C6-LSAMP - Building Bridges to the Baccalaureate

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C6-LSAMP Alliance

California Central Coast Community College Collaborative (C6, C6-LSAMP)

Alliance colleges:
- **Allan Hancock**
- **Cabrillo**
- **Cuesta**
- **Monterey Peninsula**
- **Moorpark**
- **Oxnard**
- **Santa Barbara City**
- **Ventura**

C6 Campuses and Counties. Distance from Moorpark College to Cabrillo College by car: 304 miles.

Abstract

Full paper:

C6-LSAMP is a National Science Foundation Louis Stokes Alliances for Minority Participation Bridge to the Baccalaureate project (NSF/LSAMP/B2B). C6 is an innovative, cross-disciplinary collaboration across eight California community colleges. C6 leverages existing support structures and best practices in member institutions to address inequities in STEM outcomes for a population of students comprised of the underserved: Hispanic/Latinx and other underrepresented minorities (URMs) in rural areas. Within the five counties served by C6 colleges, only 13% of Hispanic/Latinx residents 25 years or older hold a bachelor's degree, compared to 47% of the five counties' White, non-Hispanic population. At C6 colleges, Hispanic/Latinx students transfer at a rate of 34% compared to 50% for White students. Success rates in key STEM gateway courses in C6 colleges are typically 13% less for Hispanic students than their White counterparts.

The C6-LSAMP project leverages the power of an alliance to support URM STEM students via three pillars:

(1) Research Opportunities: Fall Research Symposium and university and LSAMP partnerships,

(2) Academic Support: Embedded Tutors in gateway STEM courses, and

(3) Professional Development / Career Exploration for students and for faculty: workshops, mentoring, and networking.

Three Pillars of Support

Reinforcing each pillar is a commitment to creating culturally sensitive, relevant and responsive learning environments.

This work-in-progress paper/poster will summarize some of the project activities, results, challenges and lessons learned during the first two years of the C6-LSAMP project.

Motivation

Although famed for its tourist industry, the economic backbone of California's Central Coast is agriculture, with a developing light manufacturing industry. Many students at C6 colleges are children of farm workers and those who work in low-paying manufacturing and service-industry jobs. Many of the parents are immigrants to the United States. Hispanic/Latinx is the dominant URM demographic at each college.

Gaps in Educational Attainment, 25 years+, 2019 1-yr ACS Estimates

Political/ Geographic Entity	Percent with B.S. Degree or Higher			Hispanic/ Latinx Gap
	Overall	White	Hispanic/ Latinx	
United States	33.1%	36.8%	17.6%	-19.3%
California	35.0%	45.3%	14.4%	-30.9%
C6 Counties				
Santa Cruz	43.8%	53.8%	20.0%	-33.8%
Monterey	25.7%	47.4%	8.9%	-38.5%
San Luis Obispo	37.2%	42.2%	19.9%	-22.3%
Santa Barbara	34.5%	48.9%	11.6%	-37.3%
Ventura	34.8%	45.6%	14.8%	-30.8%
C6 Counties, Total	34.5%	47.0%	13.4%	-33.6%

Source: 2019 American Community Survey, data.census.gov

Oxnard College C6 students at 2023 Fall Research Symposium. Cal Poly San Luis Obispo. Photo: Oxnard College.

An Allan Hancock student shares her summer research project. Photo: D. Dal Bello, AHC.
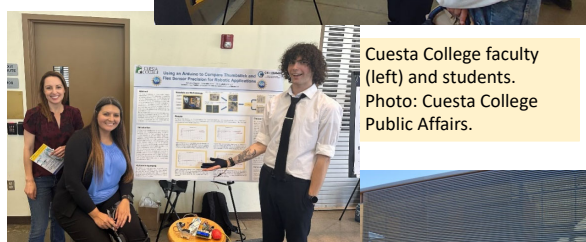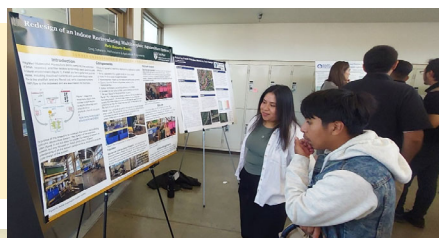
Cuesta College faculty (left) and students. Photo: Cuesta College Public Affairs.

Kick-off gathering of 2023 Fall Research Symposium. Photo: L. Jewell, Monterey Peninsula College.

Fall Research Symposium

The Research Symposium allows students to **present work they have performed outside of the classroom environment**:

- undergraduate research experiences
- work internship
- other STEM projects

The annual event, held at Cal Poly San Luis Obispo (CPLSO), is a **networking** and **learning** opportunity for students, faculty, and staff, and serves to **motivate community college students as they encounter actual research done by their peers**. C6 posters are presented alongside those by CPSLO undergraduates.

- **2022**: **16 C6 posters** and over **150 C6 student attendees**
- **2023**: **24 C6 posters** and over **250 C6 student attendees**
- at least 75% of posters each year included a URM scholar, either solo or as part of a team.

Student Feedback

Some key prompts and responses from the 2022 post-symposium survey:

The most important thing I learned/took away from today's event was:
- *Being able to imagine myself at the [university] and hopefully present a poster for research in the future*
- *You don't have to be at a 4 year university to get involved in STEM research and that even at an entry level you can help with really impactful things.*

If you did NOT present a poster, how did the experience make you think about doing it next year? What support would you need?
- *I didn't know [community college] students were able to present a research poster.*
- *I ... really enjoy the presentations. I learned a lot of information I didn't even know or thought to think of from them.*
- *I felt encouraged to do my own research and present. In terms of support, I would need someone else to help me do my research and experiment, a mentor, and overall a supportive community that will push me and make me feel empowered.*

For the poster-presenters themselves:
The most important thing I learned from presenting my poster was:
- *I now have the knowledge of how to professionally conduct research and present my findings in an understandable way. I am incredibly grateful to have gotten this opportunity to get this great experience.*
- *I was able to present my work to fellow CC students like myself and see how interested they were.*

Embedded Tutoring (ET)

2022-23 C6-wide Gateway STEM Course Retention and Success Rates All Students and URM Students Only (URM-only student data in *italics*).
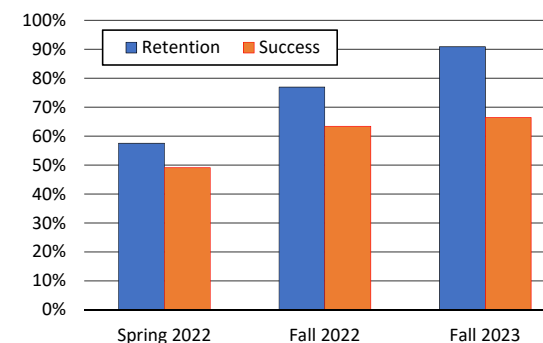
Gateway STEM Course	Embedded Tutor?	Enrollment All | *URM-only*	Retention (%) All | *URM*	Success (%) All | *URM*
General Chemistry 1	No	2,168 | *1,148*	84 | *81*	60 | *55*
	Yes	661 | *435*	85 | *83*	70 | *66*
Precalculus	No	2,652 | *1,634*	70 | *68*	47 | *41*
	Yes	572 | *319*	67 | *61*	45 | *38*
Calculus 1	No	3,665 | *2,061*	77 | *76*	52 | *49*
	Yes	286 | *155*	72 | *68*	41 | *41*
Physics 1 (calc-based)	No	756 | *341*	89 | *89*	69 | *67*
	Yes	332 | *234*	82 | *84*	62 | *62*

The impact of embedded tutors seems to be negative, except in **General Chemistry 1**. A lab experience allows ETs and students to interact in an unstructured environment, and thus to build stronger connections.

The negative impact of ETs has been observed by C6 colleges' research offices in other programs that sponsor ETs. Several factors seem to contribute to this phenomenon:

- Faculty may not utilize ETs effectively in/out of the class.
- Faculty may not sufficiently encourage their class to visit the ET's tutoring hours.
- Students may roll back their own studying, believing they have a safety net, but then do not sufficiently utilize the ET.
- Faculty and students may become complacent; ET support may be taken for granted and thus the intended improvement not realized.

C6-LSAMP is working on sharing best practices and developing faculty/ET skills to increase embedded tutor effectiveness.

Growth of Retention and Success in one C6 faculty member's General Chemistry 1 course while employing an embedded tutor. Spring 2022: first semester with an embedded tutor.

Acknowledgement

Contact

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