Introduction

Because the contributions of Learning Assistants (LAs) on student learning in undergraduate STEM courses may be attributed to the type of teaching techniques practiced by instructors in LA supported courses, a research collaboration across three U.S. institutions is investigating ways to characterize differences in LA-supported courses. At North Dakota State University, in-class behavioral observations of instructors, students, and Learning Assistants were conducted using the Classroom Observation Protocol for Undergraduate STEM (COPUS) to generate data, and identify instructors’ teaching practices, or COPUS profiles.

Research Questions:
1. How do instructors with different COPUS profiles use LAs?
2. How does the prevalence of LA codes vary across COPUS profiles?

Learning Assistants
- High performing undergraduate students selected by faculty to support peer interaction and student-centered instruction
- Provide insight to instructors about student misconceptions in regards to course content
- Focus on supporting the students and not the instructor

Methods
- COPUS observations were conducted in 5 science courses (3 biology courses, 1 physics course, and 1 chemistry course) during Spring 2016 semester.
- 13 codes (12 LA and 1 instructor) were added to original COPUS to document LA behaviors – in red above.
- COPUS profiles were determined for each course.

Determining an Instructor’s COPUS Profile

<table>
<thead>
<tr>
<th>Instructional Style</th>
<th>COPUS Profile</th>
<th>Lec</th>
<th>RTW</th>
<th>AnQ</th>
<th>SQ</th>
<th>CQ</th>
<th>Fup</th>
<th>MG</th>
<th>SG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture (slides)</td>
<td>94% 2%</td>
<td></td>
<td></td>
<td></td>
<td>8%</td>
<td>3%</td>
<td>4%</td>
<td>0%</td>
<td>2%</td>
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<tr>
<td>Lecture (board)</td>
<td>93% 8%</td>
<td>15%</td>
<td>16%</td>
<td>1%</td>
<td>3%</td>
<td>0%</td>
<td>2%</td>
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<tr>
<td>Translational lecture</td>
<td>87% 4%</td>
<td>20%</td>
<td>9%</td>
<td>5%</td>
<td>7%</td>
<td>1%</td>
<td>6%</td>
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<tr>
<td>Socratic (board)</td>
<td>97% 6%</td>
<td>52%</td>
<td>24%</td>
<td>0%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
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<tr>
<td>Socratic (slides)</td>
<td>81% 6%</td>
<td>39%</td>
<td>20%</td>
<td>1%</td>
<td>9%</td>
<td>2%</td>
<td>7%</td>
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<tr>
<td>Limited Peer Instruction (slides)</td>
<td>76% 3%</td>
<td>8%</td>
<td>4%</td>
<td>3%</td>
<td>19%</td>
<td>5%</td>
<td>24%</td>
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<tr>
<td>Limited Peer Instruction (board)</td>
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<td>18%</td>
<td>8%</td>
<td>1%</td>
<td>0%</td>
<td>4%</td>
<td>22%</td>
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</tr>
<tr>
<td>Extensive Peer Instruction</td>
<td>55% 13%</td>
<td>17%</td>
<td>4%</td>
<td>3%</td>
<td>50%</td>
<td>3%</td>
<td>24%</td>
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</tbody>
</table>

Class | Instructional Style | Respective COPUS Profile |
1     | Peer Instruction    | Limited Peer Instruction |
2     | Peer Instruction    | Limited Peer Instruction |
3     | Peer Instruction    | Extended Peer Instruction |
4     | PI / Collaborative Learning | Student-Centered PI |
5     | Collaborative Learning | Group Work |

Results

- LAs are used more often in collaborative learning courses.
- Moving through groups (MG) and one on one interactions (1o1) are most prevalent in collaborative learning environments.
- Instructors can utilize LAs strategically to increase the number of LA-to-student interactions (1o1) regardless of their instructional style.

Future Work
- NDSU: Development of a new protocol to analyze and interpret student cognitive engagement during class time.
- CSU: Observation and classification of active learning techniques employed by LAs outside of class.

References: