



Flipping the
classroom

Lola
Thompson

Intro to
flipping

The nuts-and-
bolts of
flipping

Student
feedback and
outcomes

Flipping the classroom (without turning your life upside down)

Lola Thompson

Oberlin College

October 4, 2013



What is a “flipped” classroom?

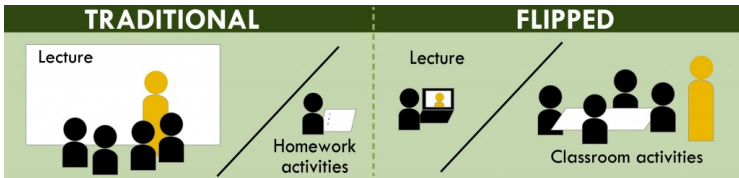
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Why did I flip my classroom?

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From the Dartmouth College course catalog:

This course is a sequel to MATH 3 and is appropriate for students who have successfully completed an AB calculus curriculum in secondary school. Roughly half of the course is devoted to topics in one-variable calculus: techniques of integration, areas, volumes, trigonometric integrals and substitutions, numerical integration, sequences and series including Taylor series. The second half of the course generally studies scalar valued functions of several variables. It begins with the study of vector geometry, equations of lines and planes, and space curves (velocity, acceleration, arclength). The rest of the course is devoted to studying differential calculus of functions of several variables. Topics include limits and continuity, partial derivatives, tangent planes and differentials, the Chain Rule, directional derivatives and applications, and optimization problems including the use of Lagrange multipliers.



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All of this in 10 weeks! (3 hour-long classes per week)



Excuses, excuses!

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Excuse #1: *I am afraid to make such a radical change in the way that I teach, especially since I don't have tenure yet.*



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Excuse #5: *I am teaching one section out of many and I don't have much flexibility in the grading or pace of the course.*



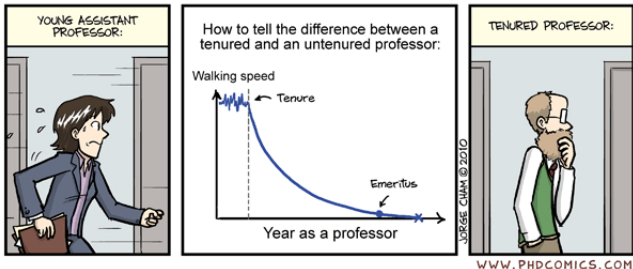
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Compromise: a partially-flipped classroom

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A week in the life of my students:

	Monday	Wednesday	Friday
Class period	In-class lecture	Worksheets	In-class lecture
Homework	WeBWork; view take-home lecture	WeBWork	WeBWork



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Excuse #2: *I don't want to have to go out and buy an expensive recording device.*



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What I used:



* Livescribe Echo SmartPen (\$100 - \$200)



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What other flipped classroom practitioners use:



- * iPad + stylus

 - Apps: Explain Everything, Doceri, Educreations,...

- * Digital video camera



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foddy.com

Excuse #3: *I will spend way too much time writing and recording the take-home lectures.*



Extra Time? Do the math!

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Regular Calculus II course:

3 regular lectures \times 90 minutes – 270 minutes

VS

Partially-flipped Calculus II course:

writing 2 regular lectures \times 90 minutes – 180 minutes

writing 1 mini-lecture (15 minutes) – 25 minutes

recording 1 mini-lecture – 15 minutes

uploading and posting 1 mini-lecture – 5 minutes

writing 1 class' worth of worksheets – 60 minutes

Total: 285 minutes



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Student feedback (week 4)

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I learn more effectively from:

Lectures	Solving problems for myself
8	8

Opinions on lectures vs. worksheets:

I prefer a standard lecture-based format	I enjoy the change of pace from lectures
7	11



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Opinions on take-home lectures:

I like the fact that I can watch and replay the take-home lectures at my own pace.	I find it difficult to learn from the take-home lectures
5	6

Take-home lectures take up too much of my time!	Take-home lectures won't play on my computer.
4	2



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Written comments:

“I didn’t like the online lectures at first. It was annoying downloading extra programs and making them work on my computer. But, I’m starting to see some of there [sic] advantages.”

“Take-home lectures are harder to follow than in-class lectures.”

“Not sure how I feel about take home lectures.”



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“Take-home lectures are harder to follow than in-class lectures.”

“Not sure how I feel about take home lectures.”

Not a single student wrote a completely positive comment about the take-home lectures!



Six Weeks Later...

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Student feedback (end-of-term)

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“Professor Thompson was the best teacher I have ever had. She explains concepts clearly and quickly and always tries to answer questions posed in class. She made herself available for office hours everyday in the afternoon such that there were either office hours or tutorial sessions every day of the week. This is an exemplary model that should be adopted throughout the college. As if this weren’t enough, Professor Thompson posted her notes from the class online after every class, and **set aside Wednesdays as in-class-exercise days. She would post interactive notes on Blackboard Tuesdays for us to go over, and she would pick up where those left off and spend most of Wednesdays going through more difficult practice problems to apply those concepts. This method was a fantastic variation of the typical lecture, and worked very well in combination with weekly, short quizzes on fridays.**”



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“Professor Thompson’s **teaching methods are impeccable**. I cannot think of any change that wouldn’t detract from her effectiveness as a teacher.”

“Excellent at explaining concepts, friendly and approachable, by far the best professor I have had, **best teacher** I’ve had overall.”



Student feedback (end-of-term)

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“Excellent at explaining concepts, friendly and approachable, by far the best professor I have had, **best teacher** I’ve had overall.”

Not a single negative comment about the worksheets or take-home lectures!



Student outcomes

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First midterm exam:

Section median	Course median
84	82.5

Final exam:

Section median	Course median
87	78.5



Advantages of flipping

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Advantages:

- Research shows that active learning is *better for the students*. Flipping can buy you more class time for active learning techniques.



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- Flipping can allow for more control over the pace than other IBL styles.
- Students may even perceive that you're a better teacher because you're doing something non-standard!



Disadvantages of flipping

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- Technological snafus can be a headache.



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- Students may not give the same weight to take-home lectures that they give to in-class lectures.
- Flipping can make it more difficult to coordinate with other sections.



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Thank you!

