TRANSITIONING FACE-TO-FACE (F2F) INQUIRY BIOLOGY LABORATORY MODULES TO FULLY ONLINE PLATFORMS

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Background

• UGA Online Learning Initiative – 2013
• BIOL 1103e

Identified Problem: How can we have inquiry in an online lab environment?

• Late Nite Labs partnership
UGA Office of STEM Education: STEM Initiative Mini Grants Program

• **Goal 1** - Ascertain student interest in enrolling in an online biology laboratory course. ✔

• **Goal 2** - Develop and field test one online module in selected spring 2015 BIOL 1103L laboratory sections. ✔

• **Goal 3** - Begin developing a course proposal and syllabus to offer online BIOL 1103L in summer 2016.
Goal 1 - Ascertain student interest in enrolling in an online biology laboratory course.

- Online survey in two sections of BIOL 1103 lecture
- Extra points for answering
- 407 respondents

2. If The University of Georgia offered a fully online version of BIOL 1103L in summer thru session (all of June and July), how interested would you be in taking this course?
Goal 2 - Develop and field test one online module in selected spring 2015 BIOL 1103L laboratory sections.

- Antibiotic Resistance two-week F2F module
- Development and run through with online instructors and PIs: 4 ½ months
- Implemented: Feb. 17 – Mar. 5

Study Participants

Instructors
- 2 Online: 98 students
- 2 F2F: 85 students

Students: 199 (183 complete data sets)
Antibiotic Resistance 2-week Module

F2F

• Written Pre-labs 1 and 2
• Experimental Design and Data Analysis
  • Both written/drawn with verbal feedback from instructor, discussion with lab partner and class
• Experiment: hands-on
• Written post-lab, normally completed in class after class discussion

Online: Late Nite Labs

• Typed Pre-labs 1 and 2
• Experimental Design and Data Analysis
  • Both written with typed feedback from instructor, discussion boards with prompts available for class discussion; instructor email for help
• Experiment: simulation
• Typed post-lab, completed after class data table generated. Discussion board available for class discussion.
Data Collection

• BIOL 1103 lecture students ✔
• F2F lab students
  • Pre & post likelihood of taking online lab course at UGA ✔
  • Pre-post expectations of online lab course
• Online lab students
  • Pre & post likelihood of taking online lab course at UGA ✔
  • Pre: expectations of online lab course
  • Post: were expectations met
• F2F and Online students
  • Summative post lab assignments – double blind grading
• Online instructors
  • Advantages and disadvantages for instructors and students in an online vs F2F lab module
Findings

- **Survey question**: If it were offered, how likely would you be to enroll in a completely online introductory biology laboratory course (such as BIOL 1103L or BIOL 1104L) at The University of Georgia?

  NL = not likely, SL = slightly likely, L = likely

![F2F Student Responses](image1)

![Online Student Responses](image2)

* p < 0.001
Findings

- **Survey question**: If it were offered, how likely would you be to enroll in a completely online introductory biology laboratory course (such as BIOL 1103L or BIOL 1104L) at The University of Georgia?

![Graph showing mean responses per class (±SE) for F2F and online surveys before and after the experiment.](image)

"Not Likely" Responses

<table>
<thead>
<tr>
<th>Timing of Survey</th>
<th>Mean # responses per class (± SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre</td>
<td>Approximately 4</td>
</tr>
<tr>
<td>Post</td>
<td>Approximately 12</td>
</tr>
</tbody>
</table>

* *p = 0.014*
Challenges

• Integration of pedagogy – bringing inquiry into online environment
  • Simulation

• Instructor – student interaction
• Student – student interaction: working partners and groups

*Discussion posts, peer reviews, formative assignments, virtual office hours, live chat
Next Steps

• Continued Data Analysis
• Re-vamp module
• Begin to transition other modules
• Propose fully online lab class – fall 2016?
Final Thoughts

• Hybrid class
• Instructor training needed
• Students vested in online classes would likely be the ones to sign up for the course

Acknowledgements: UGA Office of STEM Education: STEM Initiative Mini Grants Program