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Developing a Culturally Adaptive Pathway to Success: Implementation Progress and Project Findings

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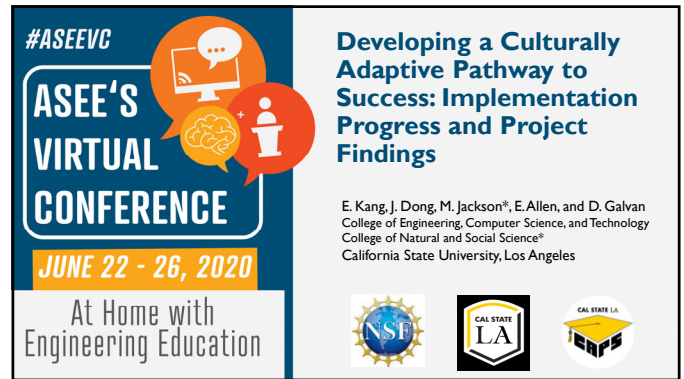California State University, Los Angeles

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CAPS
(Culturally Adaptive Pathway to Success)

❖ Inclusive pathway to accelerate the graduation for academically talented, low-income students in one of 4 majors
  ❖ Civil Engineering, Computer Science, Electrical Engineering, and Mechanical Engineering)
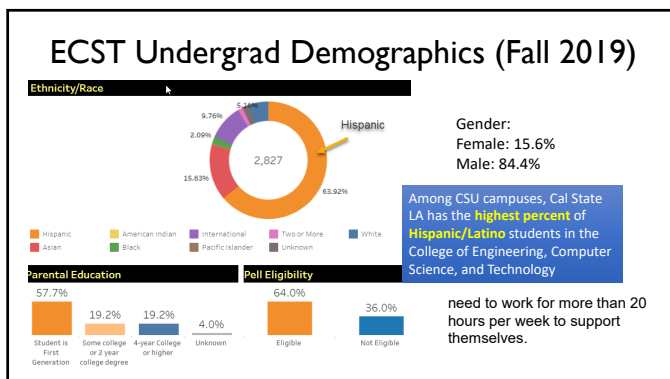 ❖ at College of Engineering, Computer Science, and Technology (ECST)
❖ NSF S-STEM Program

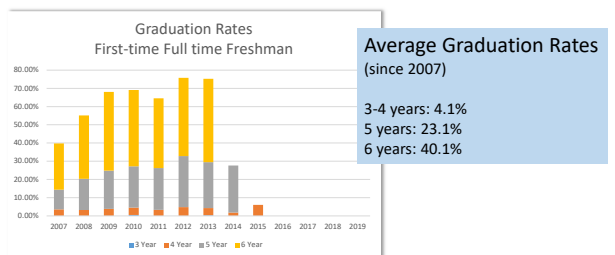ASEE'S VIRTUAL CONFERENCE #ASEEVC

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CAPS - Background

• ECST Undergraduate demographics
• ECST Graduation rates
• In addition to financial disadvantage, many students – including those who are academically talented - have inadequate preparation for the increased rigors of college education from their K-12 education and limited family guidance due to the fact that most students are first generation college students.

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ECST Undergrad Demographics (Fall 2019)

Gender:
Female: 15.6%
Male: 84.4%

Among CSU campuses, Cal State LA has the **highest percent** of **Hispanic/Latino** students in the College of Engineering, Computer Science, and Technology

need to work for more than 20 hours per week to support themselves.

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ECST Graduation Rates (2007-2019)

Average Graduation Rates
(since 2007)

3-4 years: 4.1%
5 years: 23.1%
6 years: 40.1%

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Program Objective

❖ Supports 2 cohorts of scholars from their sophomore to senior years.

❖ Using the holistic supporting pathway, the project targets to have
  - ❖ 90% of scholars persist
  - ❖ 50% graduate within 5 years and
  - ❖ an additional 40% graduate within 6 years

in engineering or computer science majors.

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Recruitment

Cohort No.	Major	Number of Scholars (Recruited)				Number of Scholars (Retained as of Fall 2019)			
		Male		Female		Male		Female	
		URM	Non-URM	URM	Non-URM	URM	Non-URM	URM	Non-URM
1	Civil Engineering			2					1
	Computer Science	2		1	2	1		1	2
	Electrical Engineering	2				1			
	Mechanical Engineering	1	1		1		1		1
	SubTotal	5	1	1	5	2	1	1	4
2	Civil Engineering	3				3			
	Computer Science	4		1		4		1	
	Electrical Engineering	4		1		4		1	
	Mechanical Engineering	2		1		2		1	
	SubTotal	13		3		13		3	
	SubTotal	18	1	4	5	15	1	4	4
	Total			28					24

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Structured Recruitment Process

- Diversified advertisement via multiple channels - a scholarship information session, flyers, emails, college Kiosk TV, college webpages, e-newsletters, student organizations, and announcements in classrooms.
- Active recruitment from the ECST First-Year Experience program (FYrE)
- Online applications
- Application Reviews & Interviews by the Selection Committee

Improved Recruitment Strategy in Year 2
- Scholar and student involvement
- Faculty mentors involvement
- Increased number of announcements

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Three Integrated Interventions & CAPS Support Activities

Mentor+, encourages students to see their academic work in relation to their families and communities

Peer cohorts, providing social support structure for students and enhancing their sense of belongings in classrooms and beyond

Professional development with difference-education, giving students support in situations where they practice reconciling how to navigate a world where others may have a different cultural script

Mentor+ Advisement Meetings

Sophomore Learning Cluster

Cohort Gatherings
  By major
  By cohort year

Field Trips
Seminars (reflection essay)
Professional Conference

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Implementations and Improvements

Mentor+	Peer Support	Professional development	Orientation
• Mandatory Mentor+ advisement session (at least twice per term) • Shifted from mentor Intiatied to scholar initiated scheduling • Mentor Training (once per semester) • Summer18 – Growth mindset • Fall18-Guide to one-on-one meeting • Spring19-Leadership • Fall19-various aspects of intersectionality • Spring20-Growthmindset (online training)	• Formal and informal cohort gatherings by year and cohort gatherings by major • Peer gathering and mentoring by major • Initiated by rotating peer leaders • Same course enrollment (extremely difficult during their first two years)	• Mandatory participation in one of professional events per term followed by a submission of a reflection essay • Research opportunities and internships • Professional conference • Field trips (once or twice per year) • Mentor initiated professional development • Peer initiated professional development activities	• Before each Fall semester • Introduction of the program • Icebreaking activities • Year 2 - orientation content to include new relationship building activities and clarification of the program expectations

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CAPS Research

Investigates
- how these interventions affect the development of social belonging and engineering identity of CAPS scholars
- the impact of Mentor+ on academic resilience and progress to degree.

Both qualitative and quantitative data collections from:
- Focus group meetings (every semester)
- An online survey after completion of each project year
- Mentor+ meetings
- Academic records

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Results / Evaluation (1)

- Scholars report a high level of satisfaction with the program and report financial and academic benefits. Faculty also report satisfaction with their participation.
- Scholars reported excellent relationships with mentors, universally agreeing that CAPS mentors were helpful.
- Suggested improvements by both mentors and scholars – more professional development workshops and social events that include both cohorts of scholars.

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Results / Evaluation (2)

(R.1a) What are students' perceptions of the obstacles they face and the resources available to them?

- Time management as their greatest challenge
- Scholars reported a wide variety of resources used to address these challenges, including support from loved ones, peer support, study groups, calendars/schedules, and tutors.

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Results / Evaluation (2)

(R.1b) What are their perceptions of social belonging and their identity as engineers?

	CAPS	NON CAPS
Engineering/CS Identity (1=least strong, 5=most strong)	3.90	3.58
Recognition of Identity by instructors, peers, and parents (1=least strong, 7=most strong)	5.83	5.0

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Results / Evaluation (3)

(R.2) How does participating in CAPS mentoring affect their academic achievement and their preferences for pursuing challenging occupations and research?

	CAPS	NON CAPS
	(1 = Strongly not recognized, 7 = Strongly recognized)	
Spring 2018 GPA	3.44	3.52
Spring 2019 GPA	3.31	3.45

	CAPS	NON CAPS
Career plans	(1 = not at all, 5 = a great deal)	
Intend an E/CS career	4.83	4.5
Committed to E/CS career	4.83	4.25
Intend to apply to Grad school	3.5	4.0
Interest in Grad school	4.0	4.0

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Results / Evaluation (4)

(R.3) What is the relationship, if any, between their perceptions and academic outcomes?

- Correlations predicting end-of-year GPA from the reported recognition of scholars' engineering identity in R.2; too small sample data
- While not conclusive, these data suggest that the trends of higher engineering identity for CAPS scholars, and greater recognition of their engineering identity from their instructors/peers/family, as compared to their matched peers, may provide protective benefits as time moves forward.

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