Pandammit! Forcing Engineering Instructors to Deliver Courses Remotely – Challenges & Successes

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Background

• The COVID-19 pandemic brought about an abrupt end to in-person teaching at universities around the world in Spring 2021.
• This situation brought about a unique opportunity to study how instructors handle a forced change in teaching practices.
• This situation was interesting because instructors are rarely forced to make changes to their instructional methods and could have implications for accelerating instructional change in the future.

Research Question:

What are the most frequently cited successes and challenges experienced by instructors following a forced change to remote learning?

Methods

• Weekly surveys were sent to engineering faculty during the last seven weeks of the semester (April-May 2021).
• The first survey occurred in week 12 after the transition to remote instruction.
• Surveys consisted of multiple choice and open-ended questions; the latter were thematically analyzed.
  o The top 3 themes from the successes and challenges across the entire survey period are presented.
• Survey Questions Analyzed:
  o Describe a teaching success you had this past week.
  o Describe a teaching challenge you are having or anticipate having.

Results

<table>
<thead>
<tr>
<th>Codes</th>
<th>Definitions</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grading</td>
<td>Pertains to the act of grading.</td>
<td>Success: “Graded first self-paced take home exam.”</td>
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<tr>
<td></td>
<td></td>
<td>Challenge: “Fairness in grading due to different impacts on students and teams.”</td>
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<tr>
<td>Engagement</td>
<td>Pertains to student participation/interaction/attendance in class, with lectures, video, office hours, or with the instructor.</td>
<td>Challenge: “Difficult to assess student engagement”</td>
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<tr>
<td>Assessments</td>
<td>Pertains to the mention of quizzes or exams including anticipation, planning, design, and administration. This excludes the students' submission of the exams.</td>
<td>Success: “Using Canvas quizzes seemed to work well.”</td>
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<td></td>
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<td>Challenge: “I'm still not sure about how to conduct the final exam, such as which format and how to monitor students, etc.”</td>
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<tr>
<td>Instructor Task Completion</td>
<td>Pertains to completing course content, including finishing up the course. This could be recording videos, uploading all assignments, etc.</td>
<td>Success: “I completed all of my video lectures.”</td>
</tr>
</tbody>
</table>

Demographics

![Demographics Chart]

- **DEPARTMENTS**
  - Other*: 10.3%
  - Mechanical & Materials Engineering: 17.9%
  - Biological Systems Engineering: 17.9%
  - Civil & Environmental Engineering: 24.7%
  - Computer Science & Engineering: 17.0%
  - Architectural & Construction Engineering: 16.9%

- **GENDER**
  - Female: 25.6%
  - Male: 74.4%

- **Faculty by Position (n = 39)**
  - Assistant Tenure-Track Professor: 30.8%
  - Associate and Full Professor: 38.4%
  - Assistant Tenure-Track Professor of Practice: 23.1%
  - Associate and Full Professor of Practice: 7.7%

Key Findings

• Instructors mentioned Assessments and Grading as both successes and challenges.
• As expected, instructors’ acknowledgment of content and assignment creation (Task Completion) decreased after the last week of instruction (Week 16).
• Student Engagement was a considerable challenge during the first two weeks of remote instruction.
• Mentions of grading challenges peaked during Finals Week, while mentions of Grading successes peaked as final grades were issued.

Conclusion & Future Work

• This study has begun to shed light on the success and challenges experienced by instructors during the initial period of forced remote instruction.
• Next Steps: Analyze Fall 2020 and Spring 2021 survey data to better understand changes in successes and challenges as the impact the pandemic had on teaching evolved.

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