Flipping the Classroom
Turning the Traditional Anatomy Lecture on its Head

Virginia Lyons and Kathleen Muldoon
Geisel School of Medicine at Dartmouth
Objectives

• Define what is meant by “flipping the classroom”
• Discuss the pedagogical reasons for change
• How we accomplished our task
• Assessment of the experience
• Future plans
Traditional classroom

Lecture (delivery of content) in class  Application of knowledge outside of class

(images removed due to copyright issues)
Flipped classroom

Students acquire content outside of class
Guided application of knowledge in class; opportunity for peer learning

(images removed due to copyright issues)
Motivation for Pedagogical Change

- Professional Identity
- Personal Inquiry & Improvement
- Science of Healthcare Systems
- Communication Skills
- Medical Knowledge
- Clinical Skills for Effective Care
Motivation for Pedagogical Change

- Increase engagement in large group sessions
- Facilitate peer learning and provide an opportunity to practice team/communication skills
- Foster life-long learning skills
- Provide an opportunity for problem-solving with faculty guidance
Course prior to flipping

• Material delivered using lecture format
• Students attended laboratory to further their understanding
• Self-assessment exercises provided in laboratory manual and on course website
• Small group exercise at the end of each unit for faculty-guided problem solving
Course after flipping

• Material delivered as narrated PowerPoint
• Students took readiness test to assess preparation
• Students attended laboratory to further their understanding
• Large group sessions provided opportunities for peer teaching and faculty-guided problem-solving
• Small group exercise at the end of each unit for faculty-guided problem solving
Qualitative Results

- Students are performing at the same level on quizzes and exams
- Students seem better prepared for laboratory
- Student engagement has increased in large group sessions
- Students seem more knowledgeable in small group discussions
Qualitative Results

• Some students were not willing to try something new
• Students felt they were “missing out” after talking with Year 2 students
• Attendance is low in large group sessions
• Physical space does not facilitate interactions
## Quantitative Results

Comparisons of final exam scores in traditional vs. flipped classroom

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<th>2011-12</th>
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<th>2012-13&lt;sup&gt;1&lt;/sup&gt;</th>
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<td>Mean ± S.D.</td>
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<td>Mean ± S.D.</td>
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<td>89.7 ± 6.4</td>
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<td>85.6 ± 7.9</td>
<td>39</td>
<td>85.6 ± 7.9</td>
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<td>81.6 ± 9.0</td>
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<td>83.2 ± 10.1</td>
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</table>

** p < 0.01, *** p < 0.001

<sup>1</sup>Students who attended ≥ 75% of flipped large group sessions
## Quantitative Results

Comparisons of final exam scores in flipped classroom based on large group attendance

<table>
<thead>
<tr>
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<th>Attended $\leq 75%$ of flipped sessions</th>
<th>Attended $&gt; 75%$ of flipped sessions</th>
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<td>Mean ± S.D.</td>
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<td><strong>Fall Practical</strong></td>
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</table>

** p < 0.01, *** p < 0.001
Quantitative Results

Attendance at Flipped Large Group Sessions
Quantitative Results

Attendance at Flipped Large Group Sessions

Fall Term Practical Exam

< 75% of sessions

75-100% of sessions
Future Plans

• Make large group sessions mandatory and don’t record them
• Conduct large group sessions in a different physical space
• Administer readiness tests in class?
• Feedback on professionalism/teamwork part of the grade?