THE IMPACT OF FLIPPED CLASSROOM ON STUDENTS’ LEARNING PERFORMANCE
Distance Education

- Distance education is one of the fastest growing trends in educational uses of technology.

- 29.7% of all students in higher education are taking at least one distance education course (Distance Education Enrollment Report)

- More than 6 million students in the U.S. are now enrolled in higher education distance education courses.
Flipped Classroom

- Flipped Classroom, an emerging type of blended instructions, has become a popular class structure in the last few years.

- A pedagogical model in which the lecture and homework elements of a course are reversed.

- The results from an analysis conducted by the Department of Education showed that instruction combining online and face-to-face elements had a larger advantage relative to purely face-to-face instruction.
Flipped Classroom - Advantages

- Gives students control of the prerecorded lectures.

- Allows instructors to devote more class time to application of the lectured content, hands-on activities, discussion and interaction.

- Allows institutions to strategically increase capacity to serve additional students.
The flipped classroom has a positive impact on student learning and the educational experience (Beapler et al. 2014).

No evidence is found that flipped learning has improved students’ grades (Kim et al., 2014; Davies et al., 2013; Strayer, 2012).

Student self-reported data shows that students preferred the flipped method compared with traditional pedagogical strategies (Roach, 2014; Gilboy et al., 2016).
Background

- Principles of Macroeconomics, a general education course, was selected for the study.
  - *The department offers around 15 sections on average every semester.*
  - *Students are from different majors with different learning styles and pathways.*
Method

- Two sections of Principles of Macroeconomics courses that taught by the same instructor during one semester
  - one section: flipped class
  - one section: face-to-face class

- The two sections had the exact same coverage and evaluation policy

- We examine students’ performance from the two sections.
## Results

<table>
<thead>
<tr>
<th></th>
<th>Face-to-face Class</th>
<th>Flipped Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Major</td>
<td>26</td>
<td>30</td>
</tr>
<tr>
<td>Non-Business Major</td>
<td>10</td>
<td>7</td>
</tr>
</tbody>
</table>
## Results

<table>
<thead>
<tr>
<th></th>
<th>Exam #1</th>
<th>Exam #2</th>
<th>Exam #3</th>
<th>Final Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Face-to-face</td>
<td>Flipped</td>
<td>Face-to-face</td>
<td>Flipped</td>
</tr>
<tr>
<td>Observation</td>
<td>36</td>
<td>37</td>
<td>35</td>
<td>36</td>
</tr>
<tr>
<td>Mean</td>
<td>84.6</td>
<td>83.2</td>
<td>82.1</td>
<td>77.3</td>
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<tr>
<td>T-statistics</td>
<td>0.598</td>
<td>1.488</td>
<td>-0.332</td>
<td>0.039</td>
</tr>
<tr>
<td>P-value</td>
<td>0.552</td>
<td>0.141</td>
<td>0.741</td>
<td>0.969</td>
</tr>
</tbody>
</table>
Conclusions

- There is no statistically significant difference of students’ grades between the two sections.

- There is a learning curve for students to adapt the flipped classroom format.