

Engaging Students One-on-One, All At Once Session 2

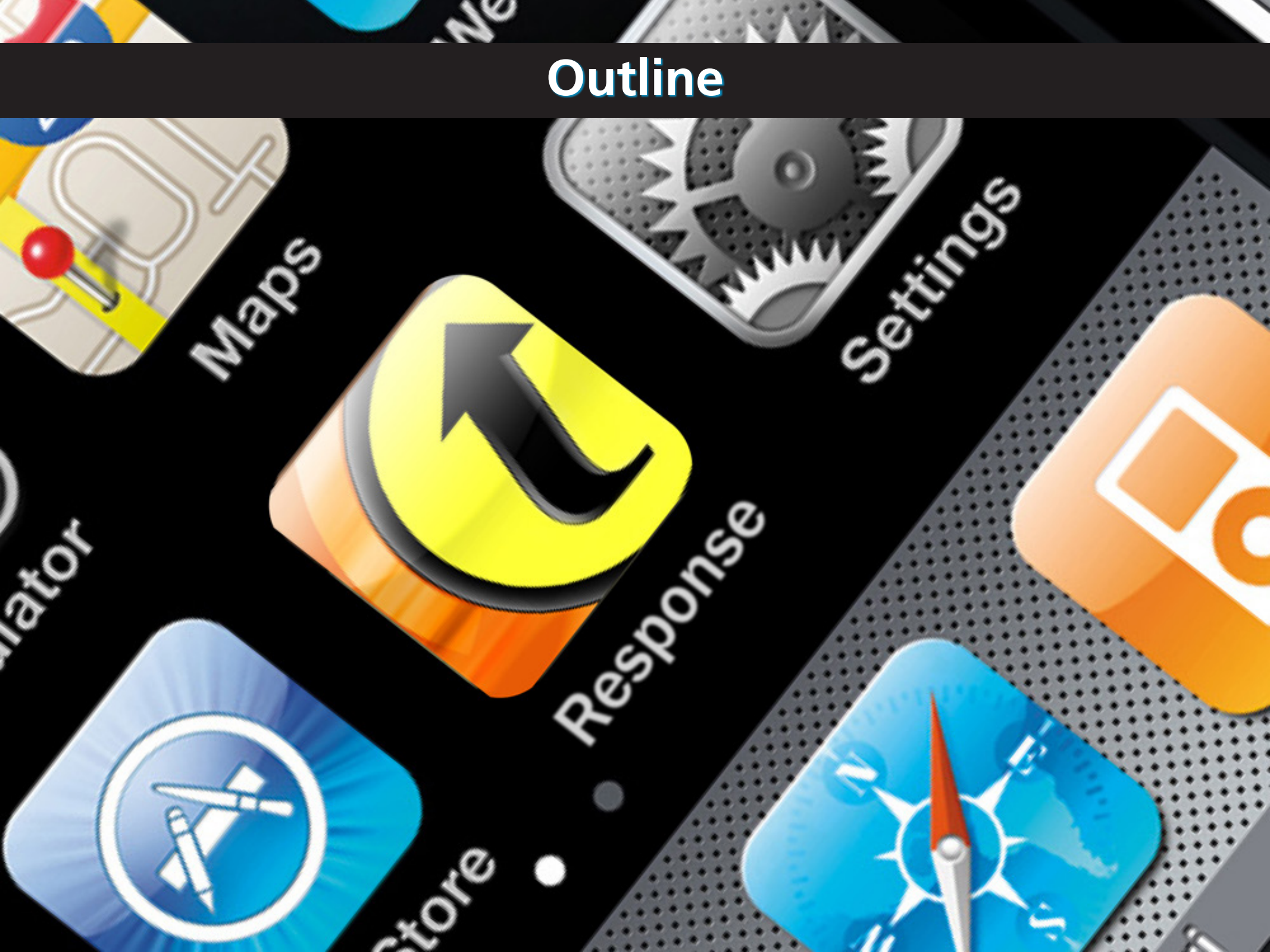


Peer Instruction Online Course
Taibah University
10 November 2014

Session 2 slides

<http://mazur.harvard.edu>

Outline



Outline

- **Your questions**
- **Developing PI/JiTT questions**
- **Strategies for assessment**

Online Polling

1. Go to learningcatalytics.com/demo
2. Enter info, click "Start"
3. Join session 123456789

Your questions

*“Do the exact sciences lend themselves better for
ConceptTest questions than social sciences?”*

Your questions

Question categories:

- **Creating/finding ConcepTests**
- **Moving information transfer out of classroom**
- **Administering ConcepTests**
- **Student resistance**
- **Assessment**

Your questions

Question categories:

- **Creating/finding ConcepTests (part 2)**
- **Moving information transfer out of classroom**
- **Administering ConcepTests**
- **Student resistance**
- **Assessment (part 3)**

Your questions

Question categories:

- Creating/finding ConcepTests (part 2)
- **Moving information transfer out of classroom**
- Administering ConcepTests
- Student resistance
- Assessment (part 3)

Moving information out of classroom

“Must students always complete a pre-class reading?”

Moving information out of classroom

*“How to make students read before class
if they are not used to it?”*

Moving information out of classroom

My approach:

- **do not deliver information in class**
- **offer a reward**
- **use reading feedback as opportunity to help**

Moving information out of classroom

“The difficulty that I face with my students that they do not prepare for the lecture even if I ask them to do that.”

Moving information out of classroom

My approach:

- **Reading quizzes (1991)**
- **Reading summaries (1994)**
- **Just-in-Time Teaching (1999)**

Your questions

Question categories:

- Creating/finding ConcepTests (part 2)
- Moving information transfer out of classroom
- **Administering ConcepTests**
- Student resistance
- Assessment (part 3)

Administering ConceptTests

“Can I use peer instruction in only one chapter of the course?”

Administering ConceptTests

“Which is better for PI, a small , medium or large class?”

“Is PI effective in big classes?”

Administering ConceptTests

“If clickers are not available, are there any other options?”

Administering ConceptTests

Yes! (And the learning gains are the same)

- **show hands (on chest)**
- **flash cards**

Administering ConceptTests

“Is there a minimum number of questions to use?”

Administering ConceptTests

*“Should the CTs always include answer options (MCQs)?
Or can they be open ended?”*

“What if decided to use open-ended questions to begin experimenting IP, then I can use students answer to develop multiple-choice questions.”

Your questions

Question categories:

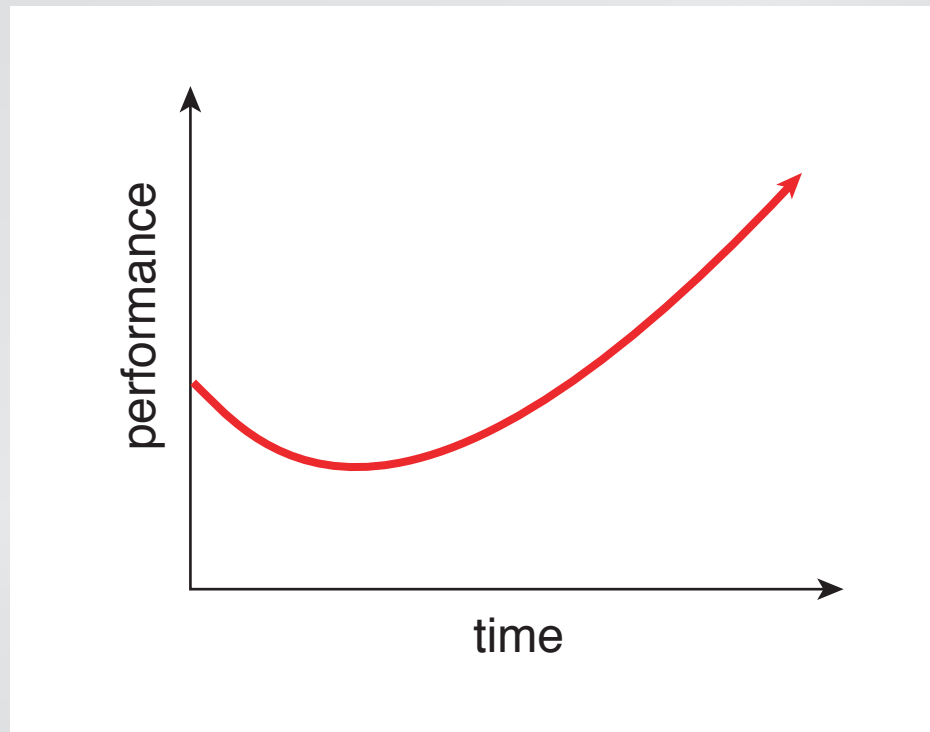
- Creating/finding ConcepTests (part 2)
- Moving information transfer out of classroom
- Administering ConcepTests
- **Student resistance**
- Assessment (part 3)

Student resistance

“How can i engage my students in reacting positively to Concept Tests?”

Student resistance

After changing, things might get *worse* before they get better!



Student resistance

Written on Wednesday Feb 16, two weeks into the course:

Subject: concerns

Professor Mazur,

Here are a few concerns. I speak for many of my classmates.

1) You are giving us WAY too much work. After spending multiple hours on the problem set, and not being able to figure out many of the questions, I now see that we have an additional 6 or 7 pages or homework in the workbook. I just spent 4 hours on the lab, and I am not confident on almost half of the questions. This is more work than I have had all semester in all of my other classes combined.

2) If you are going to give us this much work, I would suggest re-structuring the lectures. I find the readings very difficult to understand. I am not a bad student (I got a solid A in physics 1a), but it is very difficult to internalize the readings. You should spend most of the lecture going over, point by point, the readings in their entirety. While the PRS clickers are fun, they do not help me understand the complex material.

I am extremely flustered by the incredibly large amount of work, and my inability to understand it, and I am strongly considering dropping the course.

Student resistance

Written on Monday May 23, just after the final exam:

Subject: Thanks!

Professor Mazur,

First of all I want to thank you for a great semester. You are an excellent professor, and it is clear that you truly care about each and every student.

The exam went well today. I'm not sure to what extent you will curve the final grades (if at all), but it looks like I may be right around the cutoff point between an A and an A-. I studied as hard as I could and I'm keeping my fingers crossed about the A, but no matter what happens with my grade you should know that you are one of the best professors that I have ever had at Harvard.

Thanks again!

Student resistance

Hello Prof. Mayer,
I wanted to hand you this card as
a token of my deep appreciation of
how you have helped me throughout
the semester. You are truly
an inspiring and have
changed how I look at
"learning". I also wanted
to thank you for
how understanding
you were of all
my circumstances.
You really made a difference
in my life. So THANKS
Thank you!



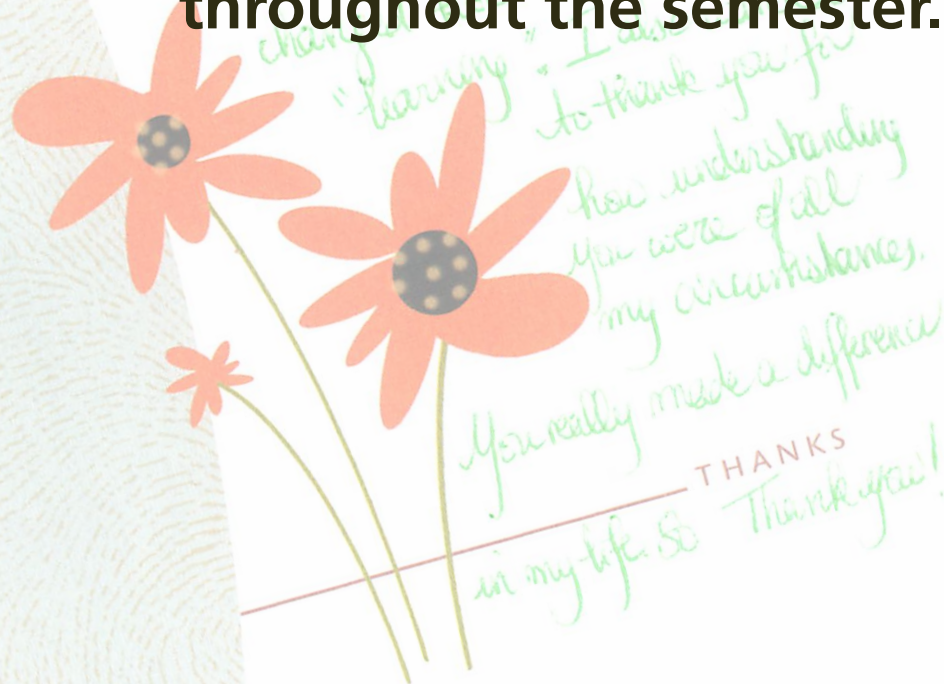
You made a difference.

Best

Student resistance

"I wanted to hand you this card as a token of my deep appreciation of how you have helped me throughout the semester.

You made a difference.



Student resistance

"I wanted to hand you this card as a token of my deep appreciation of how you have helped me throughout the semester. You are truly awe inspiring and have changed how I look at "learning".

You made a difference.

*THANKS
in my life. So Thank you!*

Best

Student resistance

"I wanted to hand you this card as a token of my deep appreciation of how you have helped me throughout the semester. You are truly awe inspiring and have changed how I look at "learning". [....] You really made a difference in my life."

You made a difference.

*THANKS
in my life. So Thank you!*

Best

Student resistance

and don't forget...

Student resistance

and don't forget...

PI leads to better learning and retention!

Student resistance

“What are the guidelines for writing ConcepTests that promote critical thinking in my students?”

Outline

- **Your questions**
- **Developing PI/JiTT questions**
- **Strategies for assessment**

Developing PI/JiTT questions

Your ranking of the CTs on the assignment (best to worst):

3, 2, 1, 6, 4, 5

Our ranking of the CTs on the assignment (best to worst):

5, 3, 4, 1, 6, 2

Developing PI/JiTT questions

Your ranking of the CTs on the assignment (best to worst):

3, 2, 1, 6, 4, 5

Our ranking of the CTs on the assignment (best to worst):

5, 3, 4, 1, 6, 2

Developing PI/JiTT questions

Which of the following is the Pythagorean theorem?

a) $a + b = c$

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

c) $a^2 + b^2/c^2$

d) $y = mx + b$

Developing PI/JiTT questions

Your ranking of the CTs on the assignment (best to worst):

3, 2, 1, 6, 4, 5

Our ranking of the CTs on the assignment (best to worst):

5, 3, 4, 1, 6, 2

Developing PI/JiTT questions

Ana plays goalie for a soccer team competing in the FIFA world cup. Her coach asks her to warm up by running from one corner of the field to the exact middle of the field. About how far does she need to run?

Developing PI/JiTT questions

<http://bit.ly/conceptesthandout>

Developing PI/JiTT questions

Which type of viral Hepatitis has the highest mortality rate during pregnancy?

- a. Hepatitis A**
- b. Hepatitis B**
- c. Hepatitis C**
- d. Hepatitis D**
- e. Hepatitis E**

Developing PI/JiTT questions

My Peer Instruction Question

- Your first time camping in the woods, you are bitten over 45 times by mosquitoes, resulting in lots of swollen, itchy bumps on your arms, legs, and back. You never want to go camping again. What kind of consequence did you confront on your first camping experience?
- A. Positive Reinforcement
 - B. Negative Reinforcement
 - C. Positive Punishment
 - D. Negative Punishment



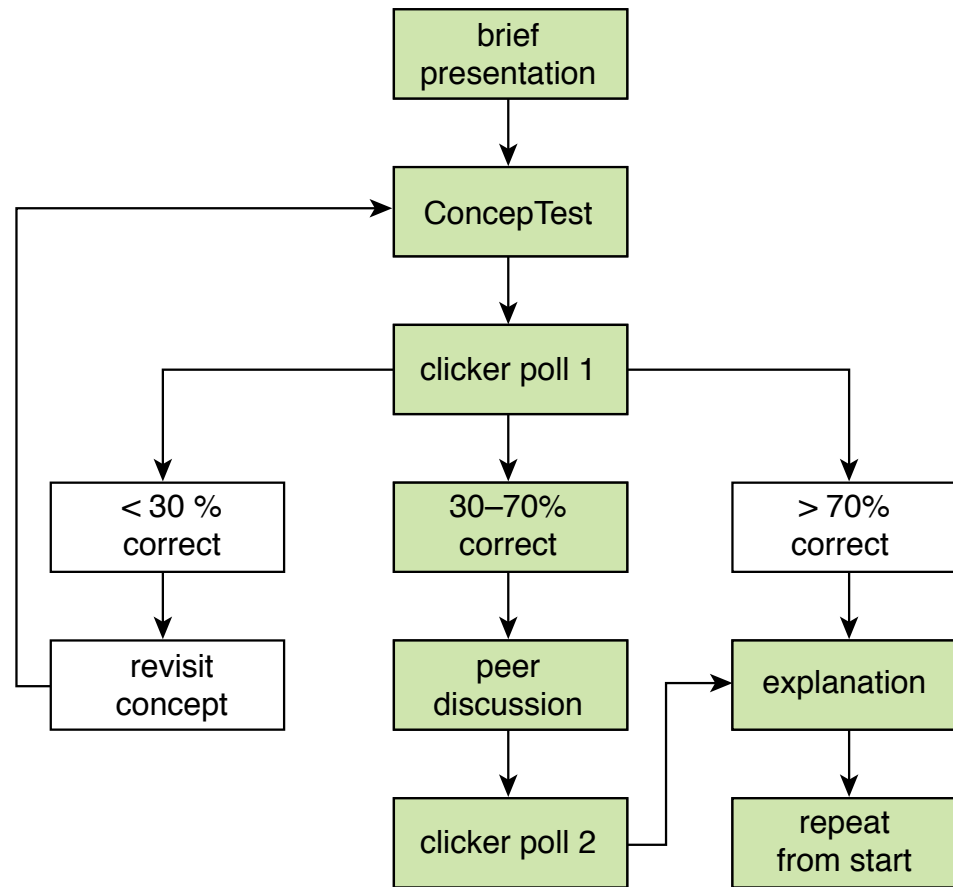
Developing PI/JiTT questions

“How do I select which concepts to evaluate?”

Developing PI/JiTT questions

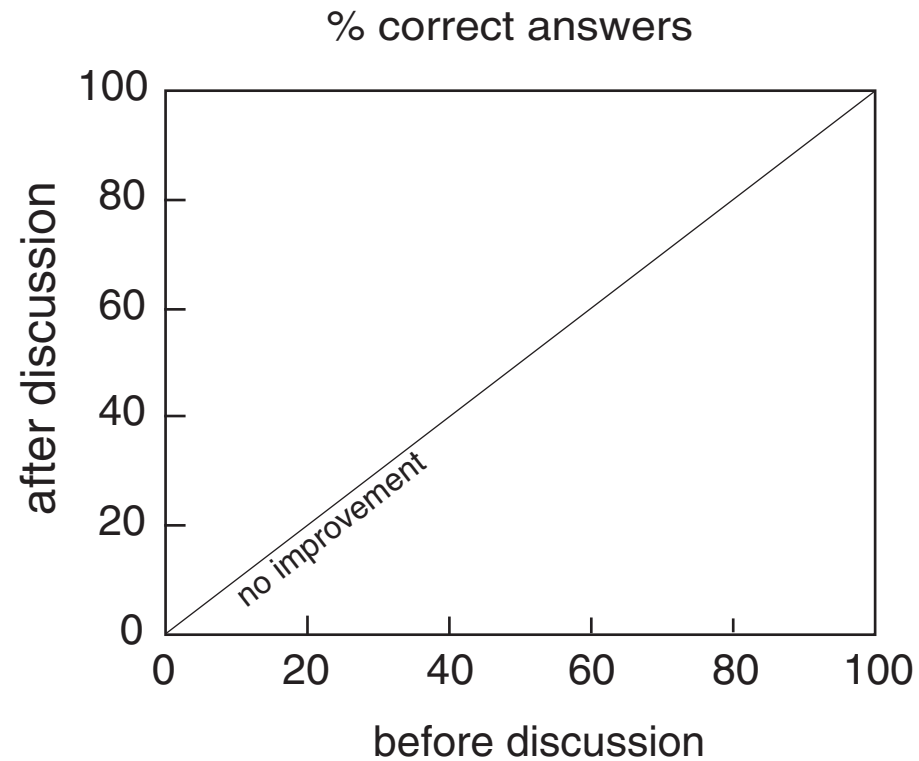
“How do I know I’m doing the right thing?”

Developing PI/JiTT questions



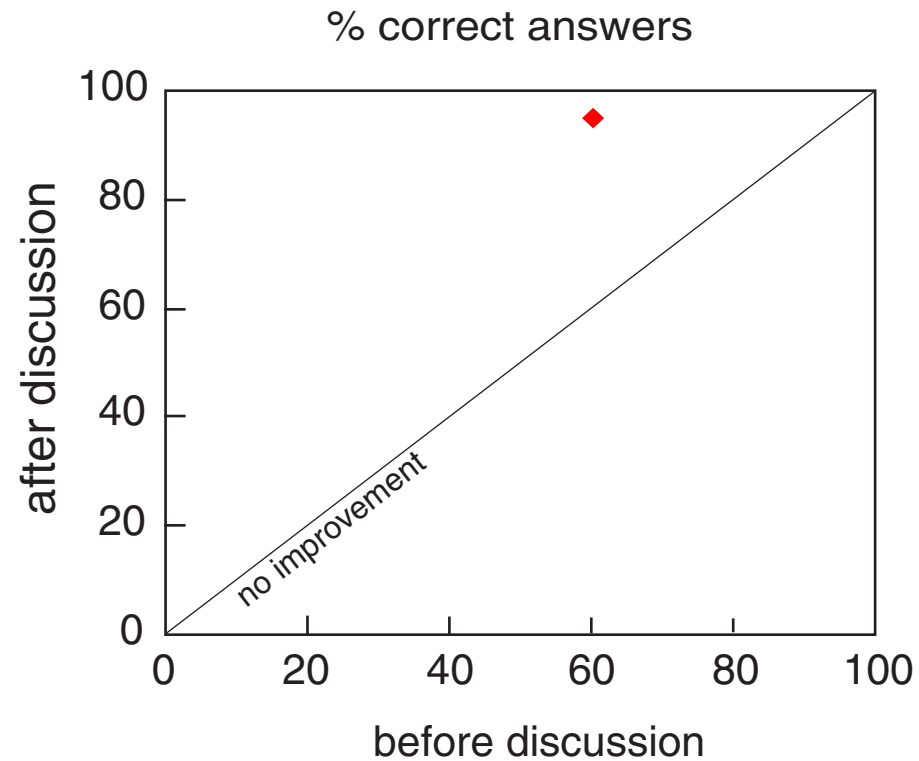
Developing PI/JiTT questions

ConceptTest data



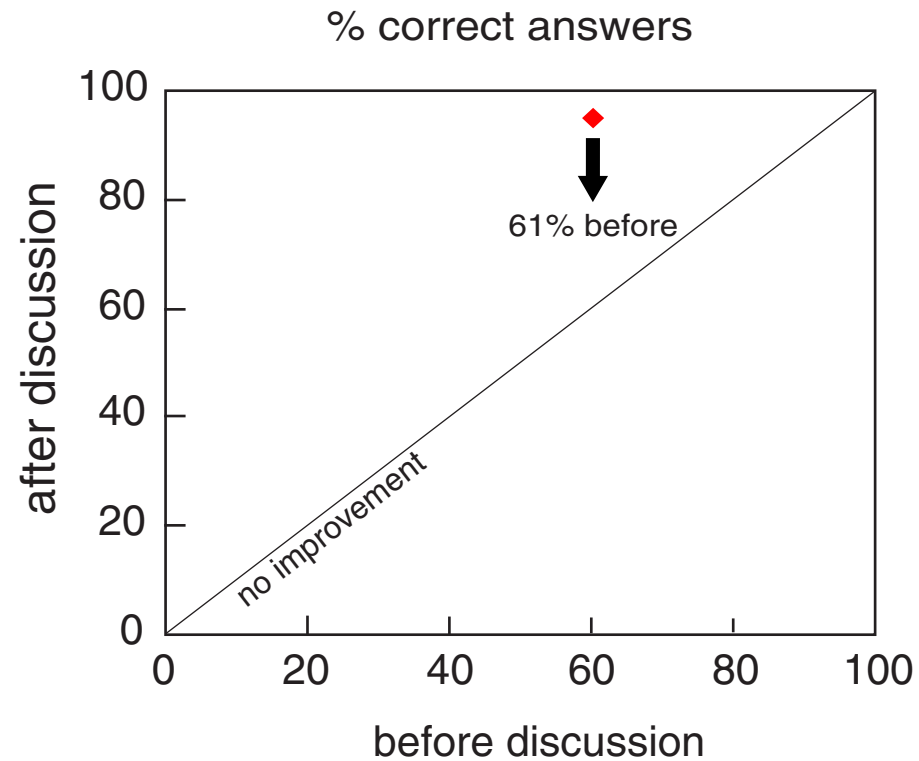
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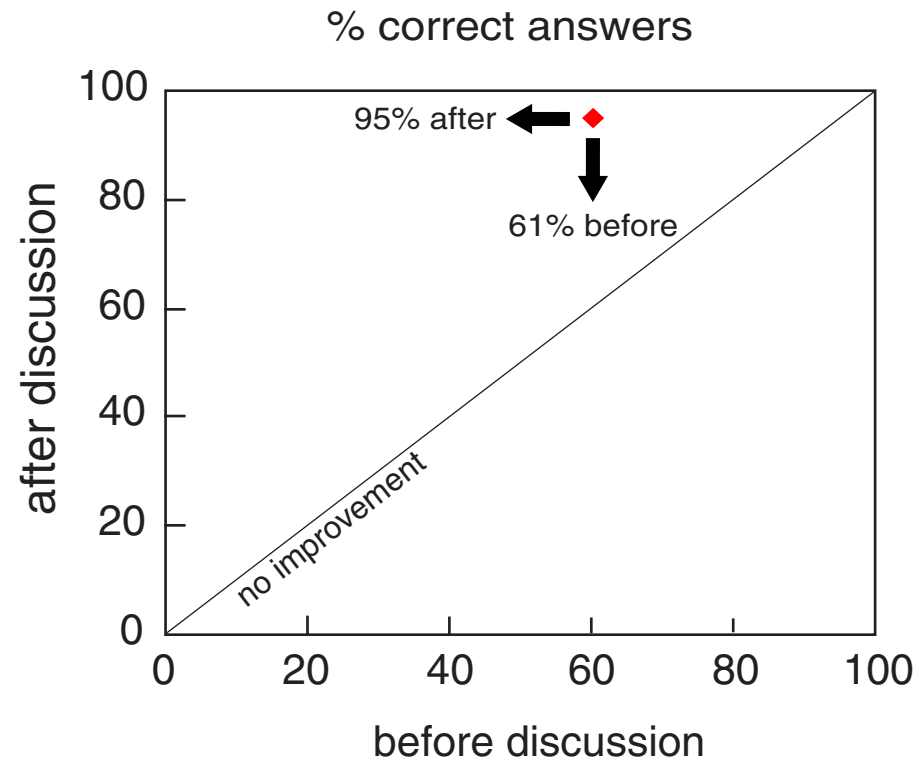
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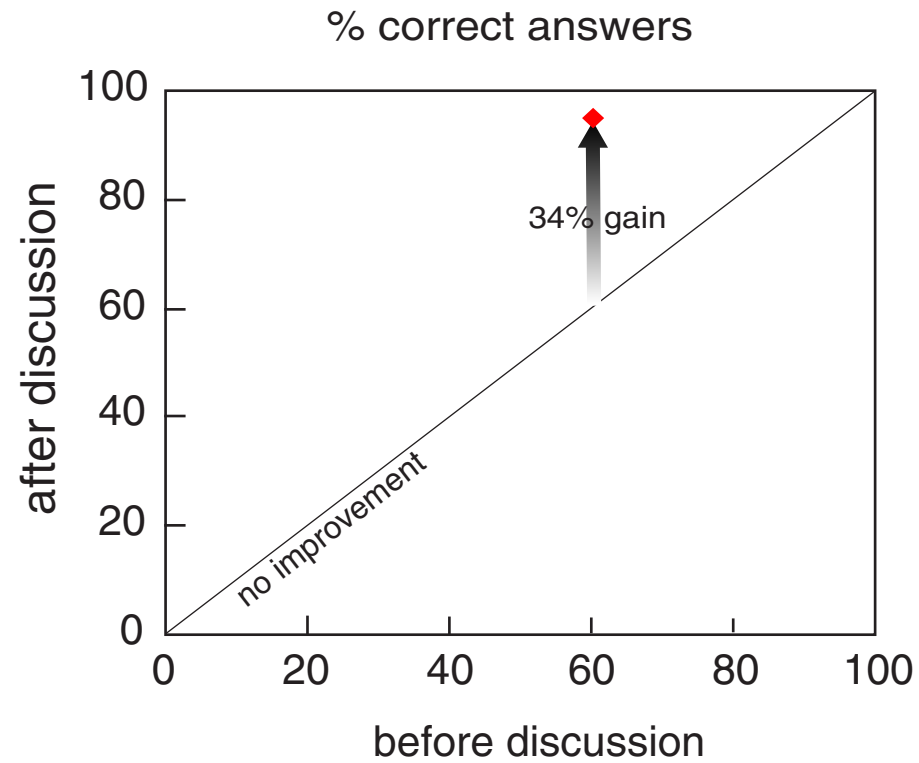
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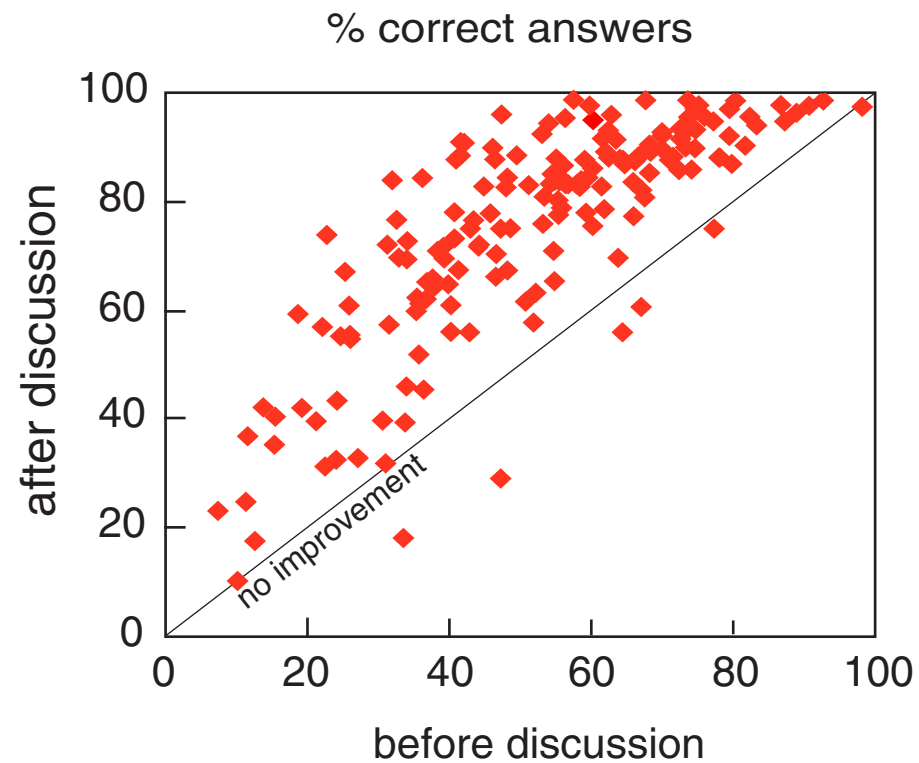
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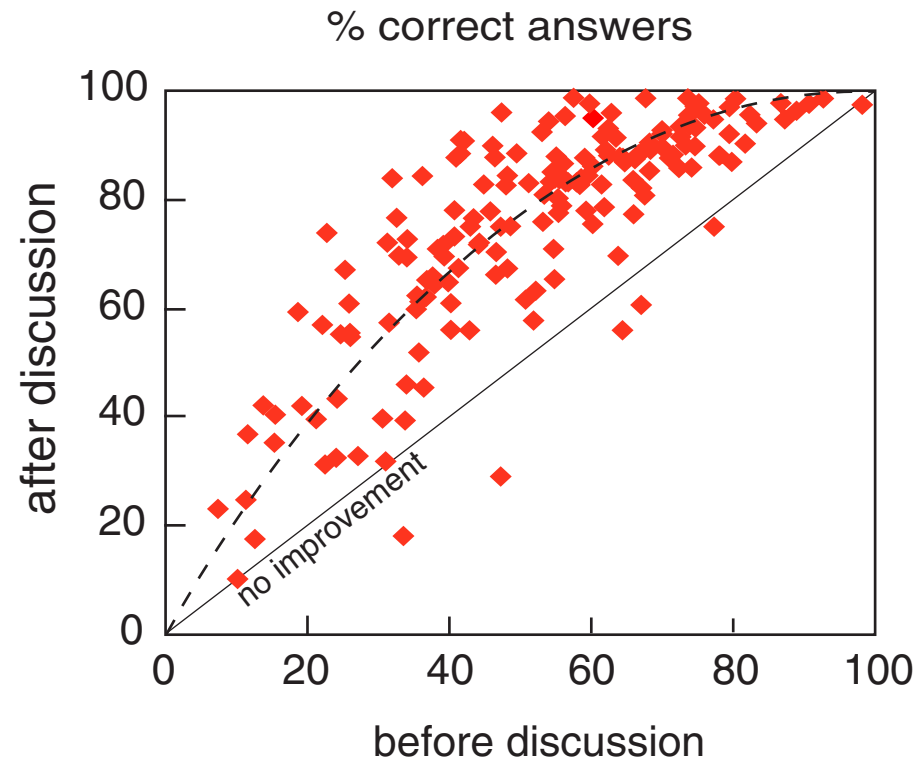
Developing PI/JiTT questions

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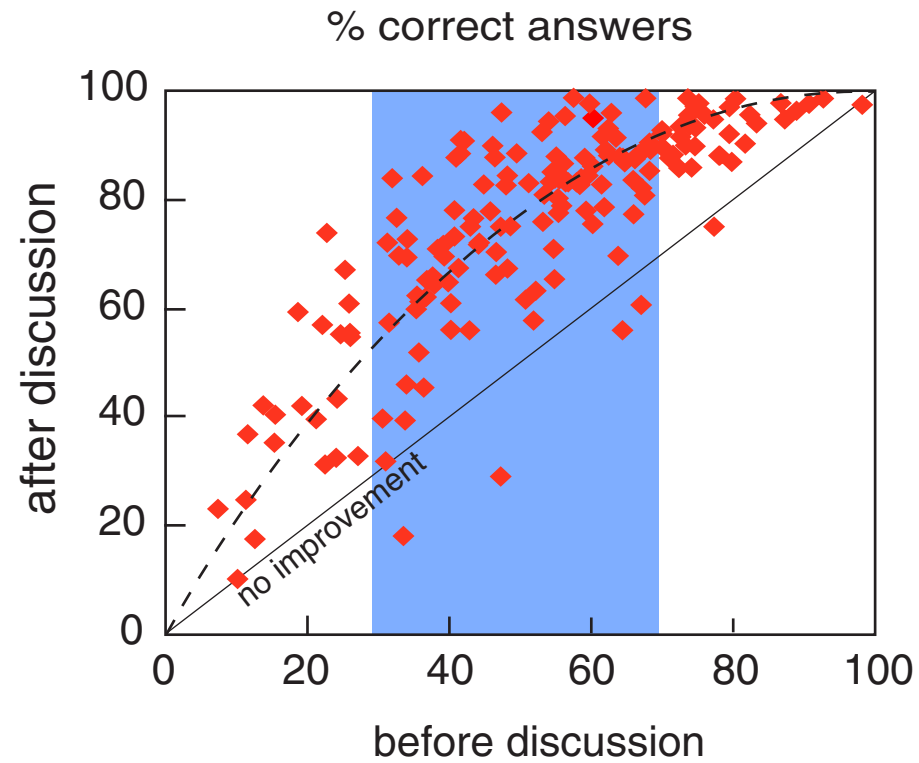
Developing PI/JiTT questions

ConceptTest data



Developing PI/JiTT questions

ConceptTest data



Developing PI/JiTT questions

*“Please tell me how to find ConcepTests
in Medicine and Medical Biochemistry.”*

Outline

- **Your questions**
- **Developing PI/JiTT questions**
- **Strategies for assessment**

Strategies for assessment

“As we try to engage students in active and thoughtful learning, it is hard to evaluate accordingly.”

Strategies for assessment

Some ideas:

- **Open book/computer**
- **Collaborative exam**
- **Multidimensional**

Strategies for assessment

“How do you assess a diverse student body? Essay questions are hard for the students and difficult to grade.”

Strategies for assessment

“How do you assess a diverse student body? Essay questions are hard for the students and difficult to grade.”

Calibrated Peer Review: <http://cpr.molsci.ucla.edu>

Strategies for assessment

YouTube:

“Assessment: The Silent Killer of Learning”

Last, but not least...

Are you going to be implementing PI/JiTT?

Last, but not least...

Are you going to be implementing PI/JiTT?

Share your plans!

Research Funding:

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