A Busy Professor’s Guide to Sanely Flipping Your Classroom

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Flipped Classroom: Is this JUST the next Buzz…

Traditional

Flipped

Hybrid

Technology-Assisted
Beyond the BUZZ:
What is KNOWN to Improve Learning

- Active Learning
- Problem-Based Learning
- Real-World Applications
- Supplemental Instruction
- Tutoring/Individual Instruction
What the Scholarship of T&L (SoTL) Research Says

1. An **flipped experimental study** in a 2\(^{nd}\) semester gen chem class showed a 56\% decrease in DFW percentage (Ds, Fs, withdrawals) - Ryan, & Reid, 2015).

2. **STEM active learning study**: average examination scores improved by about 6\% in active learning sections, and students in classes with traditional lecturing were 1.5 times more likely to fail than were students in classes with active learning. (Freeman, Eddy, McDonough, Smith, Okoroafor, Jordt, & Wenderoth, 2014).

3. In a 2\(^{nd}\) yr pharmacology course, group performance in the **TBL case study exercises** was consistently better than individual performance. TBL improved the performance of students on the summative pharmacology test. (Zgheib, Simaan & Sabra, 2010).

http://issotl.com/issotl15/node/21
But HOW to get them into MY class?

- Active Learning
- Problem-Based Learning
- Real-World Applications
- Supplemental Instruction
- Tutoring/Individual Instruction
Pre-Flip: Good, Solid Traditional Class

50 Min. MWF Lecture

1-2 Hr MWF HW
(most UofU students study alone)

3 Hour Hands On Lab

2007: ECE 5/6340
Numerical EM
2009: ECE 3300
Intro Electromagnetics
2014: ECE 1250
Freshman ECE Circuits

HW Problem Solving
Traditional Classroom

What are the Students Really DOING?
I want my students to learn MORE

Bloom’s Taxonomy

http://ww2.odu.edu/educ/roverbau/Bloom/blooms_taxonomy.htm
How Can my Students LEARN MORE?

Dale’s Cone

http://www.learningandteaching.info/learning/myths.htm
What is KNOWN to improve learning….
I need to BUY TIME

- Active Learning
- Problem-Based Learning
- Real-World Applications
- Supplemental Instruction
- Tutoring/Individual Instruction
The Flipped Class: Video Lecture
The Flipped Class: In Class

ACTIVE Learning
What would you LIKE about the Flipped Classroom?
# Course Evaluations:
## ECE3300 Intro to Electromagnetics

*Student Evaluation scores:*

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<thead>
<tr>
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<th>2007</th>
<th>2009</th>
<th>2010</th>
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<tbody>
<tr>
<td>Pre</td>
<td>4.98</td>
<td>5.68</td>
<td>5.61</td>
</tr>
<tr>
<td>Yr1</td>
<td>5.13</td>
<td>5.85</td>
<td>5.82</td>
</tr>
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Positive: made class time more valuable, able to repeat the videos as needed, helpful to the international students as they could re-watch, slow the speed and even close –caption

Unsure: Traditional students wanted a traditional lecture.

Negative: Not the way that they were taught to learn, allowed them to slack and procrastinate, “interesting method but too easy to fall behind”.

<table>
<thead>
<tr>
<th>Response</th>
<th>4 weeks into the course</th>
<th>At the end of course</th>
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<tbody>
<tr>
<td>Positive</td>
<td>56%</td>
<td>65%</td>
</tr>
<tr>
<td>Unsure</td>
<td>35%</td>
<td>21%</td>
</tr>
<tr>
<td>Negative</td>
<td>9%</td>
<td>14%</td>
</tr>
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Did They Learn More?

- Test Scores?
- Questions in Class
- Projects
- Preparation for Next Class
- In-Program Retention?
- Alumni Feedback
What did >>I<< Learn?
Bottleneck!
Important stuff we don’t teach...

Optimizing features in module “A” or “C” will not produce a change in the performance of the application until the performance problems in module “B” are addressed.
INVENT How to TEACH it!

Block Diagram
(Design Systems)

Circuit Diagram
(Build Them)

Non-Inverting Summer

\[ V_o = A V_1 + B V_2 \]
Open Access = Open Impact

# of Views

2,875,438
’A More Intimate Learning Experience’

And How MUCH It MATTERS
Don’t Be Afraid to Reach Out & TOUCH Your Students
The Future Professor … ?

• What is the optimal Role for the Professor?

• Are We becoming Dispensible, or Indispensible?

CAN I BE REPLACED??
Do We need FEWER Profs?
Where am I Most Valuable?
A Busy Professor’s Guide to Sanely Flipping Your Classroom --
Getting Started

Teach-Flip.utah.edu
Semester #1: (Starting Next Week)

Use Active Learning in Class

Supplement with Videos
Get to Know Your Students

• Why are you in ECE?
• What do you hope to learn?
• What have you heard about this class?
• How do you learn best?
• Tell me something nontechnical about yourself
My 3 Favorite Active Learning Strategies

#1 Think-Pair-Share

• (Pose a Question) WHAT is the Electric Field???
  Think about it. Commit to it! (1-2 minutes)
• Discuss with your neighbor. (2-3 minutes)
• Share with others / the class (30 seconds)
  Discuss, Vote, Clickers, Discussion Board
My 3 Favorite Active Learning Strategies

#2 Muddiest Point / Find a Question

What questions do your neighbors have?
What is the Muddiest Point this week?
My 3 Favorite Active Learning Strategies

#3 Get Real

Bring Real Stuff to Class: Bring problems that matter. Start with research or the real world, maybe a demo, news article, problem that arises in the lab.

Escort them through the process of DISCOVERY. Tell the story. Include the FAILURES!
Creating Your Own Videos – SHORT Examples

Record w/ Ink2Go Software
Co-Flipping: Using Someone Else’s Videos

• It works, saves time, provides time for active learning in class.
• But Be sure to teach like the videos!!
Feedback: A Constant Conversation with Your Students
My Favorite Grading Strategy

Exams: Motivate Learning, Assess Success

Midterm I
75/100

Midterm II
42 / 100

Midterm III
95 / 100

Final Section I
65/100

Final Section II
85 / 100

Final Section III
N/A!

Average: 85 %
Relax, Be Yourself, Have FUN with it!
Questions?

Module 01 (1/12/15 to 1/25/15)
Gathering Information:
Introduction to Flipping

Module 02 (1/26/15 to 2/8/15)
Engaging Students Online:
Creating Online Videos

Module 03 (2/9/15 to 2/22/15)
Engaging Students In-Class:
Active Learning Strategies

Dr. Cynthia Furse
Teach-Flip.Utah.edu  MOOC Starts Oct. 17

