Flipping the Classroom and Just-in-Time Teaching

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The Flipped Classroom

Introduction
http://www.washington.edu/teaching/teaching-resources/engaging-students-in-learning/flipping-the-classroom/
Example

Illinois Wesleyan University

My courses

- **Applied Financial Economics - Fall 2015**
  Teacher: Diego Mendez-Carbajo

- **Introduction to Economics - 100.3 - Fall 2015**
  Teacher: Diego Mendez-Carbajo

- **Senior Project - 2 - Fall 2015**
  Teacher: Diego Mendez-Carbajo

- **Respondus Test Course - Spring 2016**

- **Test Course**
  Teacher: Abbey Cohn
  Teacher: Diego Mendez-Carbajo
Course and Activity

Data
Descriptive Data: Course

- Students in the course: 28-25
  - (6 women and 22 men)
- Weeks in the semester: 15
- Weekly minutes of in-class contact time: 200
Descriptive Data: Activity

- Number of Video+Questions: 34
  - Narrated by a male voice: 14
  - Narrated by a female voice: 20
  - Consisting exclusively of diagrams: 6
  - With illustrations and animations: 25
  - Including a person on screen: 9

- Average length of video clips: 5 minutes and 40 seconds
Time on Task

Number of Times Each Video+Question was Viewed
Time on Task

- Average time spent on these activities per student per week: 1 hour and 30 minutes.
- Reading 300 words a minute, 90 minutes each week of the semester, a student would have read 498 pages of text.
- The textbook is 592 pages.
Classroom Activities

Just-in-time Pedagogy
Just-in-time Pedagogy

- Focused on improving student learning.
- Students' responses to JiTT exercises are used to identify learning gaps.
- Instructors tailor activities to meet students' actual learning needs.

http://serc.carleton.edu/econ/justintime/index.html
Quiz Results: Statistics

### Quiz structure analysis

<table>
<thead>
<tr>
<th>Q#</th>
<th>Question name</th>
<th>Attempts</th>
<th>Facility Index</th>
<th>Standard deviation</th>
<th>Random guess score</th>
<th>Intended weight</th>
<th>Effective weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>02. Circular Flow 1</td>
<td>26</td>
<td>100.00%</td>
<td>0.00%</td>
<td>25.00%</td>
<td>33.33%</td>
<td>0.00%</td>
</tr>
<tr>
<td>2</td>
<td>02. Circular Flow 2</td>
<td>26</td>
<td>100.00%</td>
<td>0.00%</td>
<td>25.00%</td>
<td>33.33%</td>
<td>0.00%</td>
</tr>
<tr>
<td>3</td>
<td>02. Circular Flow 3</td>
<td>26</td>
<td>44.00%</td>
<td>50.66%</td>
<td>25.00%</td>
<td>33.33%</td>
<td>100.00%</td>
</tr>
<tr>
<td>4</td>
<td>RATING</td>
<td>26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.00%</td>
</tr>
</tbody>
</table>

### Statistics for question positions

![Bar chart showing statistics for question positions]
Usage and Design

Findings
## Student Course Evaluations: Average Scores

<table>
<thead>
<tr>
<th>Question</th>
<th>Year/Section</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The instructor's expectations were clear</strong></td>
<td>4.58 4.50</td>
</tr>
<tr>
<td><strong>The instructor was prepared for class</strong></td>
<td>4.71 4.82</td>
</tr>
<tr>
<td><strong>As a student I was generally prepared for class</strong></td>
<td><strong>3.88 4.27</strong></td>
</tr>
<tr>
<td><strong>The instructor seemed genuinely concerned about student progress</strong></td>
<td>3.96 4.09</td>
</tr>
<tr>
<td><strong>The instructor was available for help outside of class</strong></td>
<td>4.33 4.27</td>
</tr>
<tr>
<td><strong>The degree of difficulty of this course was appropriate</strong></td>
<td>4.08 4.00</td>
</tr>
<tr>
<td><strong>The instructor provided meaningful criticism and comments on my work</strong></td>
<td>4.17 4.23</td>
</tr>
<tr>
<td><strong>The instructor treated students fairly</strong></td>
<td>4.42 4.55</td>
</tr>
<tr>
<td><strong>The instructor fostered an atmosphere of mutual respect</strong></td>
<td><strong>4.25 4.64</strong></td>
</tr>
<tr>
<td><strong>The course has increased my interest in the subject matter</strong></td>
<td>4.17 4.05</td>
</tr>
<tr>
<td><strong>The instructor challenged me intellectually</strong></td>
<td>4.42 4.36</td>
</tr>
<tr>
<td><strong>Overall, I would recommend this course to another student</strong></td>
<td>4.33 4.41</td>
</tr>
<tr>
<td><strong>Overall, I would recommend this instructor to another student</strong></td>
<td><strong>4.17 4.50</strong></td>
</tr>
</tbody>
</table>
Conclusions

Implications and Extensions
Student Reception

- Student time-on-task is high.
- User ratings were very positive.
- More views translate into more attempts.
- Students’ scores improve over time.
- The number of views decreases over time.
Activity Design

- Videos should not be too long.
- Videos should contain animation.
- There is value in capturing a white board through a video.
- There is value in including a human presence in a video.
Thank You.  
Questions?