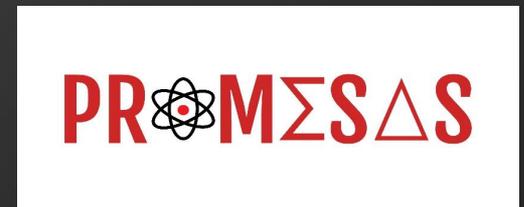




Supporting Math Success with Embedded Peer Education:

An academic support service to enhance
the learning environment





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Today's Presenters

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Embedded Peer Educator: Defined

- ▶ A peer educator is placed in the (synchronous or asynchronous; virtual or in-person) classroom, working under the instructor's guidance, to help students understand course concepts and enhance student engagement.



CSUCI Historical Context for Math Support

- Math Center established alongside Writing Center in early days of University (2002/3-ish)
- Math Center expanded to Learning Resource Center 2007/8-ish
- Campus began targeting gaps in Math achievement early on
- Project ACCESO
 - HSI STEM Grant awarded in 2011
 - Established STEM Center (Tutoring) and Peer-Led Team Learning
 - Five-year grant
- Project PROMESAS
 - HSI STEM Grant awarded in 2016
 - Continued and expanded work of Project ACCESO
 - Faculty development through STEM Service Courses initiative
 - Research-based; emphasis on equity
 - Themes: building community, student-centered activities, rich tasks



EO 1110 and GI 2025

- GI 2025: emphasis on retention and graduation rates and closing “equity gaps”
- EO 1110: elimination of developmental math courses effective Fall 2018 and calls for alternative instructional models to support students in credit-bearing courses
- Campuses provided funding under the Course Re-Design label
- Pre-Calculus and Calculus I: regular high “impact factor”
- Proposed intervention for Fall 2019
 - Embed peer educators in half of all sections of Pre-Calculus and Calculus I (for research purposes and due to funding limitations)
 - Joint workshops for instructors and peer educators
- By Spring of 2020, proposed to expand EPE to all sections of Pre-Calc and Calc



Calculus Course Redesign in Partnership with Embedded Peer Tutoring

To support GI 2025, the Mathematics Department began a process of redesigning multi-section introductory Calculus courses

Redesign was largely student-focused and included

- ▶ increasing content consistency between sections,
- ▶ creating opportunities for instructors to communicate about their sections during the semester, and
- ▶ adding embedded peer tutors (EPT) to each section.

Adding EPTs lowers the barrier between Calculus students and campus student support services.

Supporting a Virtual Transition with EPEs

Fall of 2020 - In Response to CSU Transition to Online-Only

- ▶ Expanded Embedded Peer Tutoring Across Campus
- ▶ Partnered with HSI SMART Grant to Oversee Learning Assistants
- ▶ Expanded EPTs to include more first-year Math courses:
 - ▶ Stretch Precalc - all sections
 - ▶ Precalc - all sections
 - ▶ Calculus I - all sections
 - ▶ Statistics

Spring of 2021 - Continuation of Robust EPT program

- ▶ Added Math Courses in response to demand in Center
 - ▶ Calculus II
 - ▶ Real Analysis
 - ▶ Differential Equations
 - ▶ Discrete Mathematics



Future Directions

Continued Partnership with Math Department

- ▶ Calculus Coordinators
- ▶ Ongoing Professional Development for Faculty
- ▶ Pursuit of IR Research Project for Impact of EPT Program
- ▶ Project PROMESAS Ending
 - ▶ Spring 2021 last funded semester
 - ▶ Additional funding will be required to continue EPT program
 - ▶ New Interim President indicates desire to secure donors

Essential Elements of Embedded Peer Education

- **Practice**
 - The work that Peer Educators do with students
- **Preparation**
 - The work that Peer Educators do outside of the classroom to review and prepare
 - The weekly meetings with faculty, collaborating on activities and planning, informing professors about students' experiences
- **Pedagogy**
 - The professional development that Peer Educators engage in throughout the semester
 - 16+ hours pre-semester
 - 12+ hours in-semester

Models of Embedded Peer Educators



Embedded Peer Tutors

In-class:

- Model student taking effective notes
- Assist individual students/groups
- Help facilitate small group/active learning activities
- **Observe course content to inform tutoring center**
- Serve as a visible bridge to academic support services
- **Funded through Center budgets (MSFT or Project PROMESAS)**

PLTL Leaders

In-class:

- Model student taking effective notes
- Assist individual students/groups
- Help facilitate small group/active learning activities
- **Observe course content to inform PLTL Workshops**
- Serve as a visible bridge to academic support services
- **Funded through Project PROMESAS**

SMART Learning Assistant

In-class:

- Model student taking effective notes
- Assist individual students/groups
- Help facilitate small group/active learning activities
- **Engage with course content and professor to inform curricular facilitation**
- Serve as a visible bridge to academic support services
- **Funded through NSF SMART Grant**

Models of Embedded Peer Educators



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Embedded Peer Tutors

Out-of-Class:

- Engaged in Canvas, posting notes, discussion boards
- Work regular hours in Tutoring Center
- Main point of contact at Center for students enrolled in section
- Hold one drop-in hour/week at Center
- Support content-based training
- **Weekly 30 min of check-ins** with professor

PLTL Leaders

Out-of-Class:

- Engaged in Canvas, posting notes, discussion boards
- Facilitate two weekly collaborative learning workshops
- Host one weekly office hour for individual consultation
- Weekly prep hours
- **Collaboration** with professor

SMART Learning Assistants

Out-of-Class:

- Engaged in Canvas, posting notes, discussion boards
- Work regular hours in Tutoring Center
- Main point of contact at Center for students enrolled in section
- Hold one drop-in hour/week at Center
- Support content-based training
- **Weekly preparation meetings** with professor
- **Additional biweekly professional development through SMART Grant**



FACULTY ENDORSEMENT

- **Faculty encouragement is most effective tool for student use of resource**
- First Day of Class
 - Professor to introduce EPE
 - EPE to make speech explaining role in and out of class
 - EPE to distribute survey for optimal scheduling of workshops/drop-in hours
- Ongoing inclusion of EPE by faculty member
 - Allow frequent announcements
 - Incorporate EPE in class activities
- Incentivize use of academic support services
 - Equity-minded extra credit options for:
 - Tutoring Center Visit
 - Workshop Attendance
 - Professor Office Hour Attendance
 - Online Zoom Tutoring Session



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Faculty Expectations

- Look for opportunities to include EPE in classroom when possible and beneficial to student learning and community building
- Assist in the promotion of any instructor and student surveys and encouraging students to give feedback about the service
- Establish good working relationship with EPE based on clear communication
- Set a schedule to meet briefly with EPE each week throughout semester (min 30 minutes/week)
- Communicate in a timely fashion to assist Coordinators in program management and design
- Participate in workshops and other opportunities for professional learning related to tutoring / learning assistance

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Benefits of Embedded Peer Educators

Lessons Learned from Spring and Fall 2020:

- ▶ Usage of academic support services in marked decline with virtual campus
- ▶ Students enrolled in courses with EPEs continued to use academic support services at a greater rate than those enrolled in courses without
- ▶ The more integrated the EPE in the course, the more student usage persisted
- ▶ Students reported feeling of connectivity and community that helped with virtual learning
- ▶ EPEs were able to assist in tasks related to virtual learning and ease the burden for faculty partners



Courses of Priority for Spring 2021

- ▶ High Enrollment
- ▶ First-Year and Transfer Student Enrollment
- ▶ “Gateway” Courses
- ▶ Historically Challenging
- ▶ High Drop/Fail/Withdrawal Rate
- ▶ Frequently Requested for Support in the Centers
- ▶ Faculty or Department Chair Request



Courses Receiving an Embedded Peer Educator

(Including PTL Leaders, SMART LAs, and EPTs)

- ACCT 300
- BIOL 200
- BIOL 211
- CHEM 105
- CHEM 110
- CHEM 121
- CHEM 122
- CHEM 311
- CHEM 314
- COMP 105
- COMP 122
- COMP 150
- COMP 151
- COMP 162
- COMP 232
- COMP 362
- ECON110
- MATH 104
- MATH 105
- MATH 140
- MATH 150
- MATH 151
- MATH 201
- MATH 202
- MATH 300
- MATH 350
- MATH 351
- PHYS 310
- PSY 100
- PSY 213
- PSY 301
- SOC 100
- **Total 55 Sections**



Abstract

In response to EO 1110 and in support of GI 2025 initiatives, CSUCI's Learning Resource Center initiated a targeted implementation of embedded peer education in some sections of first-year math courses in the Fall of 2019. In partnership with several campus grants, the LRC EPE program expanded to support all sections of Stretch Precalculus, Precalculus, and Calculus I by Spring of 2020. With the transition to virtual learning, embedded peer education has continued to be strengthened and expanded. In addition to supporting all sections of Precalculus and Calculus I, the program is now supporting all sections of Calculus II, Elementary Statistics, and Biostatistics, as well as targeted upper-division courses including Discrete Math, Differential Equations, and Real Analysis for Spring of 2021.



QUESTIONS?