

Achieving Broader Impacts at 2-year Hispanic Serving Institutions

with Strategic STEM Planning and Faculty Professional Development

NABI 2019 Summit: Exploring Broader Impacts through Connectedness

Theme: Connectedness Through Intentional, Strategic Design

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**Science Foundation Arizona
Center for STEM**

Outline

Description of the Need

KickStarter Overview

KickStarter's Broader Impacts

Broader Impacts from 2-year HSI's in KickStarter

Q&A

Description of the Need



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Hispanics are the fastest growing segment

- By 2060, Hispanics will reach 30% of the U.S. population and the youngest group under 18 years (33.5%).

- *U.S. Census Bureau, 2016*

- Between 2010 and 2020, 74% of people entering the workforce will be Hispanic.

- *U.S. Department of Labor, Bureau of Labor Statistics, 2012*

Latinx Students in STEM

- Increasing demand for STEM workers far exceeds number of STEM degrees attained
 - *Richard Tapia Center for Excellence and Equity, 2013*
- Latinx Students enrolling in STEM majors but not completing STEM degrees at par with other groups
 - *Pew Research Center, 2014*
- Only 15% of Latinx earn a Bachelor's degree or higher
 - *Pew Research Center, 2014*
- 61% of Latinx STEM Bachelor's degree holders attended community College; 18% earned Associates degree prior to their Bachelors - *New Directions in Institutional Research, 2010*
- HSIs “have the potential to increase the number of STEM degrees awarded to Hispanic students.” - *Crisp and Nora, 2014*

HSI Definition

Hispanic Serving Institutions (HSIs) are 2-year or 4-year institutions of higher education where Hispanic students make up at least 25% of the full-time-equivalent total enrollment.

- *United States Department of Education*

523 Hispanic Serving Institutions enroll

- 66% of the 3.5 million Hispanics in higher ed
- 39% of all Asian American & Pacific Islanders
- 21% of all African Americans
- 18% of all Native Americans
- 68% of all minority students

- *Excelencia in Education, 2019*

HSI Growth

- 47% of HSIs of the 523 HSIs are 2-year colleges
- HSIs have more than doubled since 2000
- Over 30 new HSIs added annually
- HSIs receive one-third less federal funding (on a per student basis) than the rest of higher education.
 - *Excelencia in Education, 2019*
 - *Hispanic Alliance of Colleges and Universities (HACU), 2018*

Poll – Raise your hand if the item is TRUE

1. To be an HSI, Hispanic students must make up at least 25% of the full-time-equivalent total enrollment
2. HSIs have more than doubled since 2000
3. Over 30 new HSIs are added annually
4. 523 Hispanic Serving Institutions enroll over 68% of all minority students

KickStarter Overview



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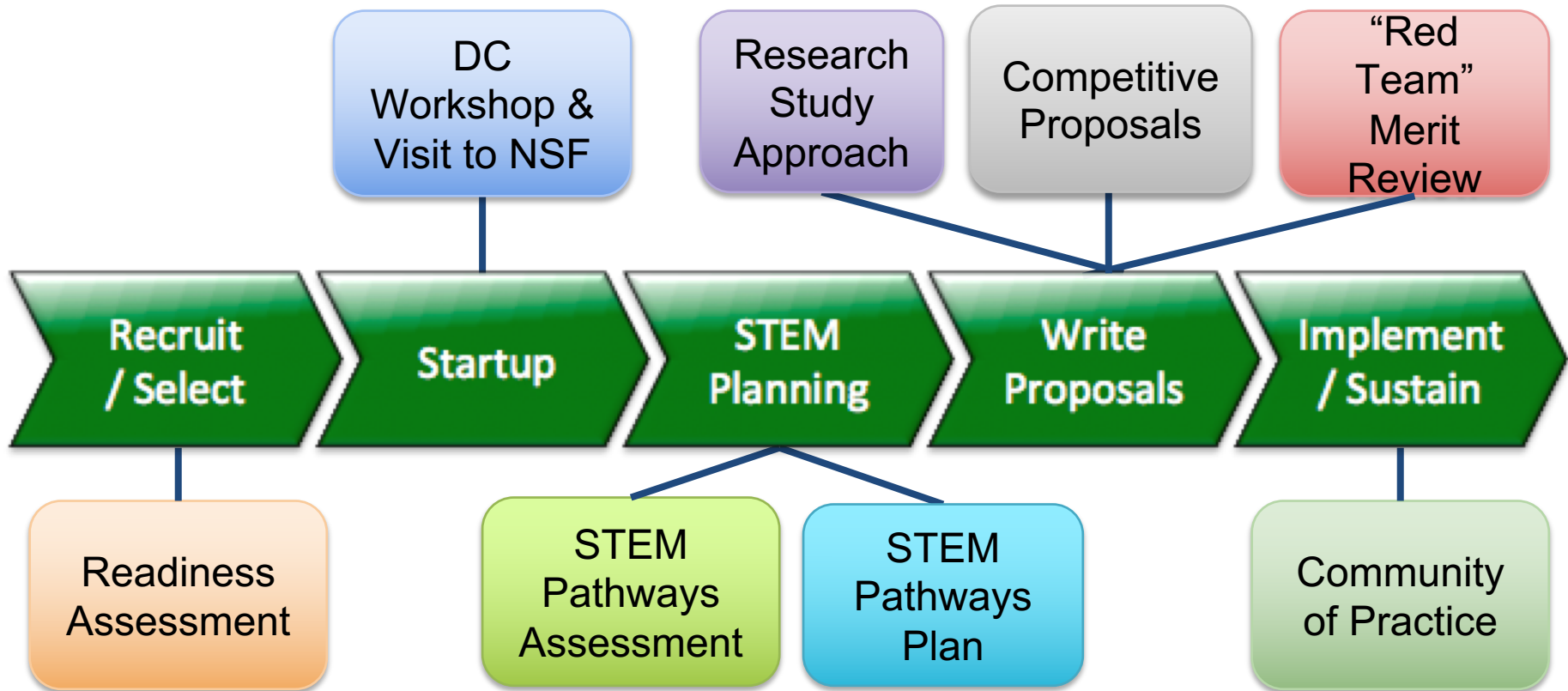
KickStarter Program

- NSF-funded Pilot program (Grant #1450661) to learn from community college Hispanic Serving Institutions (2-year HSIs)
- Assist HSIs with strategic STEM planning, concept development, proposal preparation and submission
- Desired outcomes:
 - More 2-year HSIs compete successfully on NSF projects
 - 2-year HSIs strengthen their STEM infrastructure
 - Key partnerships are established that improve 2-year HSIs' competitiveness
 - KickStarter process is sustainable

Goals and Impacts for KickStarter Participants

1. Improve HSI's STEM Pathway strategies and ability to provide evidence of effectiveness in future proposals (capacity to identify, collect, and analyze information)
2. Establish key partnerships that lead to more Hispanic students in the STEM Pathways pipeline
3. Develop a minimum of two proposals to NSF
4. Develop and implement funded projects, conceive new projects, and find new partners to further expand their STEM-based initiatives

KickStarter Process



Discussion - 5 minutes

Discuss with the person next to you how something like the KickStarter Program could benefit each other's organization, even if you are not an HSI.

Any volunteers willing to share a quick recap of your discussion?

KickStarter's Broader Impacts



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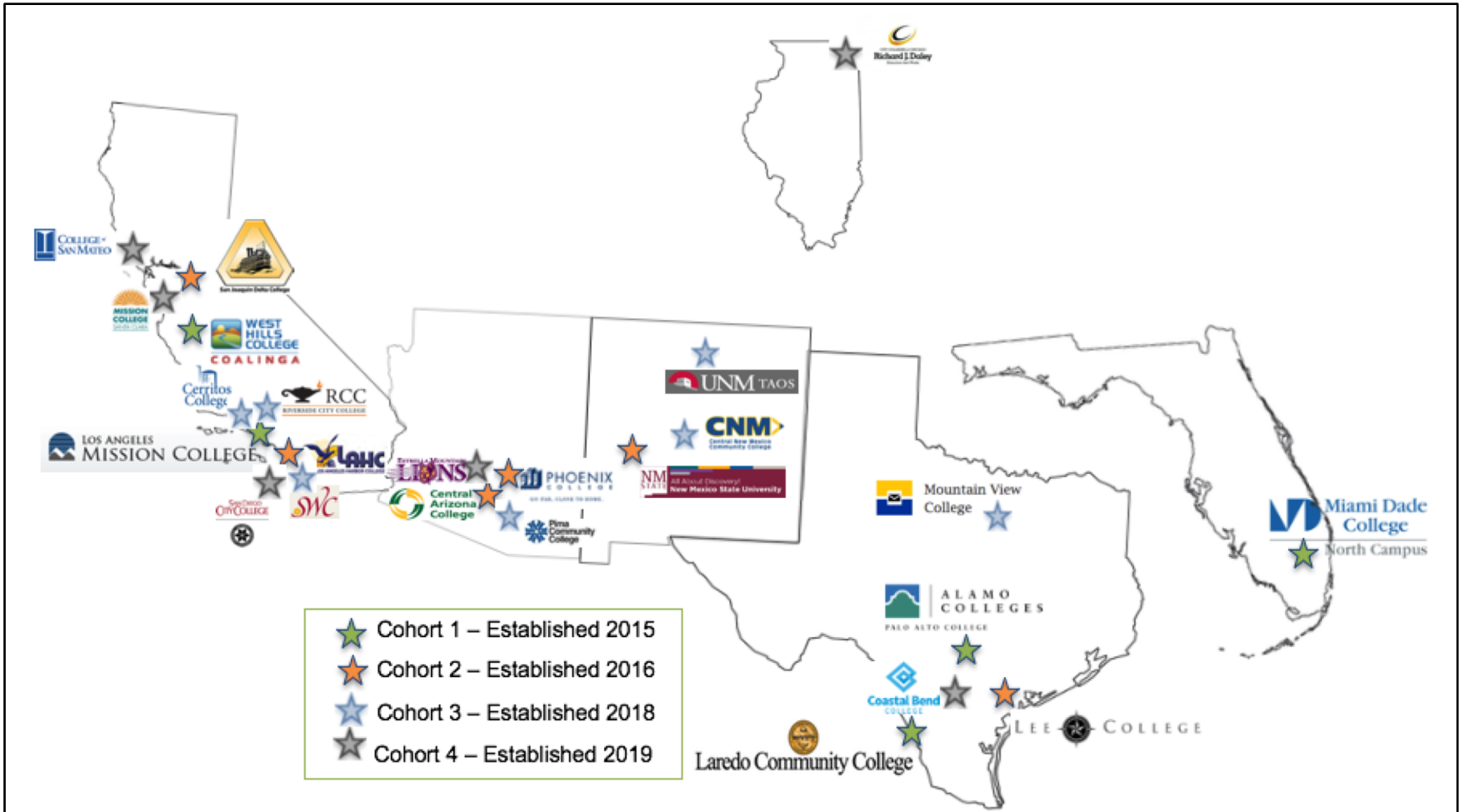
KickStarter's Broader Impacts (from NSF award abstract)

This project will increase the numbers of 2-year HSIs that successfully pursue federal grants, particularly from the National Science Foundation, ultimately increasing recruitment and retention in STEM through enhancements to these institutions' STEM curricula, strengthening ties to industry and community partners, and developing robust articulation pathways to four-year STEM programs.

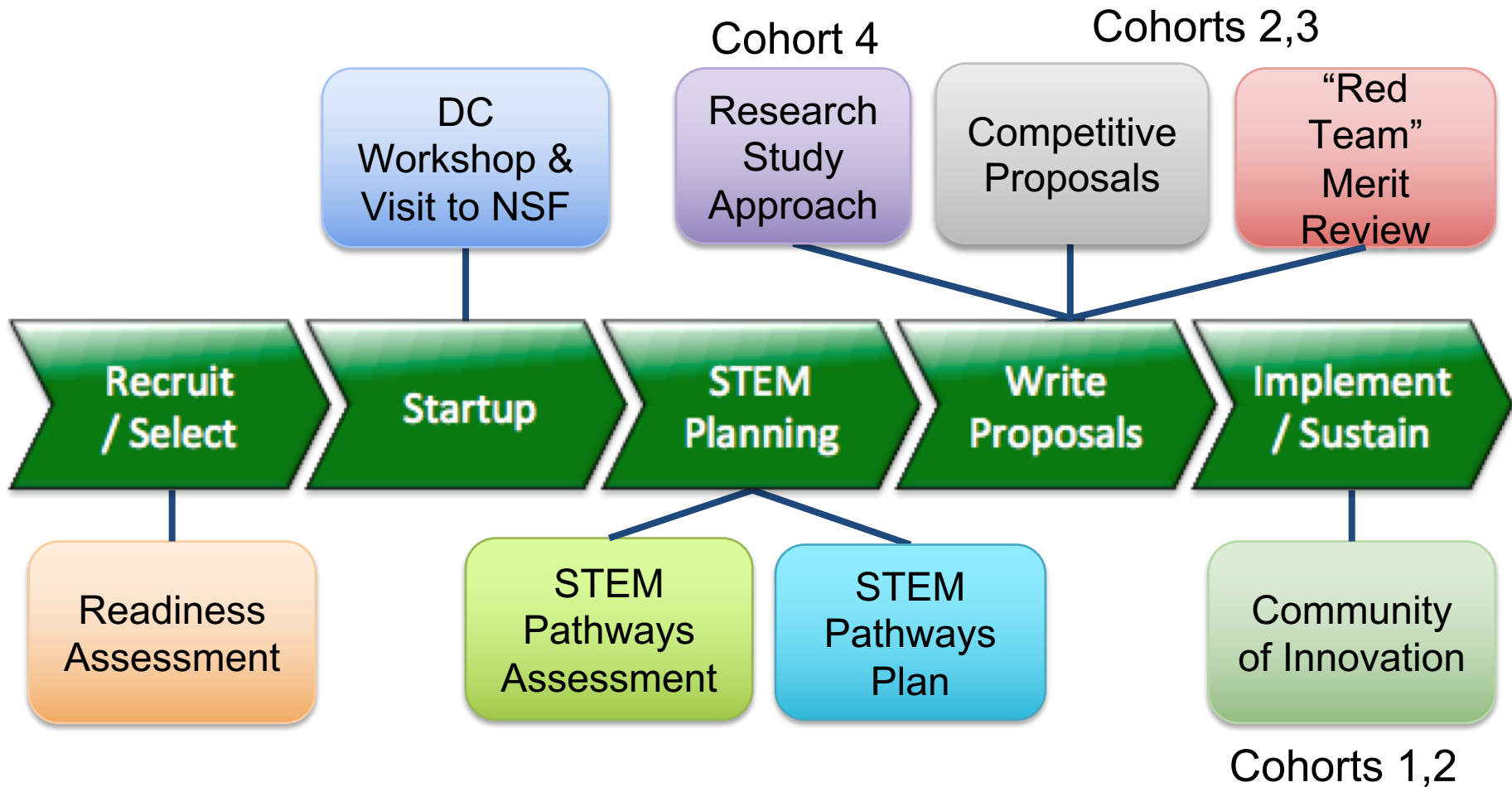
This project has the potential to become a technical assistance model for other minority-serving community colleges, such as two-year Historically Black Colleges and Tribal Colleges.

KickStarter 2-year HSI Participants

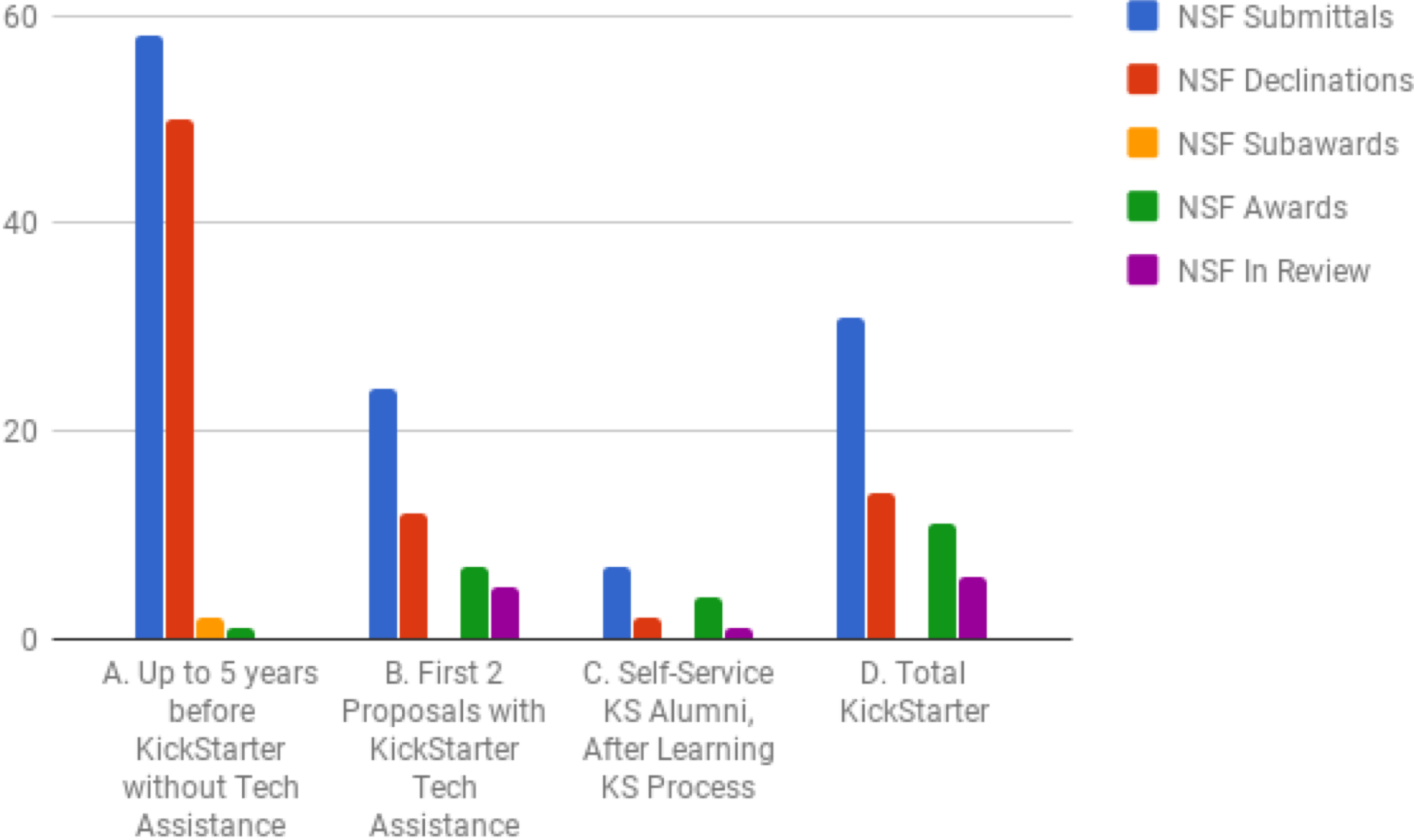
August 2015 - April 2019
 24 HSI 2-year colleges in 6 states
 \$5.5 M in NSF grants awarded
 44% proposal success rate



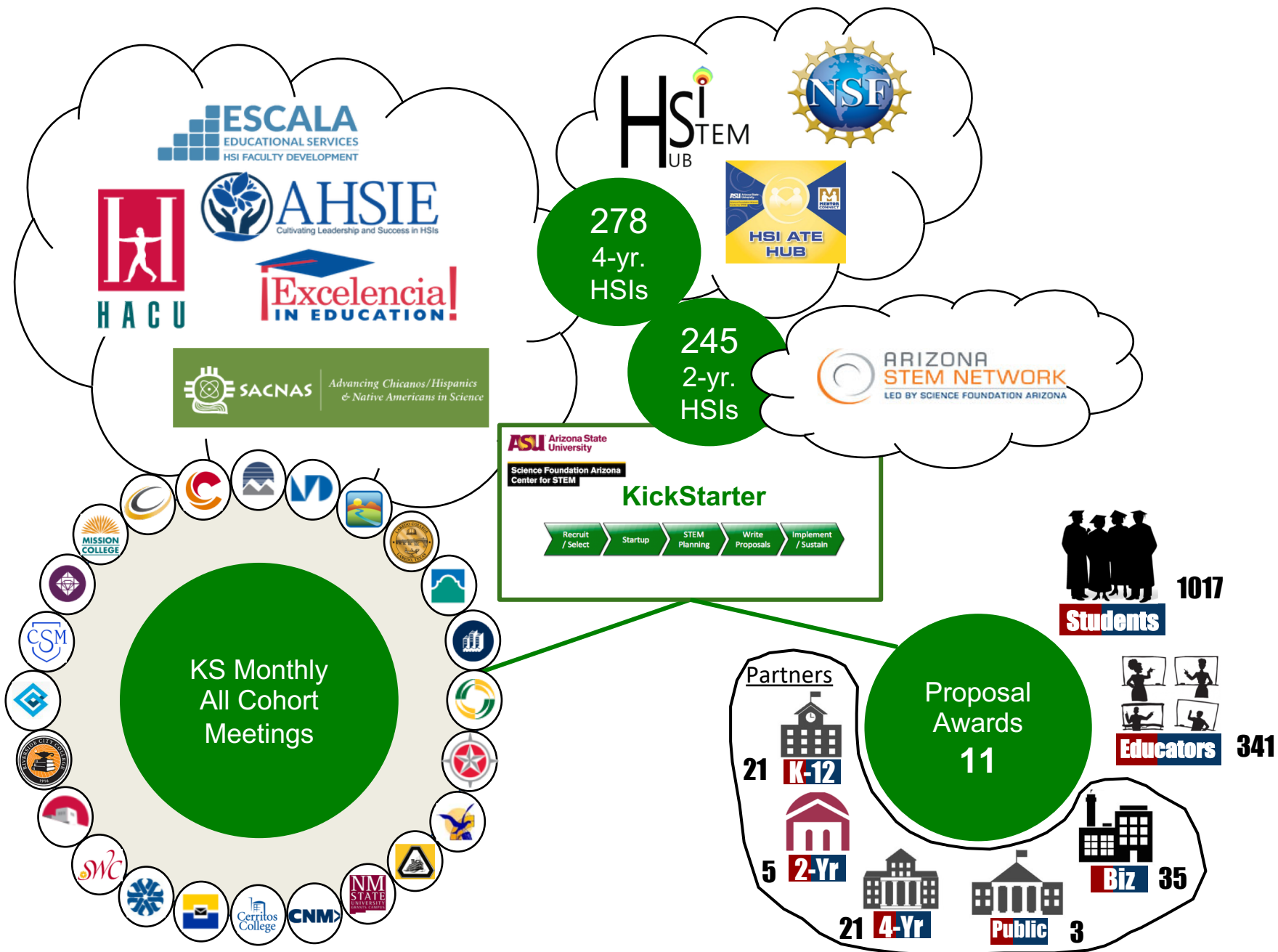
Cohort Status within KickStarter Process



KickStarter Impacts: 2-year HSI Proposals



Broader Impacts through Connectedness



Broader Impacts from 2-year HSIs assisted by Kickstarter



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KickStarter Case Study



Dr. Par Mohammadian
Life Sciences Faculty & PI

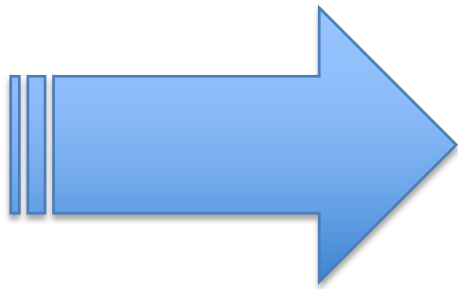


Introduction

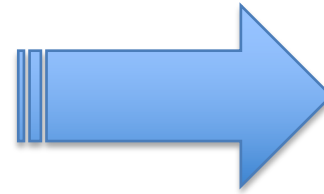


- Located in Sylmar, CA
- One of nine colleges within Los Angeles Community College District





Stackable Certificate and Degree Programs in Biotechnology



Short-term certificates -> employment - Continue with education

Support to offer the programs



NSF grant

KickStarter



(NSF ATE award # 1700152)

Advantages of being part of Cohort #1:

- Trip to Washington DC to learn about different NSF programs
- Campus visit to identify the current resources and gaps
- Assistance in identifying the type of NSF grants we should apply to
- Assistance in the grant writing process
- Introduction to other PIs who later served as mentors

(NSF ATE award # 1700152)



Outcomes of being part of KickStarter Cohort #1:

- Increasing the Student Biotech Pipeline (NSF ATE award # 1700152) (May 01, 2017 – April 30, 2020)
- Biotech students placed in top 10 NSF Community College 2018 Innovation projects in 2018
- An Intervention to Improve Success of Biology Majors in Mathematics (NSF HSI award #1832348) (Oct 1, 2018 - Sep 30, 2023)



LA Mission College Biotechnology Students



(NSF ATE award # 1700152)



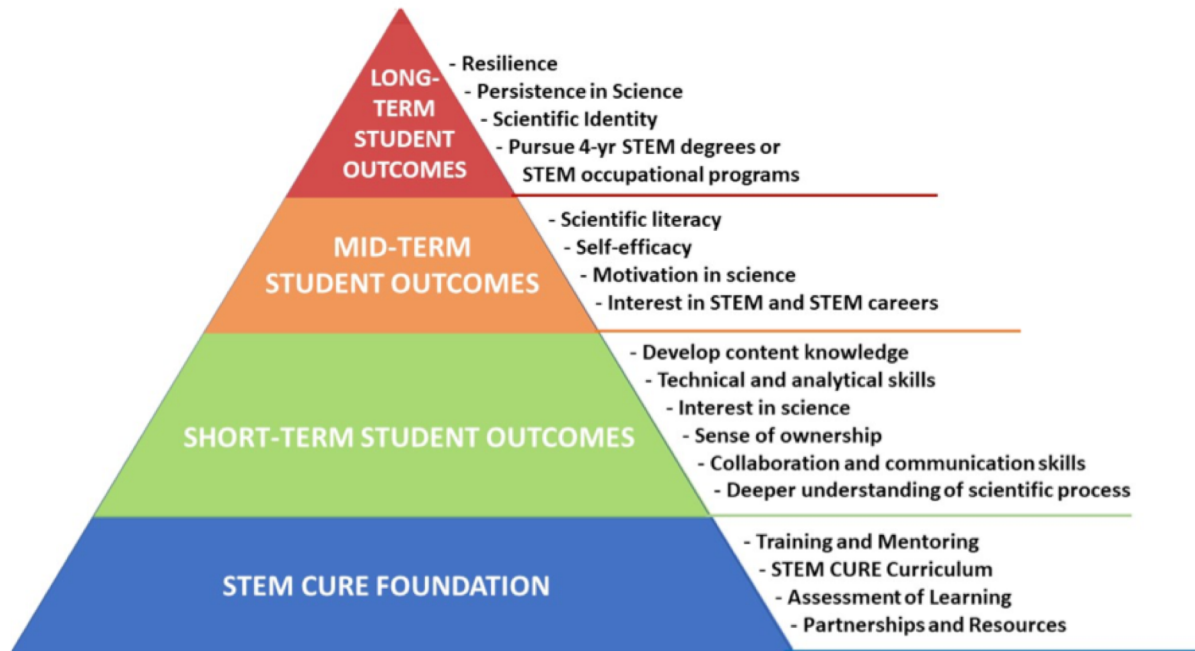
KickStarter Case Study: STEM CURE



PHOENIX COLLEGE

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Integrating Research, Mentoring, and Industry Collaborations to Improve STEM Recruitment and Retention - NSF #1832543 Jan 1, 2019 - Dec 31, 2023



Dr. Robin Cotter, Life Sciences, Biology Faculty & PI



Dr. Elena Ortiz, Life Sciences, Biology Faculty & co-PI



Dr. Anna Marti-Subirana, Life Sciences, Biology Faculty & co-PI

Introduction

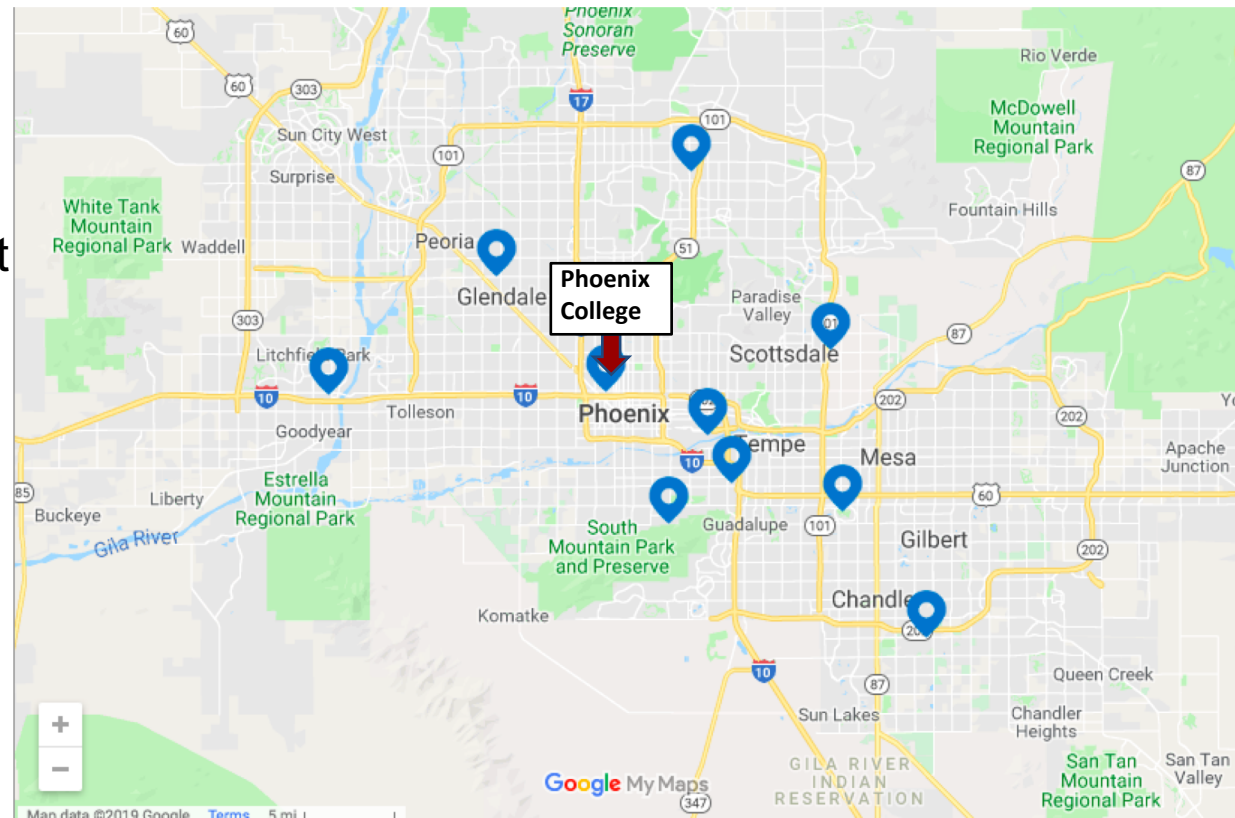


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Phoenix College serves our diverse community with student-centered teaching and learning experiences that inspire the lifelong pursuit of educational, professional, and personal goals.

- 17,000 students
- 5,840 FTE students
- 54.3% Hispanic enrollment
- 10 2-year colleges in the district, > 200K students
- 5 HSIs



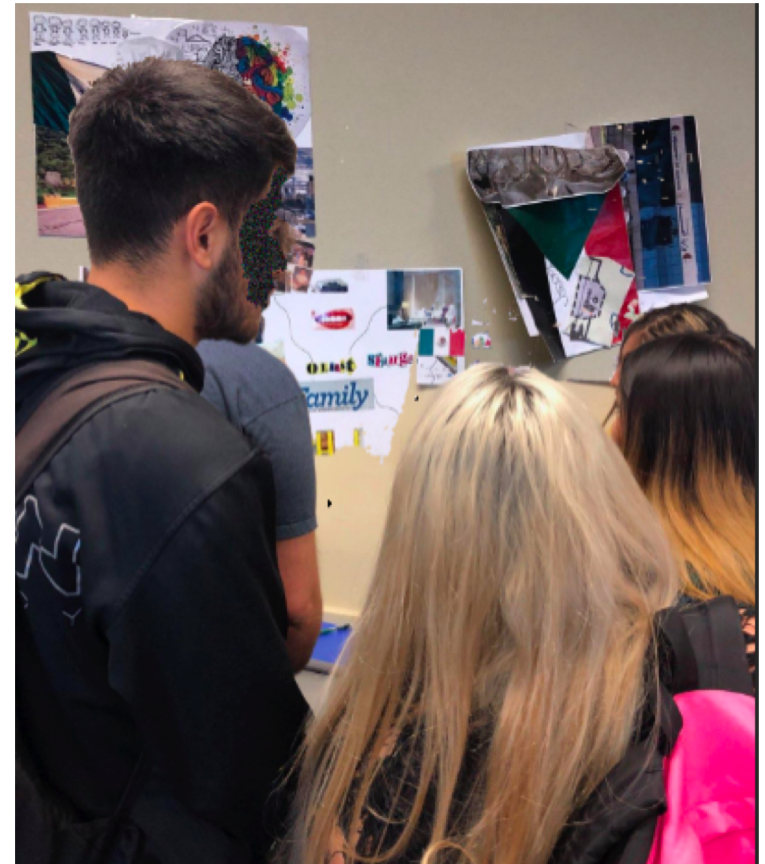
Phoenix College, AZ / Elena Ortiz



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1. How can we re-interpret others' cultural context norms as strengths?



2. How can we redesign our teaching to engage the cultural strengths our students bring?

Open Discussion with Audience

How do these examples resonate?

Does anyone in the audience wish to share a related experience?

Any Questions?

Questions and Answers

Acknowledgements

Dr. Par Mohammadian, Life Sciences Faculty & PI



Dr. Elena Ortiz, Life Sciences Faculty & co-PI



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Anna Tanguma-Gallegos, KickStarter Program Officer

Anita Grierson, KickStarter Program Officer



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Thank You

