

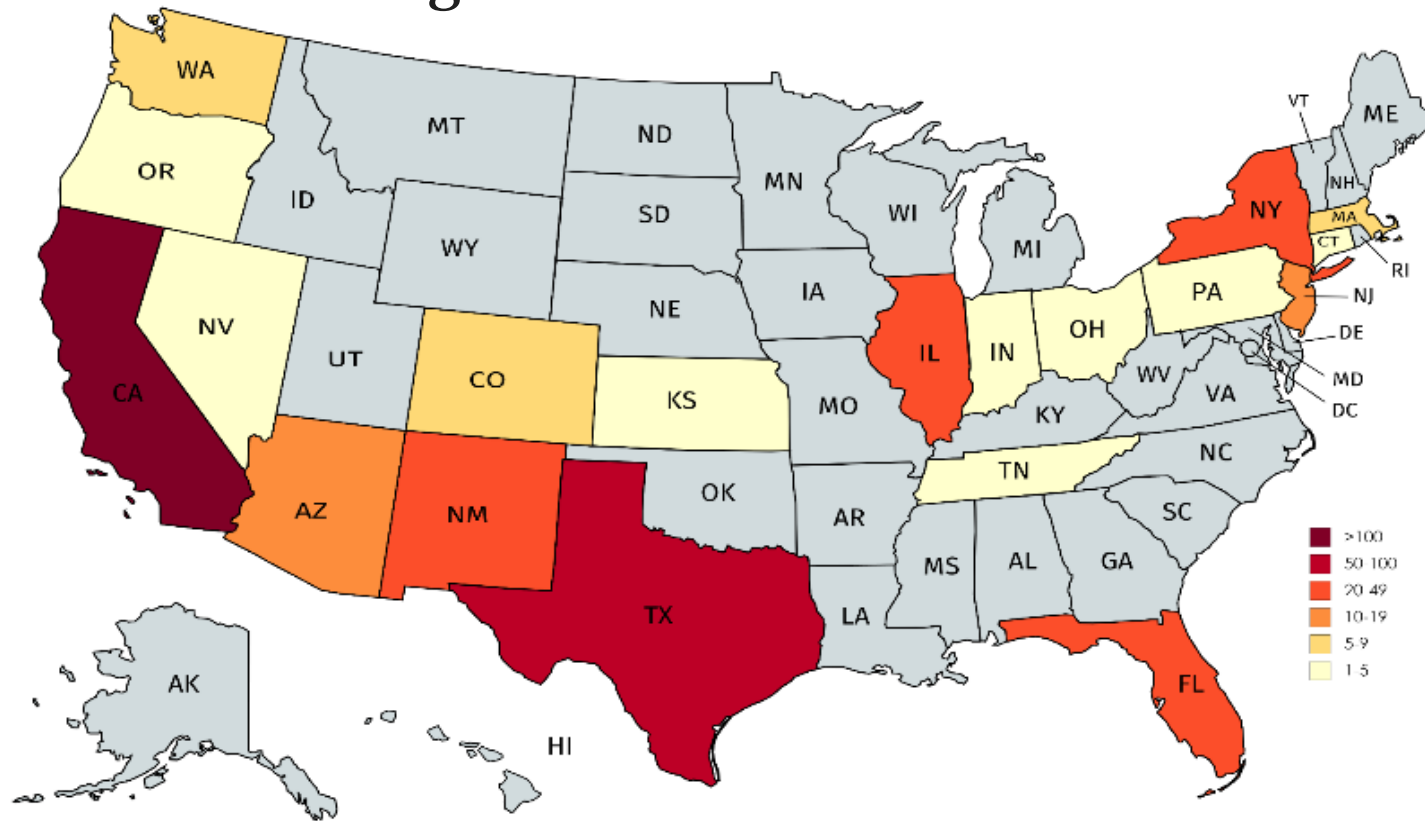
Integrating HIPs and Place into Learning Communities Improves Student Success in STEM



HSIs are concentrated geographically...

Existing in 2015

Data from HSICP² & HACU 2017

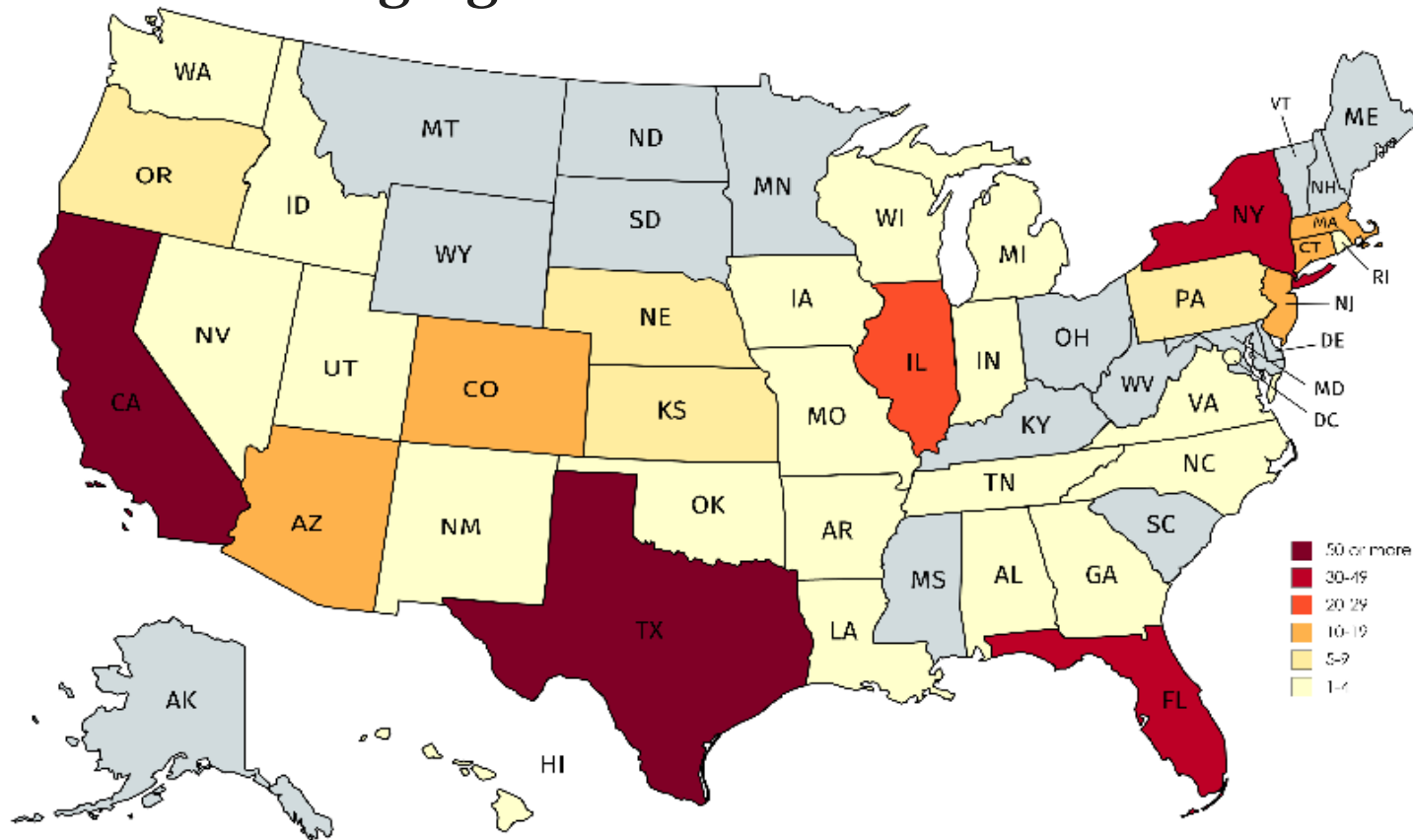


Over 80% of existing HSIs located in either cities (52%) or suburbs (32%).

HSIs are concentrated geographically... and expanding rapidly.

Emerging

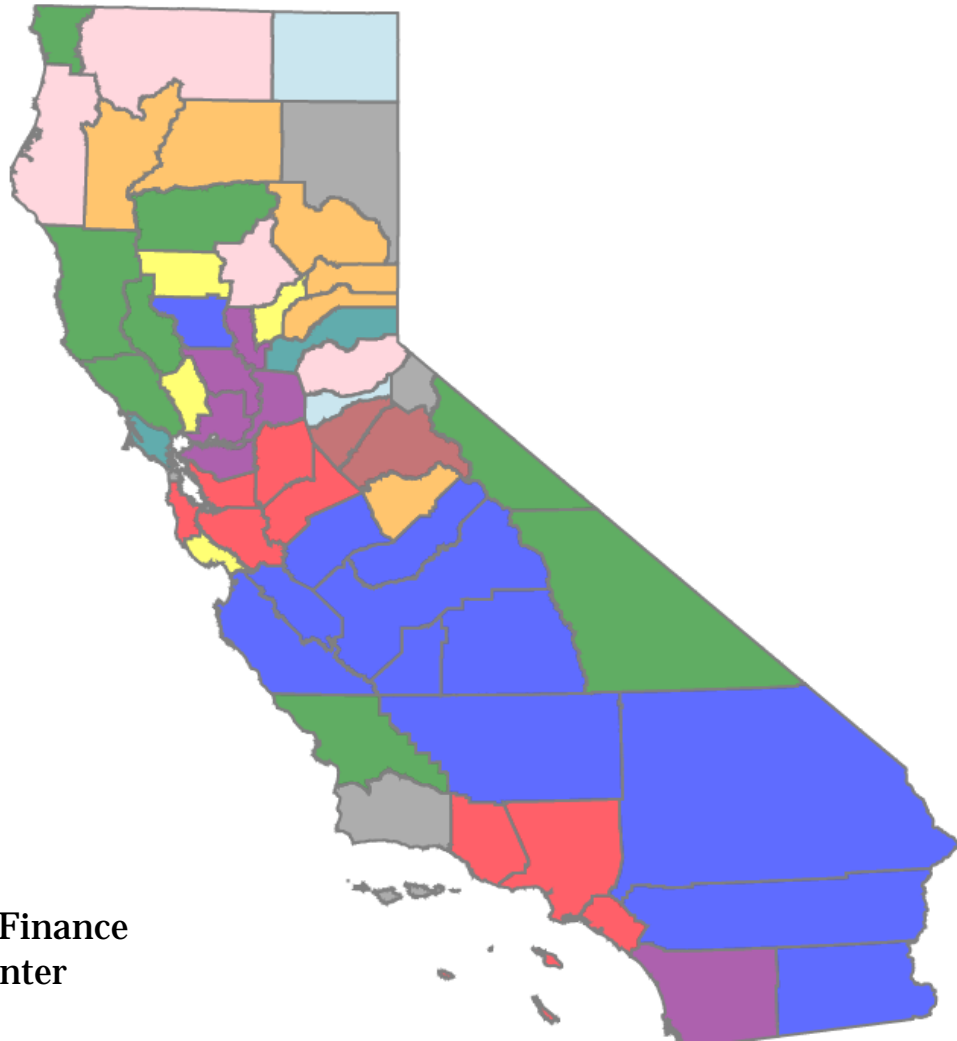
Data from HSICP² & HACU 2017



Emerging HSIs are in more northern and rural settings.

CA Counties Have Hispanic Populations Similar to Other States

State*	% Hispanic**
New Mexico	48%
California	39%
Colorado	21%
Nevada	28%
Wyoming	10%
Arizona	31%
Oregon	12%
Idaho	12%
Utah	13%
Washington	12%
Other	8-44%



*State of California Department of Finance

**2014 data from Pew Research Center

HSU is the most remote & rural CSU Campus

County of Origin



CA Region of Origin (2014)

	Head Count	Percent
1-Local	79	6%
2-Northern CA	113	8%
3-SF Bay	214	15%
4-Sacramento	55	4%
5-Coast	29	2%
6-Central CA	108	8%
7-Los Angeles	561	40%
8-San Diego	115	8%
W-WUE state	85	6%
X-Other state	24	2%
Y-Foreign	3	0%
Grand Total	1,386	100%

Context



- **Six-year grad rate @ HSU = 46.5%**
 - ~10% behind CSU average
- **Rate for incoming STEM = 49.0%**
- **Gaps for students from traditionally underrepresented groups most pronounced in STEM:**
 - 6 year graduation rate for underrepresented groups 39.5%
 - 6 year graduation rate for underrepresented groups in STEM is 37.4%



HSU's HSI STEM – Four Components

Place-Based Learning Communities



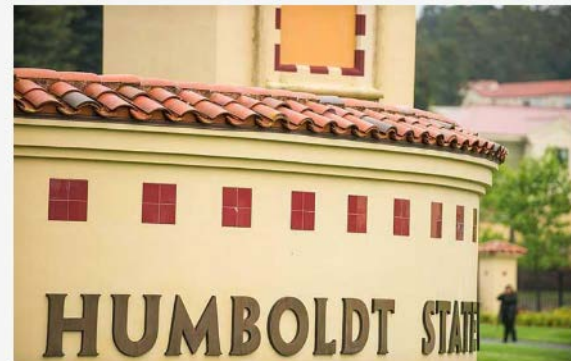
Expanded Tutoring Services



Reformed Math Instruction



New Pathways for Transfer Students



Place-based Learning Community



Our logic model posits that *place-based learning communities* can effect change and meet objectives of the HSI STEM grant.

Cohorts of first year students in linked courses, with interdisciplinary themes rooted in our unique place.



Belonging & Community

Skills & Attitudes

Academic achievement

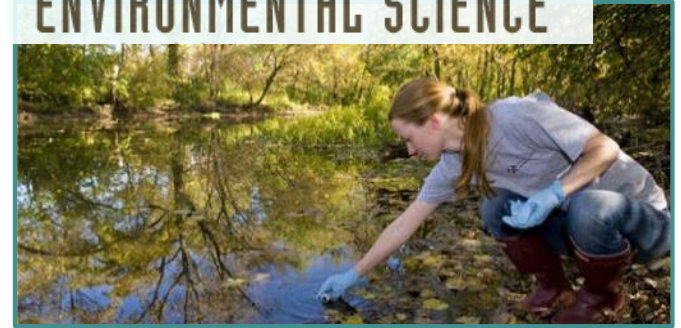
Retention & Graduation

KLAMATH CONNECTION PROGRAM

Environmental Resources Engineering



ENVIRONMENTAL SCIENCE



FORESTRY & WILDLAND RESOURCES



WILDLIFE



BIOLOGICAL SCIENCES



FISHERIES BIOLOGY



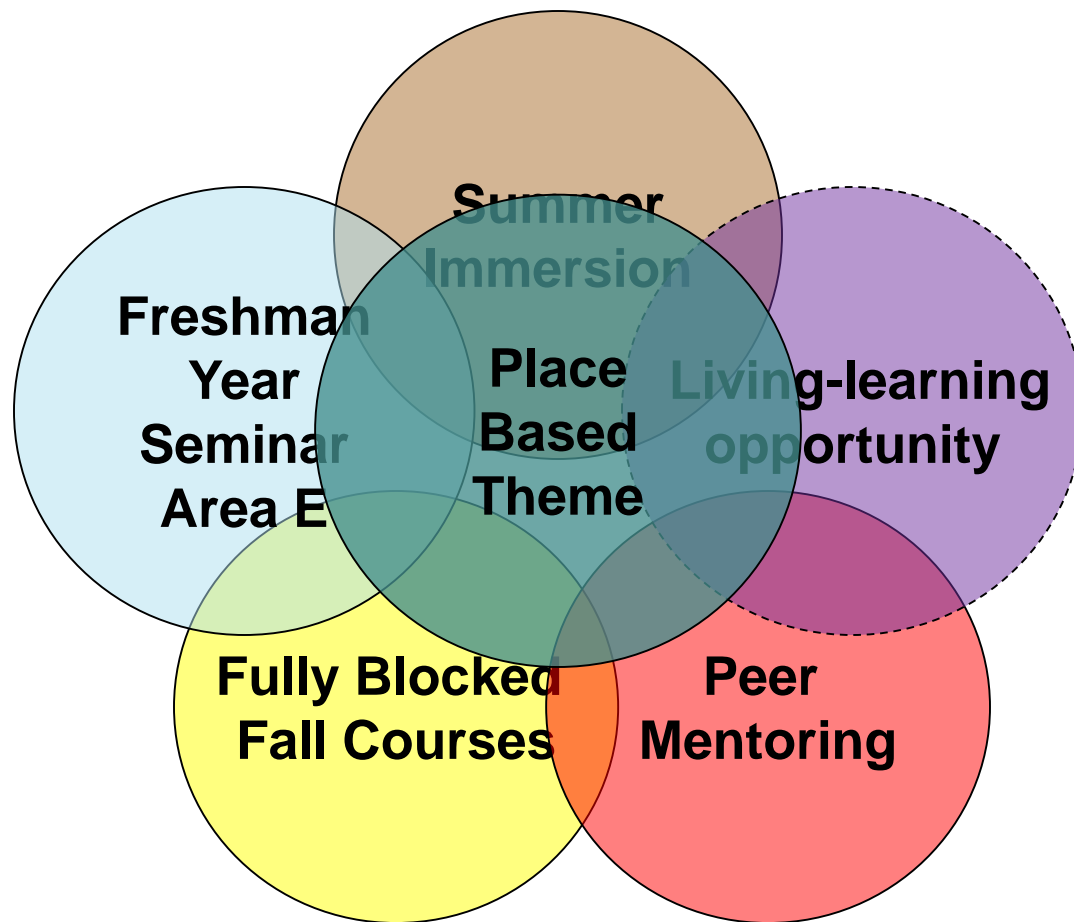
Zoology





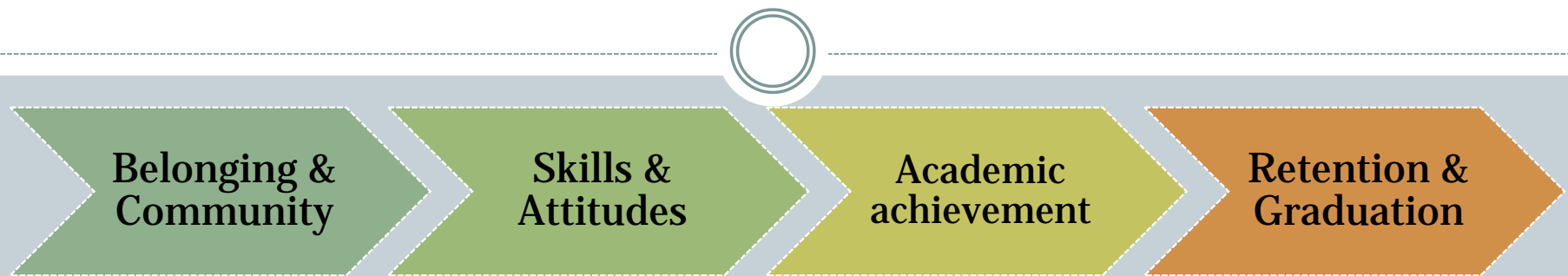
Blue Creek, Klamath River
Photo from Western Rivers Conservancy

The Klamath Connection Integrates High Impact Practices (HIPs) with a Place-Based Theme



Video 1:
~3.5 min explanation of the components
<https://youtu.be/jEZC3amUXmc>

Assessment



Analysis of 1st ('15-'16) and 2nd cohorts ('16-'17):

- n = 62 and 113 (current cohort is 160)
- 1st cohort all college-ready, 2nd cohort open to all
- Overall:
 - 44% underrepresented group, 29% Hispanic
 - 38% low-income
 - 41% first-generation



The Summer Immersion significantly cultivated community

% agreeing or strongly agreeing

Belonging & Community	Participants	Non-participants	Fisher's Exact
I feel connected to other students in my freshman year seminar.			
I am aware of campus resources that can help me complete my goal of a BS degree.			
I feel part of the HSU community.			
I am inspired to be a scientist.			
I am optimistic about my future in science.			
I am worried that science might not be for me. (score is % disagreeing or strongly disagreeing)			



The Summer Immersion significantly cultivated community

% agreeing or strongly agreeing

Belonging & Community	Participants	Non-participants	Fisher's Exact
I feel connected to other students in my freshman year seminar.	73.5	38.8	P < 0.01
I am aware of campus resources that can help me complete my goal of a BS degree.	87.7	79.1	P = 0.04
I feel part of the HSU community.	83.6	71.1	P = 0.01
I am inspired to be a scientist.	87.3	80.8	P = 0.22
I am optimistic about my future in science.	92.5	85.1	P = 0.04
I am worried that science might not be for me. (score is % disagreeing or strongly disagreeing)	83.1	63.0	P < 0.01

Propensity Score Matching

Reference Group



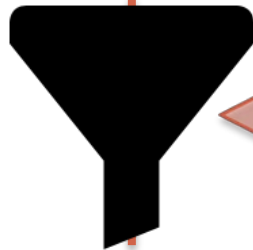
865 STEM
First Year Students
AY 15-16 & 16-17

Learning Community



62 Students '15-'16
113 Students '16-17

Missing info
-69



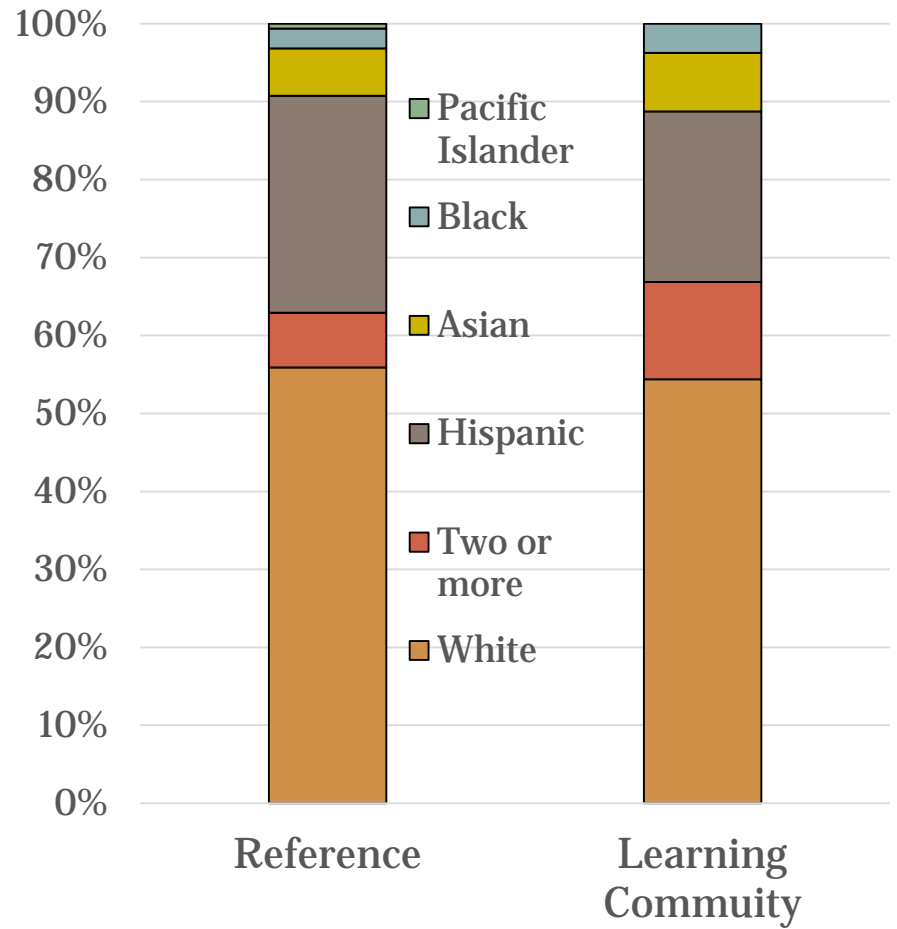
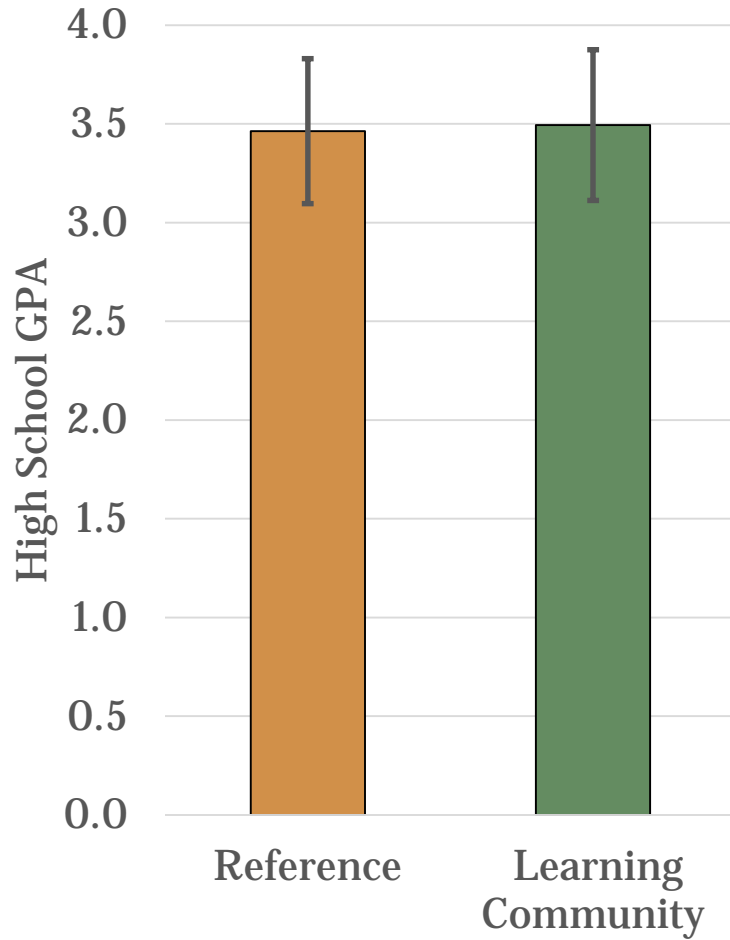
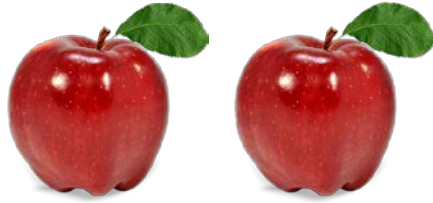
STEM
H.S. GPA
Gender
Hispanic
Math prep
Transfer units
2:1

Missing info
-15

320
Reference

160
Learning Community

* Caliper width = 0.2





Belonging & community stronger in Learning Community than in reference group, fall term

MapWorks Factor	Reference	Learning Community	Cohen's d
Commitment to the Institution			
Peer Connections			
Homesickness: Separation			
Homesickness: Distressed			
Academic Integration			
Social Integration			
Satisfaction with Institution			
On-Campus Living: Social Aspects			
On-Campus Living: Environment			
Campus Living: Roommate Relationship			



Belonging & community stronger in Learning Community than in reference group, fall term

MapWorks Factor	Reference	Learning Community	Cohen's d
Commitment to the Institution	6.50	6.54	0.05
Peer Connections	4.73	5.60	0.47
Homesickness: Separation	2.75	3.25	0.29
Homesickness: Distressed	4.71	5.25	0.25
Academic Integration	5.06	5.67	0.34
Social Integration	4.58	5.43	0.45
Satisfaction with Institution	5.08	5.93	0.46
On-Campus Living: Social Aspects	4.13	5.21	0.54
On-Campus Living: Environment	4.71	5.45	0.38
Campus Living: Roommate Relationship	4.68	5.50	0.32

> 0.2 = small effect; > 0.5 = medium effect; >0.8 = large effect

Belonging & Community

Skills & Attitudes

Academic achievement

Retention & Graduation



Skills & attitudes somewhat stronger in Learning Community than in reference group, fall term

MapWorks Factor	Reference	Learning Community	Cohen's d
Self-Assessment: Communication Skills	5.03	5.35	0.22
Self-Assessment: Analytical Skills	4.80	5.25	0.33
Self-Assessment: Self-Discipline	5.59	5.86	0.20
Self-Assessment: Time Management	4.99	5.06	0.05
Basic Academic Behaviors	6.22	6.32	0.11
Advanced Academic Behaviors	4.47	4.79	0.21
Academic Self-Efficacy	4.83	5.12	0.20
Academic Resiliency	5.46	5.87	0.27
Test Anxiety	3.88	4.05	0.10
Advanced Study Skills	4.59	4.91	0.21

> 0.2 = small effect; > 0.5 = medium effect; >0.8 = large effect



Belonging &
Community

Skills &
Attitudes

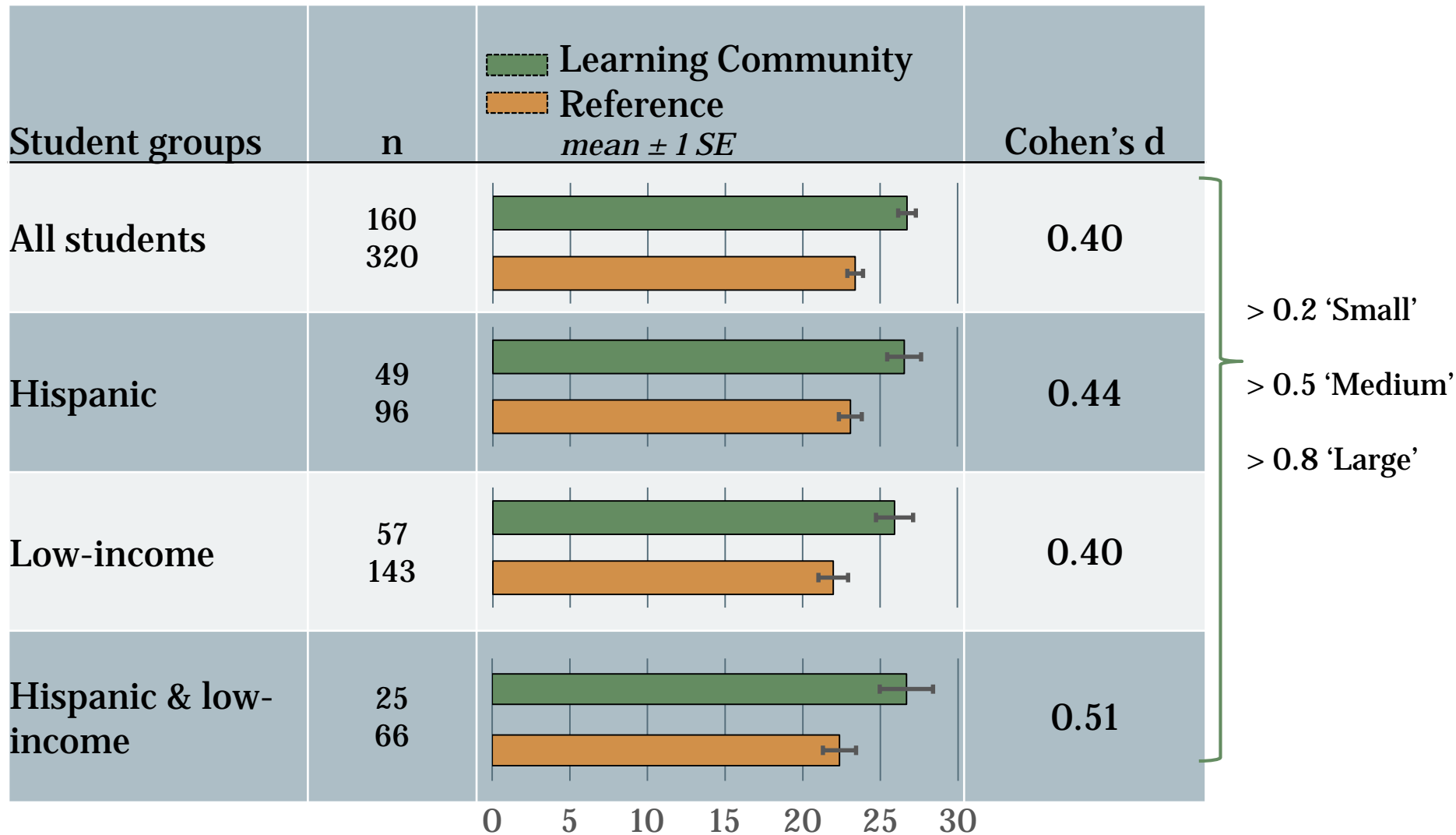
Academic
achievement

Retention &
Graduation

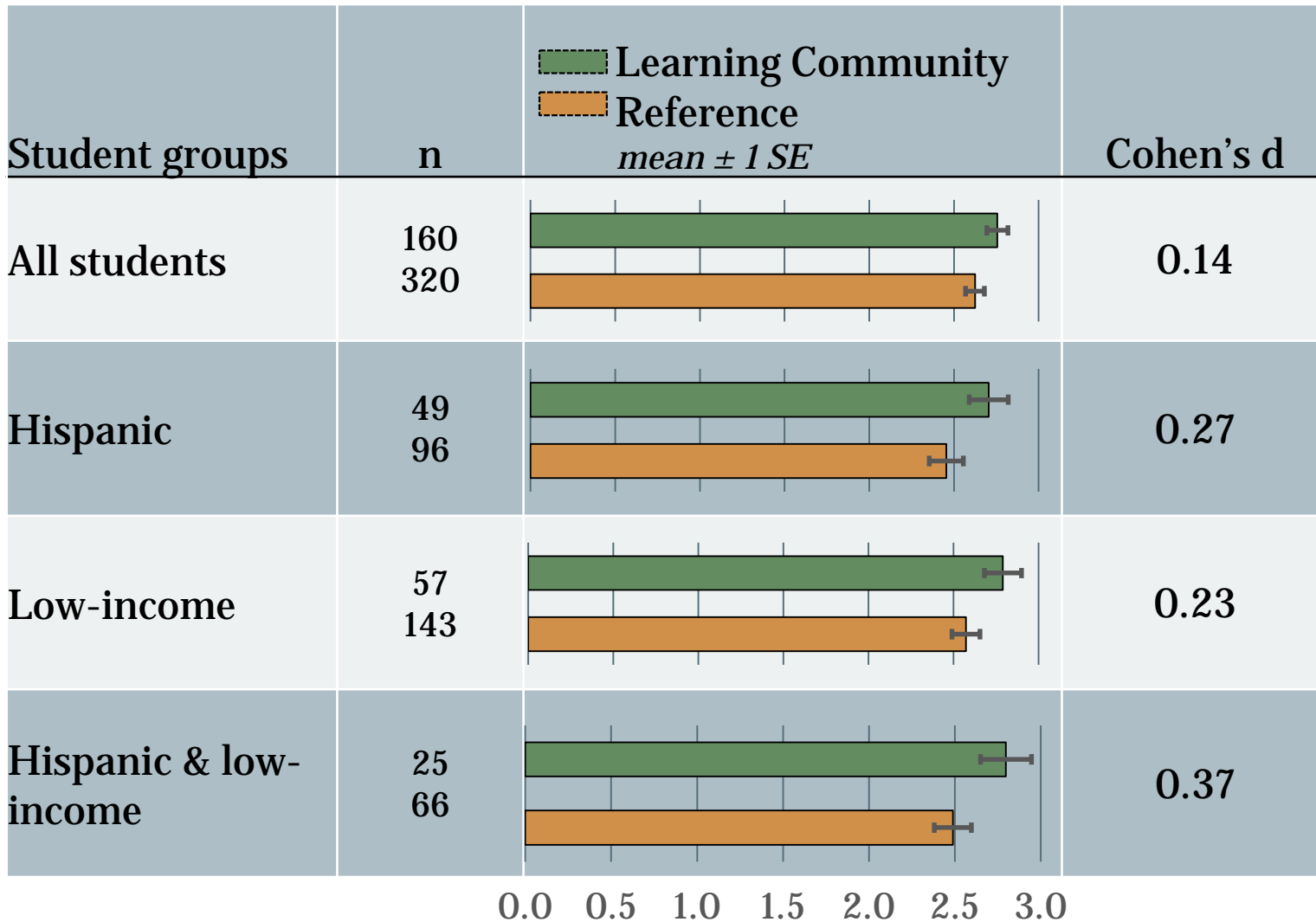
Compare learning community & reference group in first year...

- *Units earned toward degree*
- *Overall GPA*
- *Grades in gateway courses*

Learning community increased # units earned for all student groups



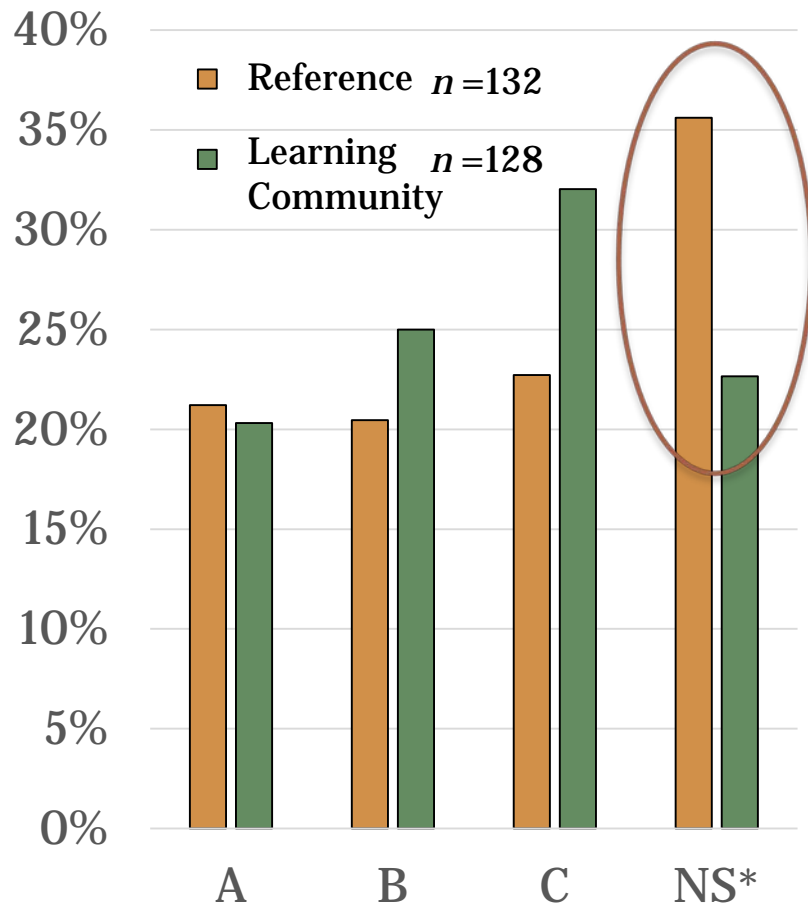
Learning community showed small increases overall 1st year GPA



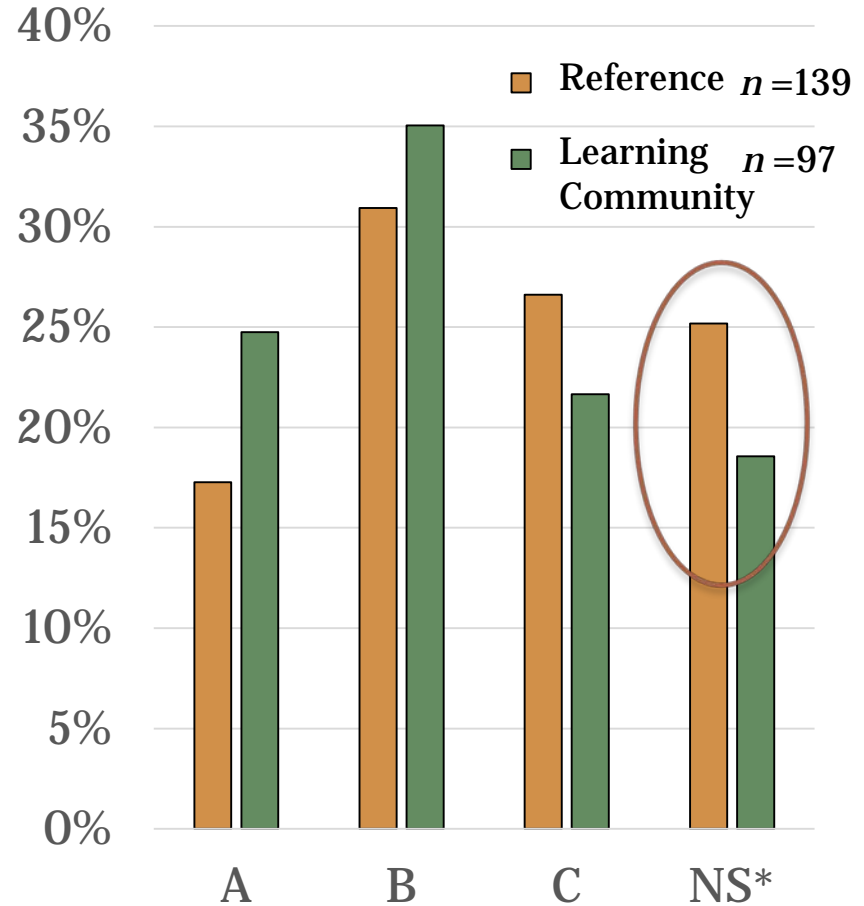
> 0.2 'Small'
> 0.5 'Medium'
> 0.8 'Large'

Learning community improved grades in gateway science courses

Intro. Botany



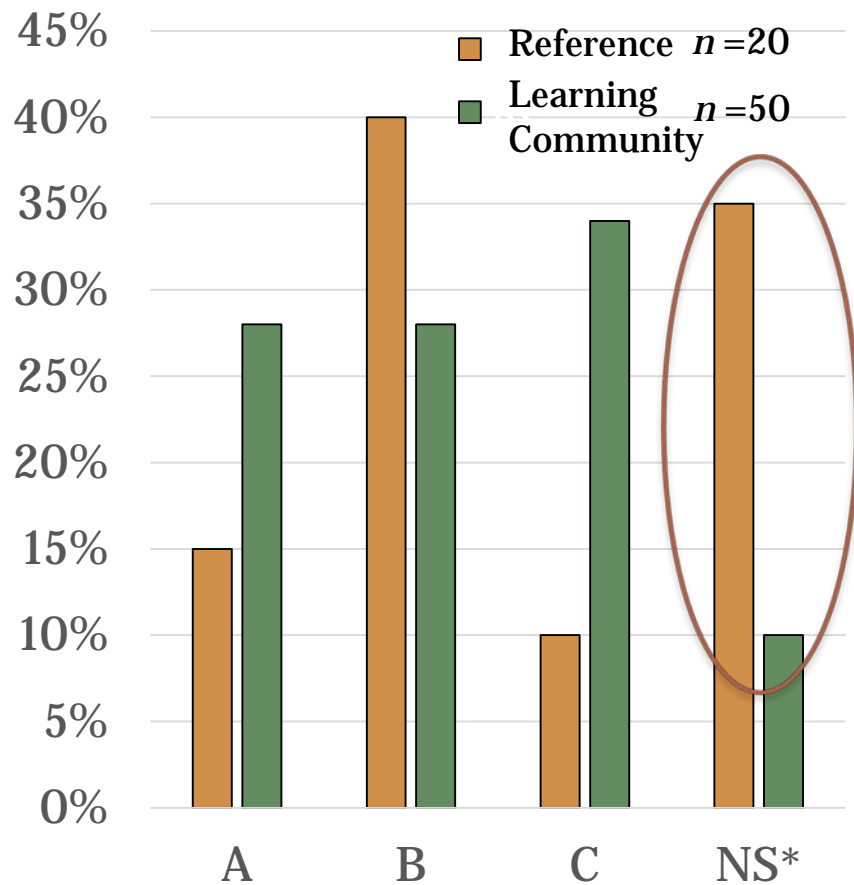
Intro. Chemistry



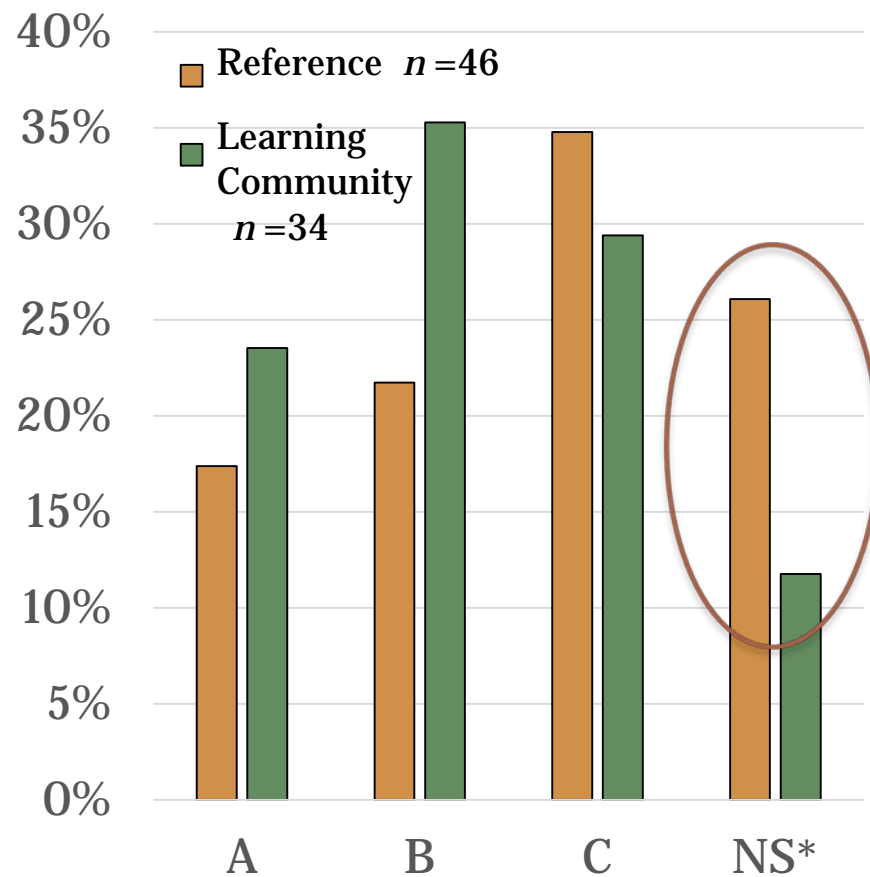
* Non-success: D, F, or Withdrawal

Learning community improved grades in gateway math courses

Stretch Algebra



Calculus



* Non-success: D, F, or Withdrawal



Belonging &
Community

Skills &
Attitudes

Academic
achievement

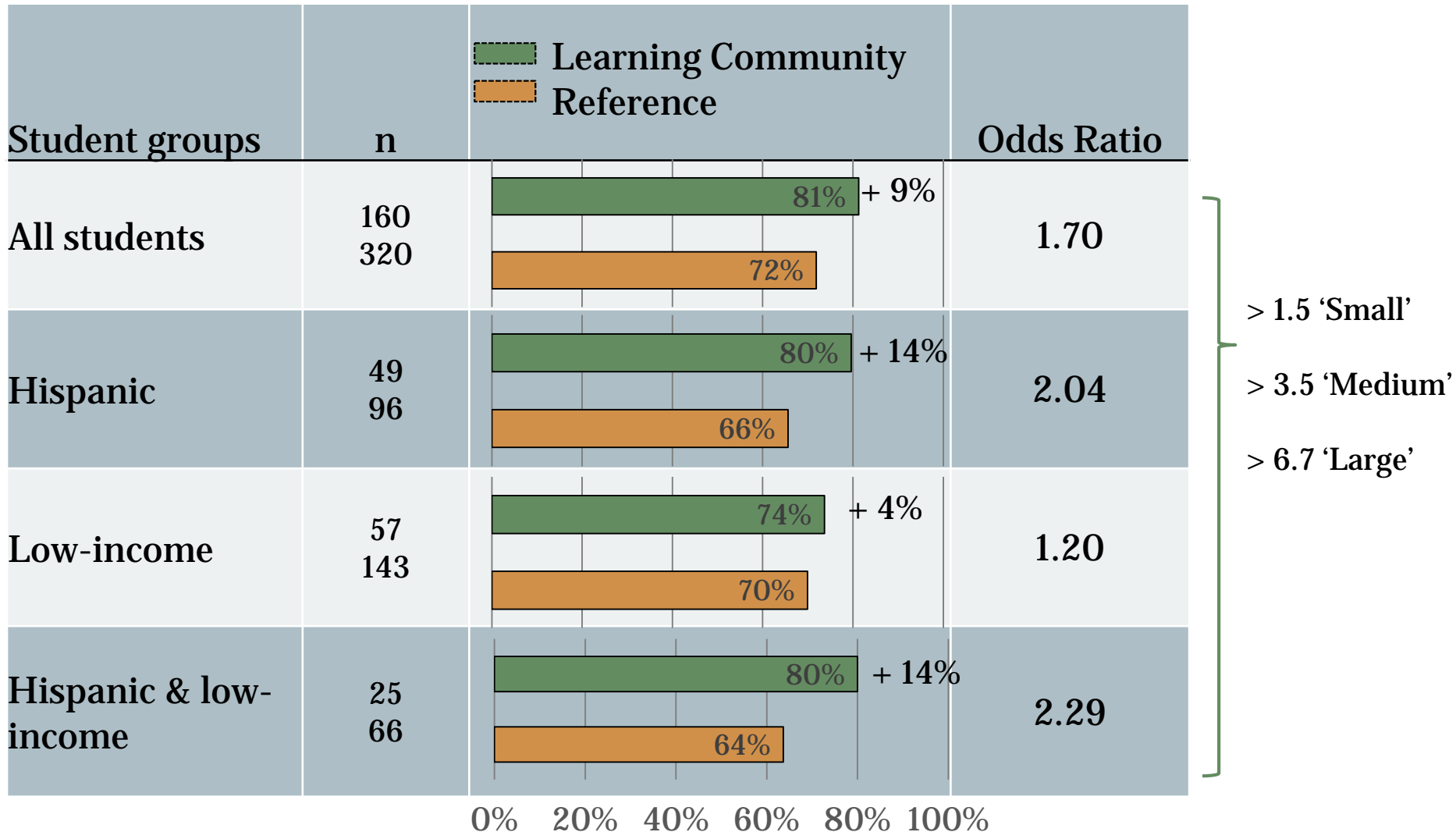
Retention &
Graduation

Goals

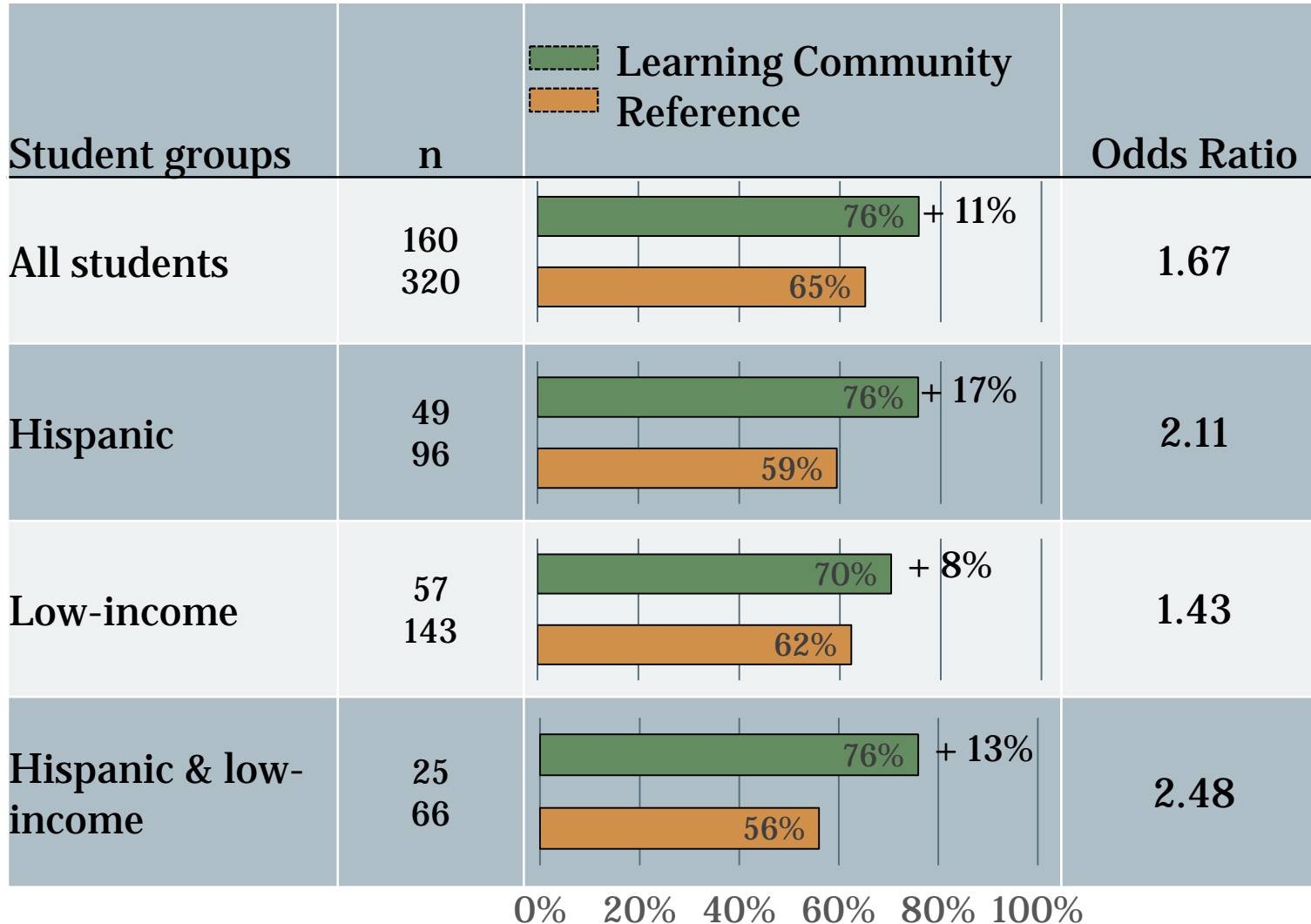
- *Increase 1st year retention* by 10%*
- *Cut opportunity gaps in half*
- *Increase graduation by 5%*

* Both overall retention (institutional retention) and retention within a STEM major (STEM retention)

Learning community increased Institutional Retention especially for Hispanic students



Learning community increased **STEM Retention** especially for Hispanic students

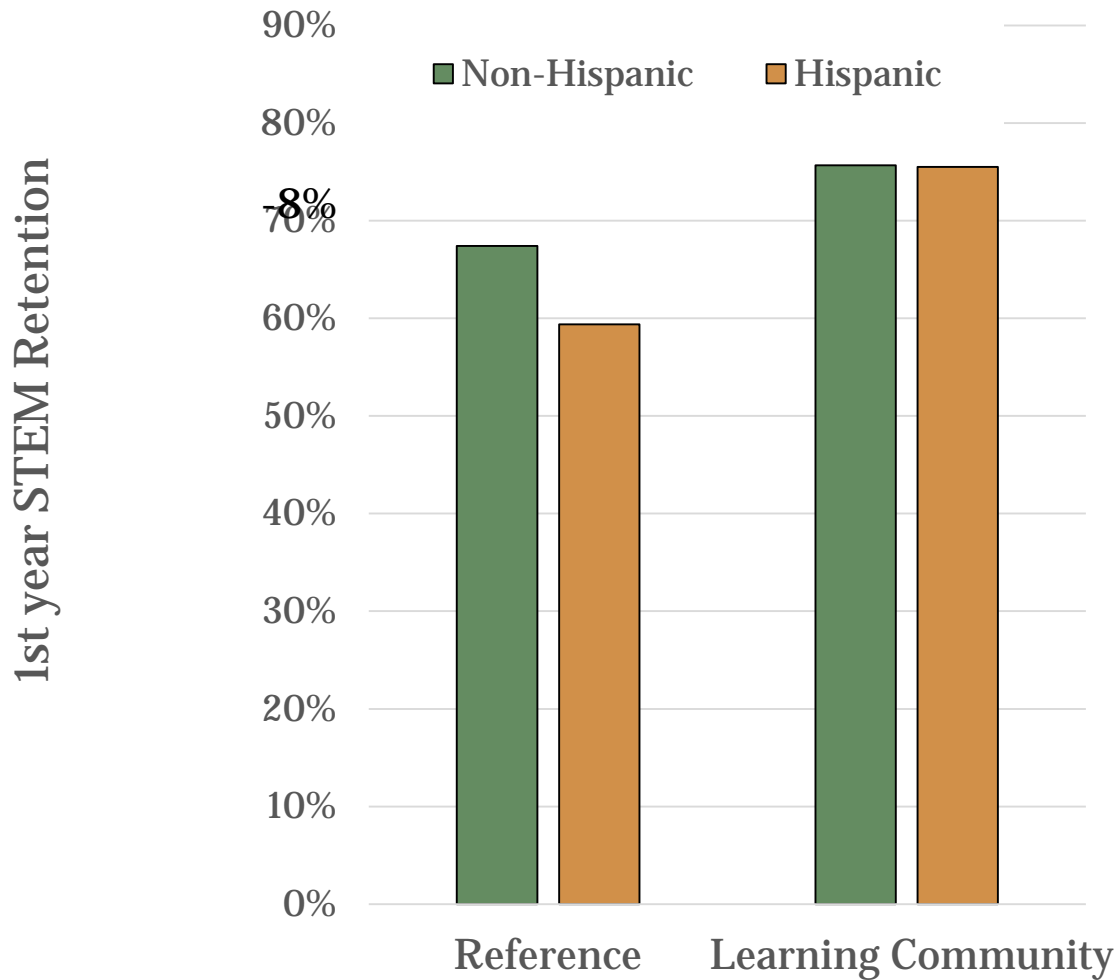


> 1.5 'Small'

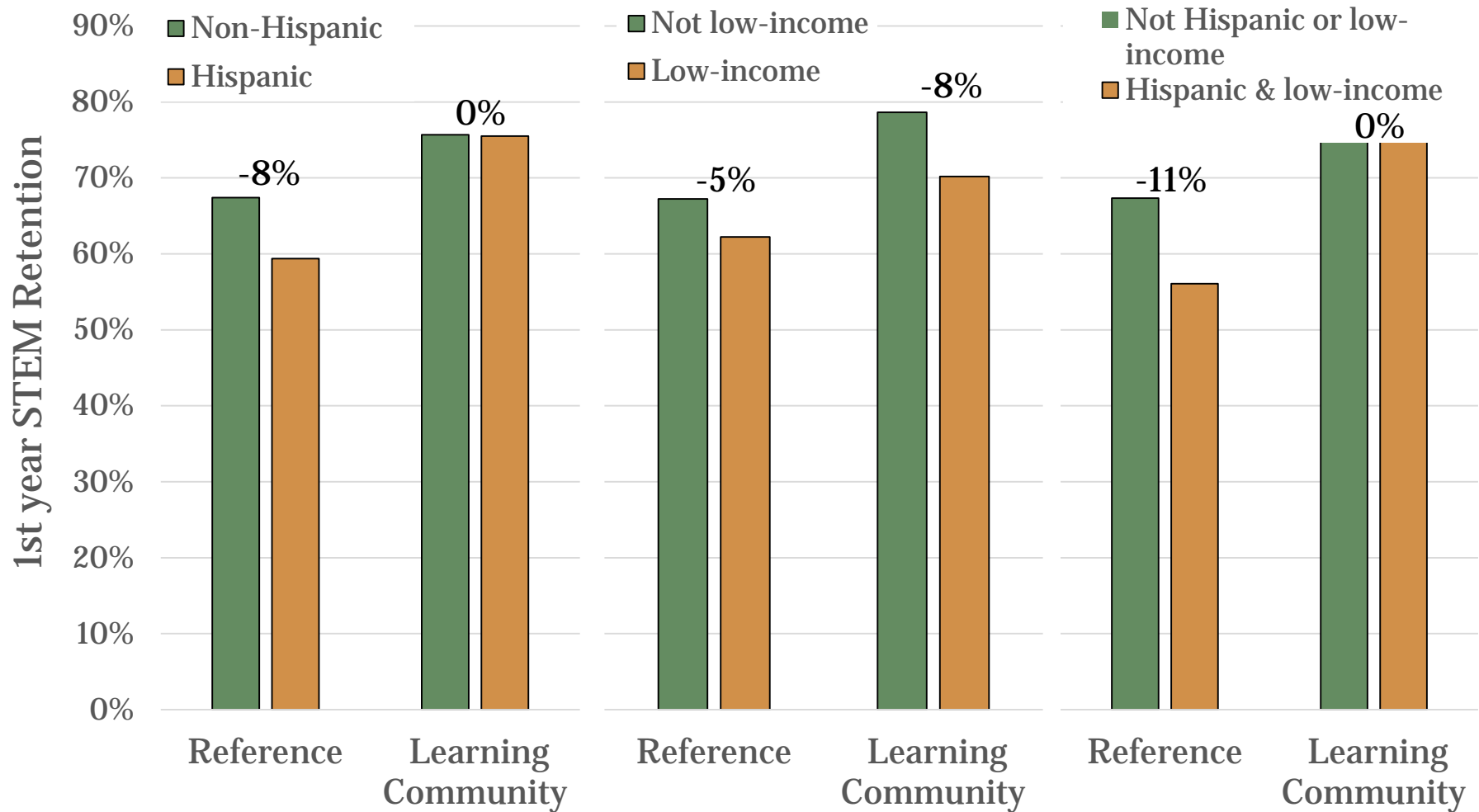
> 3.5 'Medium'

> 6.7 'Large'

Learning community cut opportunity gaps for Hispanic but not Low-income students



Learning community cut opportunity gaps for Hispanic but not Low-income students

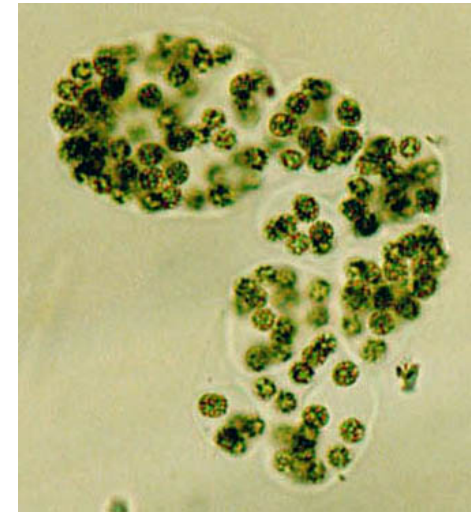
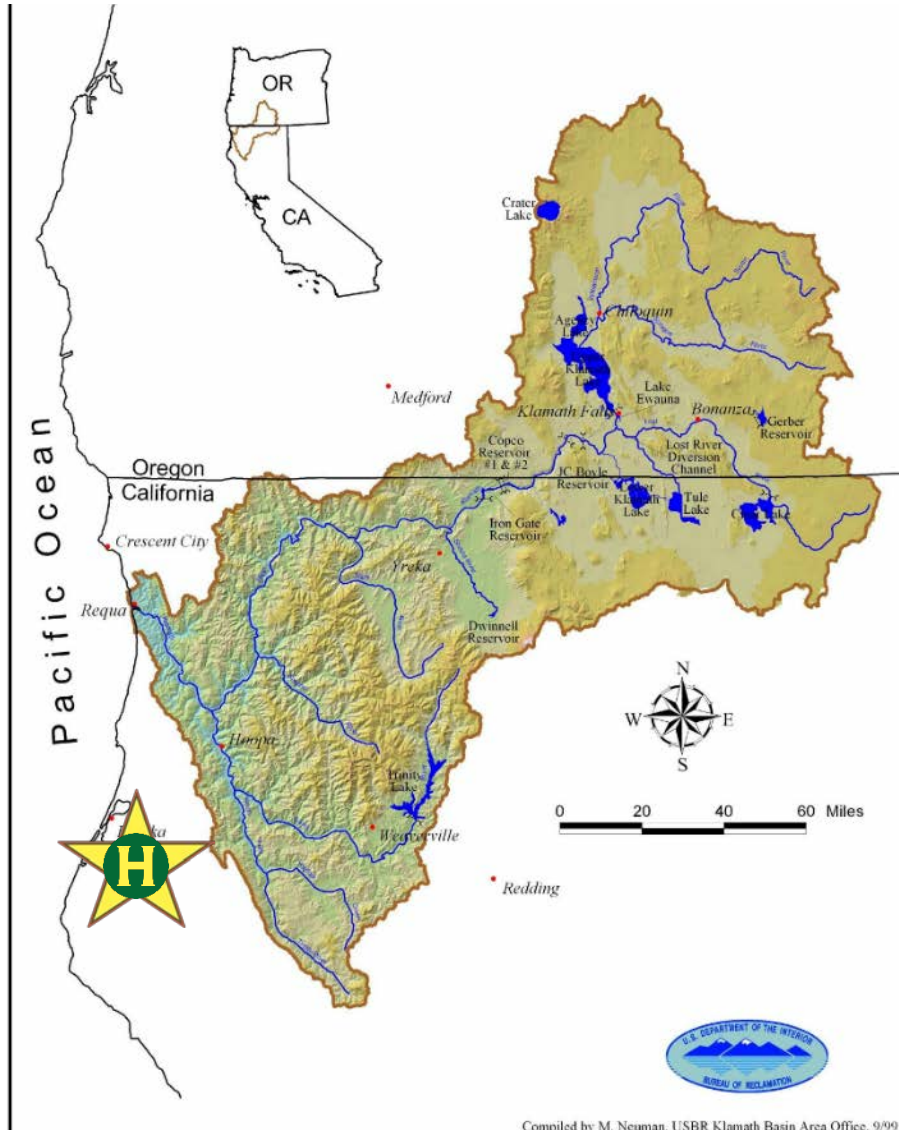
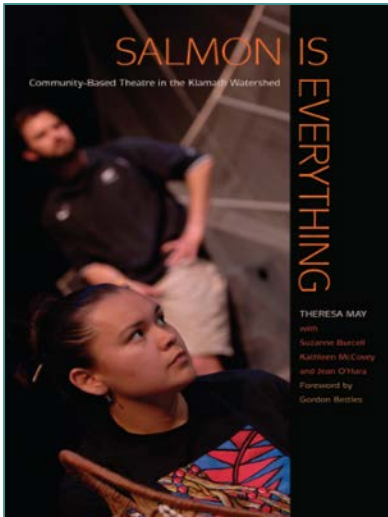


Caveats & future assessment

- “Hawthorne effect”
- Continue to assess
- Institutionalization
 - Tapered funding model
 - “Opt-out”
 - Structural equation modeling



Linking The Place to the Curriculum Helps Students Understand the Relationship to STEM and Society



HEALTH ADVISORY

AVOID WATER CONTACT IN THIS AREA OF THE KLAMATH RIVER

Pollution has resulted in high levels of blue-green algae that can produce harmful toxins. This has resulted in violations of the State's water quality standards.

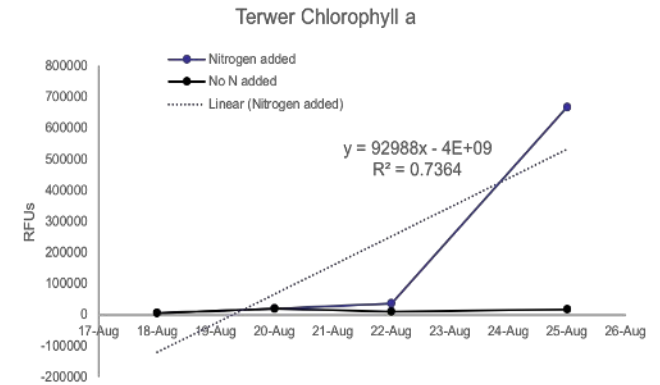
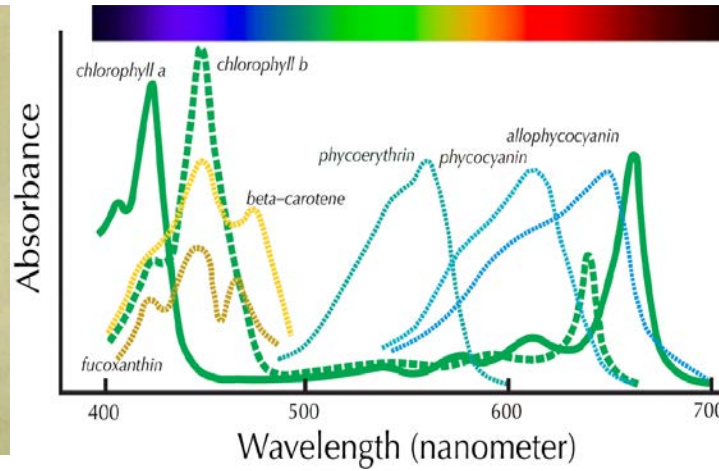
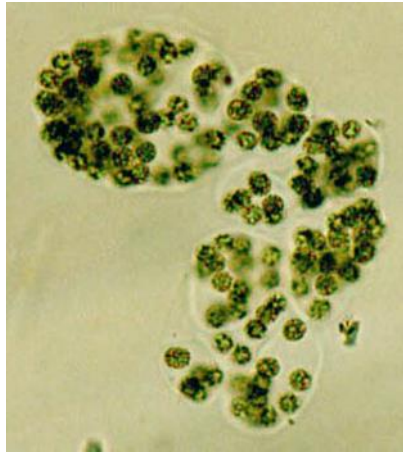
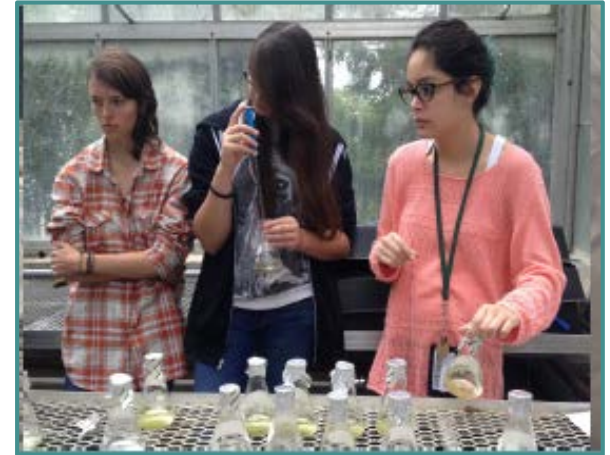
- Do not use this water for drinking or cooking
- Do not consume fish livers or digestive organs, and wash fillets with drinking water

Children and pets are at greatest risk

For more information contact staff at:
North Coast Regional Water Quality Control Board
(707) 576-2220

*Water quality standards violated include: TOXICITY; waters shall be maintained free of toxic substances, and BOSTIMULATORY; waters shall not contain excess biostimulatory substances.

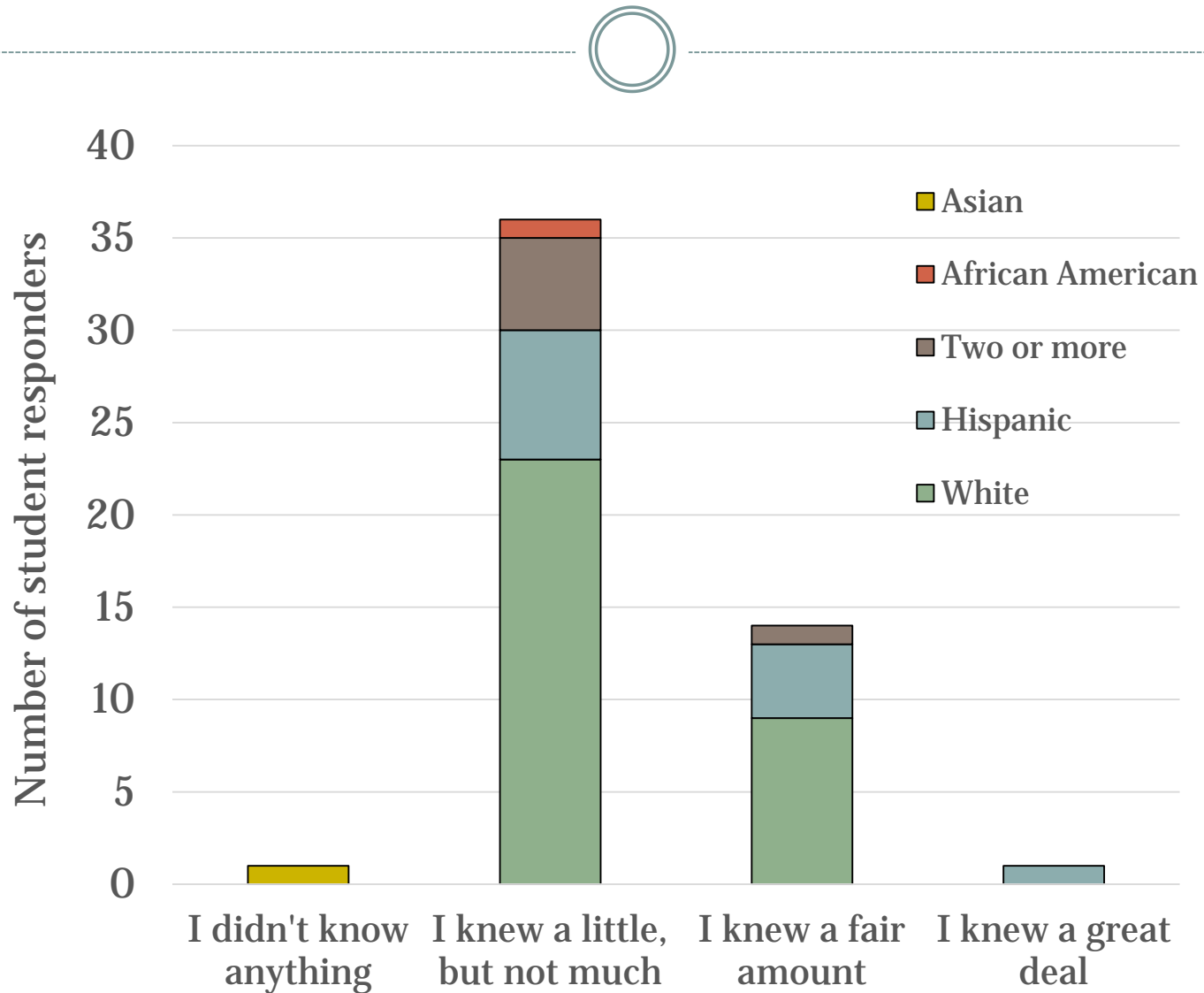
Linking The Klamath to the Curriculum



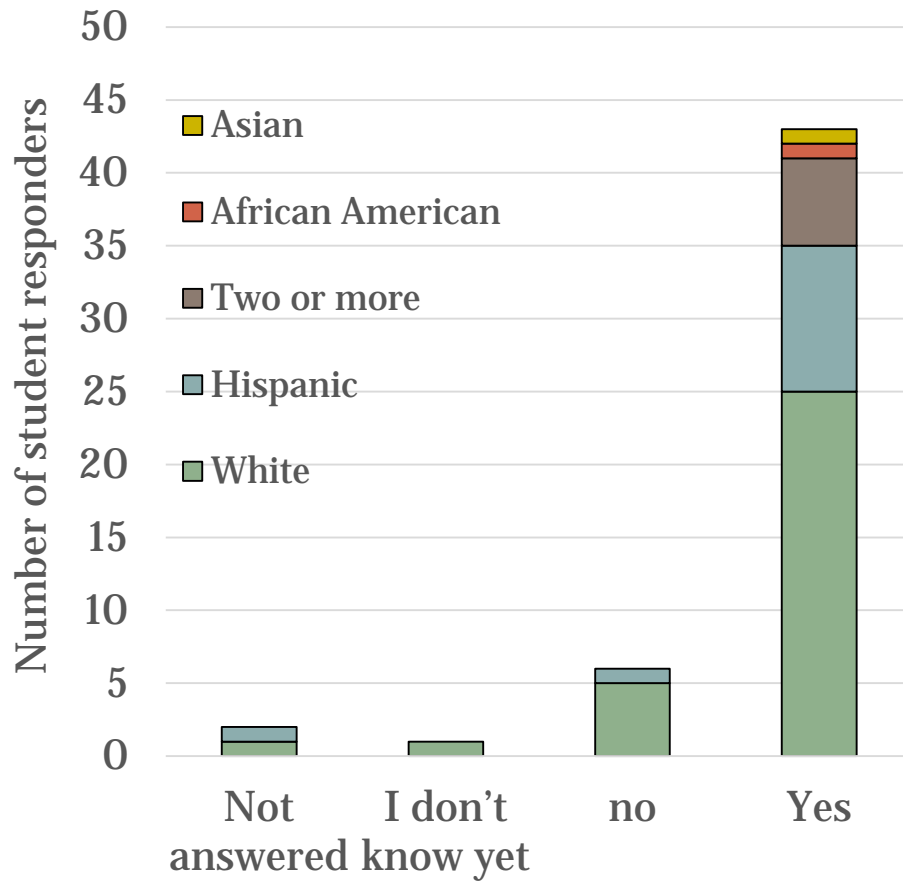
Linking the Culture to the Curriculum Promotes Cultural Awareness



Majority of KC Freshman Knew, “*a little, but not much*” about Native American Culture Before Entry



84% of KC Freshman Believe Gained Knowledge of Native American Cultures Will Help Them in Careers

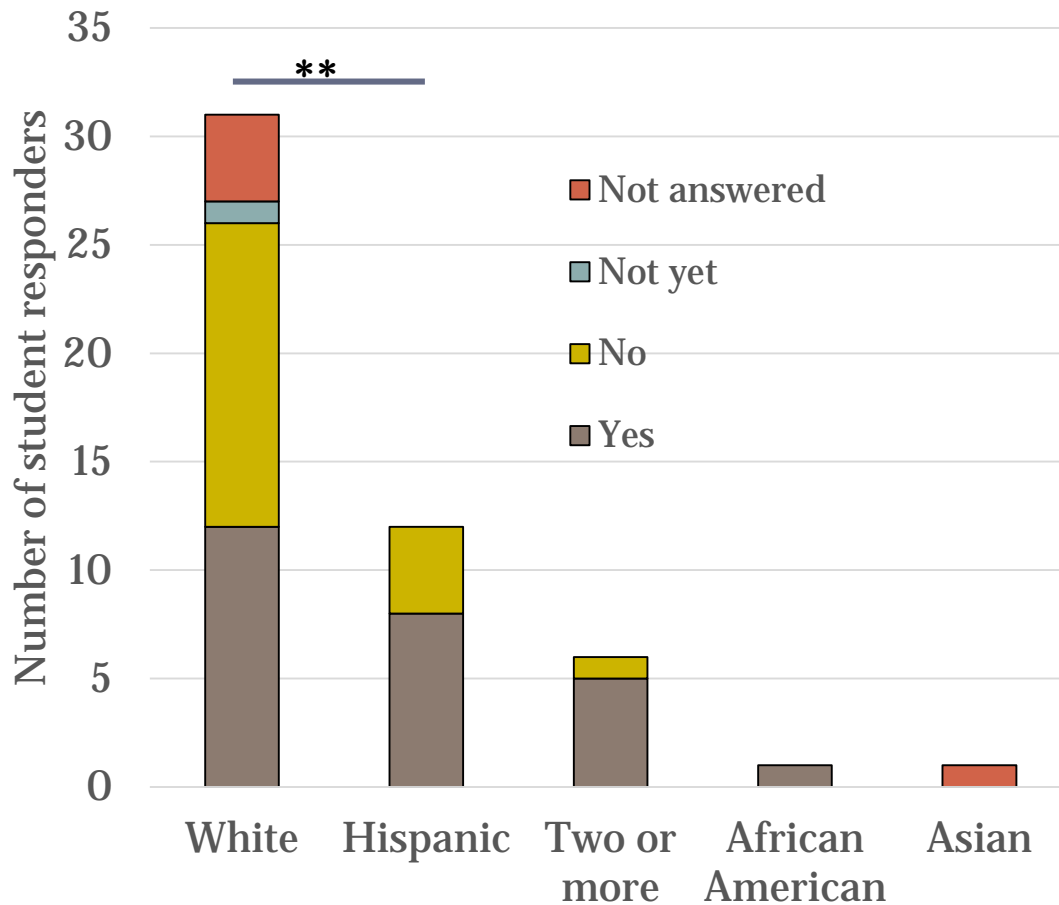


“I believe it will help me understand who I'm working with and how to best work with different communities”

“I will take into consideration how projects will affect the land and the Native American way of life.”

“As a doctor, I have to be culturally aware of my patients to treat them”

Overall 51% of KC Freshman See Parallels with Issues in their Communities; Higher for Hispanic Students



** $\chi^2 = 7.77, d.f. = 2, P = 0.02$

“Native American communities struggle like other minorities in society and government.”

“Substance abuse, finding government aid programs, becoming estranged from your cultural background.”

“Being a minority, many people underestimate us. The city I come from is slowly going through gentrification. Business people, mainly white, are rebuilding the land to build a stadium for football.”

“Pyramid Lake tribe has issues with people fishing in sacred areas.”

Klamath Freshman Report Many Benefits from a Place-Based Research Curriculum



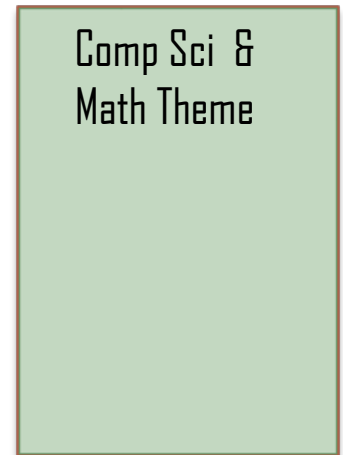
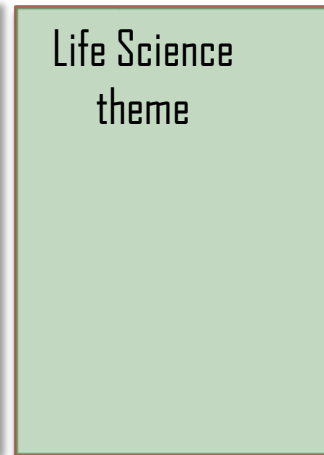
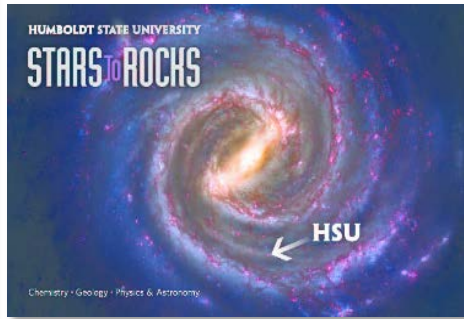
“Going further into what I previously thought about the experiment during the summer immersion, I was honestly excited but at the same time nervous... I was a little scared that this process would end up being too much for me. I was very relieved to find that the complexity of the experiment grew at the same pace we students grew intellectually... I now see this process as something of a tutorial for future projects students may encounter while trying for their science major, a way for us to get our feet wet so to speak.”

Video 2:
~ 2.5 min story featuring student voices
<https://youtu.be/PnRSiPJr6O0>

Next Steps

- **Go Bigger!**

- ~85% of STEM Freshmen by 2020



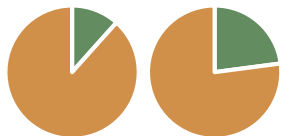
2015&16

2017

2018

2019


2020



Cultural Competency & Inclusive Pedagogical Training



ESCALA's Levels of HSI Faculty Development



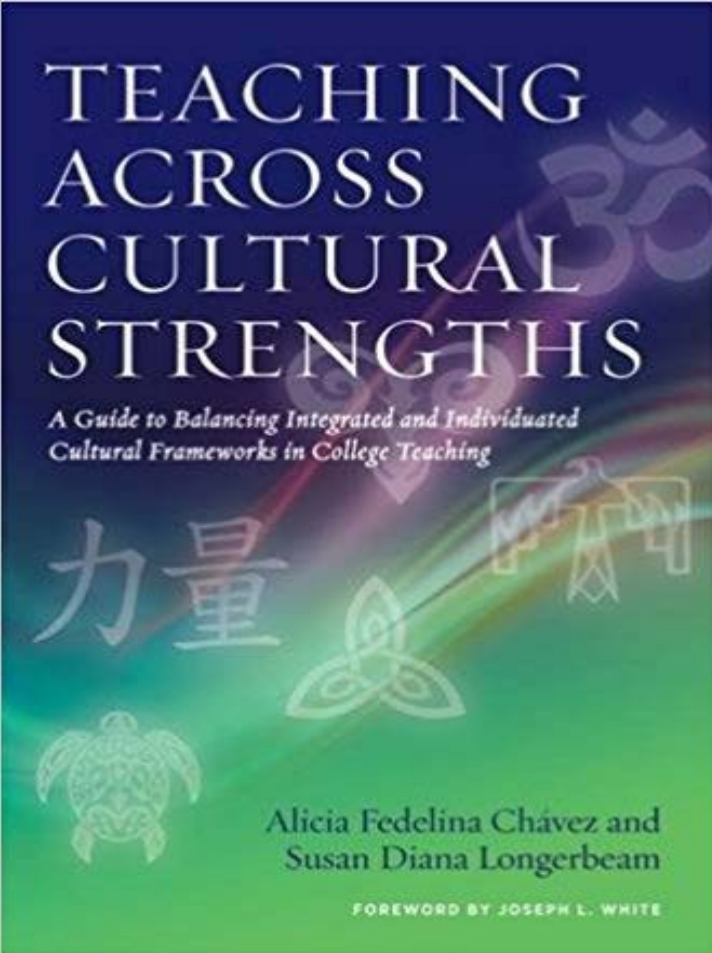
Certificate in College Teaching & Learning in HSIs (36 hours)

HSI Faculty Institute on Data-Driven Teaching & Learning (24 hours)

Getting Started: HSI Faculty Retreats (6-12 hours)

TEACHING ACROSS CULTURAL STRENGTHS

A Guide to Balancing Integrated and Individuated Cultural Frameworks in College Teaching



Alicia Fedelina Chávez and Susan Diana Longerbeam

FOREWORD BY JOSEPH L. WHITE

Funding

- CSU STEM Collaboratives
- HSI STEM
- HHMI Inclusive Excellence
- SENCER Transcending Barriers

Staying Connected

Website

humboldt.edu/klamathconnection



facebook.com/HSUklamathconnection



instagram.com/hsuklamathconnection

Acknowledgements

- HSI STEM Staff
 - Steven Margell
 - Katlin Goldenberg
 - Nicole Ryks
 - Sarah Bacio
 - Raven Palomera
- HSI STEM Steering Committee
- RAMP Program
- Office of Inst. Effectiveness
- Yurok, Hoopa, and Karuk tribes
- El Centro
- HSU Translation Services
- STEM VISTA program
- Office of Diversity Equity & Inclusion
- Coll. of Arts Humanities & Soc. Sci.
- Admission & Office of the Registrar
- Residential Life