Empowering students to create inclusive learning environments in STEM

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The Peer-Assisted Learning (PAL) program at California State University, Sacramento (Sacramento State) fosters inclusive, cross-year support among students in science and math gateway courses. PAL encourages students to learn co-operatively under the guidance of trained students (PAL Facilitators), who have been very successful in the same course they facilitate, and have been highly trained in group facilitation, pedagogy, and inclusive practice. PAL is based on the Peer-Led Team Learning (PLTL) model.

Each PAL section (10-15 students/1 PAL Facilitator) is directly connected to a primary STEM course (e.g. Calculus or Gen Chem) that serves as a co-requisite. PAL meets for 2 hours/week as an independent, 1-unit class that is graded credit/no credit. **During PAL class**, students work in groups of 3-4 around a whiteboard or chalkboard, taking turns working through faculty-designed problems from the day's worksheet. It is supported, focused practice of relevant problems with embedded social interaction.

Sacramento State is a diverse and highly integrated campus, and both PAL enrollees and facilitators reflect this diversity, which we believe is **foundational to the establishment of an inclusive learning environment**.

Facilitators are recruited from campus equity programs and through faculty referrals, and are interviewed and selected based on demonstrated empathy, optimism, and inclusive mindset as demonstrated through situational interview questions.

Facilitator training includes open discussions about how to make their PAL classroom as inclusive as possible. **Idea generated by these undergraduate leaders include:**

**Using student names**      **Sharing personal experiences/struggles with same class**
**Identifying Preferred Gender Pronouns**      **Multiple icebreakers throughout the semester**
**Incorporating social media to connect outside of class**      **Using humor/being friendly**
**Convey genuine interest in their well-being**      **Sensitivity to age and cultural differences**
Discussions about the barriers to student success faced by Sac State students has illuminated the gap that exists between student reality & faculty members’ assumptions.

“What are the barriers to success faced by students on our campus?”

Student Responses:  
Food Insecurity  
Financial Aid issues  
Can’t afford textbooks  
Outside responsibilities (family, work)  
Family pressures  
Language barriers  
Time management  
Hesitant to ask for help

Faculty Responses:  
Poor time management  
Lack of discipline  
Lack of engagement  
Don’t come to class  
Last minute submission of homework  
Poor preparation (either high school or pre-requisite)  
Unrealistic schedules

Peers may be more “in-touch” with student struggles & better positioned to help.

Further, the structure of PAL provides the opportunity for peer-peer support.

- 94% of Facilitators polled “very much” agreed that PAL helps to create an inclusive environment for students (n=50)

**Program Results:** Five years of data indicate that students opting into PALs earn a 20% “bump” in their course grade (data controlled for all mitigating factors).

![Average Course Grade for students opting into PAL vs. not (n=2652 with PAL; n=6565 without PAL). Data controlled for all measurable indicators.](image)

Data indicate that PALs improve problem-solving skills, boost student confidence, create a sense of community and support among students, and promote effective study techniques, helping students build the foundation for future success.