Faculty Participation in a Learning Community Improves STEM Student Success

**Jen-Mei Chang¹, Kelly Young², Jesse Dillion²**

¹Department of Mathematics and Statistics, ²Department of Biological Sciences, College of Natural Sciences and Mathematics, California State University, Long Beach

**WHAT (Background/Materials)**

- STEM educators receive relatively little formal training in teaching, and many lack skills in assessing student learning, and translating that assessment into effective changes to classroom practices.
- The CNSM at CSULB is currently undertaking a cross-discipline, STEM-specific faculty development project to empower STEM faculty to engage in active and effective pedagogical practices.
- The funding to create the CNSM FLC initially came from the Healthy Valued Degree Initiative, with the goal to target faculty teaching low completion rate courses. It is currently supported by the College.
- Our preliminary results have been replicated in four completed cohorts, and suggest that STEM-focused FLC can directly affect the pedagogical practice of faculty participants and these guided changes can significantly impact student learning and engagement.

**WHO (People Involved)**

- AY Cohort Leader & Core Leader
- College Dean
- Assessment Specialist
- Assistant Dean of Faculty
- Director of Faculty Center for Teaching and Learning
- Faculty

**WHEN (Timeline)**

- **Semester 1**
  - Participants read pedagogical literature and discuss ideas and concerns with FLC peers.
  - Complete online learning modules while completing guided online learning modules.
- **Semester 2**
  - Participants plan and implement teaching reforms based on the impact of these changes on student learning, grades, and retention. Assessed changes are disseminated to College.
  - Final report.
- **Semester 3+**
  - Faculty fine-tune their results from their evaluations of student cognitive and affective learning.

**WHERE (Platforms)**

- Online discussions are conducted through Piazza, an open source and interactive platform that facilitates real time and asynchronous interactions among participants.

**SUMMARY**

- The CNSM Faculty Learning Community surpassed conventional learning and community outcomes using the novel two-semester format where faculty members apply what they have learned using the novel two-semester format where faculty members apply what they have learned.
- Incorporating multiple peer leaders not only legitimizes the goals of the FLC, but also fosters leadership skills among CNSM faculty members.
- Completing the two-semester FLC enhanced student success (grades, exam scores, student affect towards subject), increased how faculty members viewed teaching, and fostered a sense of community across departments within the college.

**IMPACTS & RESULTS**

- **Percentage of FLC Participants Reporting Specific Positive Changes**
  - 40% of participants reported an increase in their own affect towards teaching.
  - Not all faculty members compared individual exam scores; however 41% of the participants reported a strong increase in their own affect towards teaching.
  - Many FLC participants related of feeling less isolated and more connected to both their colleagues and their students.
  - FLC participants have collectively modified 28 individual courses, ranging from remedial mathematics to senior and graduate level courses in hydrogeology.

**RESOURCES**

- Teaching & Learning @ The Beach:
  - http://www.csulb.edu/colleges/cnsm/learning/ 
- Timetable and responsibilities of the cohort leader:
- For more information, please contact Jen-Mei Chang via jen-mei.chang@csulb.edu

**WHAT**

- Family-in-center faculty with the device-grid enrollment generation, i.e., how should we enhance our teaching strategies?
- Help faculty see the connection between students’ diverse backgrounds and various learning modalities.

**WHO**

- Family-in-center faculty with the device-grid enrollment generation, i.e., how should we enhance our teaching strategies?
- Help faculty see the connection between students’ diverse backgrounds and various learning modalities.

**WHEN**

- Participates read pedagogical literature and discuss ideas and concerns with FLC peers.
- Complete online learning modules while completing guided online learning modules.

**WHERE**

- Faculty fine-tune their results from their evaluations of student cognitive and affective learning.

**WHO**

- Family-in-center faculty with the device-grid enrollment generation, i.e., how should we enhance our teaching strategies?
- Help faculty see the connection between students’ diverse backgrounds and various learning modalities.

**WHEN**

- Participates read pedagogical literature and discuss ideas and concerns with FLC peers.
- Complete online learning modules while completing guided online learning modules.

**WHERE**

- Faculty fine-tune their results from their evaluations of student cognitive and affective learning.