Comparing Online and Live Lecture Courses
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Quantitative Research

Does student performance differ by classroom environment: online versus live lecture?
- Data from Geology 105
- Online & Live Lecture
- Conducted from 4 Years of Data
  - 2012 - 2016
- Large Sample Size
  - Online: 171 students
  - Live Lecture: 1,266 students
- Covariates Considered
  - Actual GPA
  - Prior Experience Taking Online Courses
  - Type of Degree Program
  - STEM v. non-STEM
  - Geology v. non-Geology
  - Completed Student Credit Hours (SCH)
  - Current Course Load

How do students describe their level of satisfaction in online classes?
Focus Group of Four Students that were Currently Enrolled in Online Geology 105

What perceptions contribute to student satisfaction in online classes?
How do students describe their self-regulating learning practices that contribute to student success in online classes?
What do students believe should be implemented to improve the delivery of online classes?
How do students’ perceptions and expectations of online classes differ from traditional, face-to-face, classes?

Qualitative Research

Themes from Qualitative Findings

Interaction
- Student-to-Instructor
  - Connect factor is important
  - Prompt reply to email
  - Office hours
- Student-to-Content
  - Mimic live lecture time such as requiring logging in two to three times per week.
  - Create opportunities for students to meet other students in the class.

Technology
- Don’t over use

Self-Regulated Learning Practices
- Incorporate built-in accountability

Convenience
- Advantage of online environment is its flexibility and familiarity
- Online chosen because it was preferred option or only option

Course Structure
- Organized lesson structure
- Students approach course through lens of learning style

Quantitative Results

Comparing Student Online Performance to Live Lecture (Face-to-Face)
- Covariate: GPA
- Significant Interaction between GPA and Classroom Environment
- Identified 5 GPAs where interaction between Final Score and GPA most similar in both Online And Live Lecture

OLS Regression – Online and Live Lecture
- Hierarchical Regression Approach – 6 models with covariates added in stages
  1. GPA
  2. GPA, Course Load
  3. GPA, Course Load, SCH
  4. GPA, Course Load, SCH, STEM/non-STEM
  5. GPA, Course Load, SCH, STEM/non-STEM, Geology/non-Geology
  6. GPA, Course Load, SCH, STEM/non-STEM, Geology/non-Geology, Number of prior online courses successfully completed

Online: Model 1 & Model 3 Significant
- GPA (29.3%) had the strongest influence – explains just under 30% of a student’s final score
- Course Load (1.2%) and SCH (1.9%) together explained 3.1% of a student’s final score
- No other covariates had significant impact on student performance

Live Lecture: Model 1, Model 2, & Model 5 Significant
- GPA (28.3%) had the strongest influence
- Combination of Course Load, SCH, STEM/non-STEM, Geology/non-Geology only explained 1.6% combined

Predicting Performance in Geology 105 Online and Live Lecture Using GPA

<table>
<thead>
<tr>
<th>GPA</th>
<th>Online Final Score</th>
<th>Live Lecture Final Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.49</td>
<td>55.4%</td>
<td>78.0%</td>
</tr>
<tr>
<td>2.51</td>
<td>70.6%</td>
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<tr>
<td>4.00</td>
<td>92.8%</td>
<td>92.9%</td>
</tr>
</tbody>
</table>

Online Regression Equation
$Online\ Model\ 1\ final\ score_i = 33.244 + (14.495 \times GPA_i)$, $p < .001$

Live Lecture Regression Equation
$Live\ Lecture\ Model\ 1\ final\ score_i = 69.198 + (5.925 \times GPA_i)$, $p < .001$

Take-Aways
- Important to differentiate between the structure provided in each environment
- Live Lecture Highly Structured
  - Meets same time each week
  - Lecture proceeds at a measured pace determined by the instructor
  - Physical distractions are minimized
  - High and low performing students are provided the same structure
- Online More Loosely Structured
  - Lectures accessed at different times and typically last minutes
  - Material is often read too quickly
  - Physical distractions can be myriad
  - Lower performing students often have great difficulty adapting to create their own structure

What You Should Know About Online Courses

For Students
- Purge from your mind that online classes should be easier
- Extra diligence should be taken to create a regular schedule for viewing material
- Work through course content slowly, perhaps more than once
- Don’t multi-task while studying material

For Instructors
- Design courses to meet all learning styles
- Do not overuse technology
- Incorporate interaction
- Add built-in structure to your content
- Keep students accountable, especially early on