Facilitating a Culture of Transformative Pedagogical Change in STEM via Focused Faculty Development

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“Promoting Active Learning Strategies through the Flipped Class Model in STEM Courses”

- 7 gateway STEM courses
- Core faculty collaborate over 3 semesters:
  - Planning & development
  - Initial implementation
  - Reflection & modification
- Support via FLC
- Promotional activities and trainings
- Rich evaluation
Organizational structure & ideal faculty development structure

- Multi-level FLCs:
  - Core faculty FLC
  - Campus FLC
  - Cross-campus disciplinary FLC

- Workshops:
  - Two-day workshops for core: Jan. & June 2016
  - Campus workshops for STEM: June 2017 & 2018
  - Campus workshops for all faculty: June 2019
  - Calculus-specific training Fall 2017, Fall 2018
What about culture change?

Individual Core Class-Flipping & Calculus Flipping

Faculty Learning Communities
People flip their classes on schedule but do not work together much. Why?
Operational explanations:

• Significant project personnel “churn”
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- 3-yr flipping calendar for core courses

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
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<tbody>
<tr>
<td>Calculus I</td>
<td>Circuits</td>
<td>Physics II</td>
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<td>Physics I</td>
<td>Computer Science I</td>
<td>Statics</td>
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<td>Discrete Math</td>
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• 3-yr flipping calendar for core courses

• Rigid grant requirements
Theoretical explanations:

- FLC best practices
- Motivation to improve teaching
Recommendations for FLC design

✓ ✓ Workable size of 8 to 10
✓ ✓ Voluntary membership
✓ ✓ Multidisciplinary cohort, topic, goals, and membership
✗ Cohort reasonably similar in terms of skills*
✗ Meet every 3 weeks for 2 hours for one academic year*
✗ Determine meeting time at the point of member applications
✗ Provide social moments, community, and food at meetings
✗ Trained facilitator who is a key participating member
✗ Members determine objectives, topics, budget
✗ Focus on obtaining and maintaining FLC member commitment
✗ Include rewards, recognition, and a celebratory ending
Two theories of motivation:

- Value/expectancy
- Self determination
Motivation in two domains:

- ✓ Motivation to improve teaching
- × Motivation to participate in FLCs
One more motivation domain:
FLC coordinators Ravisha, Silvia, & Victoria
Conclusion

Will the flipping last? We don’t know yet.
Depends on campus commitment and resources dedicated to activities and joint meetings.

Should we conclude that FLCs are generally ineffective? No.
Campus FLCs have more autonomy and stronger accountability.
Cross-campus FLCs need stronger support.
References


• Lowenthal, P.R., et al. 2013. Examining Faculty Motivation to Participate in Faculty Development. International Journal of University Teaching and Faculty Development 3:149-164.