Leveraging Technology to Enhance Evidence-Based Pedagogy: A Case Study of Peer Instruction in Norway

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Peer Instruction

An evidence-based pedagogy developed by Eric Mazur at Harvard University in the 1990s.
Peer Instruction
Peer Instruction
A Flipped Classroom Approach

BEFORE CLASS: Nothing

IN CLASS: First Exposure to content through lecture

AFTER CLASS: Application of content at home, with homework

Image ©Knewton.com
Peer Instruction
A Flipped Classroom Approach

BEFORE CLASS: First Exposure to content through video lecture, reading, etc.

IN CLASS: Application of content learned at home

AFTER CLASS: Review, prep for next class
Peer Instruction

BEFORE CLASS: First exposure to content and completion of warm up activities, send feedback to instructor

IN CLASS: Time spent eliciting, confronting, and resolving student difficulties (from feedback) in-depth
Just-in-Time Teaching

Before Class

1. **topic 1 reading assignment**
2. **online assignment**
3. **review feedback**
4. **address difficulties in class**
5. **repeat with next topic**

- **2 conceptual questions**
- **1 feedback question**
Peer Instruction

brief presentation

Question

Student poll 1

30-70% correct

peer discussion

Student poll 2

In Class
Peer Instruction

• Why use Peer Instruction?
  – Compared to traditional teaching
    • Student conceptual understanding
    • Student achievement on end-of-term grades
    • Retention in courses and majors
    • Attendance
    • Engagement in and out of class
Peer Instruction

• Benefits of Low-Tech Classroom Response Systems
  – Easy to implement
  – The only cost is printing of paper
  – Easy to implement on the fly
Peer Instruction

• Limitations of Low-Tech Classroom Response Systems
  – Relies on visual assessment of responses
  – Learning analytics limited to “in the moment”
  – Not anonymous
Peer Instruction in Norway

OSLO AND AKERSHUS UNIVERSITY COLLEGE OF APPLIED SCIENCES

21 pre-service primary school teachers
Course structure

Year 1
Science

Year 2
Science

Year 3
Science

Year 4
Science

1 session = 2hr 45min
Use of PI in class
Implementing clickers
Survey of Student Perception

How valuable were the following aspects of the physics course for learning physics?
(1 = worthless; 3 = OK; 5 = very valuable)

3.5  4.0  4.5  5.0
Survey of Student Perception

«Which do you prefer, and why?»

0 3 15

Graphics
Efficiency
Anonymity
Fun!
Survey of Student Perception

A traditional lecture course would have been better

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

The physics course was boring.

I am satisfied with the physics course.

The physics course helped me understand physics.
Summary
Summary

Graphics
Efficiency
Anonymity

Fun!

Useful for teaching and research purposes
Tips for new clicker users

Office

Classroom
Recent Articles

How learning works in Peer Instruction and Learning Catalytics
March 11, 2013
March 11, 2013 @julieschell Many teachers are using Peer Instruction and classroom response systems (CRSS) to flip their classrooms and to engage students in deep learning and subject-matter understanding. After trying a range of CRSSs throughout his career, in 2011 Eric Mazur teamed up with Brian Lukoff and Gary King at Harvard University to develop Learning […]

How to FLIP your class...in 4 basic steps
March 4, 2013
FLIP in 4 Steps Contrary to popular belief, there is actually no “ONE way to flip a class” (Bergmann, 2012). However, after visiting flipped classrooms all over North America and talking with lots of teachers who have tried flipping across the globe, I have come to view the cycle of flipping as occurring through a […]