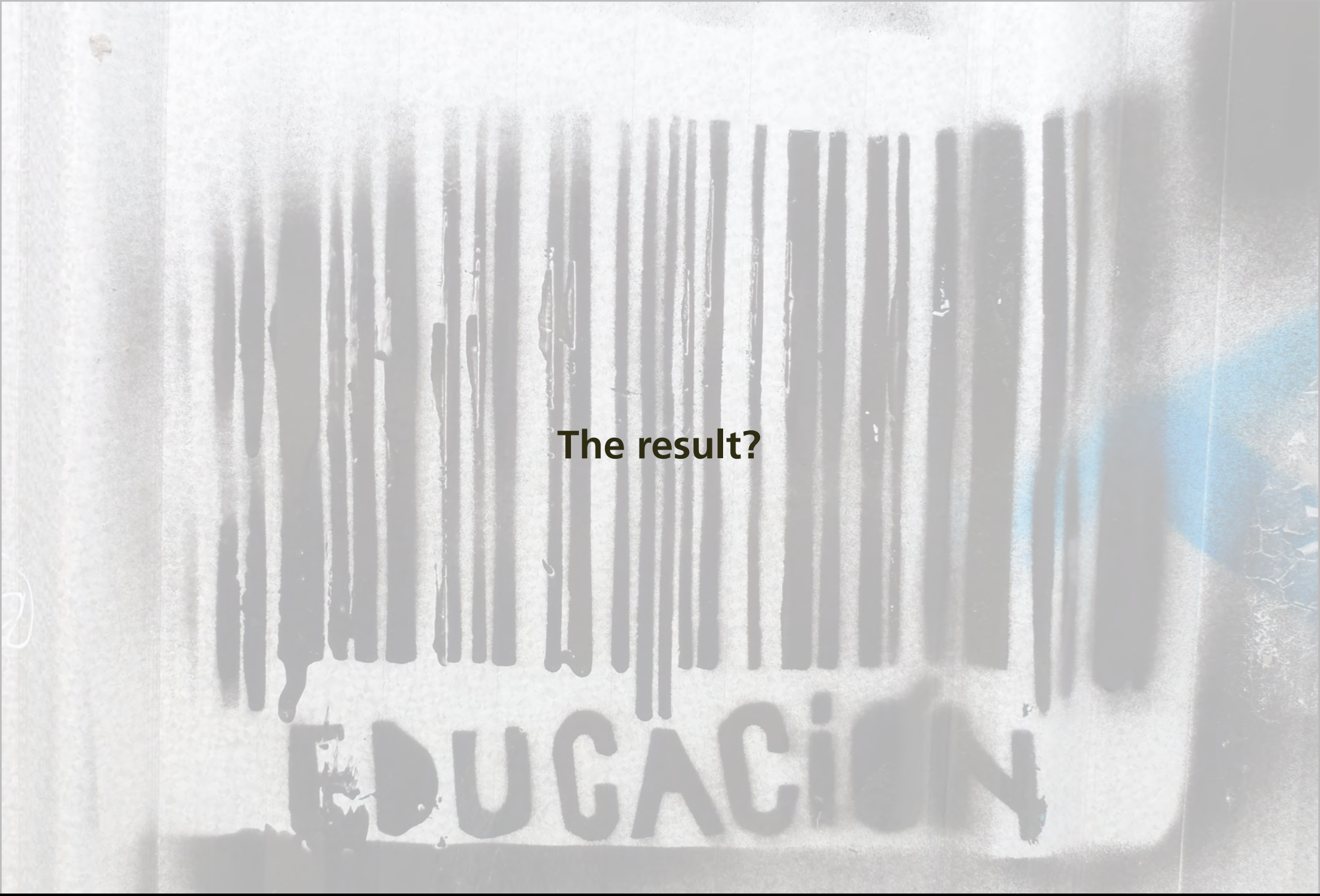
3 PI 2.0


What happens
in a lecture?

1 lecture



1 lecture


The result?
EDUCACION

1 lecture

1 lecture

1 lecture

2 PI


1. transfer of information

1. transfer of information

2. assimilation of that information

1 lecture

2 PI

1. transfer of information (in class)

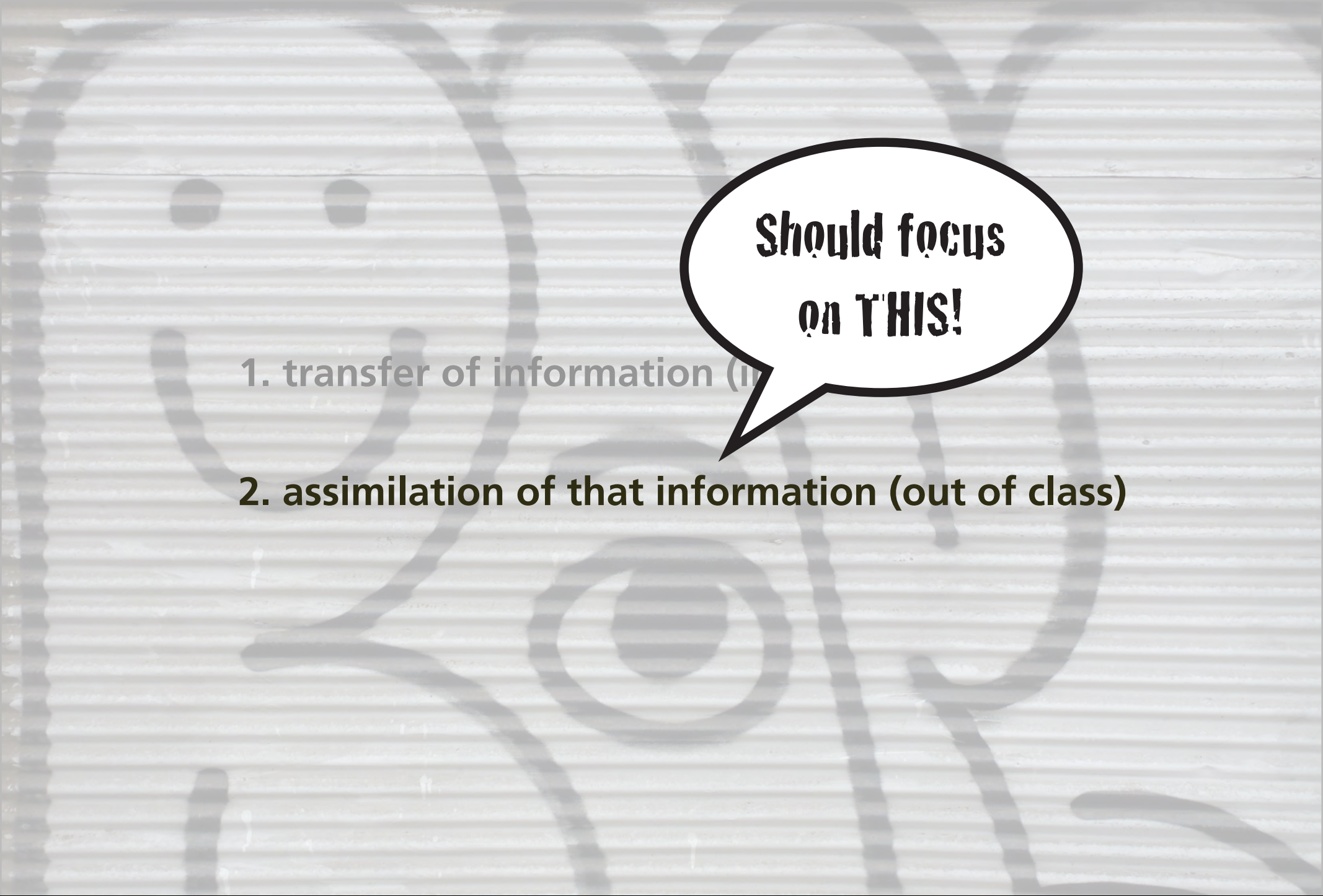
2. assimilation of that information

1 lecture

2 PI

1. transfer of information (in class)

2. assimilation of that information (out of class)


Should focus
on THIS!
1. transfer of information (i
2. assimilation of that information (out of class)
1 lecture
2 PI

1. transfer of information (in class)

2. assimilation of that information (out of class)

1 lecture

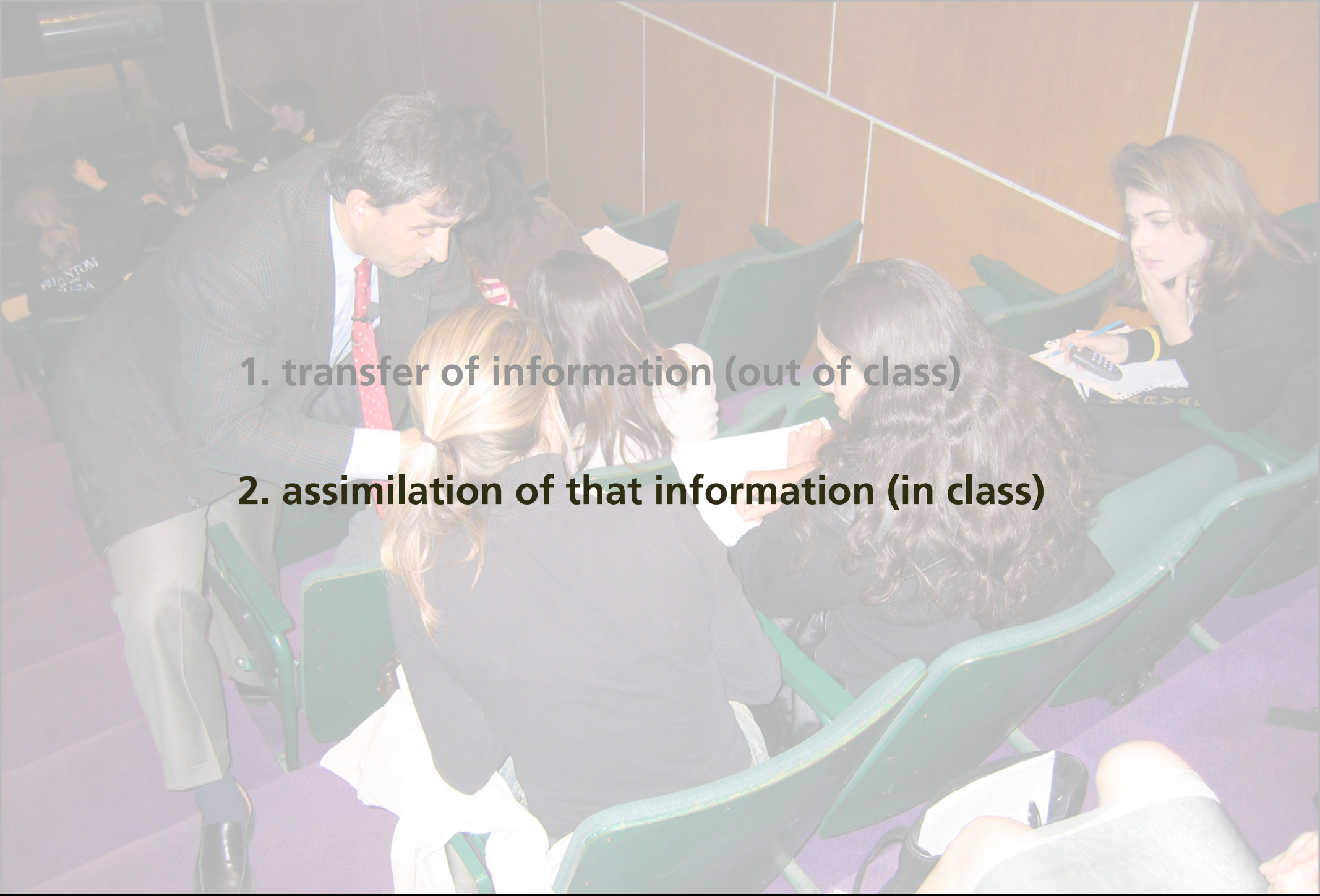
2 PI

1. transfer of information (out of class)

2. assimilation of that information (in class)

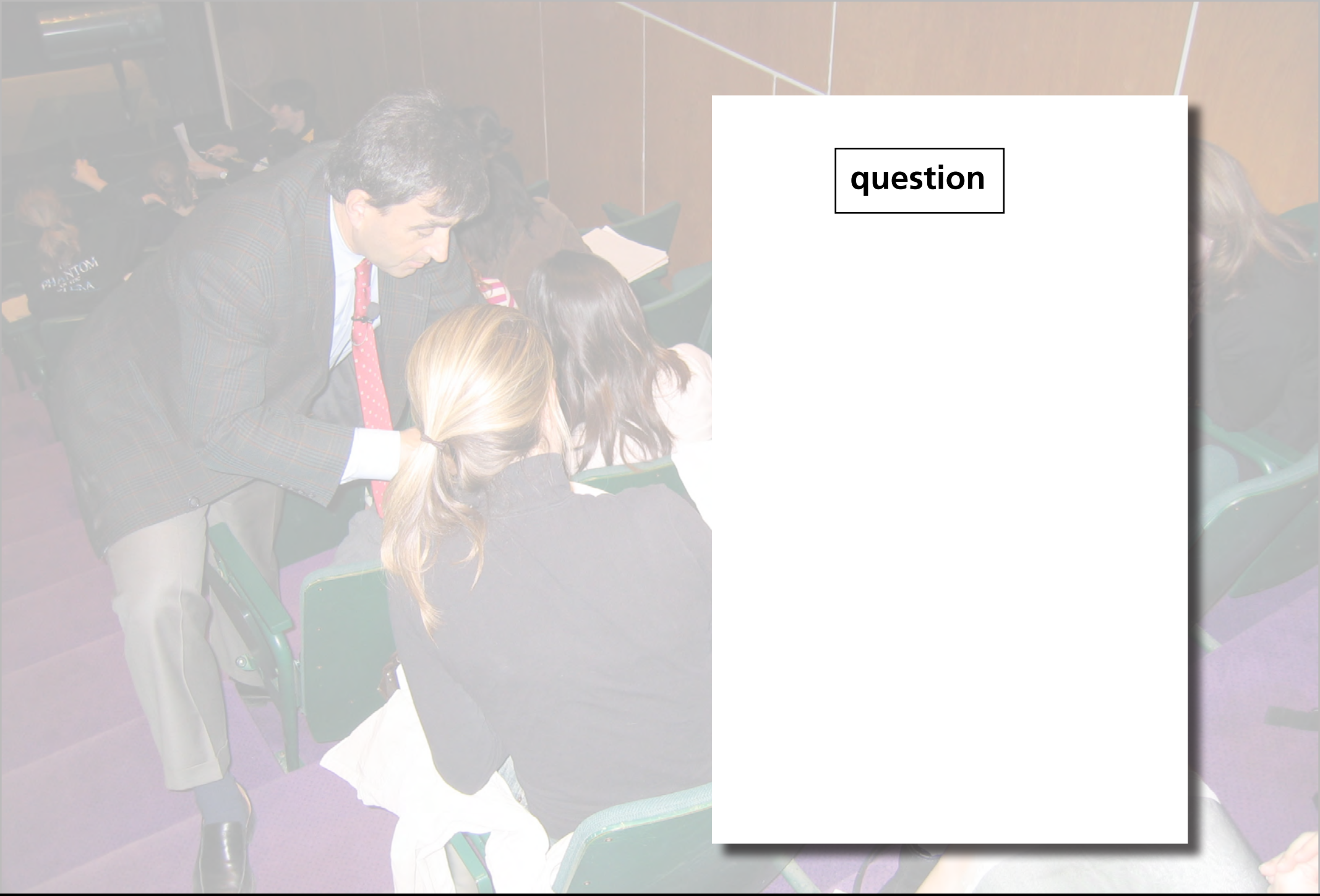
1 lecture

2 PI



1 lecture

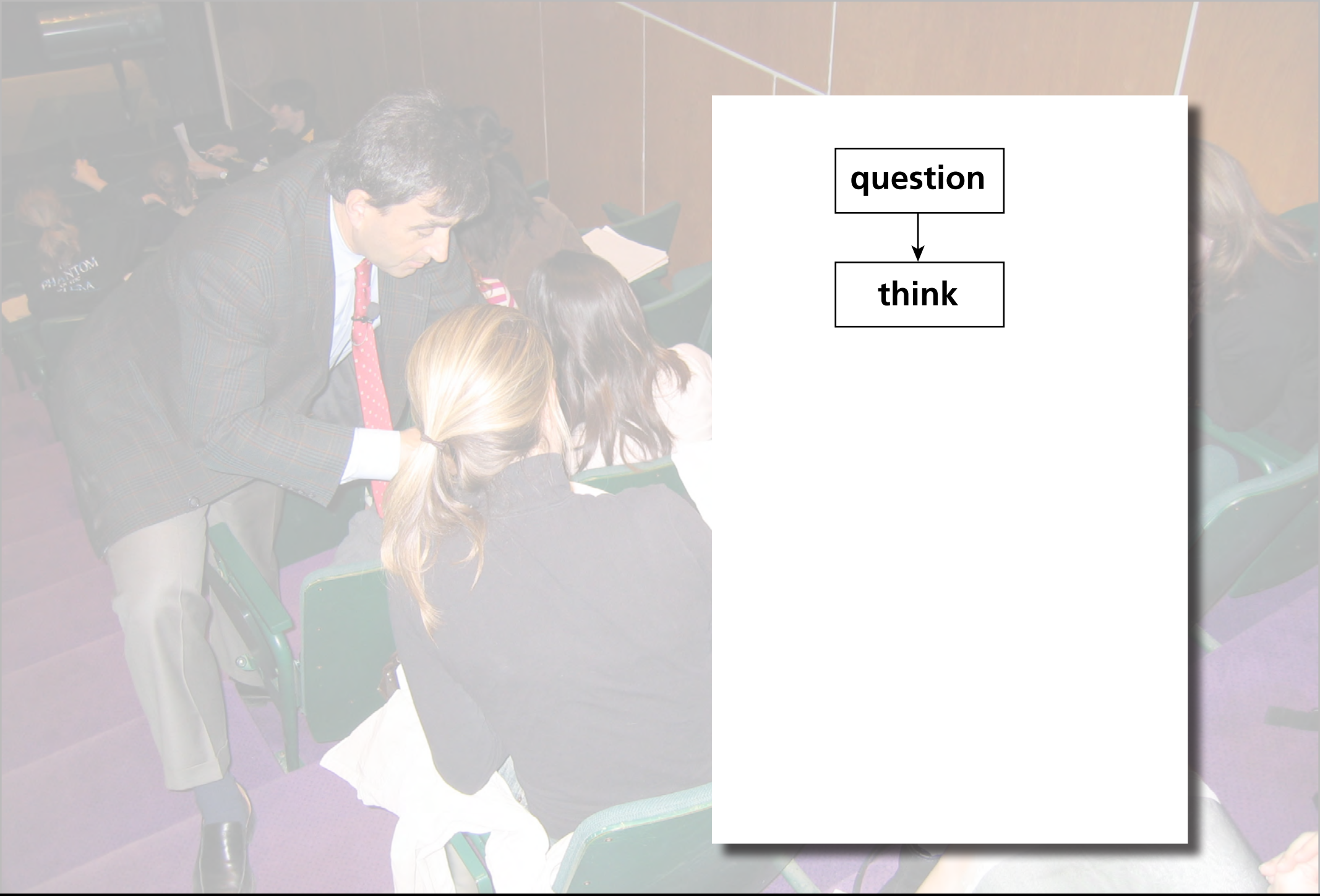
2 PI



question

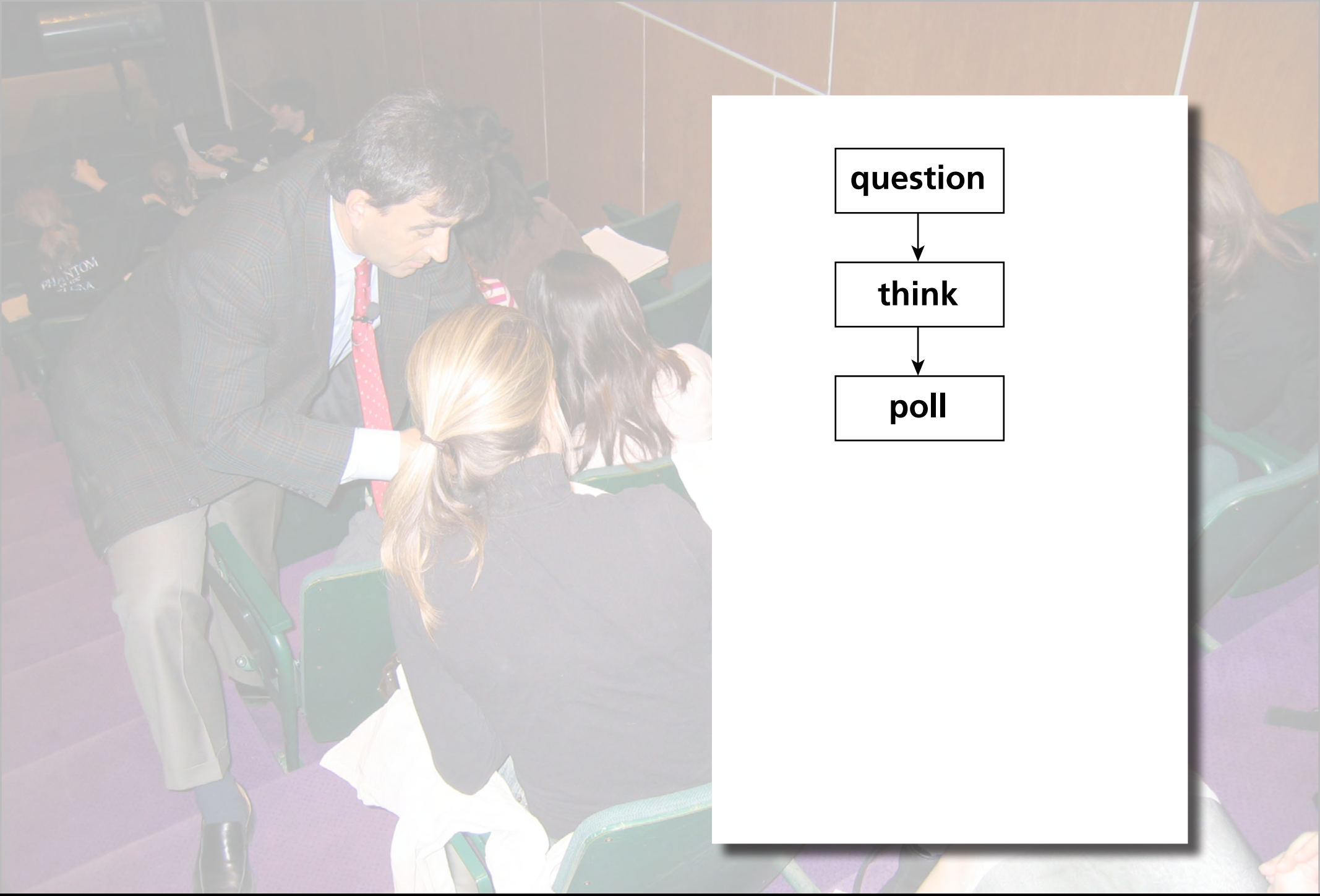
1 lecture

2 PI



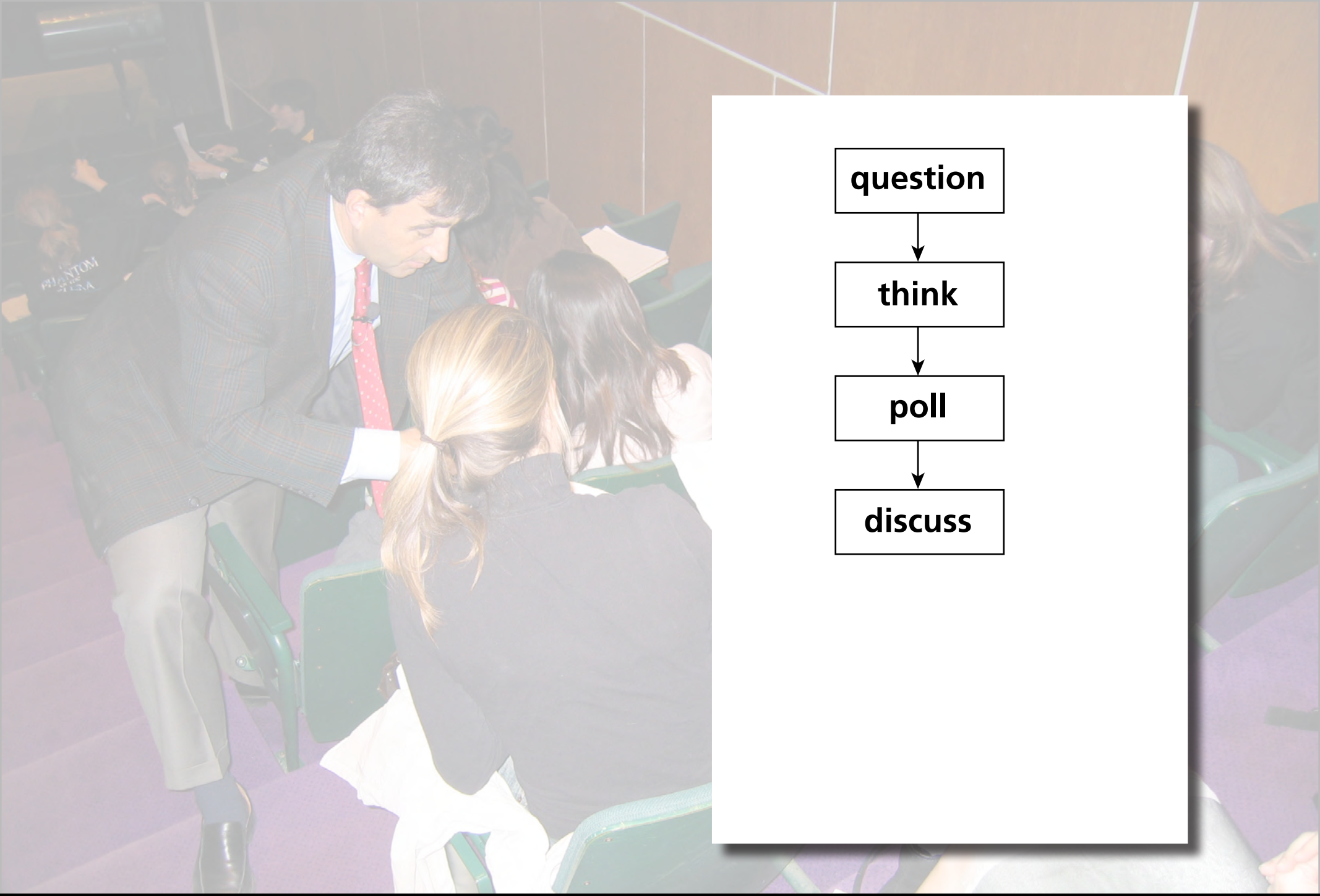
1 lecture

2 PI



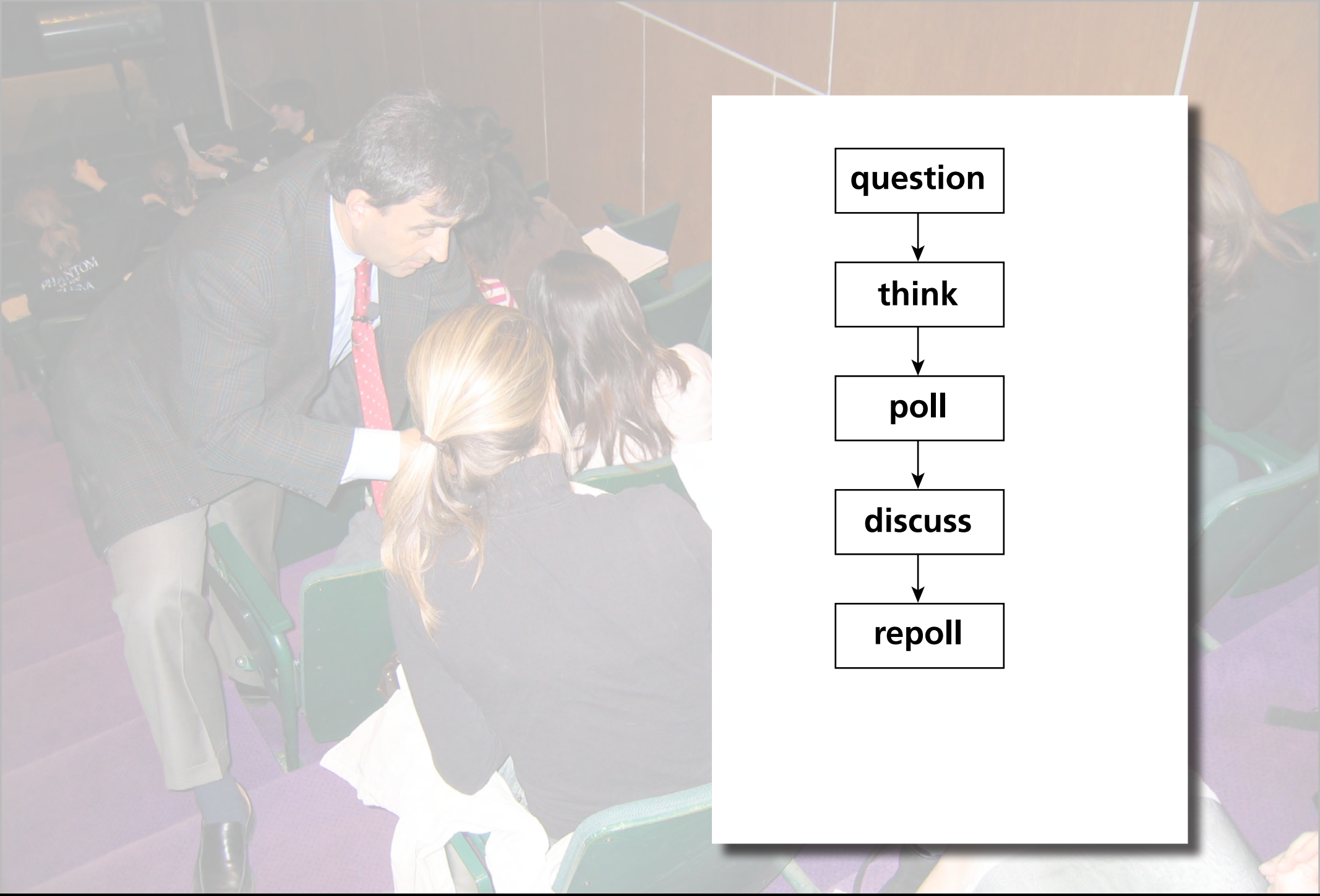
1 lecture

2 PI



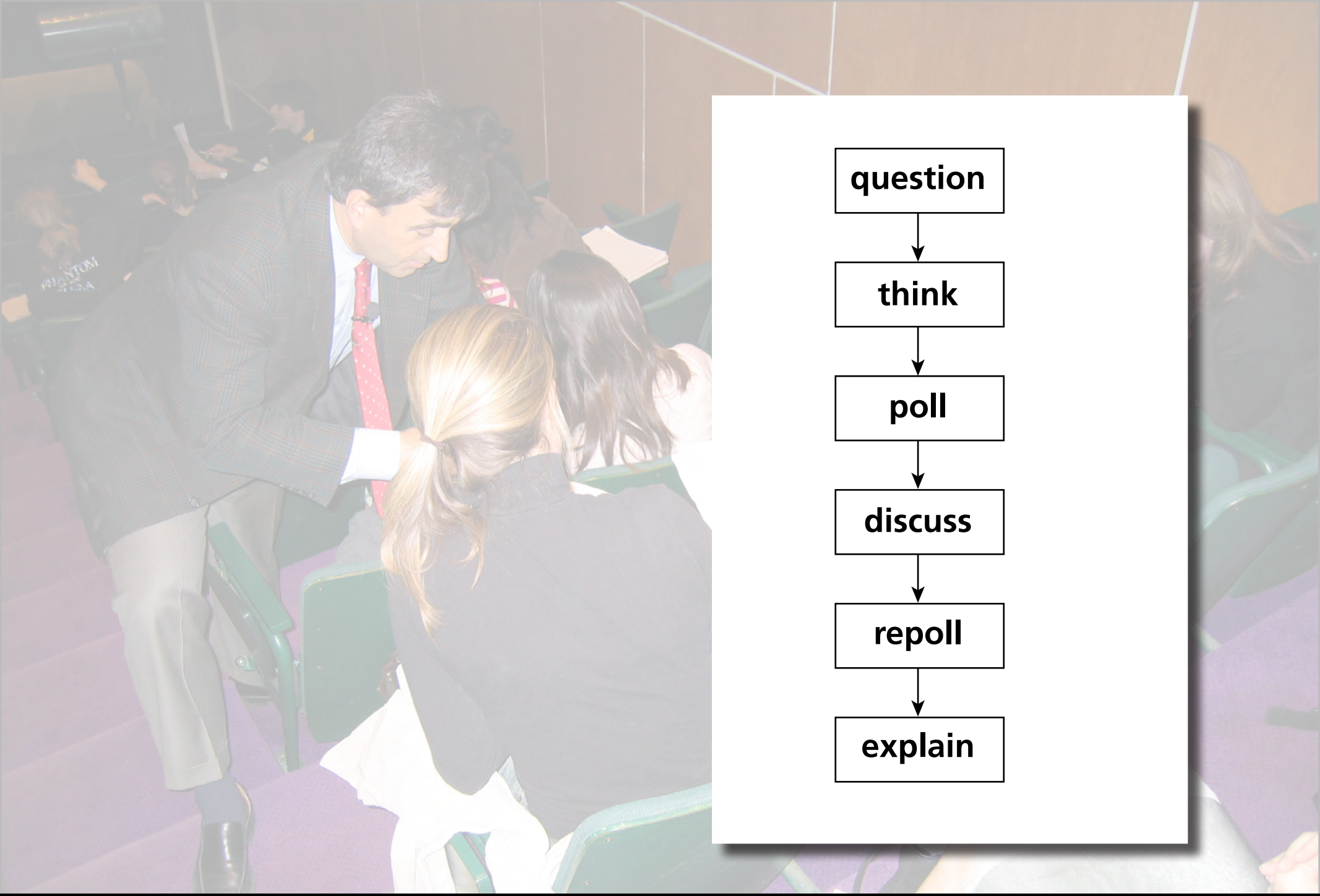
1 lecture

2 PI



1 lecture

2 PI



question

think

poll

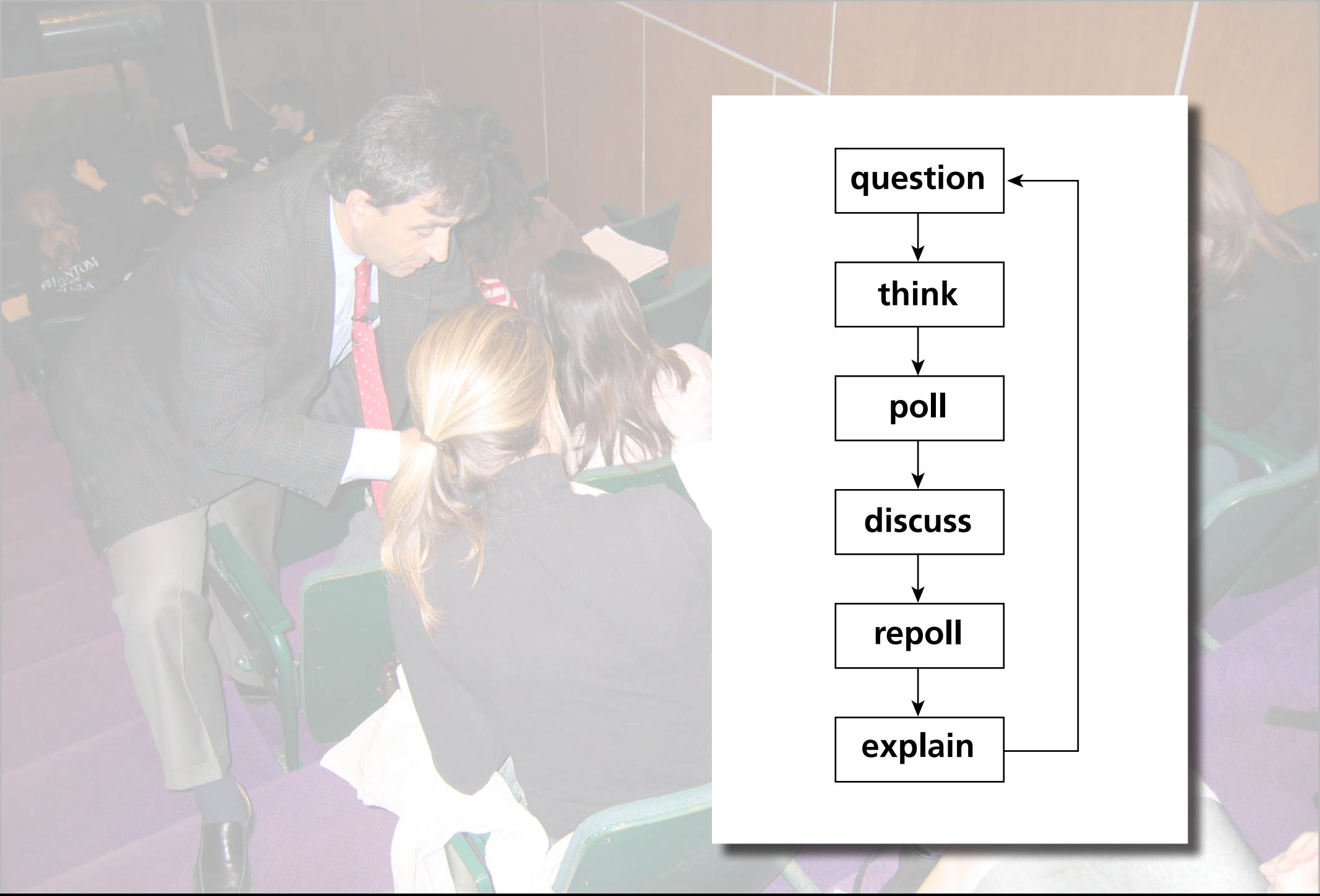
discuss

repoll

explain

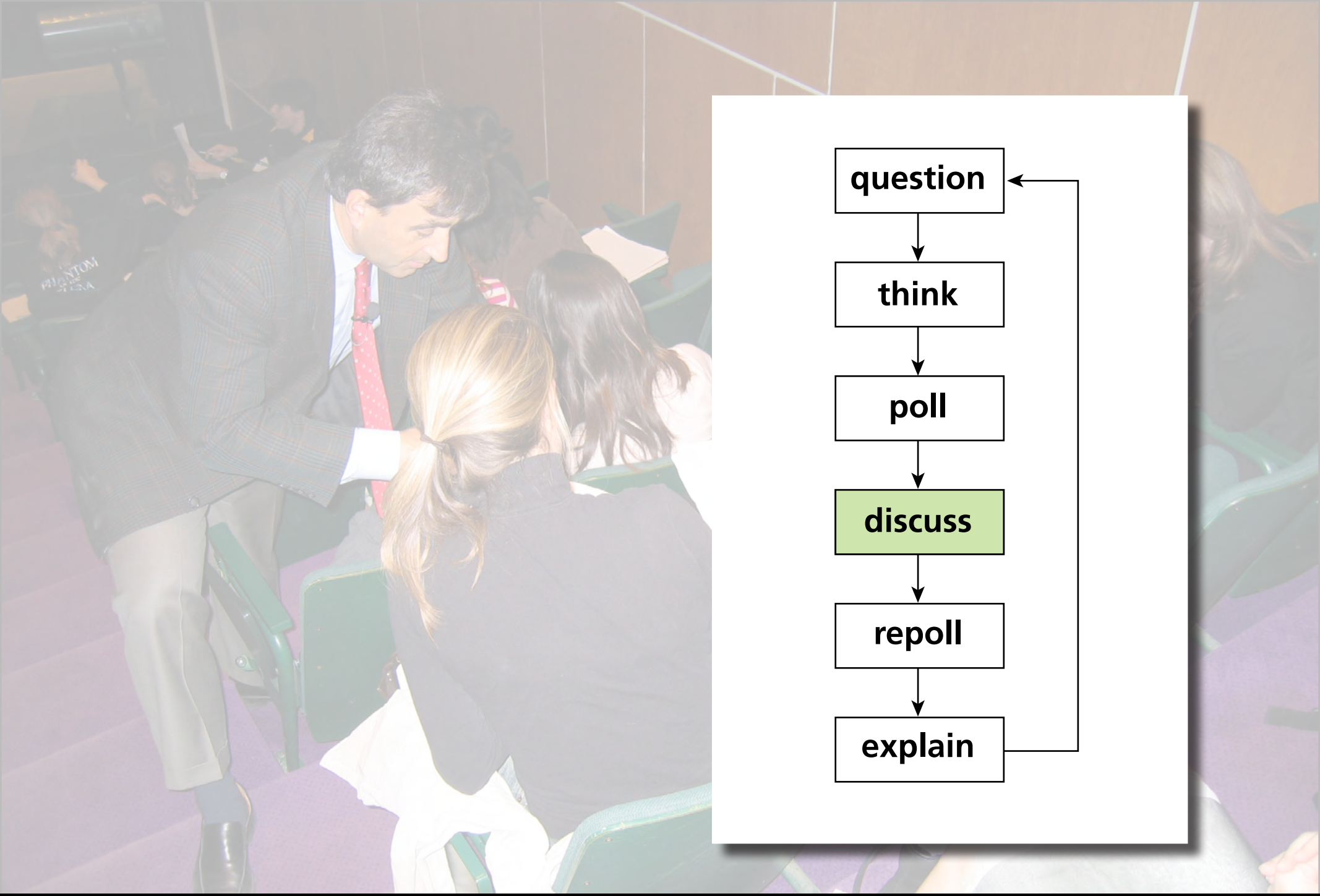
1 lecture

2 PI



1 lecture

2 PI



1 lecture

2 PI

feedback

1 lecture

2 PI

3 PI 2.0


1991
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

How do I…

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

1 lecture 2 PI 3 PI 2.0

Use intelligent algorithms and data analytics to…

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

a. A 30-year fixed rate
b. A 15-year fixed rate mortgage
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
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

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:

business model

preciation?

1 lecture 2 PI 3 PI 2.0

extensible plug-in architecture for question types

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

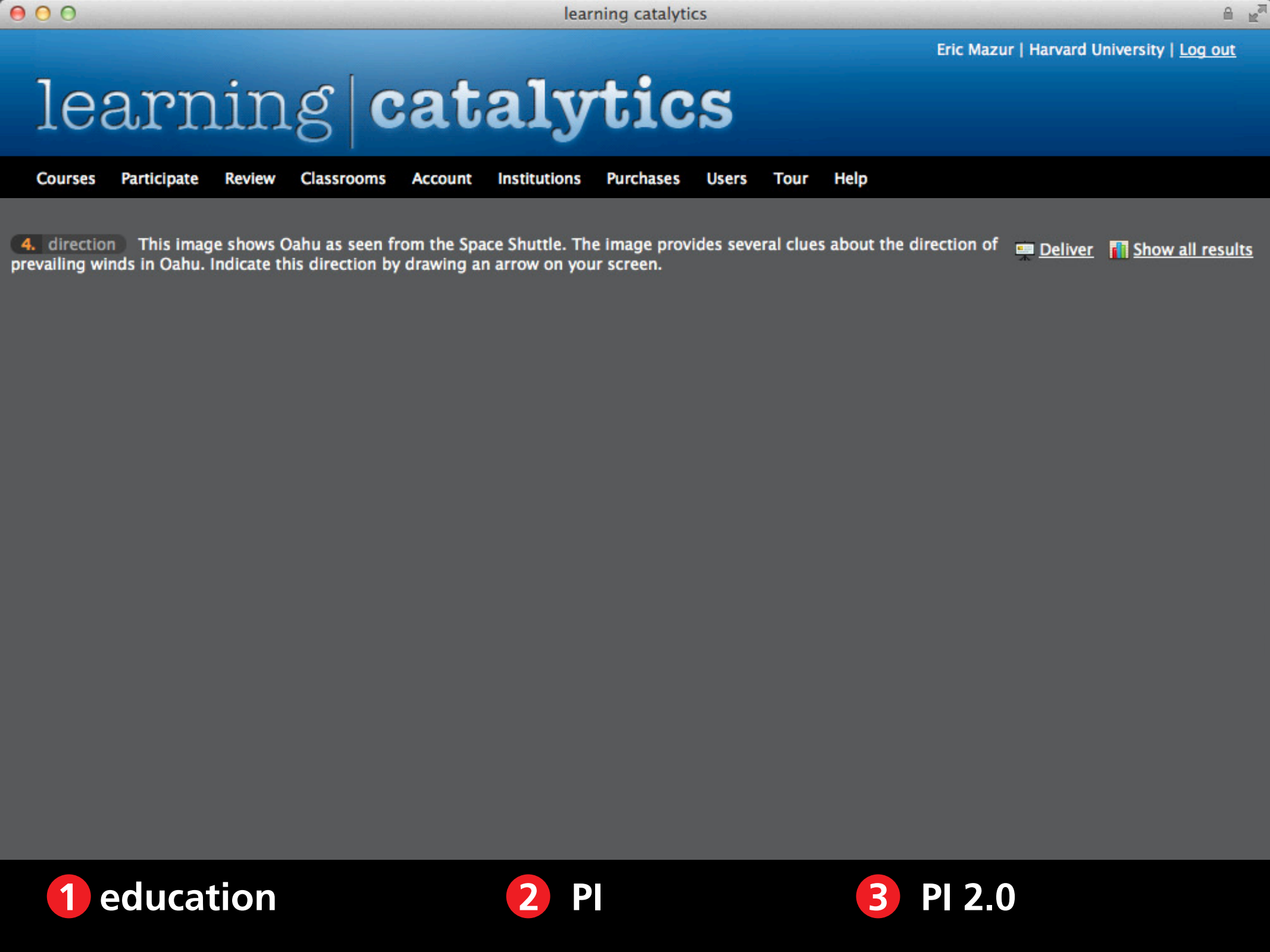
1. Go to: http://LCatalytics.com

2. Create student account with signup code DEMO

3. Join session 1234567

4. Pick your seat from the seat map

1 lcatalytics.com 2 create student account 3 ID 1234567


learning catalytics
Eric Mazur | Harvard University | Log out
learning | catalytics
Courses Participate Review Classrooms Account Institutions Purchases Users Tour Help
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

learning catalytics

Eric Mazur | Harvard University | Log out

learning | catalytics

Courses Participate Review Classroo… …titutions Purchases Users Tour Help

4. directi… prevailing …tle. The image provides several clues about the direction of …n your screen.

Deliver Show all results

1 educa…

3 PI 2.0

learning catalytics

Eric Mazur | Harvard University | Log out

learning | catalytics

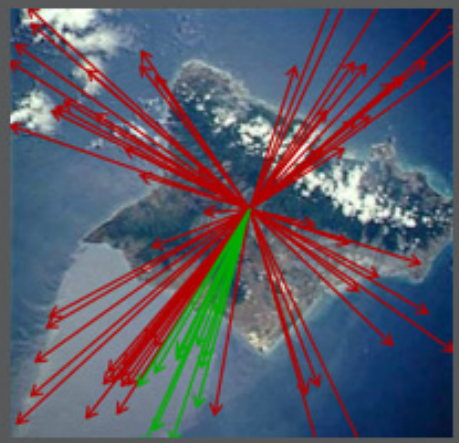
Courses Participate Review Classroo… …titutions Purchases Users Tour Help

4. directi… prevailing …tle. The image provides several clues about the direction of …n your screen.

Deliver Show all results

Round 1

77 responses, 16% correct



17 get it now

3 still don't get it

1 educa…

3 PI 2.0

learning catalytics

Eric Mazur | Harvard University | Log out

learning | catalytics

Courses Participate Review Classrooms Account Institutions Purchases Users Tour Help

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.

Deliver | Show all results

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

feedback & support

1 education 2 PI 3 PI 2.0

learning catalytics

Eric Mazur | Harvard University | Log out

learning | catalytics

Courses Participate Review Cla... ...tions Purchases Users Tour Help

optics i...

current session: 766079 | 69 students

...ap Show floating session ID Edit Delete

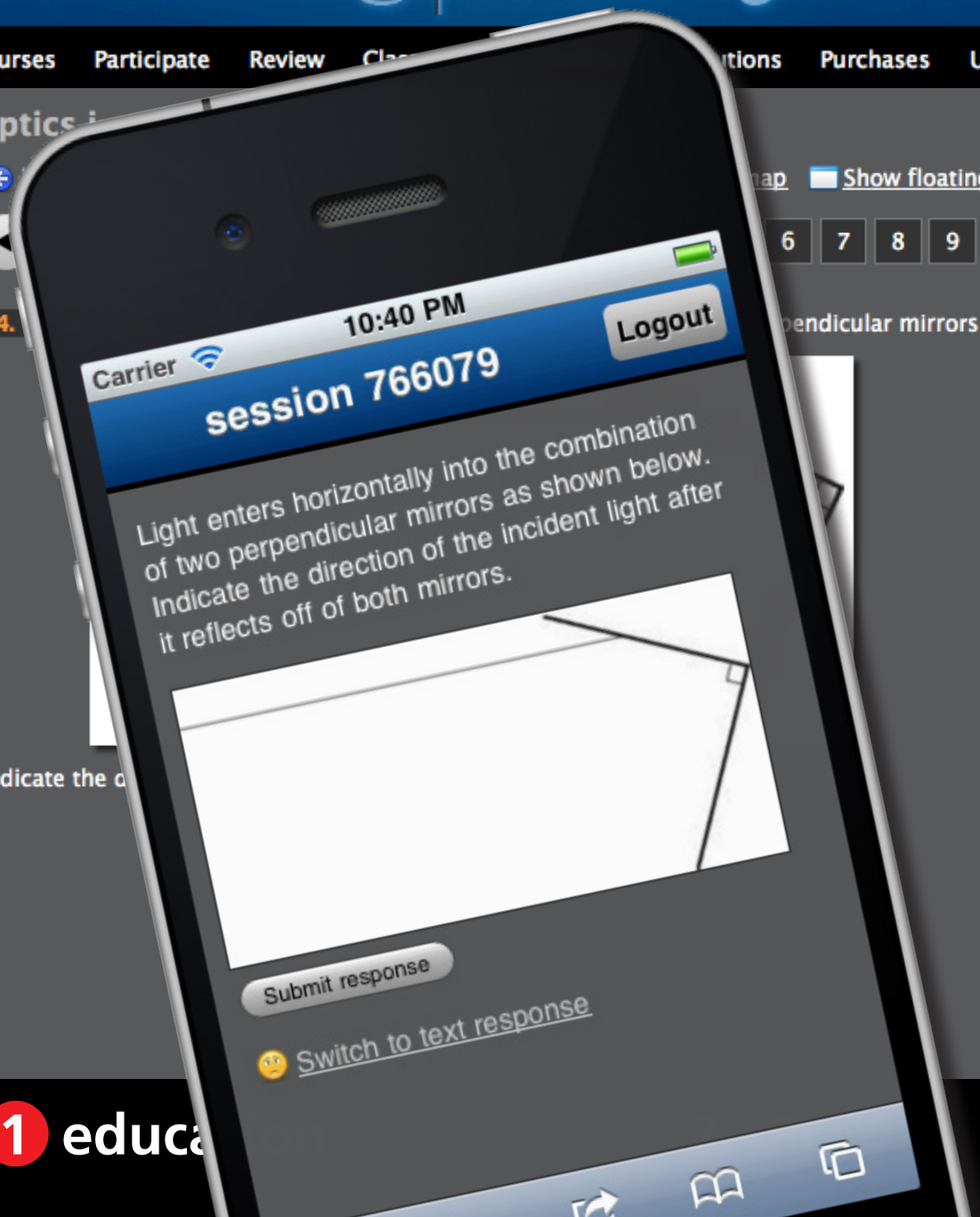
6 7 8 9 10 11 12 13 14 15

4. ...endicular mirrors as shown below.

Deliver Show all results

Indicate the d...

feedback & support



1 educa...

3 PI 2.0

learning catalytics

Eric Mazur | Harvard University | Log out

learning | catalytics

Courses Participate Review Cla... ...tions Purchases Users Tour Help

optics i...

current session: 766079 | 69 students

...ap Show floating session ID Edit Delete

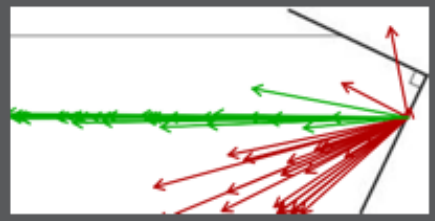
6 7 8 9 10 11 12 13 14 15

4. ...endicular mirrors as shown below.

Deliver Show all results

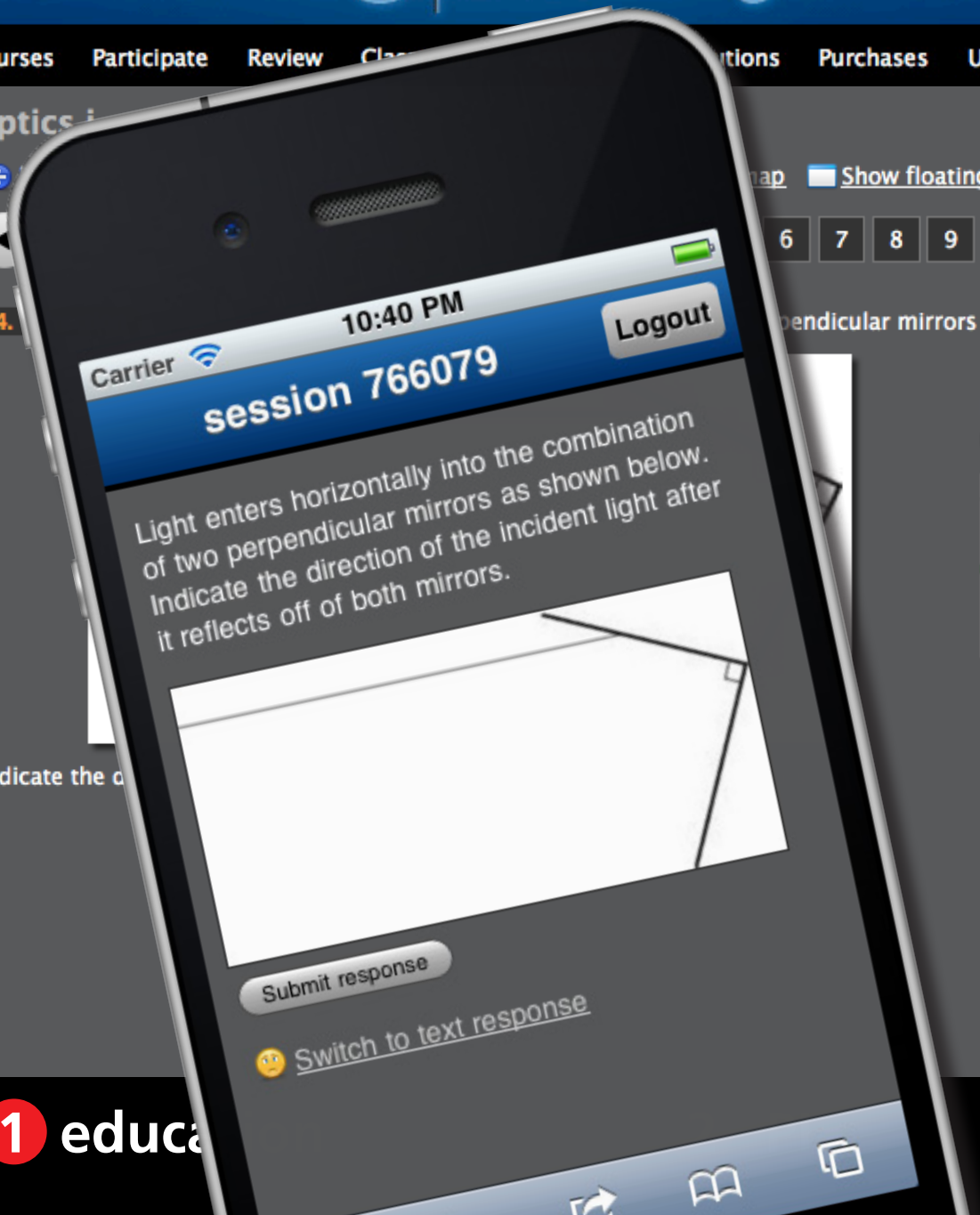
Round 1

57 responses, 58% correct



Indicate the d...

feedback & support



1 educa...

3 PI 2.0

learning catalytics

Eric Mazur | Harvard University | Log out

learning | catalytics

Courses Participate Review Cla tions Purchases Users Tour Help

optics i

current session: 766079 | 69 students

ap Show floating session ID Edit Delete

6 7 8 9 10 11 12 13 14 15

4.

endicular mirrors as shown below.

Deliver Show all results

Round 1

57 responses, 58% correct

Round 2

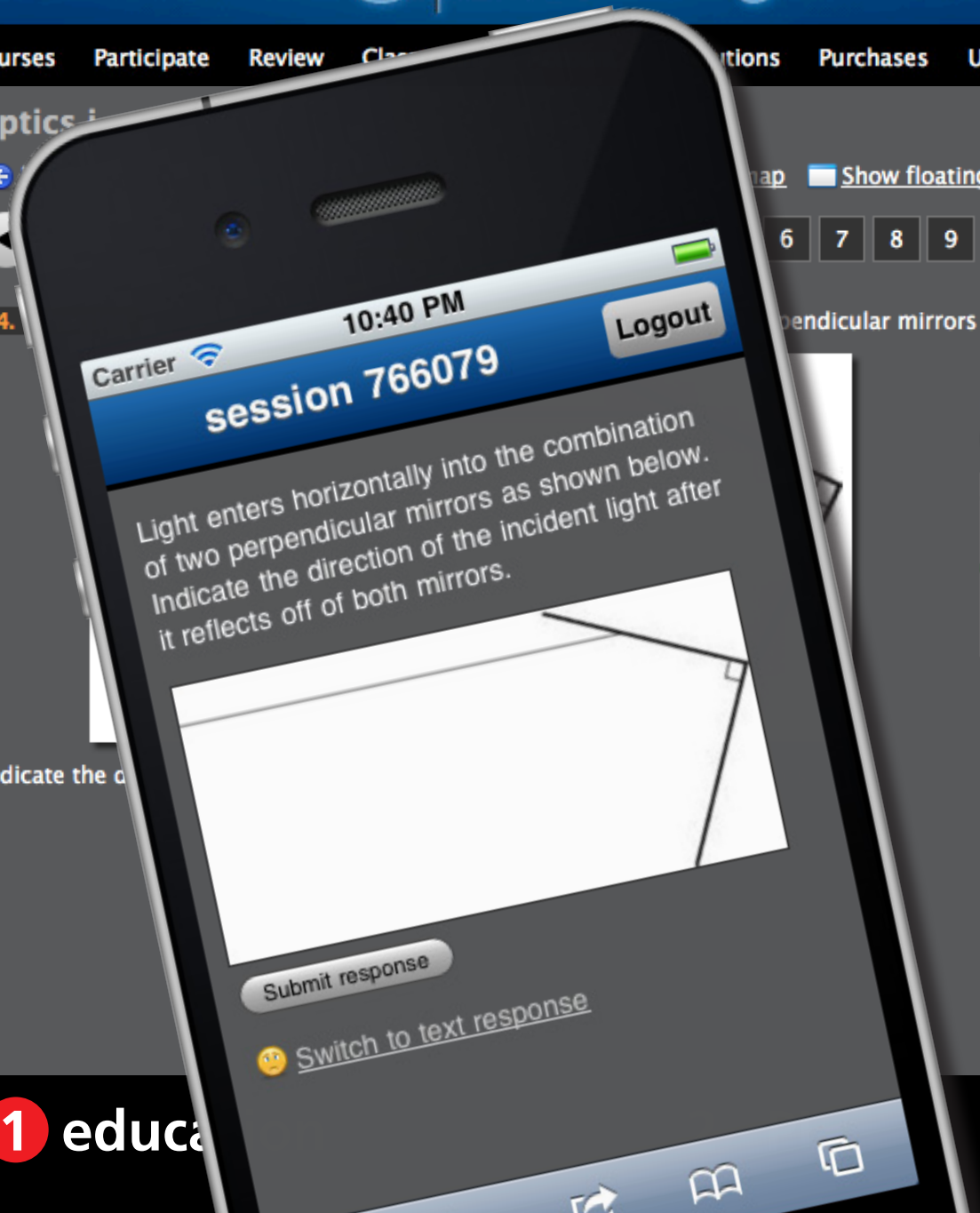
51 responses, 73% correct

8 get it now

0 still don't get it

Indicate the d

feedback & support



1 educa

3 PI 2.0

transformations of parabolas

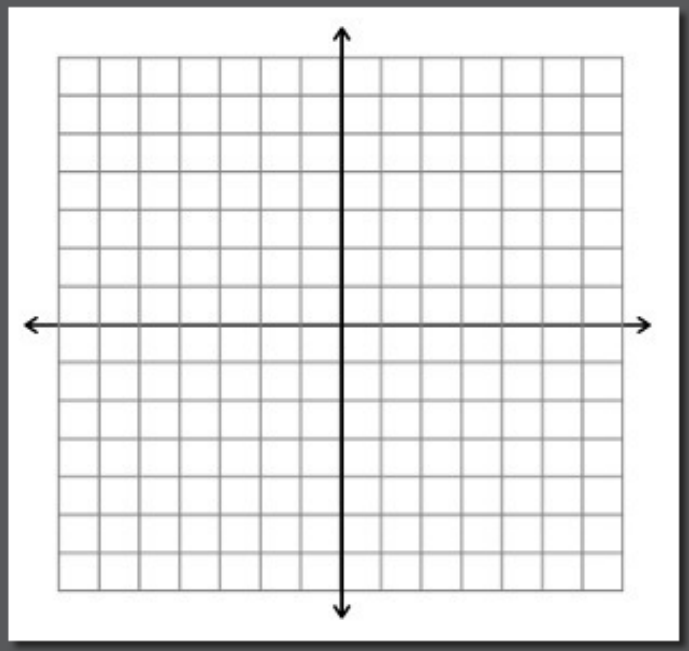
current session: 773885 | 9 students

Back to all lectures | Stop session | Review results | Show floating session ID | Edit | PDF | Delete

Jump to ▼ 1 2 3 4

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

Stop delivery | Deliver again | Assign groups | Show all results



1 education 2 PI 3 PI 2.0

transformations of parabolas

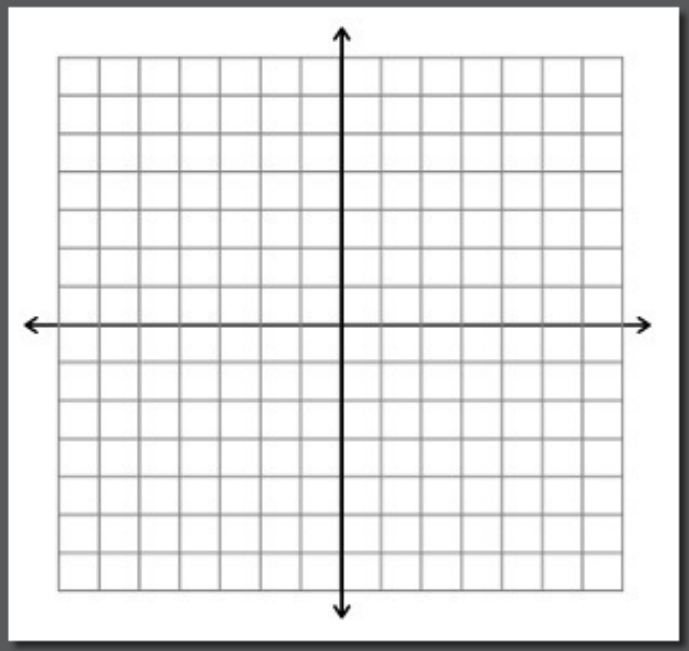
current session: 773885 | 9 students

Back to all lectures | Stop session | Review results | Show floating session ID | Edit | PDF | Delete

Jump to ▼ 1 2 3 4

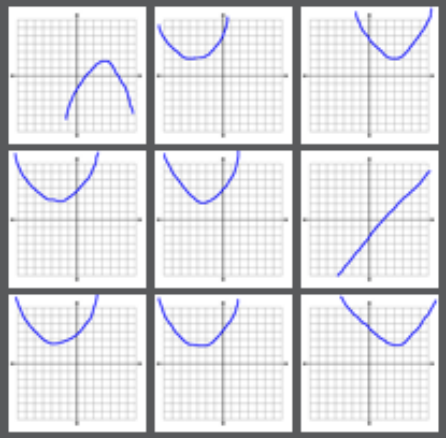
4. sketch Sketch a graph of the function $f(x) = (x-3)^2 + 2$.

Stop delivery | Deliver again | Assign groups | Show all results

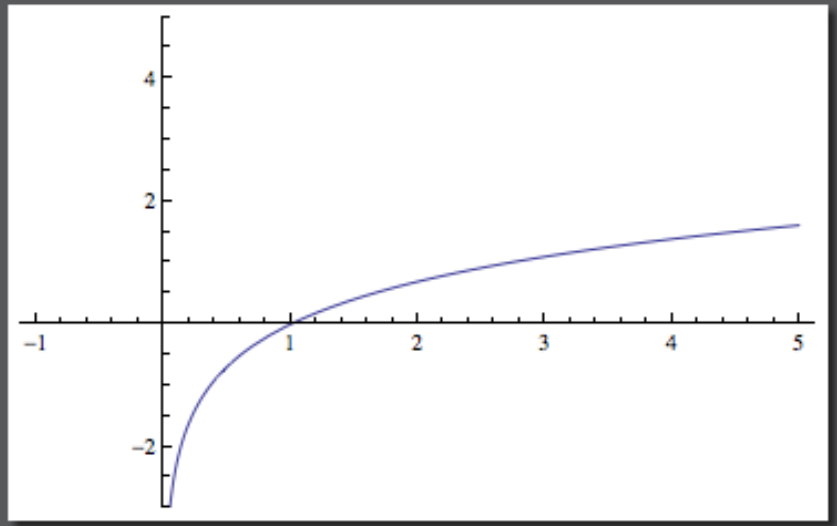


Round 1

9 responses



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



learning catalytics

Eric Mazur | Harvard University | Log out

learning | catalytics

Courses Participate ases Users Tour Help

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

1 education

3 PI 2.0

learning catalytics

Eric Mazur | Harvard University | Log out

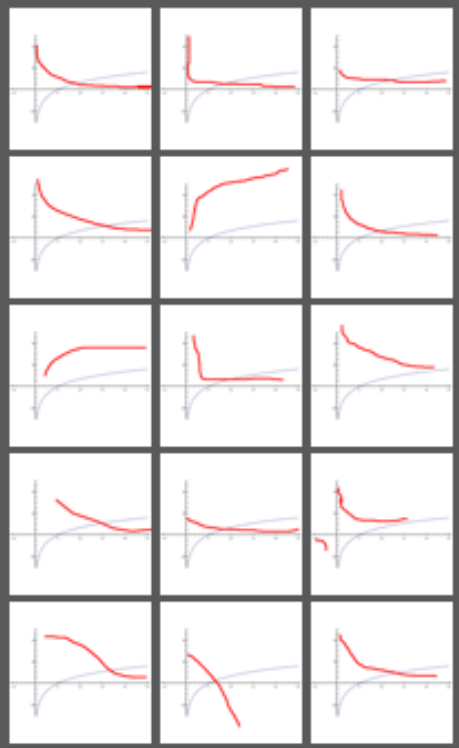
learning catalytics

Courses Participate ases Users Tour Help

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

learning catalytics

Eric Mazur | Harvard University | Log out

learning | catalytics

Courses Participate Review Classrooms Account Institutions Purchases Users Tour Help

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

learning catalytics

Eric Mazur | Harvard University | Log out

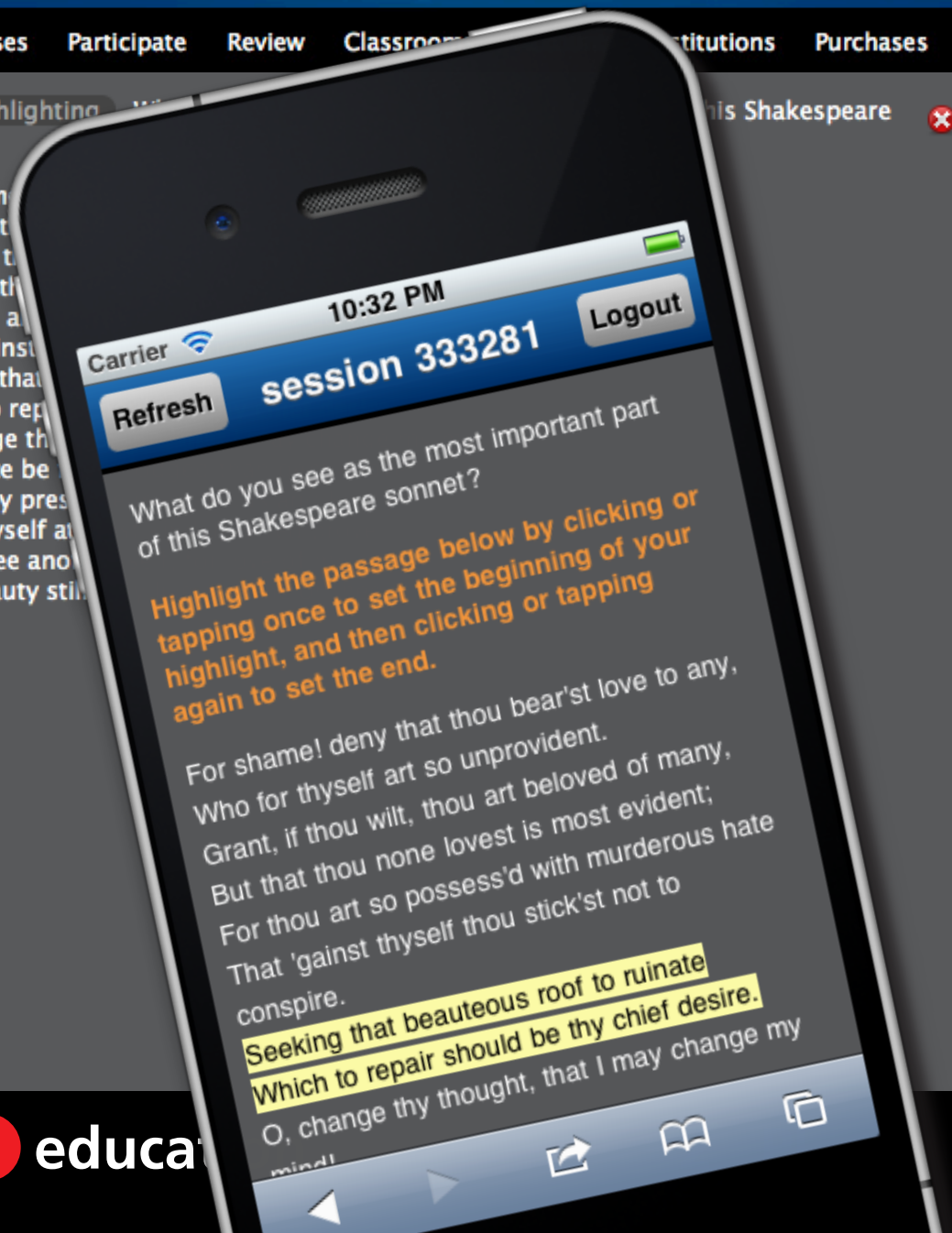
learning | catalytics

Courses Participate Review Classroo… …titutions Purchases Users Tour Help

1. highlighting … …is Shakespeare sonnet?

Stop delivery Deliver again Assign groups Show all results

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



1 educa…

3 PI 2.0


learning catalytics
Eric Mazur | Harvard University | Log out
learning | catalytics
Courses
Participate
Review
Purchases
Users
Tour
Help
Stop delivery
Deliver again
Assign groups
Show all results
Round 1
3 responses
10:32 PM
Carrier
Logout
Refresh
session 333281
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,
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
1 educa
3 PI 2.0

Sample question types:

- direction
- expression
- long answer, short answer, word cloud (fill in text)
- multiple choice, multiple 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

Carrier 9:31 PM 100%

learning catalytics

skywalker.seas.harvard.edu/class_sessions/399757/review_results

Google

learning | catalytics

Eric Mazur | Harvard University | Log out

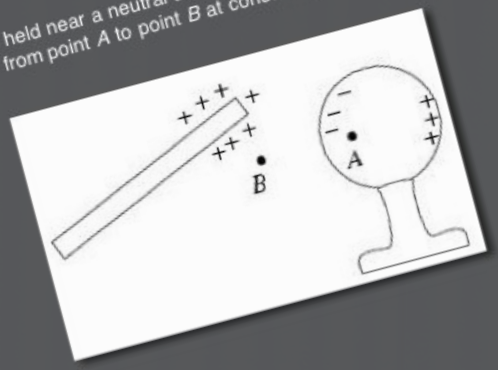
Courses Participate Review Classrooms Account Institutions Users About

review results for session 399757 in electrostatic work and energy ii

Back to all lectures Download all results

Jump to ▼ 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

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 potential difference from *A* to *B* is



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

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%

Search:

1 lecture 2 PI 3 PI 2.0

Carrier 9:31 PM 100%

learning catalytics

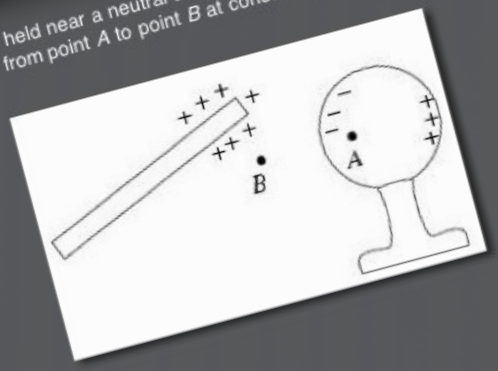
skywalker.seas.harvard.edu/class_sessions/399757/review_results

Google

Eric Mazur | Harvard University | Log out

learning catalytics

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 potential difference from *A* to *B* is



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

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%

Search:

1 lecture **2 PI** **3 PI 2.0**

Carrier 9:31 PM 100%

learning catalytics

skywalker.seas.harvard.edu/class_sessions/399757/review_results

Google

learning | catalytics

Courses Participate Review Classrooms Account Institutions Users About

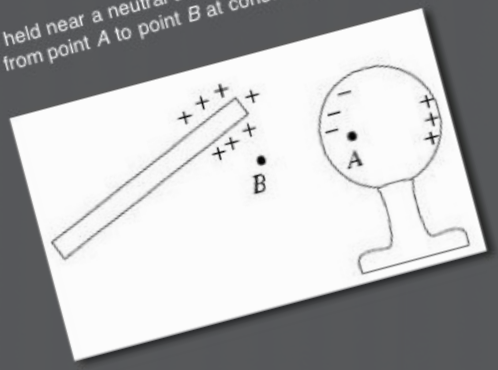
Eric Mazur | Harvard University | Log out

review results for session 399757 in electrostatic work and energy ii

Back to all lectures Download all results

Jump to ▼ 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

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 potential difference from *A* to *B* is



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

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%

Search:

1 lecture 2 PI 3 PI 2.0

Carrier 9:31 PM 100%

learning catalytics

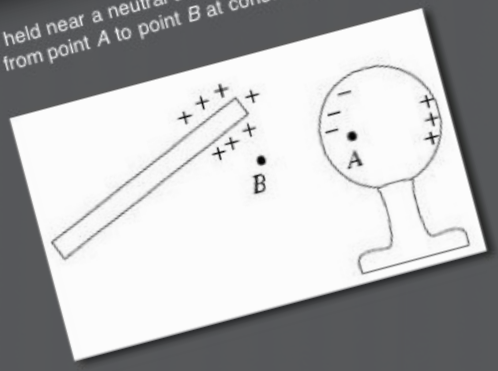
skywalker.seas.harvard.edu/class_sessions/399757/review_results

Google

Eric Mazur | Harvard University | Log out

learning catalytics

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 potential difference from *A* to *B* is



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

Round 1
74 responses, 61% correct

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

Round 2
75 responses, 83% correct

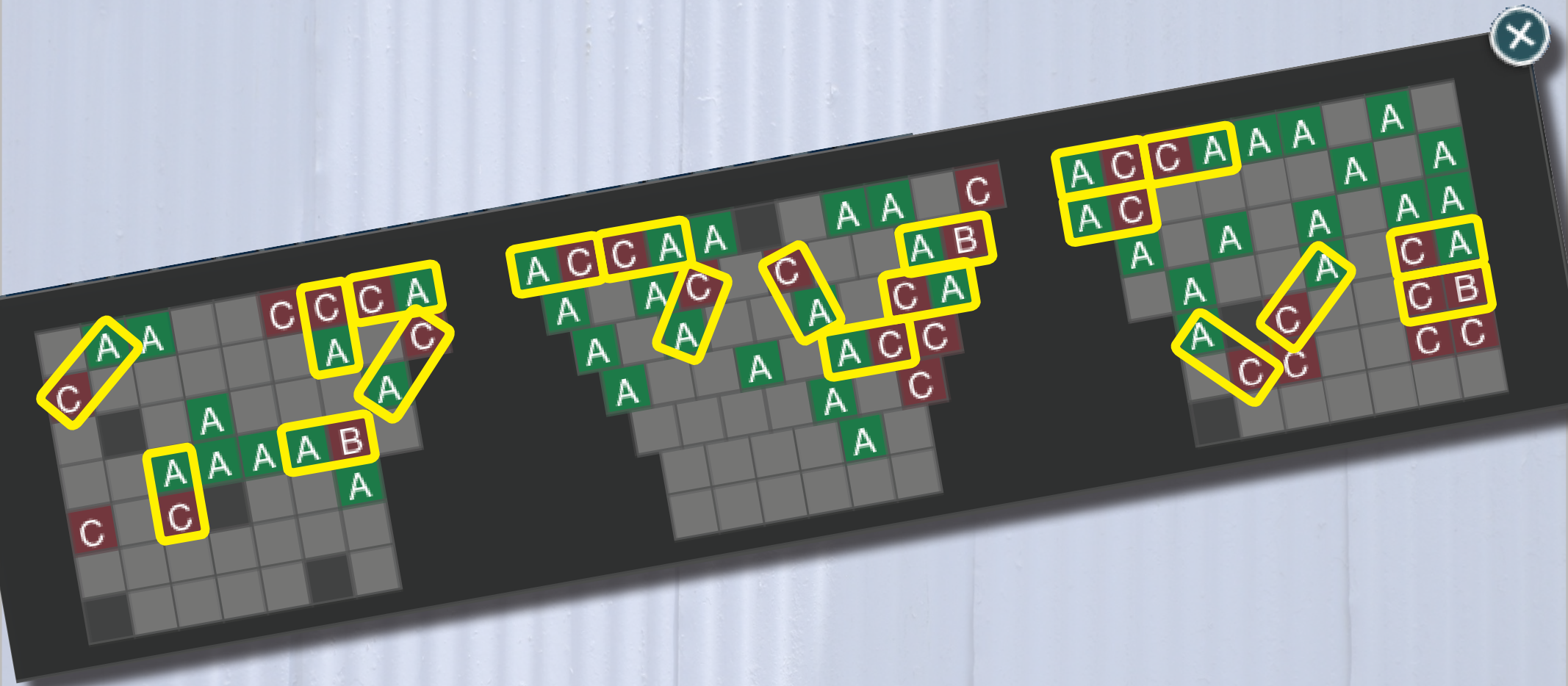
A. 83%
B. 0%
C. 17%
D. 0%
E. 0%

Search:

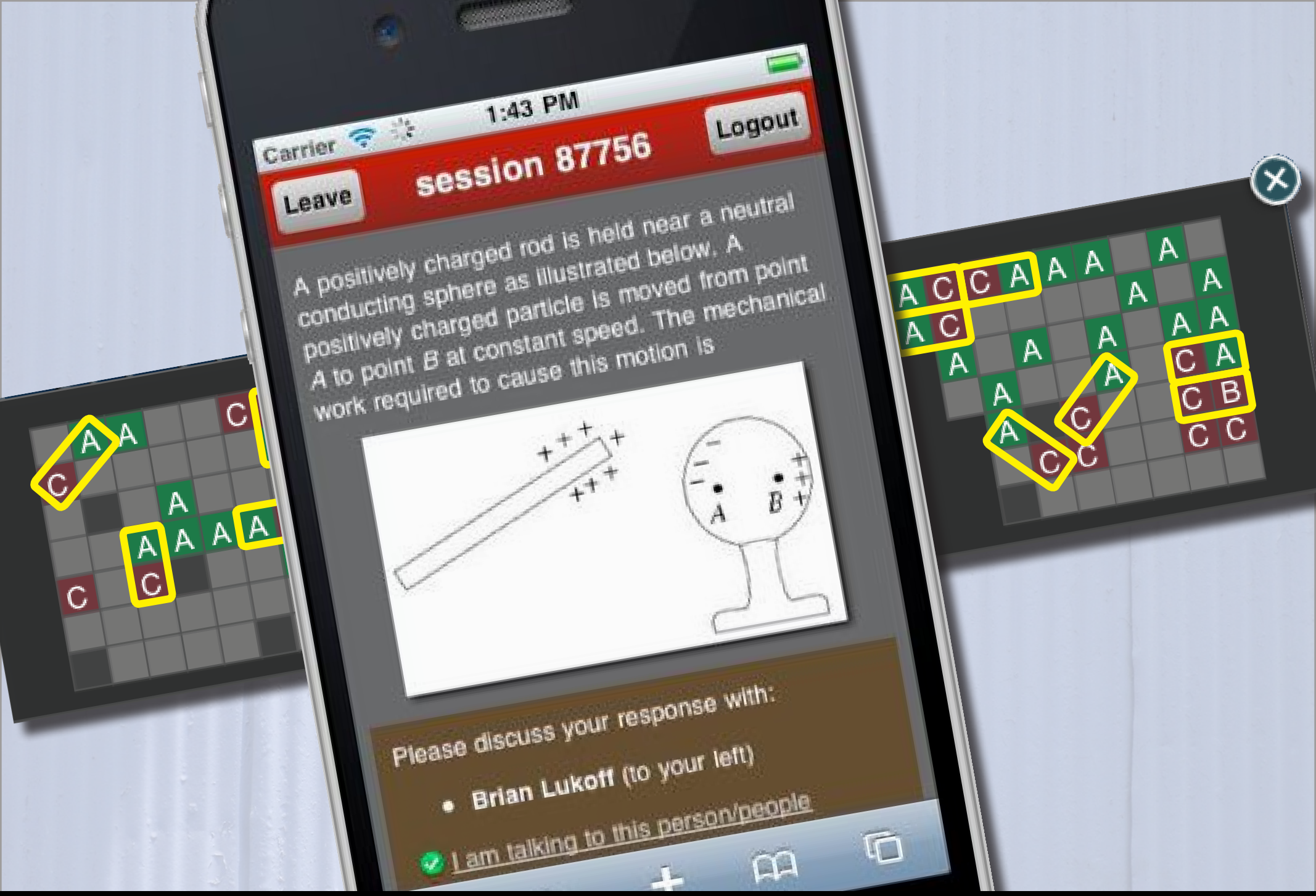
1 lecture **2 PI** **3 PI 2.0**

let system manage pairing

1 lecture 2 PI 3 PI 2.0



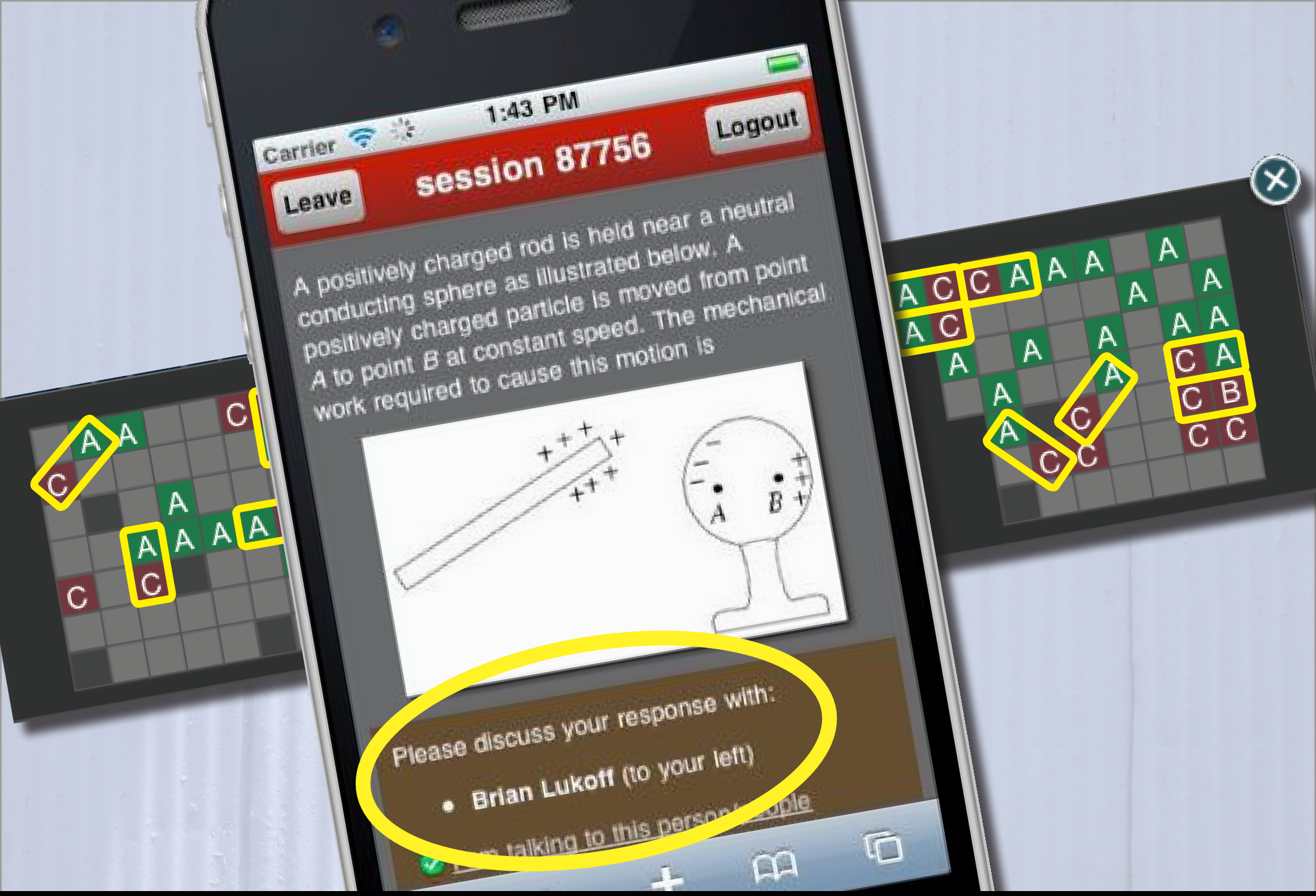
1 lecture 2 PI 3 PI 2.0



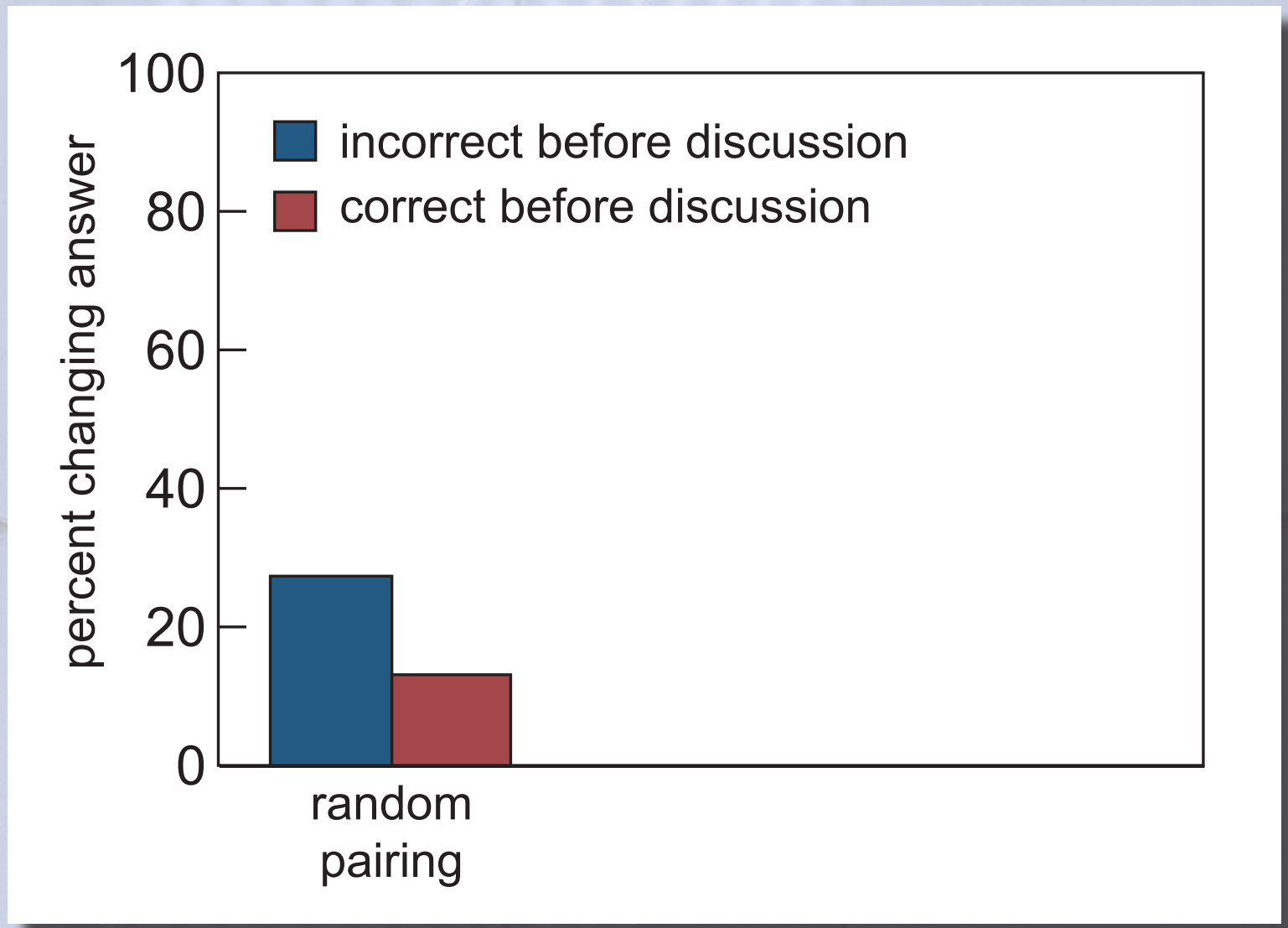
1 lecture

2 PI

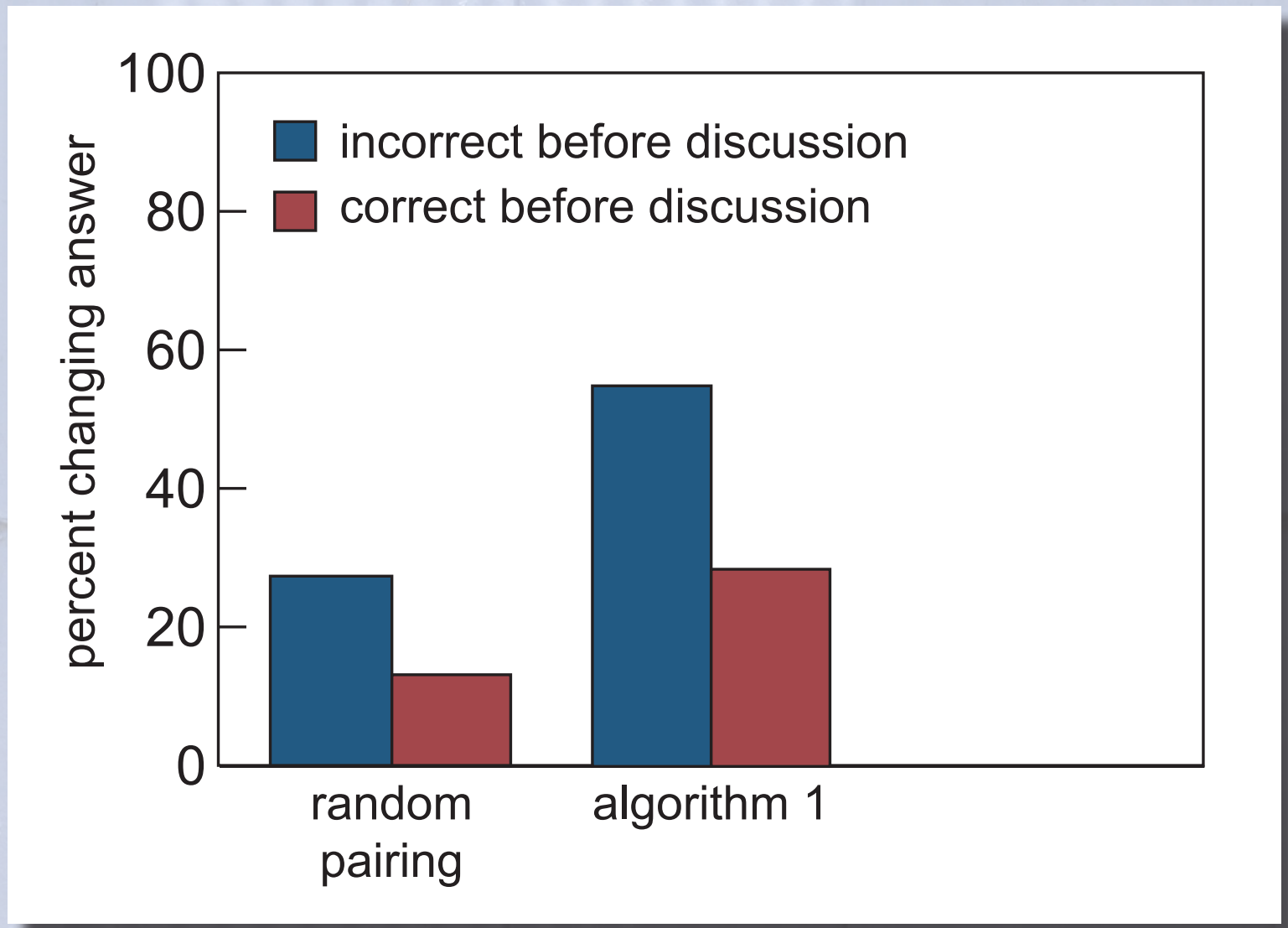
3 PI 2.0



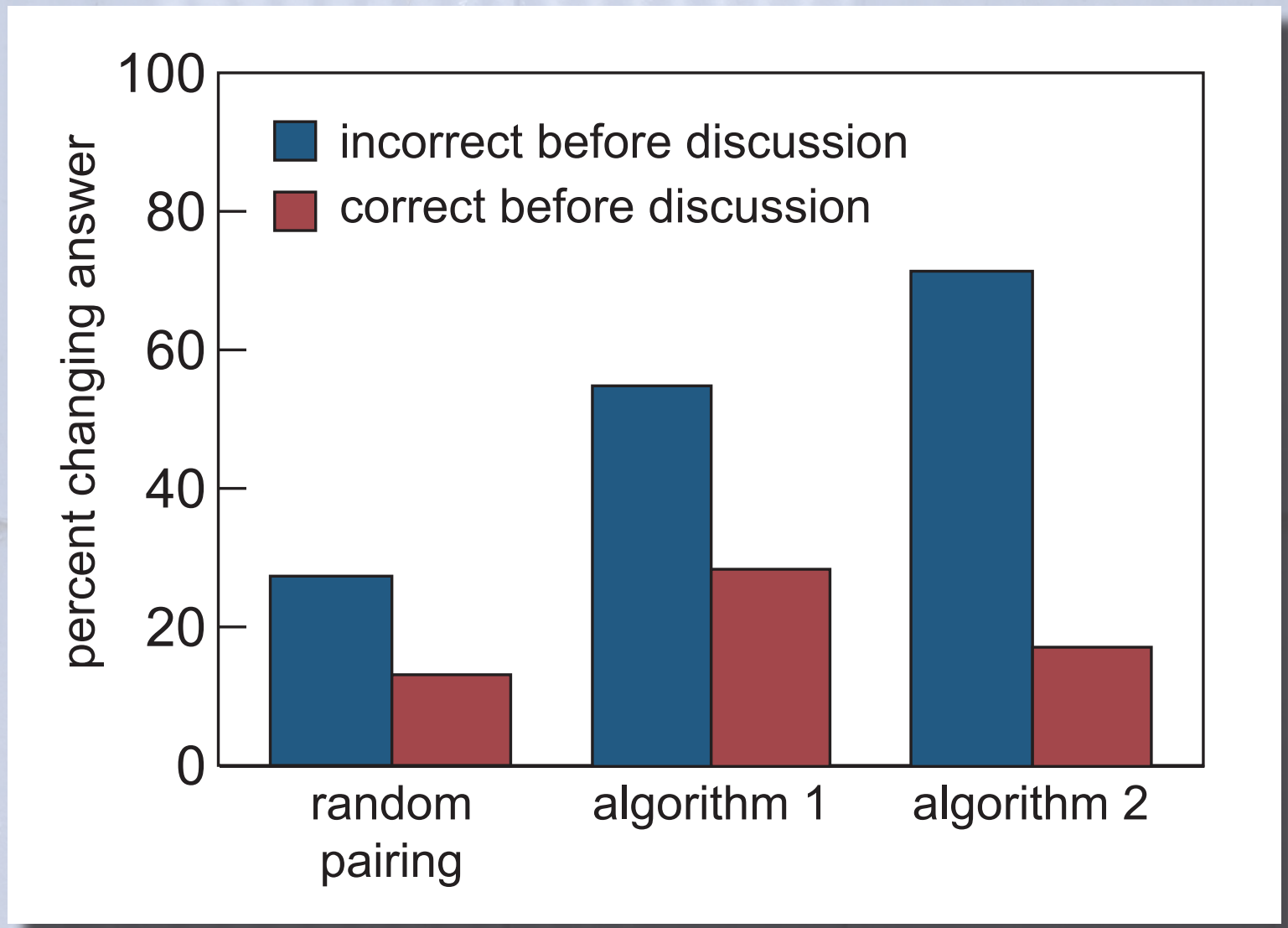
1 lecture 2 PI 3 PI 2.0



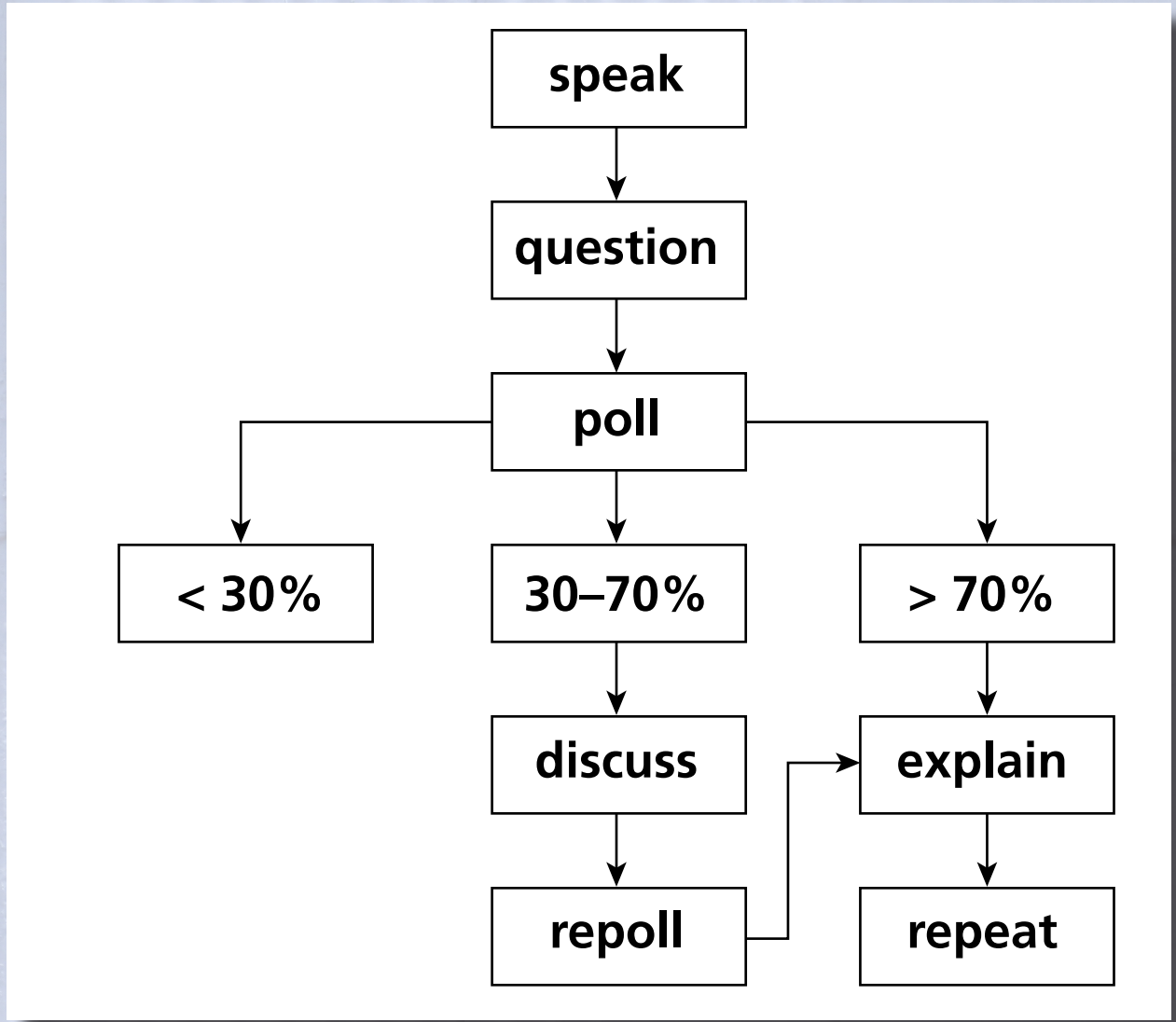
1 lecture 2 PI 3 PI 2.0



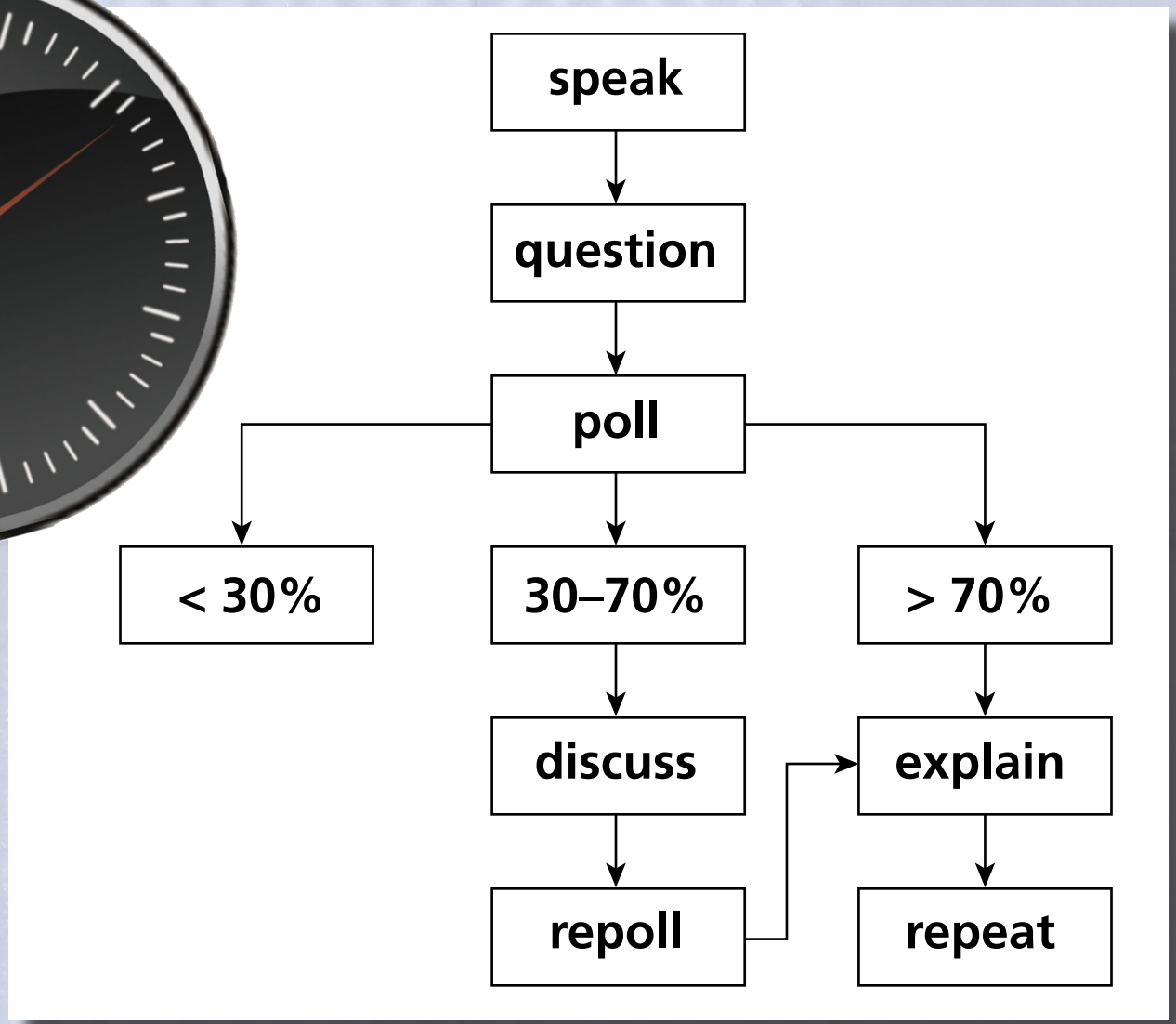
1 lecture 2 PI 3 PI 2.0



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*

Funding:

National Science Foundation

for a copy of this presentation:

mazur.harvard.edu

learningcatalytics.com

Follow me!  eric_mazur

1 education 2 PI 3 PI 2.0