

# **ENGAGING STUDENTS IN LARGE (AND SMALL) CLASSES: THE PEER INSTRUCTION METHOD**

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## **What is Student Engagement?**

### **◎ Self-determination**

(Deci & Ryan, 1985)

### **◎ Academic Intrinsic Motivation**

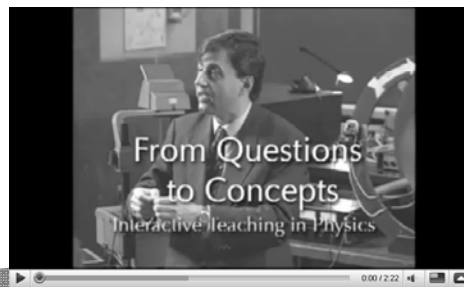
- Participation Through Curiosity
- Desire to Contribute
- Interaction with the Environment

### **◎ Cooperative Learning**

- Learning as a cooperative, social activity
- Students learn from each other

## What is Peer Instruction/Peer Discussion?

- ⦿ Type of cooperative learning
- ⦿ Means for engaging students in large classes
- ⦿ Promotes Interaction
- ⦿ Eric Mazur <http://www.youtube.com/watch?v=IBYrKPoVFwg>  
Harvard



## Method

- ⦿ Pose conceptual, thought-provoking/high level question
- ⦿ Poll students, display results
- ⦿ If responses vary, direct them to discuss
- ⦿ Re-poll, display results
- ⦿ Have a student articulate why answer is correct

## Describe Results

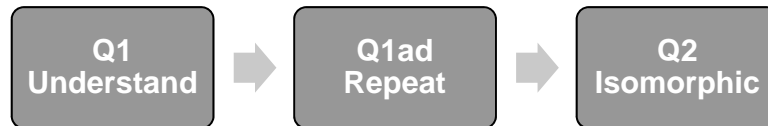
- ◎ Students engage
- ◎ Answers typically cluster
- ◎ Understanding, retention increase

## WHY?

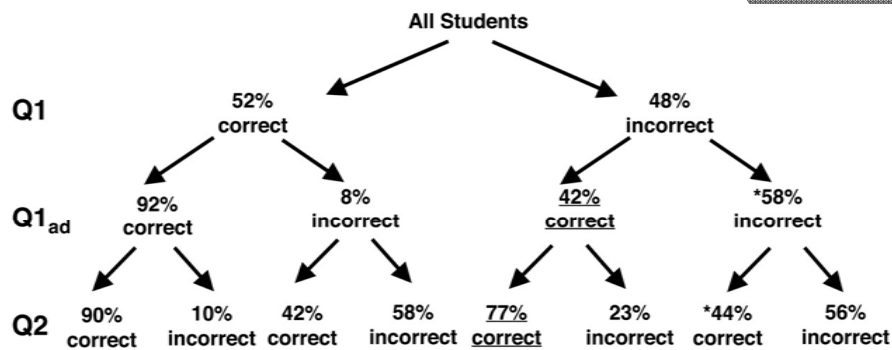
- ◎ Gains in understanding during discussion?
- ◎ Got answer someone else in group?
- ◎ Other explanations?

## New Study- University of Colorado, Boulder

- Undergrad Genetics course- 350 students
- Average 5 clicker questions during 50 minute lecture through semester



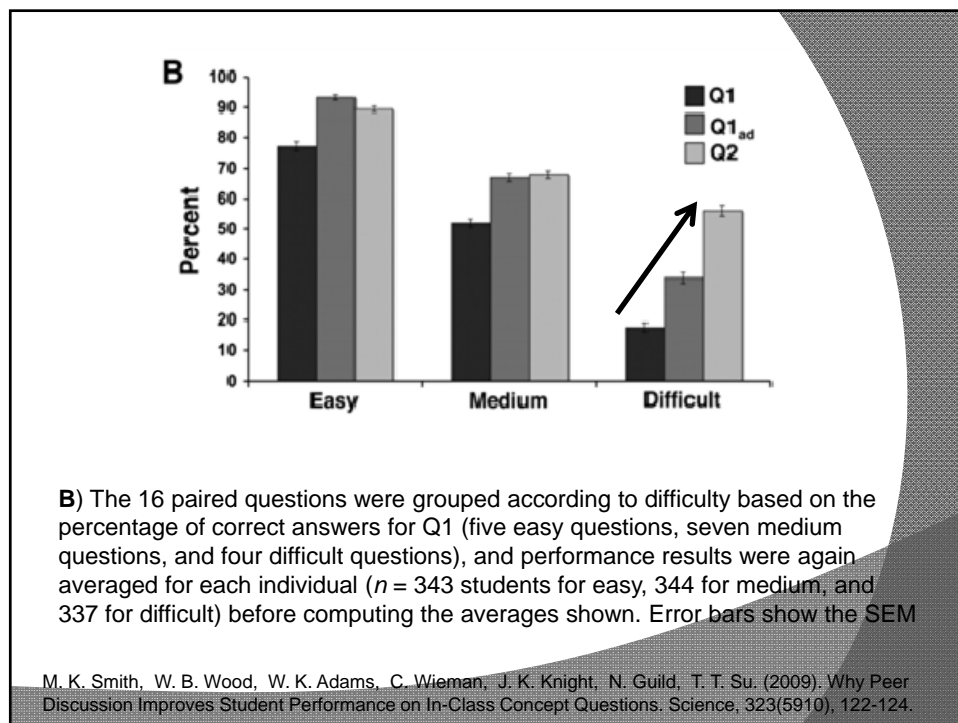
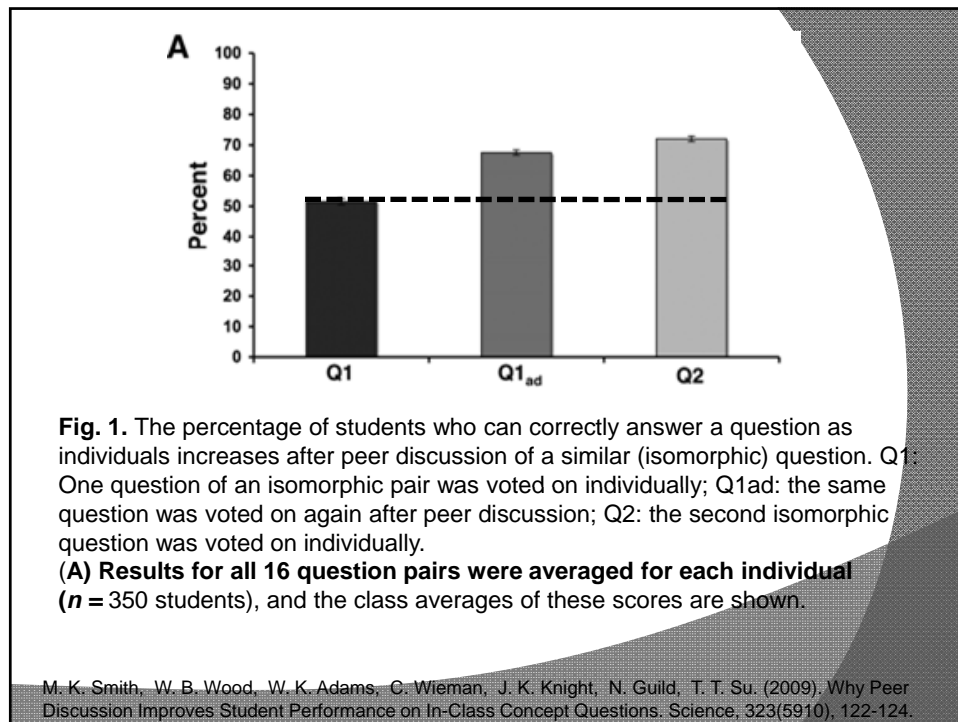
- Assessed 16 times during semester by adding a 2<sup>nd</sup> isomorphic question; did not reveal answers or histogram until after Q2



**Fig. 2.** Underlined entries represent students who initially did not answer Q1 correctly but did so after group discussion;

\*\*entries with an asterisk represent students who did not answer either Q1 or Q1<sub>ad</sub> correctly, but nevertheless were able to correctly answer the isomorphic question Q2. Of the 32 questions in our 16 question pairs, 7 had 5 answer choices, 5 had 4 choices, 3 had 3 choices, and 1 had 2 choices.

M. K. Smith, W. B. Wood, W. K. Adams, C. Wieman, J. K. Knight, N. Guild, T. T. Su. (2009). Why Peer Discussion Improves Student Performance on In-Class Concept Questions. *Science*, 323(5910), 122-124.



## Collecting responses

- clickers



- flashcards



- hands <http://www.youtube.com/watch?v=qQra4baNwP8>



## Best Practices for PI

- Explain to students how you expect process to work- may be difficult to get them started initially
- If using points, award for both responses, may use differential
- Probe/challenge students explanation of correct answers
- Circulate during discussion
- A good question will result in 40-80% correct response (Mazur)

# Thoughts? Questions?

Are teachers ready to give up control of the learning environment?

Are students ready for teachers to give up control?

What changes do we need to make in our philosophies and practices?

## Sources

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