The Interactive Learning Toolkit: technology and the classroom

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...and hundreds students in dozens of courses
Large lectures

universally loathed by students and faculty alike

(but here to stay!)
Large lectures

focus on delivery of information
Large lectures

not delivery of information

but assimilation of knowledge
Large lectures

instructor: busy delivering information
Large lectures

instructor: busy delivering information

students: busy taking down information
Large lectures

instructor: can’t address individual student needs

students: no time to think
Technology
Technology

not a magic bullet
new method for delivering old content
Interactive Learning Toolkit

Use technology to

• facilitate new modes of learning

• increase interaction

• help instructor address student needs
• preparing for class
• provoking thought
• additional tools
Preparing for class
Preparing for class

nameless faces
Preparing for class

nameless faces

faceless names

$CV = 90mV$

$Y = \frac{2}{3}CV$

$= \frac{2}{3}(0.25 mV)(0.1 m) = 0.01667 mV$
Preparing for class

How to move information transfer out of classroom?
Preparing for class
Preparing for class

web-based pre-class assignment
Preparing for class
Preparring for class

Benefits:

- prepares students for class
- helps instructor address individual student needs
- increases student-faculty interaction
- connects names and faces
Outline

• preparing for class
• provoking thought
• additional tools
What to do in class?
Provoking thought

Peer Instruction
A User’s Manual

ERIC MAZUR
Provoking thought

Focus on depth, not breadth
Provoking thought
Provoking thought

Some hurdles:

- finding materials
- collecting and managing feedback
- providing materials to students
1. A permanent magnet is dropped through a long aluminum tube, as shown. As the magnet drops, electric currents are induced around the tube. Compared to a freely-falling magnet, the magnet through the tube drops

1. more slowly.
2. exactly the same way.
3. faster.
4. Need more information.

Hint: consider the effects of induced currents through strips ahead of and behind the dropped magnet.

**Answer:** 1. In a loop of the aluminum tube just below the magnet, the flux is increasing as the magnet gets nearer. This induces a counterclockwise current producing an opposing magnetic field which repels the magnet. In a loop above the magnet, the flux is decreasing, so a clockwise current is induced producing a magnetic field in the same direction as the magnet's field, thus attracting the magnet upward. So the net effect is to slow the magnet down.
Benefits:

- easy preparation
- automatic student Web page generation
- management of data
Outline

- preparing for class
- provoking thought
- additional tools
Additional tools

- forums
- e-mail
- gradebook
- cloning
- reminders

and much more!
Additional tools

Interactive Learning Toolkit is:

- a learning management system
- a content management system
- a course management system
Summary

- enables new modes of learning
- helps instructor address student needs
- facilitates workflow
Students’ conclusion:

“Prof. Mazur is not teaching us anything. We have to learn it all ourselves.”
Support:

- Davis Foundation
- National Science Foundation
- Harvard SEAS Information Technology Group
- Pearson/Prentice Hall
- Apple Computer

for a copy of this presentation:

http://mazur-www.harvard.edu