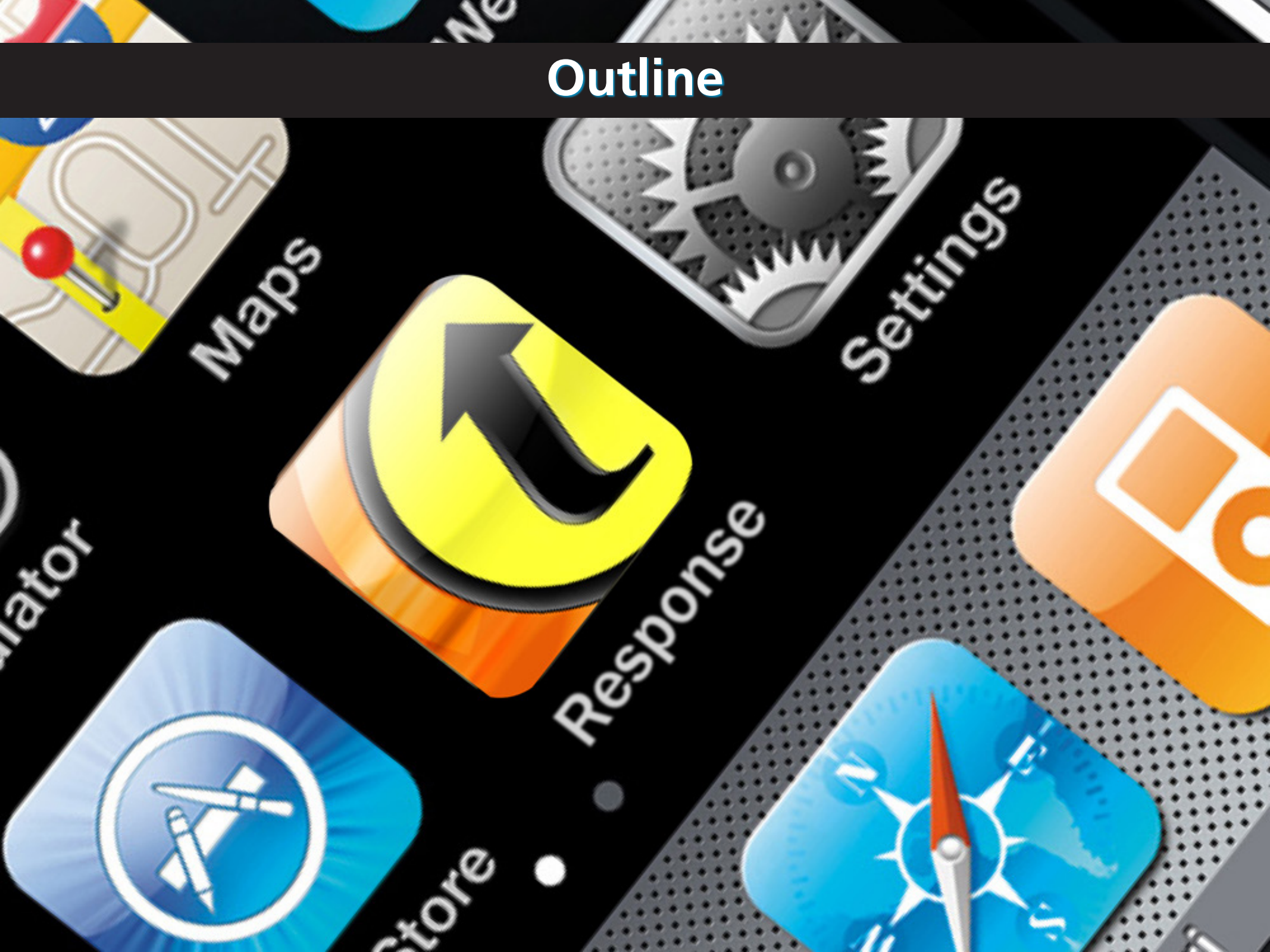
Engaging Students One-on-One, All At Once
Session 2

Peer Instruction Online Course
Hong Kong Polytechnic University
3 July 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

"Is Peer Instruction a method or a concept?"

Your questions

“Is there a connection

between Peer Instruction and MOOCs?”

Your questions

"Do you plan to add CTs for more practical subjects?"

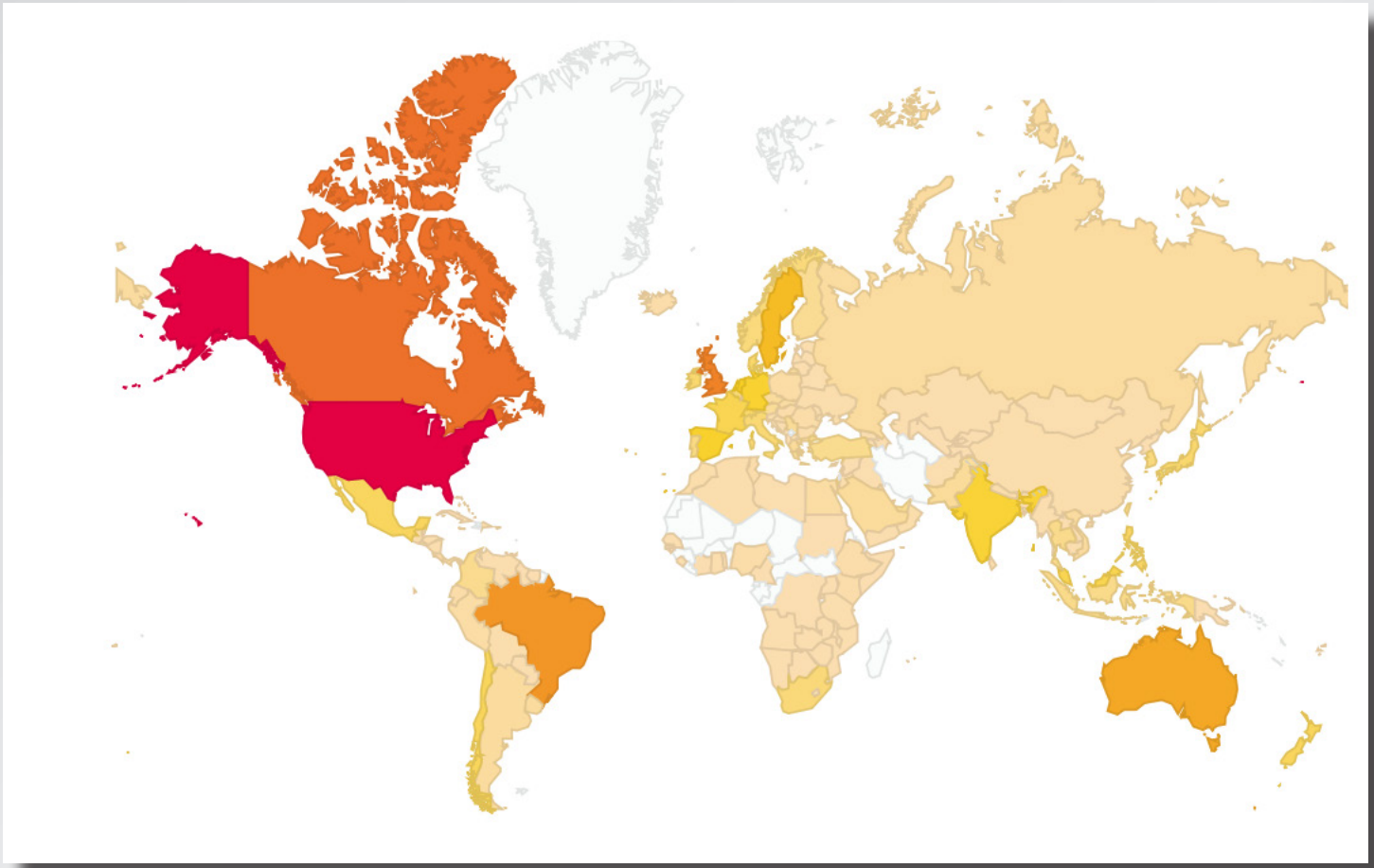
"Are you encouraging more CTs in other languages?"

YES!

Your questions

"What plans do you have to increase the "interna[tiona]liza-tion" of PI? It seems very American biased at the moment"

Your questions



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

"Besides JiTT, what other ways exist for motivating students to read ahead?"

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 ConcepTests

“Any suggested duration of each question?”

Administering ConcepTests

"Is implementation of PI possible without clickers?"

Administering ConcepTests

Yes! (And the learning gains are the same)

- show hands (on chest)
- flash cards

Administering ConcepTests

"What is an optimal balance between ConcepTests and lecture format?"

Administering ConcepTests

"The more I read about Peer Instruction, the more I think that technology is best used to foster the kind of learning that best happens in small groups. It is focused on conceptualising, how to think through issues. In that light, the technology itself — slides and mobile phone access to TurningPoint or other response ware — can be distracting. Any suggestions?"

Administering ConcepTests

"Would would be a feasible plan for PI

to be implemented for a large-sized class?"

Your questions

Question categories:

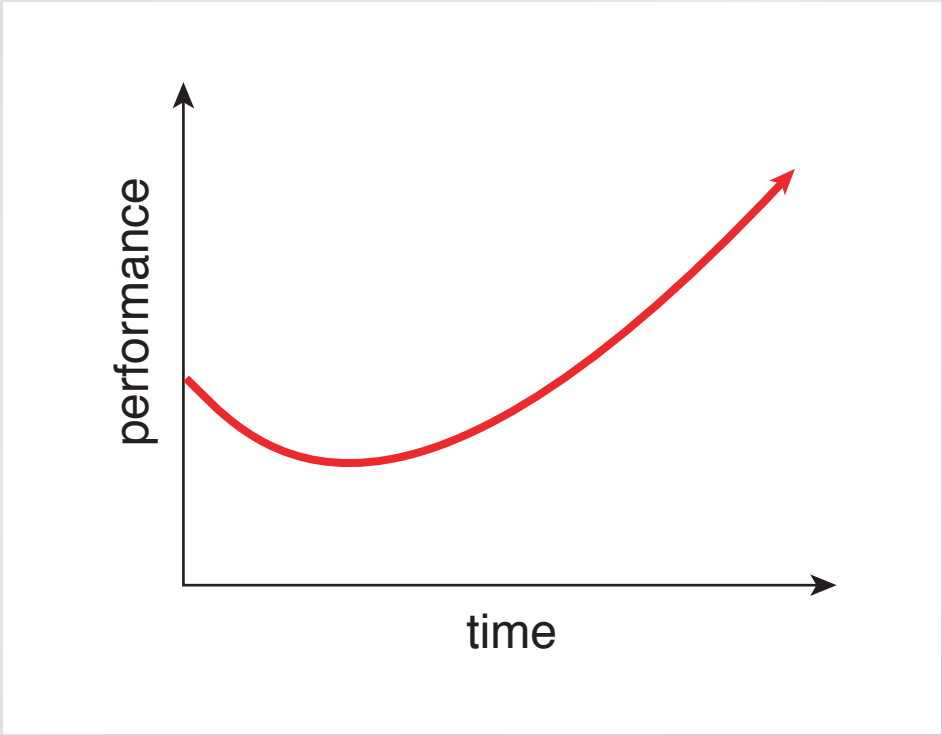
- Creating/finding ConcepTests (part 2)
- Moving information transfer out of classroom
- Administering ConcepTests
- **Student resistance**
- Assessment (part 3)

Student resistance

"If studens complain that they have to spend lots of time on readings but they understand not much, whereas spending 10 minutes in class listening to the instructor helps them understand the same thing or even more. How to reply?"

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 to 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:

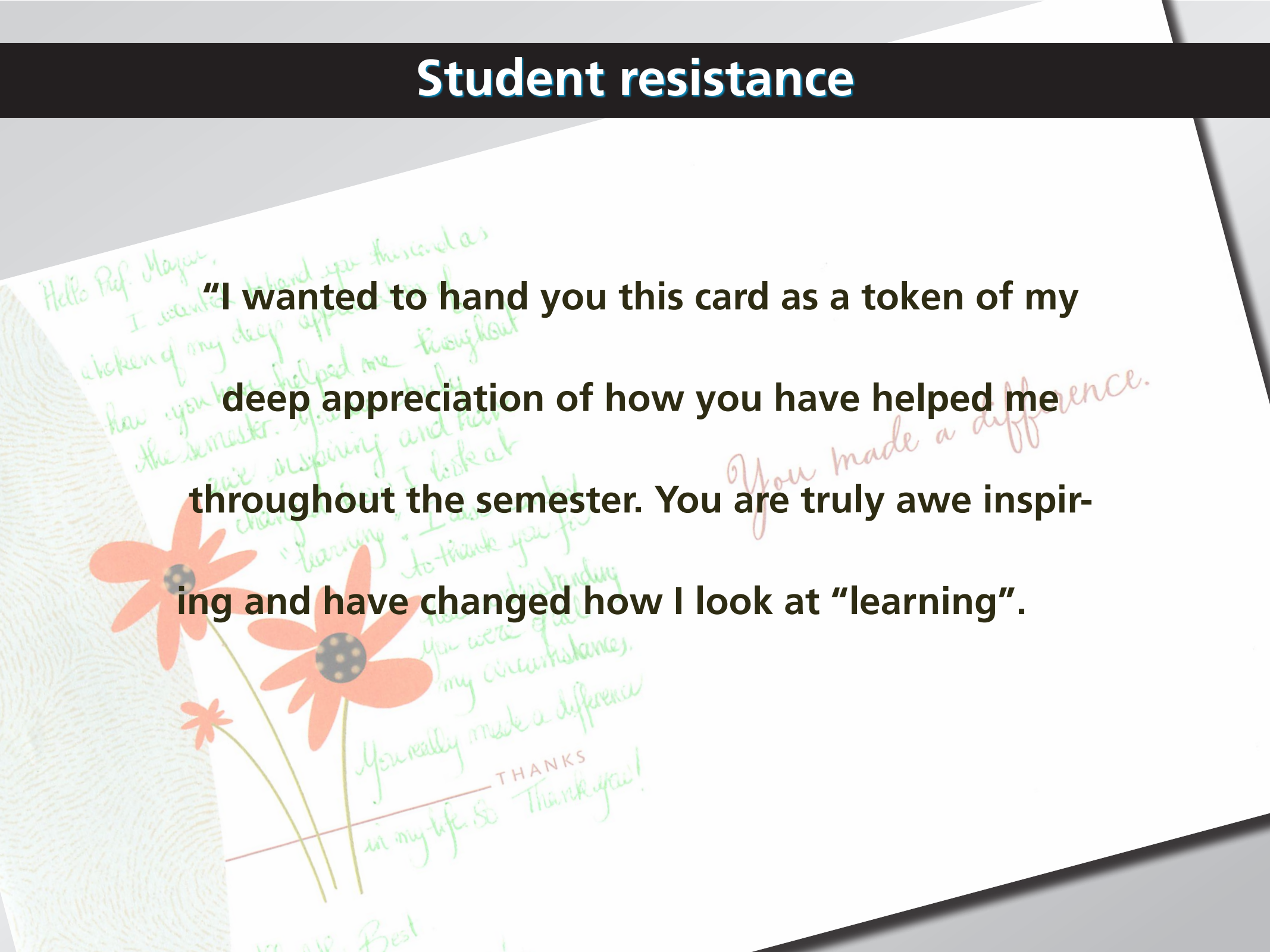
> Subject: Thanks!
>
> Professor Mazur,
>
> First of all I want to thank you for a great semester. You are an excellent professor, and it is clear that you truly care about each and every student.
>
> The exam went well today. I'm not sure to what extent you will curve the final grades (if at all), but 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

Student resistance

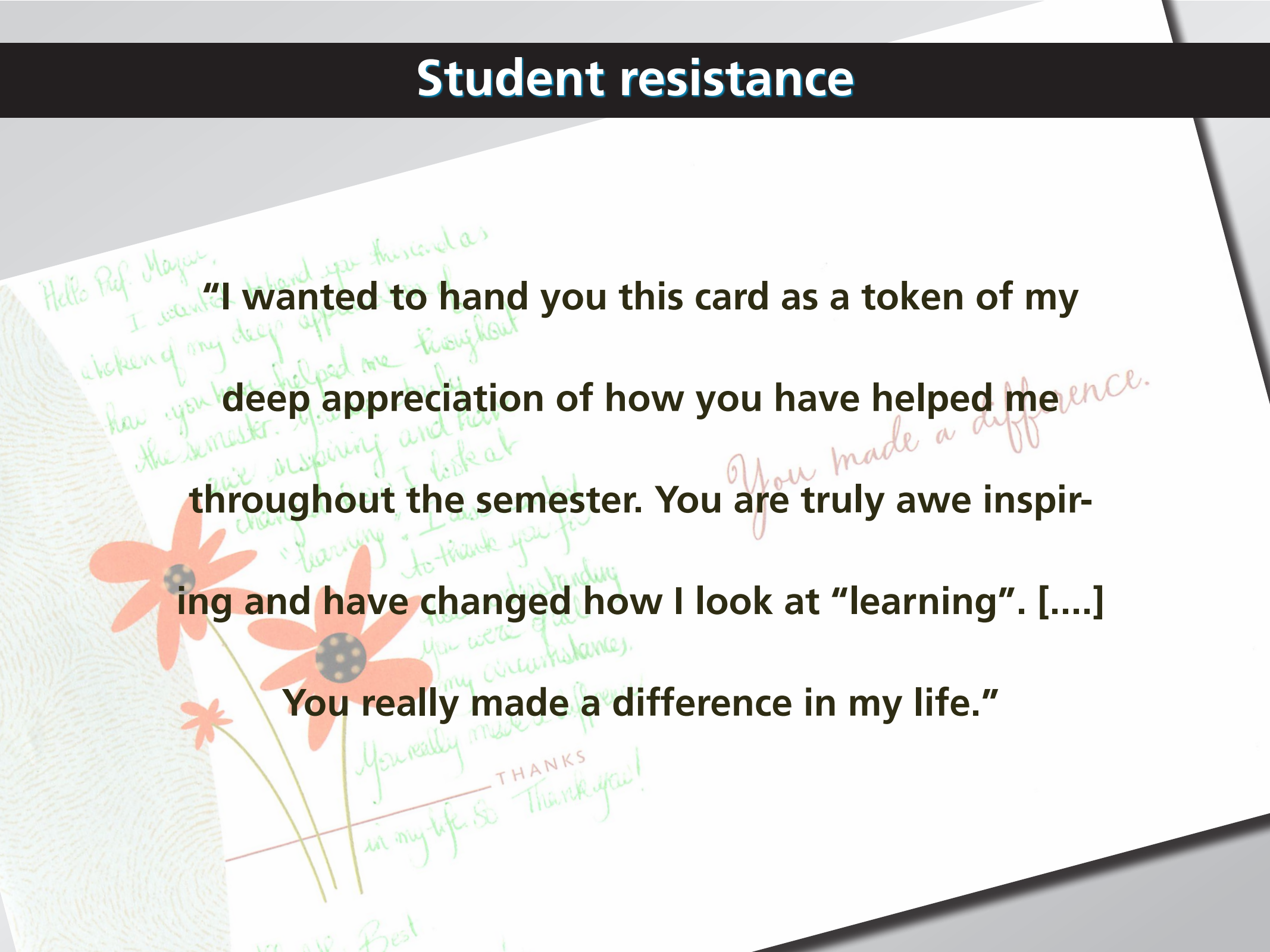
"I wanted to hand you this card as a token of my deep appreciation of how you have helped me throughout the semester.

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".

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."

Student resistance

and don’t forget…

Student resistance

and don’t forget…

PI leads to better learning and retention!

Student resistance

"If students would rather discuss with classmates (the same way as Peer Instruction) at other times rather than coming to class, what to do?"

Student resistance

“Student may feel the questions not interesting,

so may not bother to answer it seriously.”

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, 1, 4, 5, 6, 2

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, 1, 4, 5, 6, 2

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):

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

5, 3, 4, 1, 6, 2

Developing PI/JiTT questions

To get from his high school to his home, Yahya travels 5.0 meters east and then 4.0 meters north. When Jasmine goes to her home from that same high school, she travels 8.0 meters east and 2.0 meters south. What is the approximate measure of the shortest distance, between Yahya's home and Jasmine's home?

Developing PI/JiTT questions

http://bit.ly/conceptesthandout

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

Kevin Chan, HKPoly

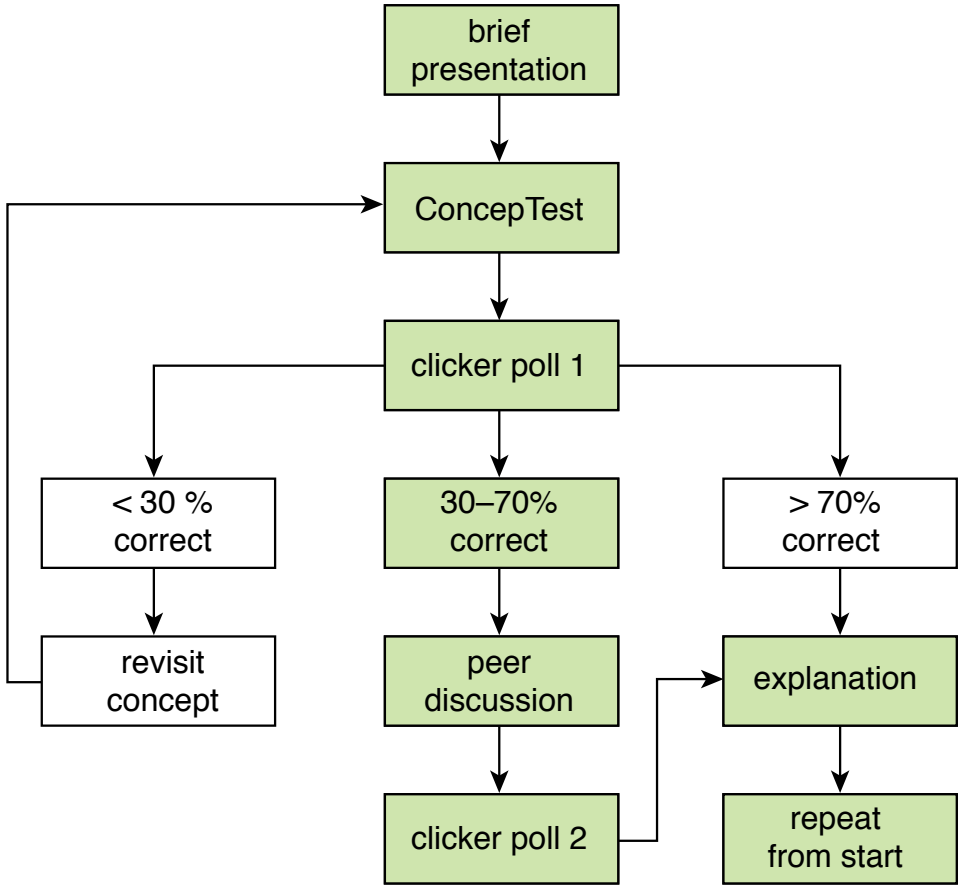
Developing PI/JiTT questions

“How do I select which concepts to evaluate?”

Developing PI/JiTT questions

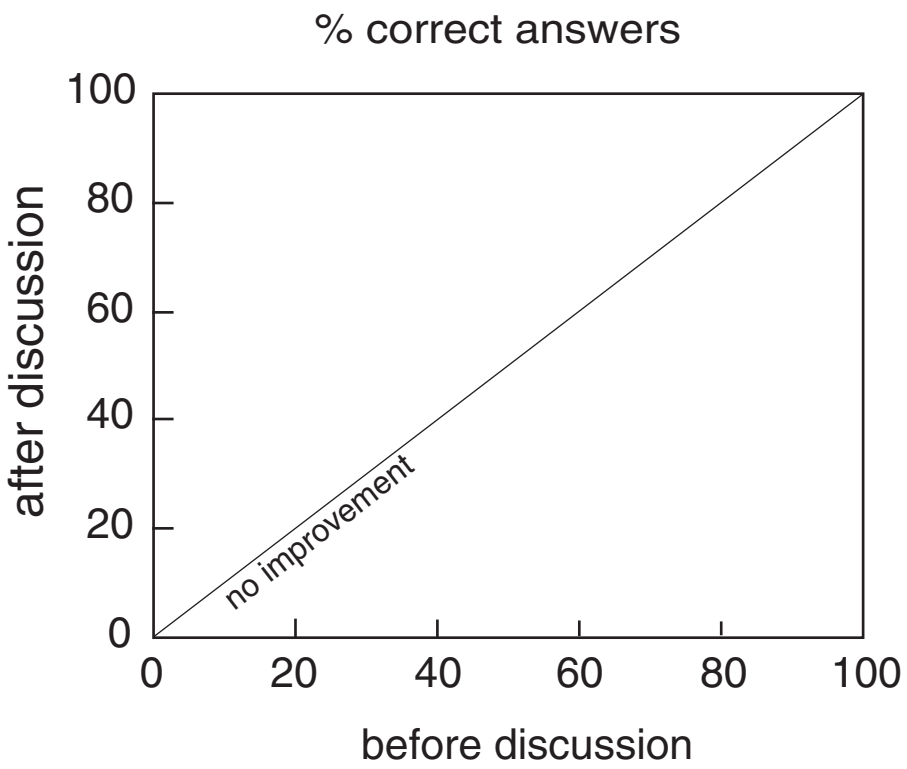
"How can I know what question is a good ConcepTest before I try it out in class with the 30%–70% principle"

Developing PI/JiTT questions



Developing PI/JiTT questions

ConcepTest data



Developing PI/JiTT questions

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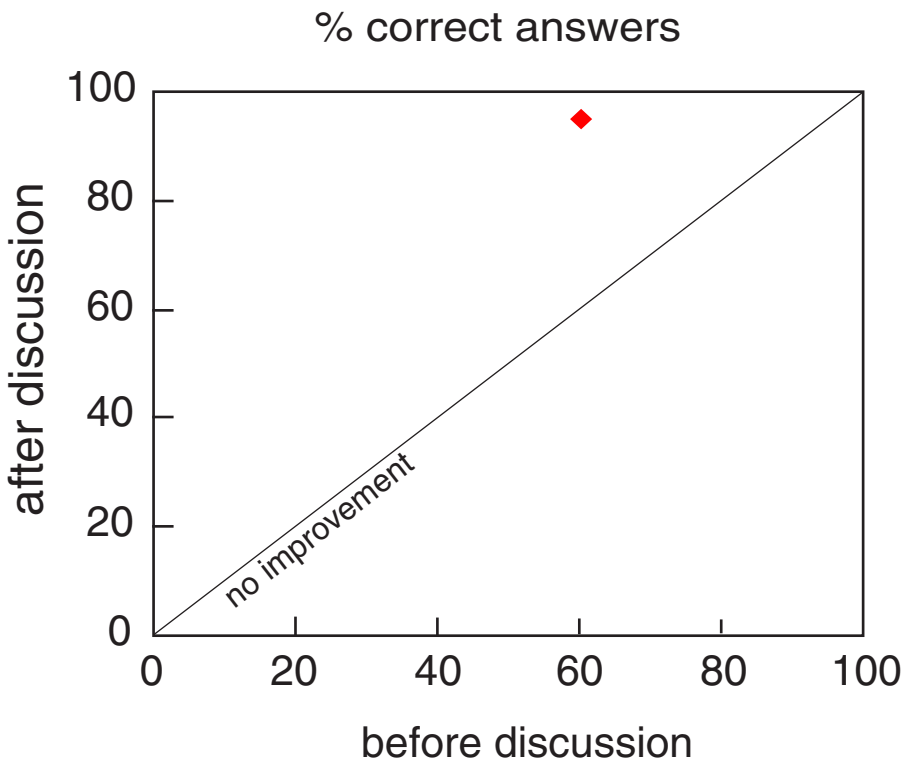

Developing PI/JiTT questions

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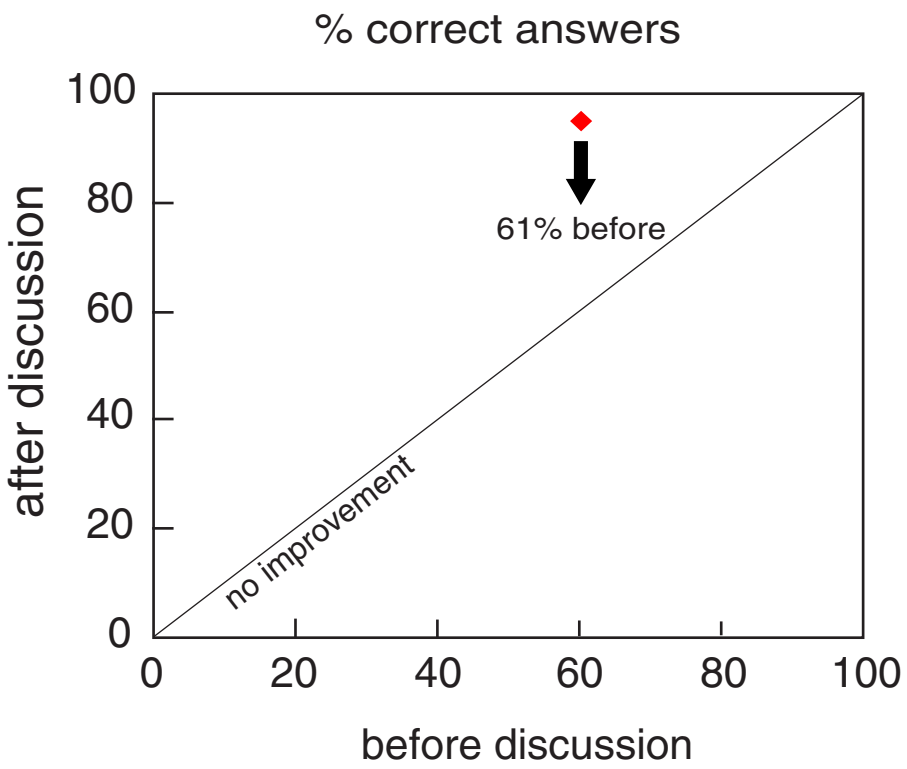

Developing PI/JiTT questions

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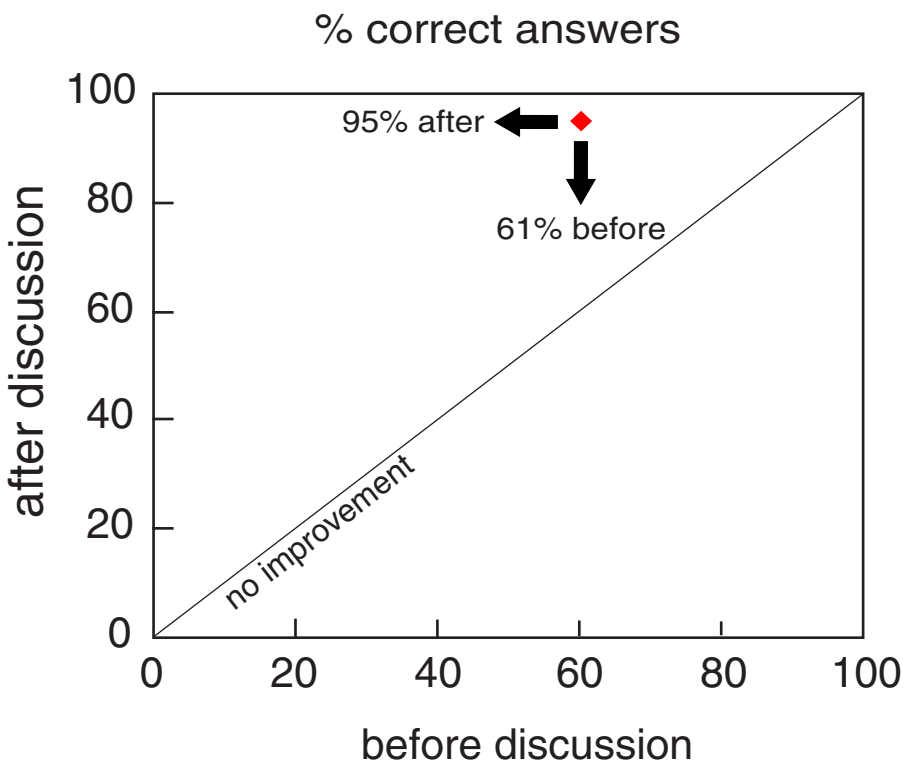

Developing PI/JiTT questions

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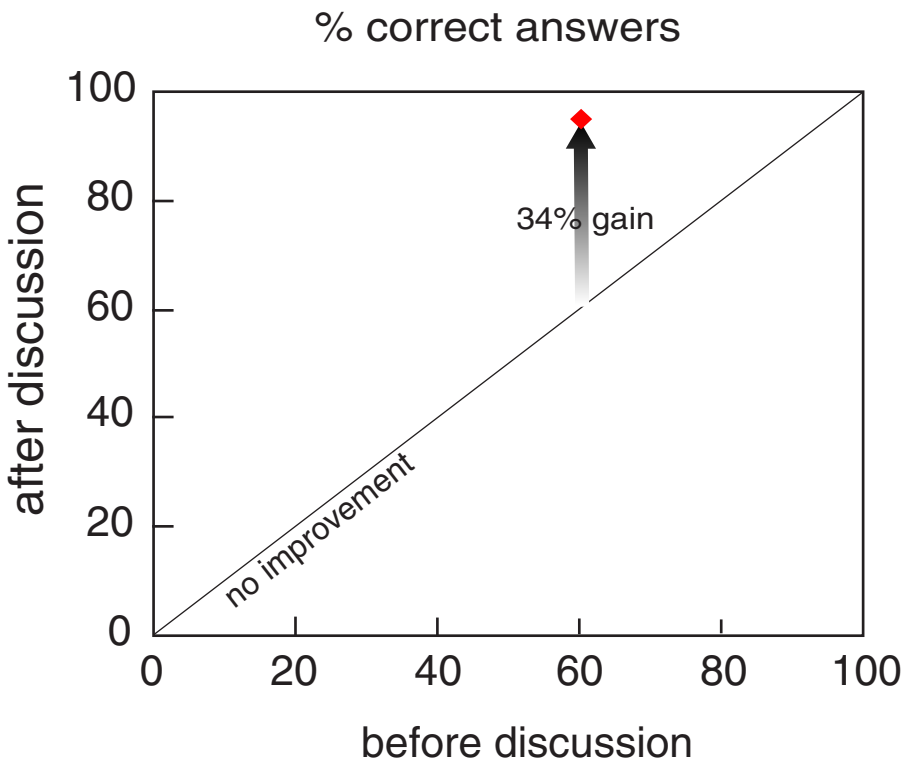

Developing PI/JiTT questions

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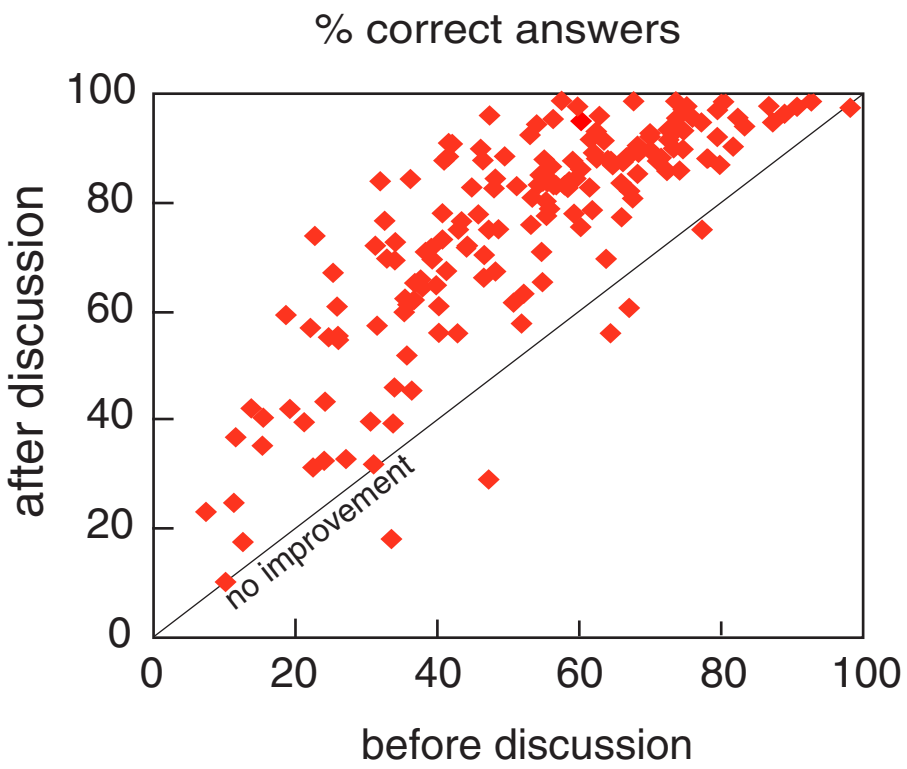

Developing PI/JiTT questions

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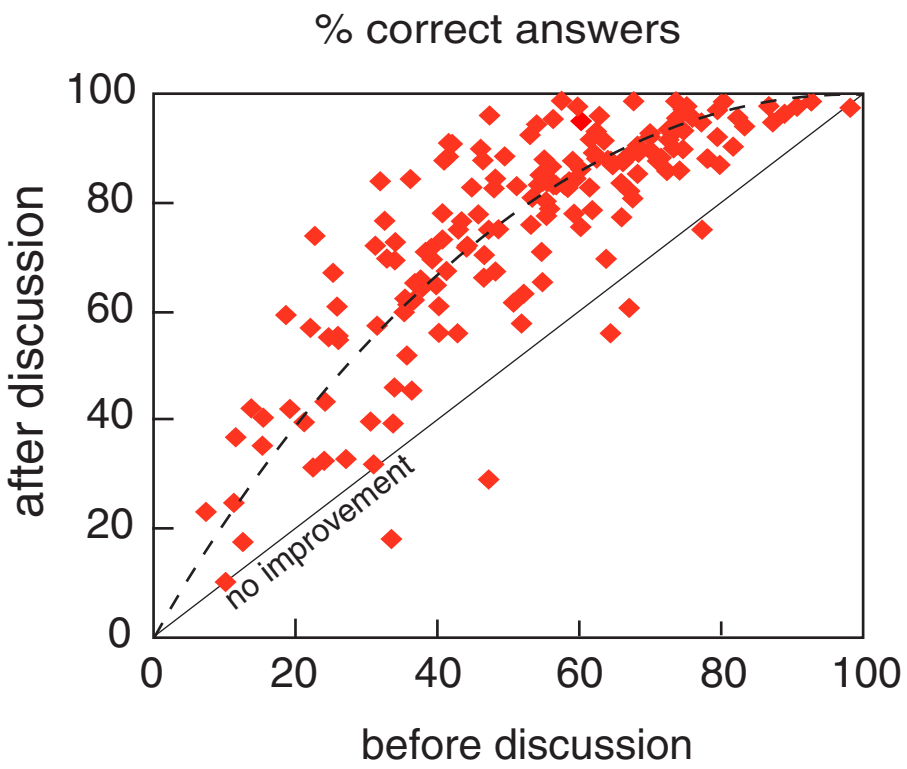
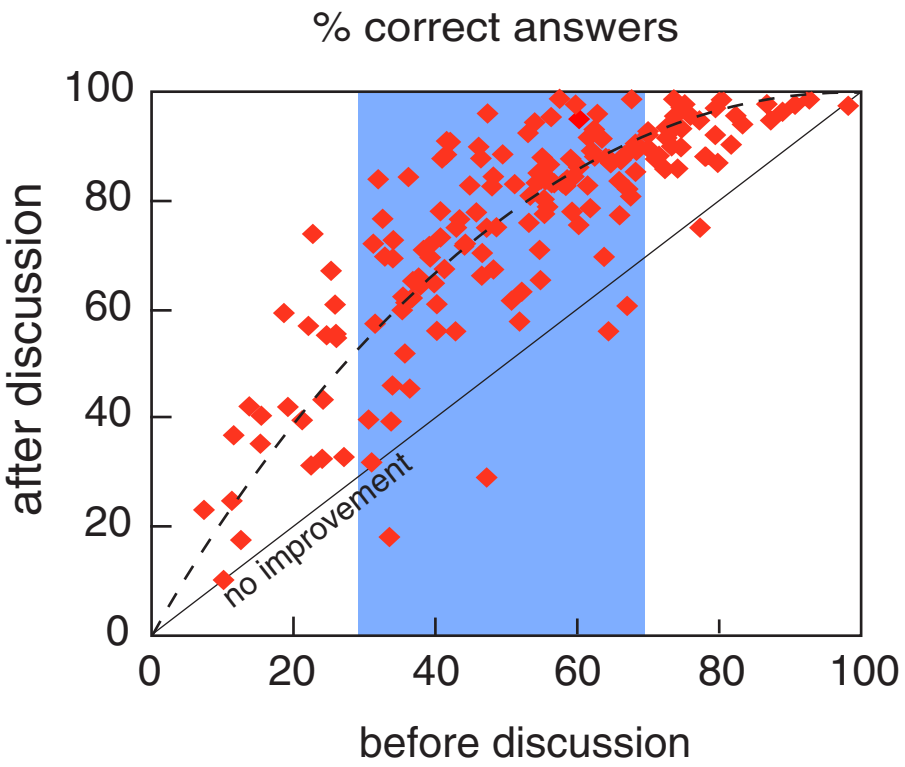


Developing PI/JiTT questions

ConcepTest data



Developing PI/JiTT questions

"Do you encourage students to come up with their own ConcepTests?"

Developing PI/JiTT questions

“I didn’t find any CTs on <subject>. Do you know of any?”

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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