Assessment Focused Flipped Classroom

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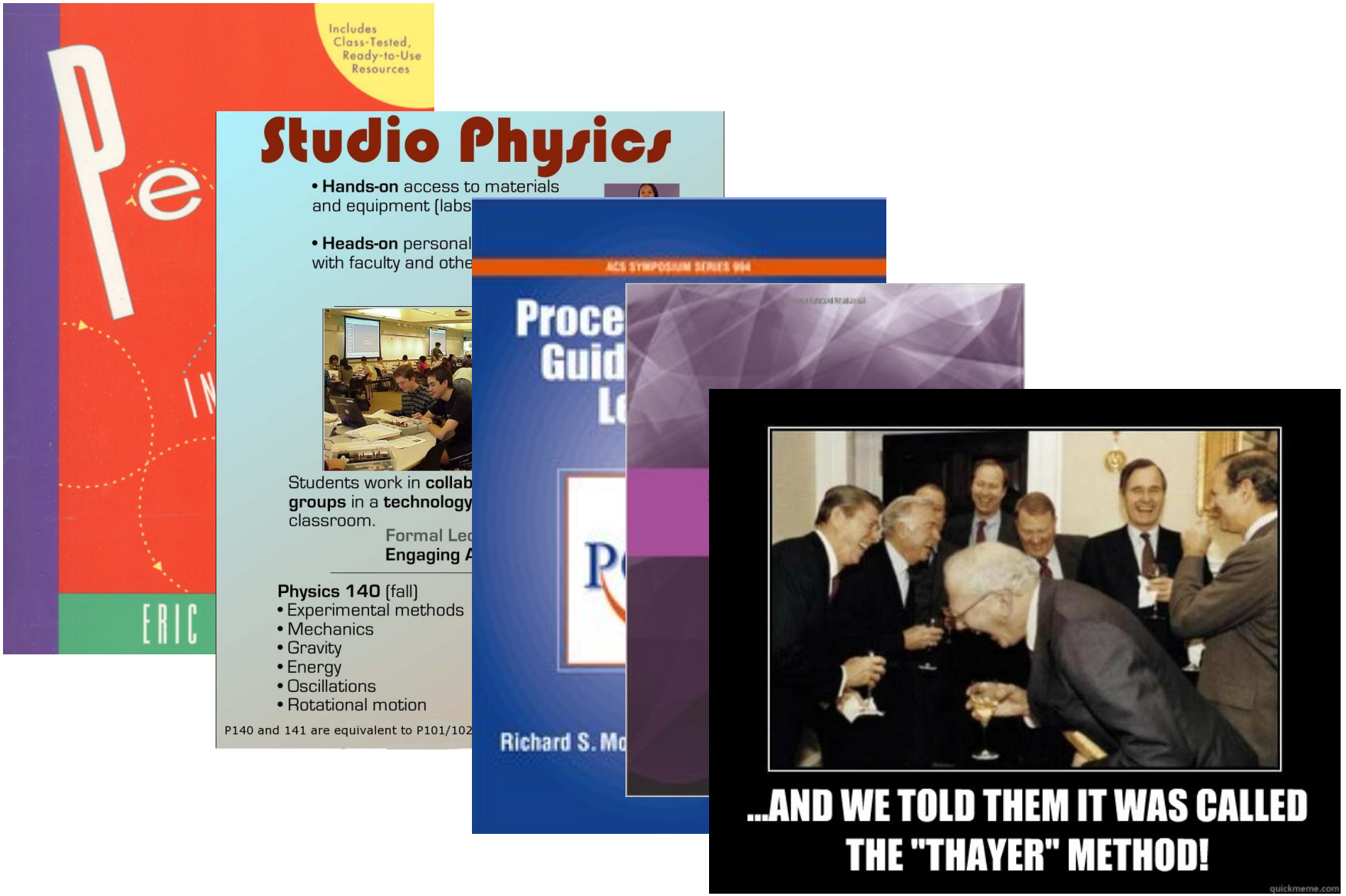
Physics “Active Learning” Pedagogy



Flipped Classroom Made Easy

Traditional Classroom

School

- Happens FIRST:
  - Lecture
  - Assign Homework

Home

- Happens SECOND:
  - Complete Homework

Flipped Classroom

Home

- Happens FIRST:
  - View Instructional videos at home OR
  - Listen to teacher podcasts
  - Complete quick assessments so teachers can gauge understanding before tomorrow's class

School

- Happens SECOND:
  - Do schoolwork (what used to be assigned for homework) together with teacher and peers
  - Teachers can offer one-on-one help

Image credit: http://edtechenergy.blogspot.com/

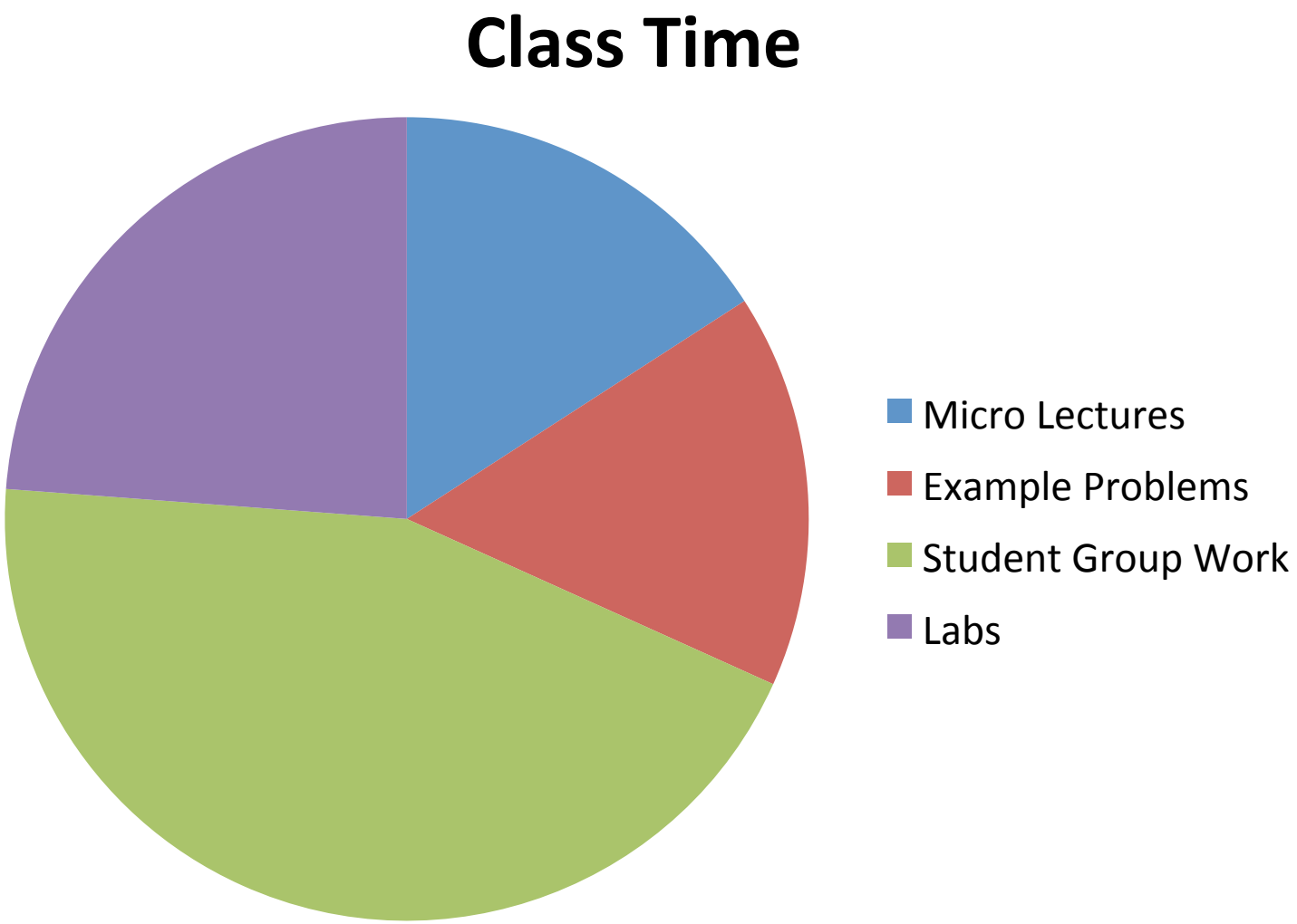
Reasons to “flip” the classroom

- Many students don’t have the attention span for a traditional lecture.
- “Passive” listening does not engage the mind like “active” doing.
- “Content delivery” is not the best use of time together.
  - Get the students interacting with each other while they are together.
  - Let the professor interact with student individually while they are together.

Challenges of “Flipped”

- Some students will not do pre-class work and come unprepared (Is this just GGC?)
- Students do not get to see their professor “teaching”
- Student buy-in
  - Most students hate “flipped classroom” learning
  - They complain that “the teacher doesn’t teach”

A balanced approach.



A balanced approach.

- Micro Lectures:
  - 10 – 15 minutes
  - Focused on a single topic
- Example Problems:
  - Directly Related to Homework
- Student Group Work
  - Student work on “homework” during class
  - Anything they don’t finish is taken home
- Lab
  - Labs are directly tied to the day’s topic
  - Lecture/Lab are combined

What else?

- Textbook optional; not referenced in class or homework.
- Weekly quizzes replace unit tests
- Planning my week
  - Write the quiz first: what is most important.
  - Write the homework next
    - Not from a book
    - Designed to directly prepare student for the quiz
    - LOTS of homework: physics requires practice!
  - Plan mini-lectures last

What do students think?

Question	Week 2 Answer (N=41)	Week 9 Answer (N=36)
We need a book.	41%	14%
Professor should lecture more.	51%	44%
Homework helps on the quiz.	98%	97%
Tests are better than quizzes.	7%	11%
Labs relate to the quiz.	95%	97%

What do students think?

Question	Week 2 Answer	Week 9 Answer
Homework a waste of time.	5%	3%
I do all the homework.	98%	83%
Lectures do not related to quiz/ homework.	0%	0%
I spend ____ hours working on homework at home.	5+ 5% 3-5 30% 1-3 60% 0-1 5%	
The professor doesn't "teach."	0%	3%

What do students think?

- Positive
  - One of the most helpful ways of teaching I have had.
  - Well balanced
  - Perfect example of how courses should be.
  - I enjoy this method of teaching.
  - Continuity between lectures and out-of-class work
- Negative
  - Spend more time explaining
  - We need more example problems
  - Professor goes to fast
  - I would like a book to read to supplement class and get background
  - Quizzes don't provide a sufficient challenge - students should have the additional challenge of serious examinations.

Comments and Questions

- What am I doing wrong?
- What great things are you doing that I could learn from?