STEM Program Assessment and Evaluation Webcast

Moderated by:
Dr. Frank A. Gomez
Executive Director, STEM-NET
Office of the Chancellor

https://www2.calstate.edu/impact-of-the-csu/research/stem-net

Speakers

Heather Macias & Rachel Part, CSULB & STEM-NET
The Golden Ticket: When, Why, and How to use a Mixed Methods Evaluation Plan

Dalton Marsh, CSUSB
Assessing Self-Perceptions and Habits of Mind in STEM

Jane Lehr, Cal Poly San Luis Obispo
Utilizing and Evaluating Network Improvement Communities (NIC) in CS4All Initiatives

Nada Rayyes, CSULB
Supporting Undergraduate Research: Evaluating the CSULB BUILD Program

Fadi Castronovo, Castronovo LLC
Assessing Beyond knowledge and skills. Measuring and Evaluating Self-Efficacy, Engagement, Identity, and Sense of Belonging in Summer Research Programs.

The Golden Ticket: When, Why, and How to use a Mixed Methods Evaluation Plan

Heather Macias – California State University, Long Beach

Rachel Part – STEM-NET

Dr. Heather Macias, Assistant Professor
Cal State Long Beach, Teacher Education
Heather.Macias@csulb.edu

Dr. Rachel Part, Consultant,
STEM-NET Educational Research
rachelpart@gmail.com

Project Overview/Agenda

1. Introduction
2. What and Who: Evaluation Plans and Grant Work
3. What and When: Quantitative and Qualitative Data
4. Why and How: Fidelity and Student Outcomes
5. Key Takeaways

Introduction

- Collective expertise in educational research
  - Quantitative research methods
  - Qualitative research methods
- Grant work with various institutions throughout the CSU system and California
- STEM departments + Culturally Responsive Teaching and Pedagogy (Gay, 2018; Ladson-Billings, 1995)
- Our evaluation work = mixed methods

WHAT: Evaluation Plans and Grant Work

- **<u>What</u> is 'assessment?'**
  - Assessment for student learning
    - NOT program assessment
  - Unit of analysis in an evaluation:
    - Student

WHAT and WHO: Evaluation Plans and Grant Work

- **<u>What</u> do we do?**
  - **Mixed Methods**
    - NOT simply [qualitative] + [quantitative]
    - Requires integration in the research questions, data collection, and analysis
- **<u>Who</u> are we?**
  - **The evaluator(s)**
    - Bring us in at ideation - not after the fact

WHEN: Quantitative and Qualitative Data

- **<u>When</u> to use mixed methods evaluation approaches in grant proposals?**
  - **Quantitative methods**
    - Answers questions about how or to what extent change occurs over time
  - **Qualitative methods**
    - Answers why or in what ways changes occur

WHEN: Quantitative and Qualitative Data

- **<u>When</u> to use mixed methods evaluation approaches in grant proposals?**
  - **Level One NSF grants**
    - More qualitatively focused (but some quantitative work is required)
  - **Level Two NSF grants**
    - Equally qualitative and quantitative

WHY and HOW: Fidelity and Student Outcomes

- **<u>Why</u> would you use mixed methods for an evaluation plan?**
  - Mixed methods approaches leverage the complementary nature of <u>both</u> quantitative and qualitative methods
- **<u>How</u> do you use mixed methods in an evaluation plan?**
  - Focus on the ways in which you want to integrate your quantitative and qualitative data
    - Sequential **exploratory** design (qualitative data inform quantitative design)
    - Sequential **explanatory** design (quantitative data inform qualitative design)
    - Iterative mixed methods design (continual integration of qualitative and quantitative data)

Key Takeaways

- **Bring evaluators into the process early!**
  - We can be excellent collaborators on your research and data collection design
- **Mixed Methods design for evaluation (and research) is the best of both worlds to answer both quantity and quality questions**

Questions?

Contact Information:

Heather Macias
CSULB, Teacher Education
heather.macias@csulb.edu

Rachel Part
STEM-Net, Educational Research
rachelpart@gmail.com

Assessing Self-Perceptions and Habits of Mind in STEM

Dalton Marsh – CSU San Bernardino

Collaborators: Susan Addington (CSUSB) and Steve Balady (CSUSB)

Dalton Marsh, Assistant Professor

CSUSB, Department of Mathematics

Dalton.Marsh@csusb.edu

Project Overview

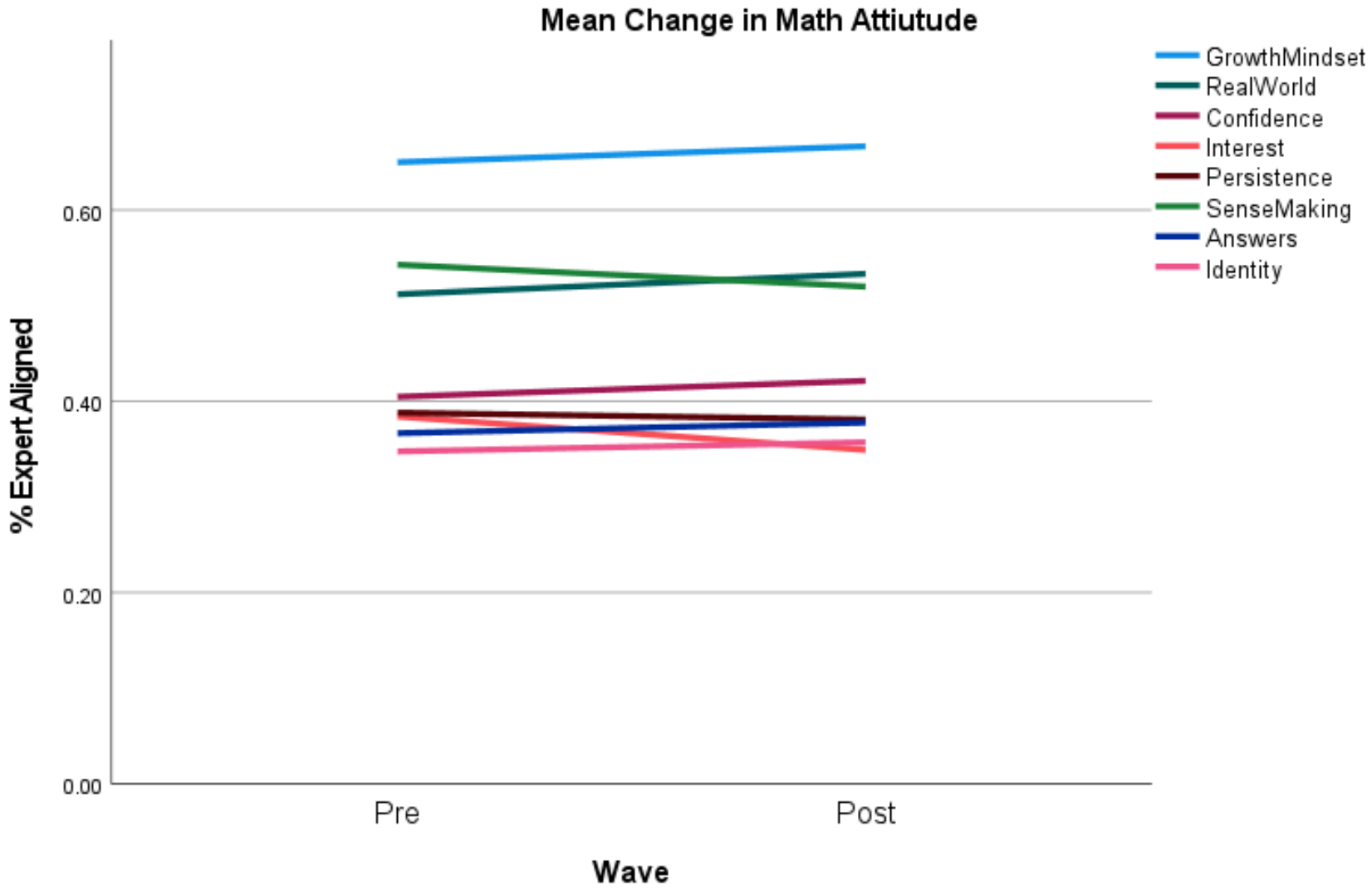
- "Building College-Level Number Sense" - supplemental learning material for GE mathematics courses.
- The focus is on "learning how to learn" mathematics by developing productive problem-solving skills and dispositions.
- The material is administered online through myOpenMath with ~10 different modules, for example:
  - Multiplicative and additive reasoning
  - Fractions, proportions, rates, percent
  - Estimating, dimensional analysis
- The material could form a full concurrent support course or parts could be used a needed (i.e., "just in time" teaching model)
- Sponsored by the California Learning Lab - "Improving Equity, Accessibility and Outcomes for STEM Gateway Courses"

Activities

- Assessment of the Number Sense materials and student outcomes:
  - Instructor opinions
  - Instructor use
  - Student use
  - concurrent and future math course grades
  - retention in STEM
  - *growth in problem-solving dispositions – “expert-like views and dispositions about mathematics” (MAPS; Code et al., 2016)

Assessing Self-Perceptions and Habits of Mind in STEM

Results



Lessons Learned

- Response rates were around 25%
- Results are only representative of the students who consented and stuck with the course.

Next Steps/Long-Term Plans

- Dropout survey and analysis.
- Disaggregate results by gender, race/ethnicity, college-generational status, socioeconomic status, and other indicators.
- Track success in later math courses and retention in STEM.

Summary

- **Problem-Solving Skills**: Adaptive reasoning, strategic competence, conceptual understanding, procedural fluency.
- **Problem-Solving Dispositions**: Inclination to see mathematics as sensible, useful, and worthwhile, belief in diligence and one's own efficacy. (*Adding It Up*, National Research Council, 2001)
- We have tended to focus on skills without being mindful of how this impacts students' dispositions. The literature shows they are both important, but we are still in the early stages of studying how to best build both in tandem.

Questions?

Contact Information:

Dalton Marsh

CSUSB Department of Mathematics

https://sites.google.com/csusb.edu/dalton-d-marsh

Dalton.Marsh@csusb.edu

CAL POLY

Utilizing and Evaluating Network Improvement Communities (NIC) in CS4All Initiatives

Jane Lehr (she/they) – Cal Poly, San Luis Obispo

NSF DUE 1935108 “CUE Ethics: Collaborative Research: An Inclusive and In-Depth Computing Curriculum to help Non-Majors Learn Small Patterns to Solve Big Problems”

Zoë Wood[1], Aaron Keen[1], John Clements[1], Jane Lehr[1], Zachary Rentz[1], Bruce DeBruhl[1], RoxAnn Stalvey[2], Tim Chamillard[3], Emily Coyle[4]

[1]Cal Poly SLO; [2]College of Charleston; [3]University of Colorado, Colorado Springs, [4]Saint Martin’s University

Jane Lehr, Professor, Cal Poly SLO

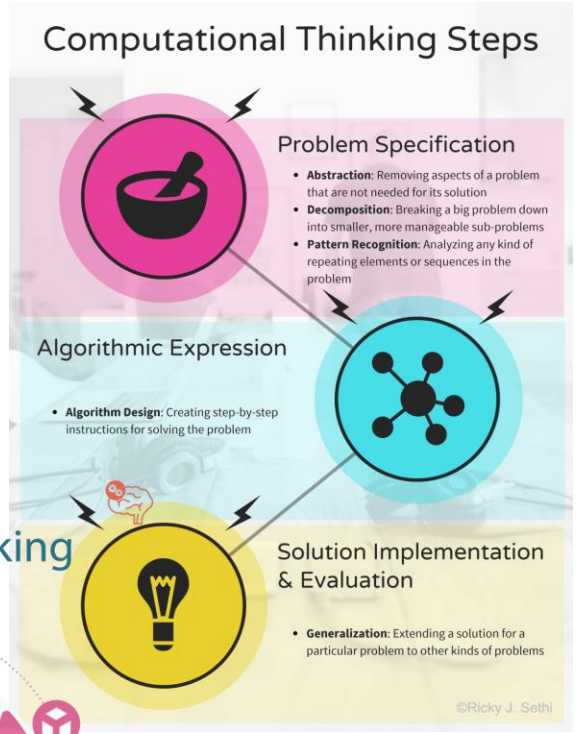
Departments of Ethnic Studies | Women’s, Gender & Queer Studies
Center for Engineering, Science & Mathematics Education (CESAME)

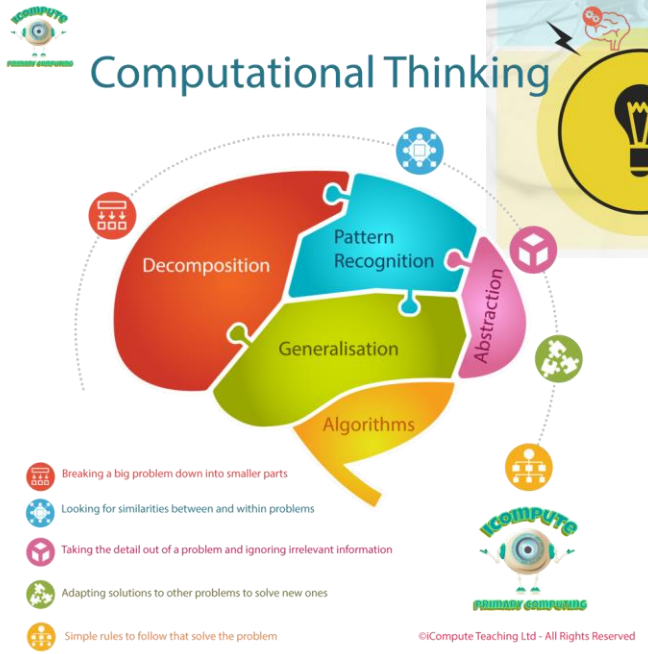
jlehr@calpoly.edu | @calpolystudentresearch

CAL POLY

Project Overview

- The project is structured around two goals:
  - increasing exposure to computing and computational thinking among all students, and better preparing these students for professional careers in fields requiring a certain level of computing, and
  - diversifying the population of students enrolled in computer science courses.
- The project reframes computer science around **human-centric learning goals** in 15 modules that will be implemented across the collaborating institutions.
- The NIC will create a series of modules, each targeting a specific aspect or a group of related aspects of **computational thinking**, tightly coupled with multiple domain examples. Each module will include an **ethics perspective** on the material.



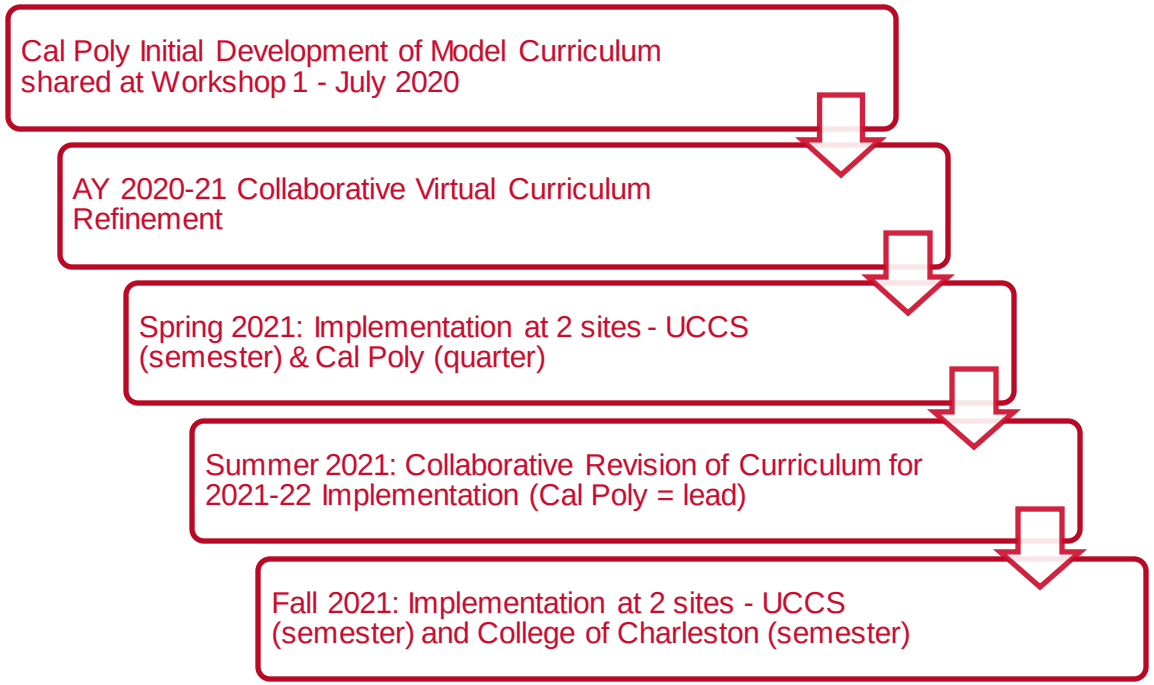


CAL POLY

Evaluation Activities

1. Curriculum Design & Student learning
   - Is the curriculum (modules, sequencing, etc.) achieving the intended learning objectives in computational thinking for its intended students?
   - Is the curriculum (modules, sequencing, etc.) achieving the intended learning objectives in ethical thinking for its intended students?
   - How integrated are computational thinking and ethical thinking in the curriculum?
2. Is the curriculum achieving its intended impacts in fostering inclusivity & diversity?
   - Does the integration of ethics components enhance the intended impacts in fostering inclusivity & diversity?

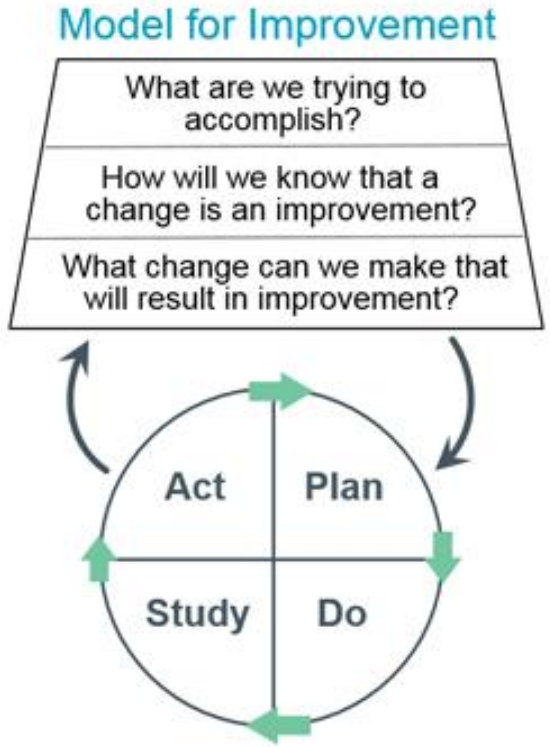
3. Is the **Network Improvement Community** functioning to support design & learning of team members? (~Formative Evaluation)



CAL POLY

What is a NIC?

- Per the CUE IUSE solicitation through which the Small for Big/CS4All project is funded:
  - "Curricular reforms undertaken by a single IHE often have limited impact on the larger academic community. **This solicitation intends to build community around efforts that are robust and operate across a range of IHEs.** With that in mind, IUSE: CUE will fund collaborations of 3 to 5 IHEs working together, structured and functioning (formally or informally) as a Networked Improvement Community (NIC).
  - NICs are design communities in which partners share a common goal, develop a common understanding of what it will take to reach that goal, employ common metrics, and meet often to share activities and progress.
  - Individual implementations may vary across partners, but the researchers and practitioners together engage in rapid cycles of **Plan, Do, Study, Act (PDSA) in order to "learn fast, fail fast, and improve quickly."** In this way, they develop, test, and refine interventions that can be effectively adapted across a variety of educational contexts.
  - Proposers are encouraged to include faculty from different disciplines and departments, as well as administrators. **In addition, they should include the researchers and evaluators who will be needed to provide the "Study" aspect of the PDSA cycles.** The effort should be generally organized according to best practices for NICs."



Source: Institute for Healthcare Improvement

CAL POLY

What is a NIC? (cont'd)

- Getting Ideas into Action: Building Networked Improvement Communities in Education (Bryk, Gomez & Grunow 2011 | Carnegie Foundation)
  - Networks as design communities
    - Networks enable individuals from many different contexts to participate according to their interests and expertise while sustaining collective attention on progress toward common goals.
    - A network organizational approach can surface and test new insights and enable more fluid exchanges across contexts and traditional institutional boundaries—thus holding potential to enhance designing for scale.
  - Networks as learning communities
    - A networked improvement community is a distinct network form that arranges human and technical resources so that the community is capable of getting better at getting better (Engelbart 2003).
  - A case of "learning through doing"

CAL POLY

NIC Evaluation Methods

American Journal of Preventive Medicine
ELSEVIER Volume 35, Issue 2, Supplement, August 2008, Pages S161-S172

Methodologic contribution

The Collaboration Readiness of Transdisciplinary Research Teams and Centers: Findings from the National Cancer Institute's TREC Year-One Evaluation Study

Kara L. Hall PhD [a], Daniel Stokols PhD [c], Richard P. Moser PhD [a], Brandie K. Taylor MA [b], Mark D. Thornquist PhD [d], Linda C. Nebeling PhD, Carolyn C. Ehret MS, RD [d], Matthew J. Barnett MS [d], Anne McTiernan MD, PhD [d], Nathan A. Berger MD [e], Michael I. Goran PhD [f], Robert W. Jeffery PhD [g]

- **CUE Ethics CS4All NIC Evaluation**
  - Modified segment of the National Cancer Institute's Transdisciplinary Research on Energetics and Cancer (TREC) Year 1 Evaluation Study

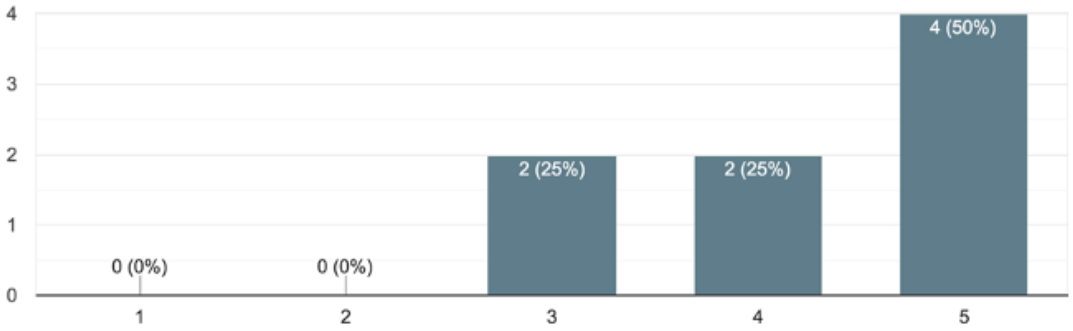
Collaborative Processes

CPS-AI1. Please evaluate the *collaboration within your TREC center*.

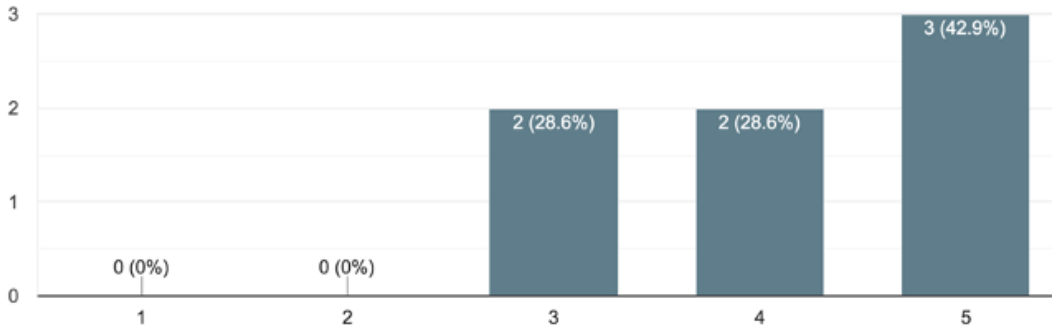
	Very Poor	Poor	Fair	Good	Excellent
a. Communication among collaborators.	•	•	•	•	•
b. Ability to capitalize on the strengths of different researchers.	•	•	•	•	•
c. Resolution of conflicts among collaborators.	•	•	•	•	•
d. Productivity of collaboration meetings.	•	•	•	•	•
e. Overall productivity of collaboration.	•	•	•	•	•

July 2020

Please rate “communication amongst collaborators” (to date) (1-Very Poor; 2-Poor; 3-Fair; 4-Good; 5-Excellent)



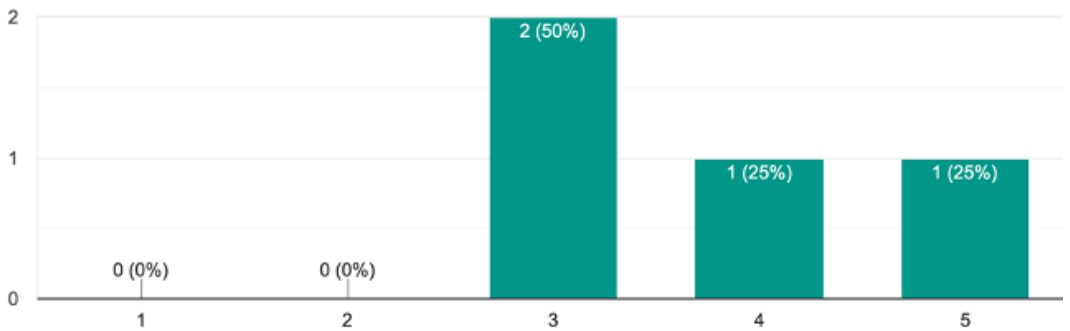
Please rate “ability to capitalize on the strengths of different collaborators” (to date) (1-Very Poor; 2-Poor; 3-Fair; 4-Good; 5-Excellent)



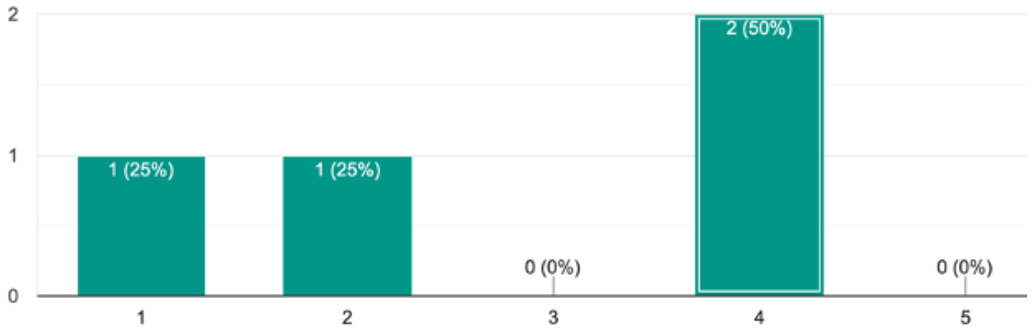
8 respondents

August 2021

Please rate “communication amongst collaborators” (to date) (1-Very Poor; 2-Poor; 3-Fair; 4-Good; 5-Excellent)



Please rate “ability to capitalize on the strengths of different collaborators” (to date) (1-Very Poor; 2-Poor; 3-Fair; 4-Good; 5-Excellent)



4 respondents

CAL POLY

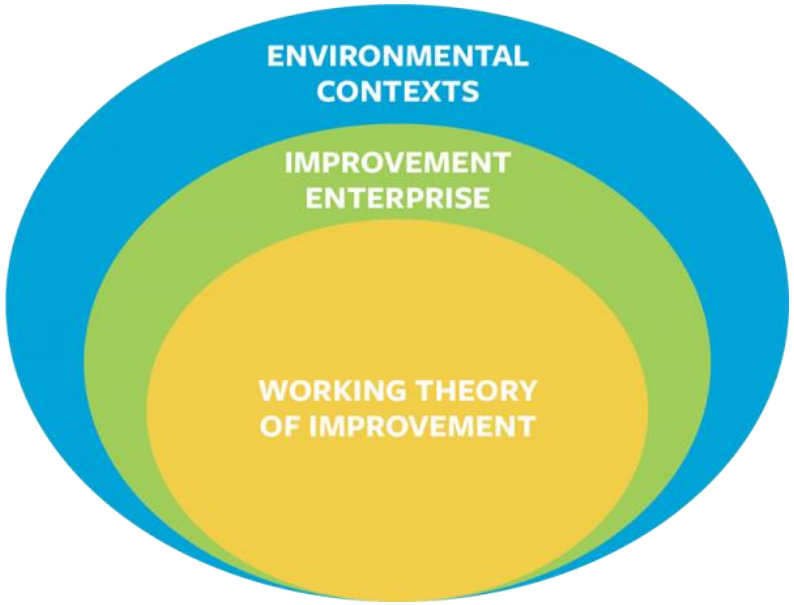
Results

August 2021

During the last year:	Cal Poly	Cal Poly AVG	Other Campuses	Other Campus AVG	Diff. in AVG
1. Please rate "communication among collaborators" (to date)	3, 3	3	4, 5	4.5	1.5 (30%)
2. Please rate "ability to capitalize on the strengths of different collaborators" (to date)	1, 2	1.5	4, 4	4	2.5 (50%)
3. Please rate "ability to capitalize on the strengths of different campuses" (to date)	1, 2	1.5	4, 4	4	2.5 (50%)
4. Please rate "involvement of different campuses" (to date)	1, 2	1.5	3, 5	4	2.5 (50%)
5. Please rate "resolution of conflicts among collaborators"	3, 3	3	5, 5	5	2 (40%)
6. Please rate "productivity of collaboration meetings" (to date)	3, 3	3	5, 5	5	2 (40%)
7. Please rate "overall productivity of collaboration" (to date)	2, 2	2	4, 5	4.5	2.5 (50%)

CAL POLY

Lessons Learned



[The Three-Level Nested Model of Improvement Networks - Carnegie Foundation]

Table 1: How Could Analytic Partners Meet the Needs of Improvement Networks?

	Improvement networks seek to …	So they need help …
WORKING THEORY OF IMPROVEMENT	Explore new practices, iterate on early change ideas, and develop reliably effective interventions in their context.	Analyzing their efforts through a developmental, formative, and summative lens.
	Avoid solutionitis by deeply studying their problem and the system factors that produce it.	Understanding the true needs of their users and taking a systems view of the problem.
	Systematically study and iterate on their interventions through disciplined inquiry.	Building their own capacity to use improvement science and developing an infrastructure that allows them to efficiently analyze data.
IMPROVEMENT ENTERPRISE	Manage social dynamics across network members in different contexts.	Understanding the nature of participation, engagement, and social learning occurring across the network.
	Accelerate social learning across the network.	Resourcing technical research expertise, consolidating learning within the network, and creating mechanisms for more rapid diffusion of emergent knowledge network-wide.
ENVIRONMENTAL CONTEXTS	Operate in complex environments.	Sensing salient dynamics within their communities, their policy environment, relevant fields of academic research, and the funding environment.
	Learn from variation in the adaptations and performance of the intervention across contexts.	Analyzing local adaptations made to interventions, understanding why these are occurring, and analyzing effects of the interventions across different settings.

CAL POLY

Next Steps/Long-Term Plans

Small for Big: An Inclusive and In-Depth Computing Curriculum to help Non-Majors Learn Small Patterns to Solve Big Problems

An honest reflection about the challenge of CS for all, given college curriculum demands and requirements

Zoë Wood[1], Aaron Keen[1], John Clements[1], Jane Lehr[1], Zachary Rentz[1], Bruce DeBruhl[1], RoxAnn Stalvey[2], Tim Chamillard[3], Emily Coyle[4]

[1]California Polytechnic State University, San Luis Obispo, CA, [2]College of Charleston, Charleston, SC, [3]University of Colorado, Colorado Springs, CO, [4]Saint Martin's University, Lacey, WA

CAL POLY

Summary

- Network Improvement Communities (NICs) can be a useful framework for project implementation and evaluation
- Opportunity to utilize NIC resources intentionally and explicitly as part of the ”work” of the project team

CAL POLY

Questions?

Contact Information:

Jane Lehr, CPSLO

Ethnic Studies | Women's, Gender & Queer Studies | Center for Engineering Science & Mathematics Education (CESAME) | Computer Science & Software Engineering | Science, Technology & Society Program

jlehr@calpoly.edu

@calpolystudentresearch

@ccc.undocu

@janelehr

Supporting Undergraduate Research: Evaluating the CSULB BUILD Program

Nada Rayyes, Ph.D. – California State University, Long Beach

Nada Rayyes, Project Director

CSULB, Center for Evaluation and Educational Effectiveness (CEEE)

Nada.rayyes@csulb.edu

Overview

- About the Center for Evaluation and Educational Effectiveness
- Evaluation Approach – working with clients
- BUILD Program
- BUILD Evaluation Methods
- Dissemination

Mission of CEEE

CEEE promotes effective educational programs and services for students at all educational levels, in both formal and informal settings. We accomplish this through using an interdisciplinary, capacity-building, PK20 perspective to:

- Examine the effectiveness of practices, programs, and services for advancing equity, access, and achievement in educational settings;
- Support the application of data-based, high-impact practices, programs and services;
- Encourage innovation and effectiveness in organizational, instructional, and programmatic practice;
- Work with partners to develop effective practices for urban education.

CEEE
CENTER FOR EVALUATION & EDUCATIONAL EFFECTIVENESS

Supporting Undergraduate Research: Evaluating the CSULB BUILD Program

CEEE Projects

CEEE Projects Focus Areas	CURRENT	COMPLETED	TOTAL
Undergraduates	7	10	**17**
Graduate Students	3	5	**8**
Teacher Prep	1	2	**3**
Comm. College/Transfer	1	4	**5**
STEM	7	6	**13**
URM/Low-income/1st gen	8	7	**15**
Psychosocial/Soft Skills	4	2	**6**
Academics	6	5	**11**
Data analytics/Research/Survey Development	2	5	**7**
Systems & Partnerships	5	7	**12**

Sampling of Current Projects

- **CSULB HSI-Teacher Preparation Caminos Project (HSI Teacher Prep – U.S. Department of Education) (2017-Present)**
- **CSU HSISTEM Partnership Project with 10 other CSU Campuses (U.S. Department of Education (2016-Present)**
- **CSU Center to Close the Opportunity Gap (CCOG) (2020-Present)**

CEEE
CENTER FOR EVALUATION & EDUCATIONAL EFFECTIVENESS

BUILD Program

- BUilding Infrastructure Leading to Diversity
- NIH grant 2014 - 2024
- Goals:
  - To engage and retain URS in biomedical and behavioral health research
  - To promote enhanced and improved mentorship among faculty
  - To enhance and expand research culture institution-wide
- Four colleges: Natural Sciences & Math, Engineering, Liberal Arts, Health & Human Services

CSULB BUILD Evaluation

- BUILD Phase I (2014-2019)
  - Summative evaluation conducted year 5
- BUILD Phase II (2019-2024) Overall Eval Plan
  - Refining effective components for institutionalization/ sustainability
  - Dissemination of products/ scholarship
- Annual Evaluation Plans
  - Developed each year
  - Modifications made as needed/ relevant
  - Specify:
    - Evaluation Questions
    - Data Sources/Methods
    - Indicators
    - Timeline

Evaluation Questions

Student

How does BUILD influence:

- student psycho-social outcomes?
- professional development, and career preparation?
- family support and awareness of trainees' career goals?

Faculty

To what extent does BUILD

- Provide faculty with supports to enhance research capacity?
- Influence competitiveness for faculty to obtain external funding?

Institution

- How are BUILD efforts enhancing faculty diversity at CSULB and throughout the CSU
- How does Week of RSCA influence campus research culture? Does WOR increase students' awareness of research activities and opportunities?

Evaluation Questions

Student

- What are trainees' perceptions of the BUILD program this year?
- What are the characteristics of mentoring experiences for trainees?

Faculty

- How do faculty view their mentoring experiences? How has current societal context affected this?

Institution

- To what extent is the institutionalization plan being implemented?
- What progress is being made regarding dissemination of program components and research/evaluation findings?

Supporting Undergraduate Research: Evaluating the CSULB BUILD Program

Methods

Student psycho-social constructs • Sense of belonging • Science Identity	Surveys
Trainee perceptions of program	Focus Groups
Faculty views of mentoring	Focus Groups & Surveys
Influence on faculty research productivity	Institutional Data (e.g., grant awards)
Influence of Week of RSCA on campus culture	Surveys; Program Data (e.g., participation)

Dissemination

- Annual Evaluation Reports, including recommendations
- Ongoing discussions with client (BUILD PIs)
- Evaluation data used for reports to funder (NIH)
- Support for publications and presentations
- Presentations to various bodies (e.g., funder, leadership team, advisory boards)

Next Steps/Looking Ahead

In Years 9 & 10 (2022-2024):

- Evaluation will shift from formative to summative/ outcomes
- Focus will be on student outcomes and institutional impact
- Quasi-experimental impact study will examine effect of BUILD program participation on student outcomes:
  - Retention in major/related discipline
  - Matriculation to Ph.D. programs
  - Research careers
  - Data sources: Institutional Research, National Student Clearinghouse

Questions?

Contact Information:

Name: Nada Rayyes

Campus/Department: CSULB/CEEE

https://www.csulb.edu/college-of-education/center-for-evaluation-and-educational-effectiveness

Phone #: 562.985.8868

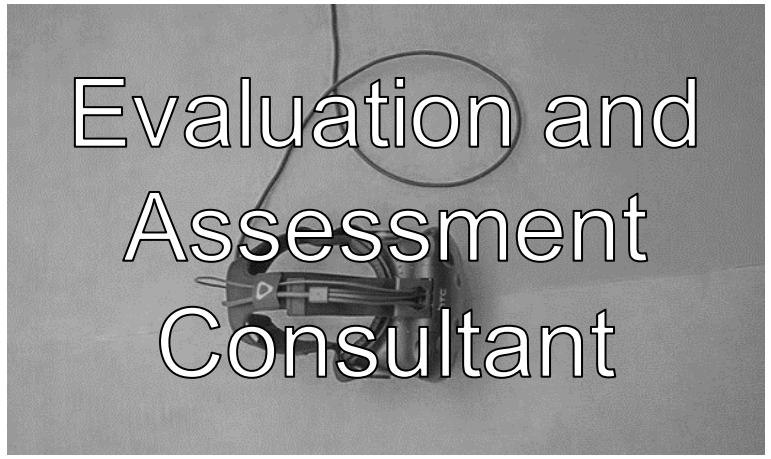
Email: nada.rayyes@csulb.edu

Assessing Beyond Knowledge and Skills

Measuring and Evaluating Self-Efficacy, Engagement, Identity, and Sense of Belonging in Summer Research Programs

FADI CASTRONOVO PhD EIT
SENIOR LECTURER AT THE UNIVERSITY OF BRIGHTON
EVALUATION AND ASSESSMENT CONSULTANT
fadi@castronovoevaluations.com

Dr. Fadi Castronovo fadi@castronovoevaluations.com



University of Brighton

CASTRONOVO
EVALUATIONS

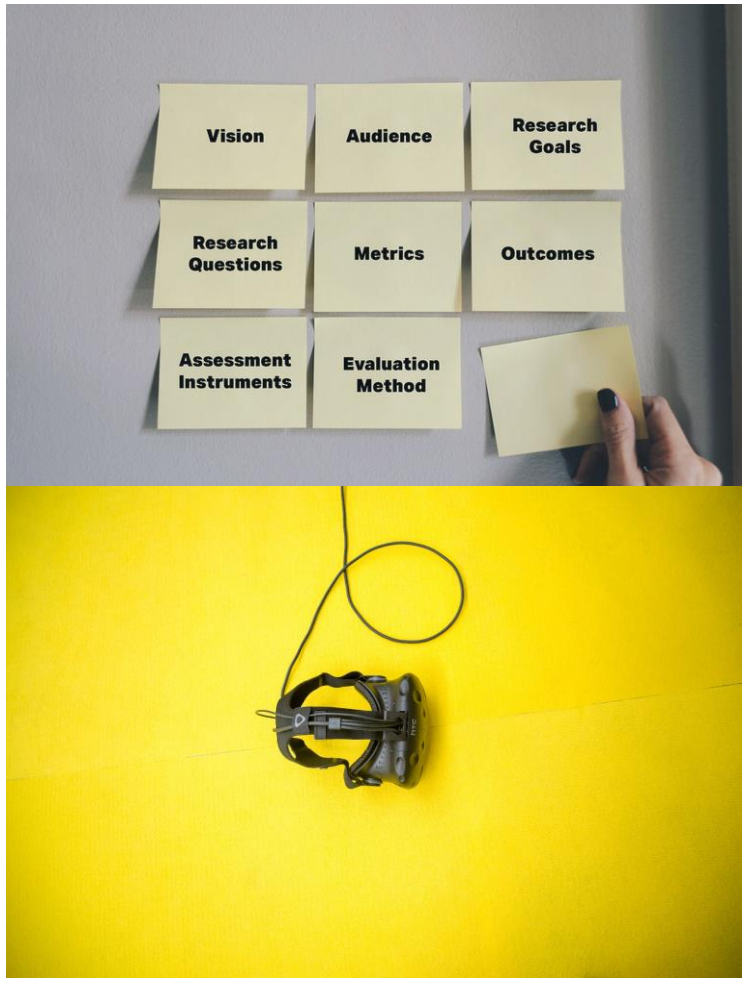
CAL STATE
EAST BAY

CASTRONOVO EVALUATIONS

Assessing Beyond Knowledge and Skills

What I do

- External Program Evaluations for Federal and State Grants
- Each evaluation is developed with your programmatic goals and questions in mind to assure success and significant impact.
- Technology Adoptions Consultations.
- Assess impacts of psychological factors, such as STEM Identity, Self-Efficacy, Engagement, and Sense of Belonging.
- Assess learning impacts of technology in the classroom, such as VR, AR, Educational Gaming.



CASTRONOVO EVALUATIONS

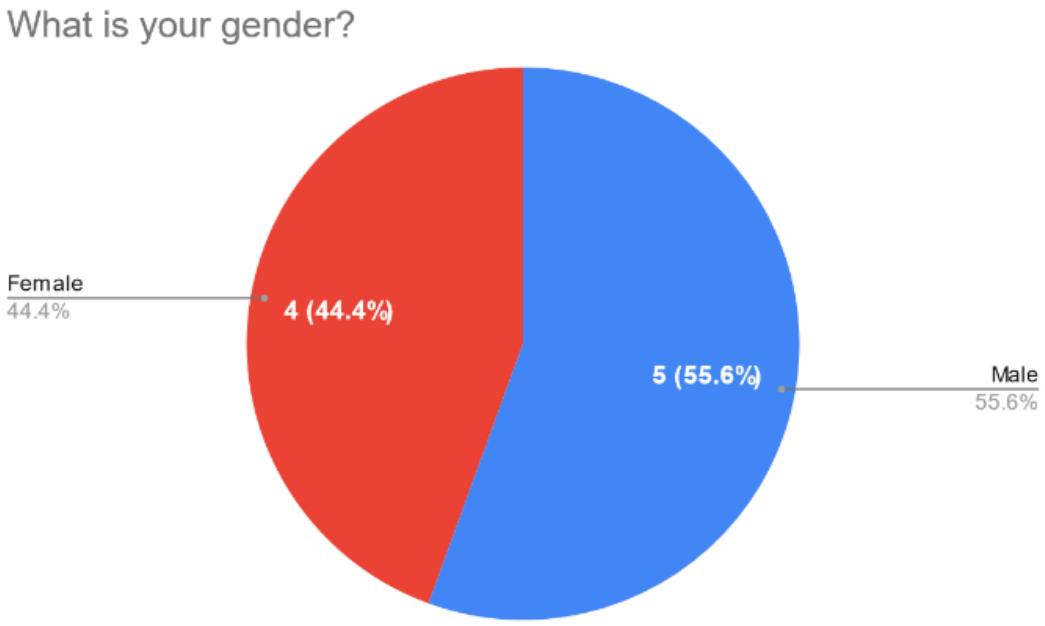
Summer Program Evaluation and Instruments

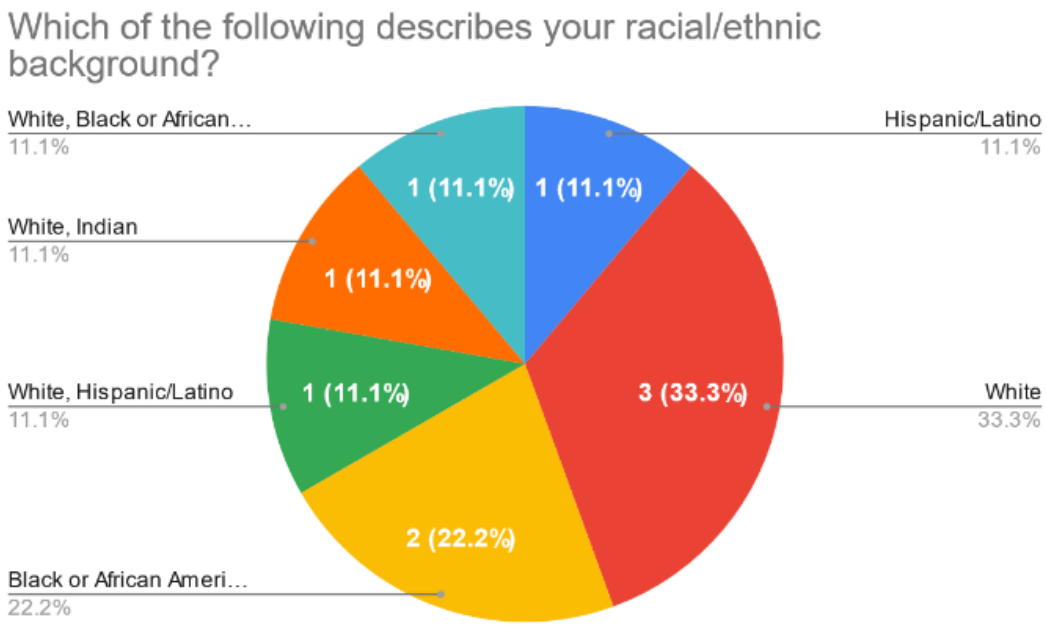
Evaluation Questions	Metrics
How many students were from under-represented groups (women, minorities, disabilities, etc.)? Or from institutions with limited research opportunities?	Recruitment of diverse student population
Did students find the program to stimulate their scientific identity, sense of belonging, engagement, and self-efficacy?	Student's STEM identity, sense of belonging, engagement, and self-efficacy

- *"Undergraduate Research Student Self-Assessment (URSSA)"* by the National Science Foundation
- "*Measure of Engineering Identity Survey developed*" by Godwin (2016)
- "*The development of a measure of engineering identity*" by Godwin (2016)
- "*General Self-Efficacy Scale*" by Schwarzer and Jerusalem (1995)
- "*Measuring undergraduate students' engineering self-efficacy: A validation study.*" by Mamaril, N. A., Usher, E. L., Li, C. R., Economy, D. R., & Kennedy, M. S. (2016)
- "*Sense of Belonging Scale*" by Butcher and Conroy (2002)
- "*Student Response to Instructional Practices Survey*" by Nguyen et al. (2016)
- *"Measuring activation and engagement. Activation Lab, Enables Success Study."* by Moore, D. W., Bathgate, M. E., Chung, J., & Cannady, M. A. (2011)

Program Diversity

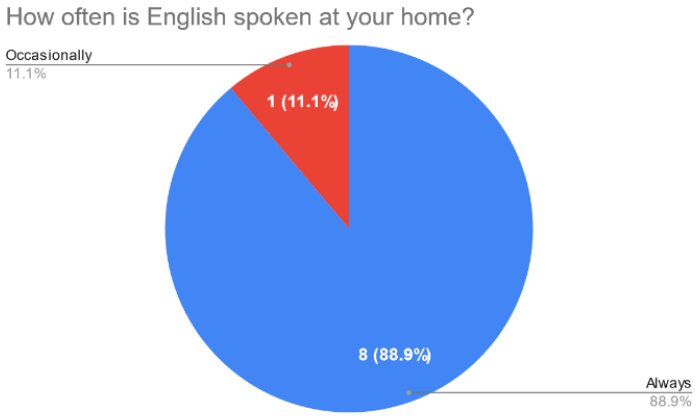
- How many students were from under-represented groups (women, minorities, disabilities, etc.)? Or from institutions with limited research opportunities?

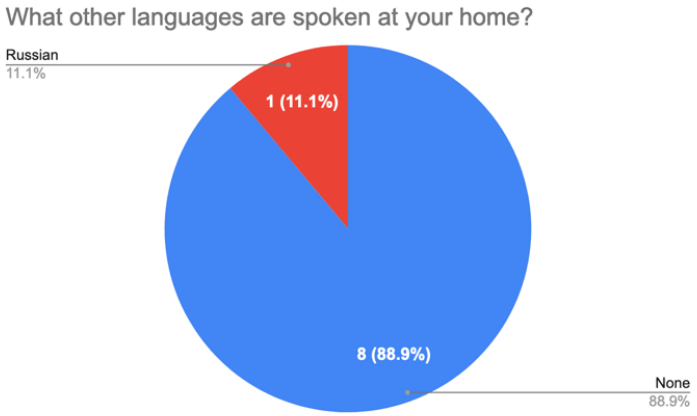


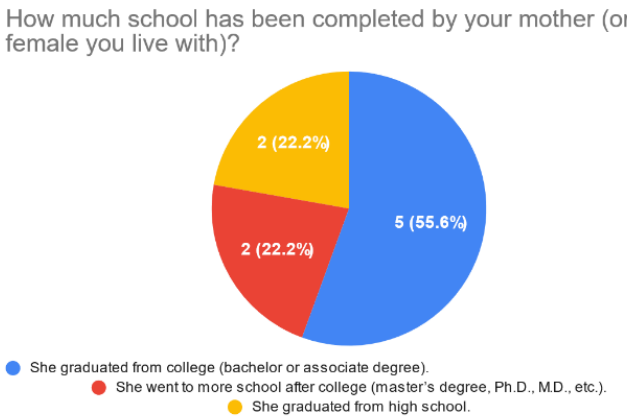


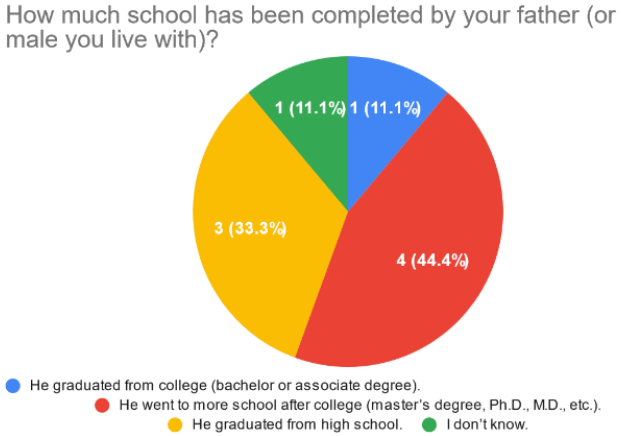
Program Diversity

- How many students were from under-represented groups (women, minorities, disabilities, etc.)? Or from institutions with limited research opportunities?



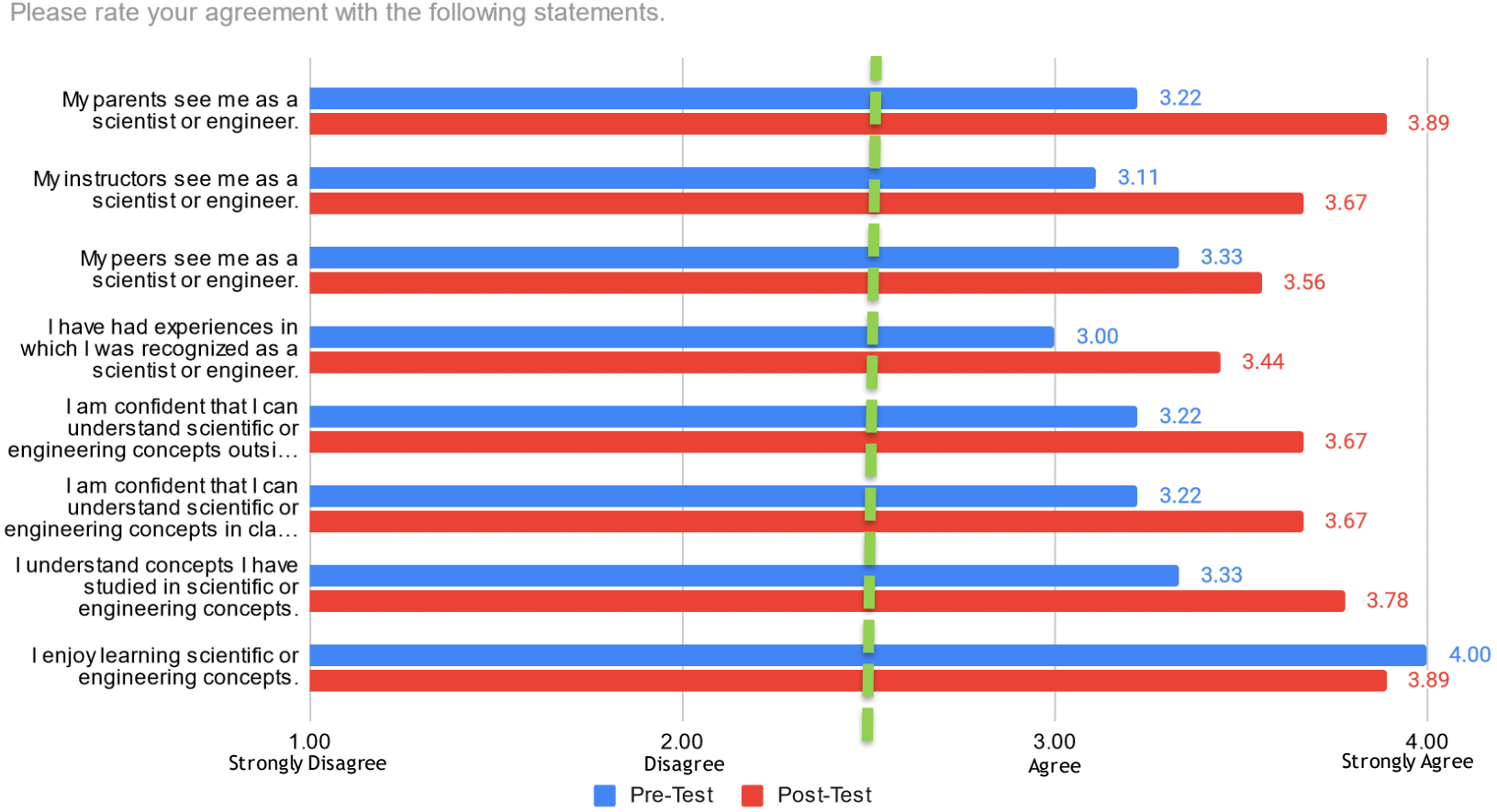






STEM Identity

- Did students find the program to stimulate their STEM identity, sense of belonging, engagement, and self-efficacy?

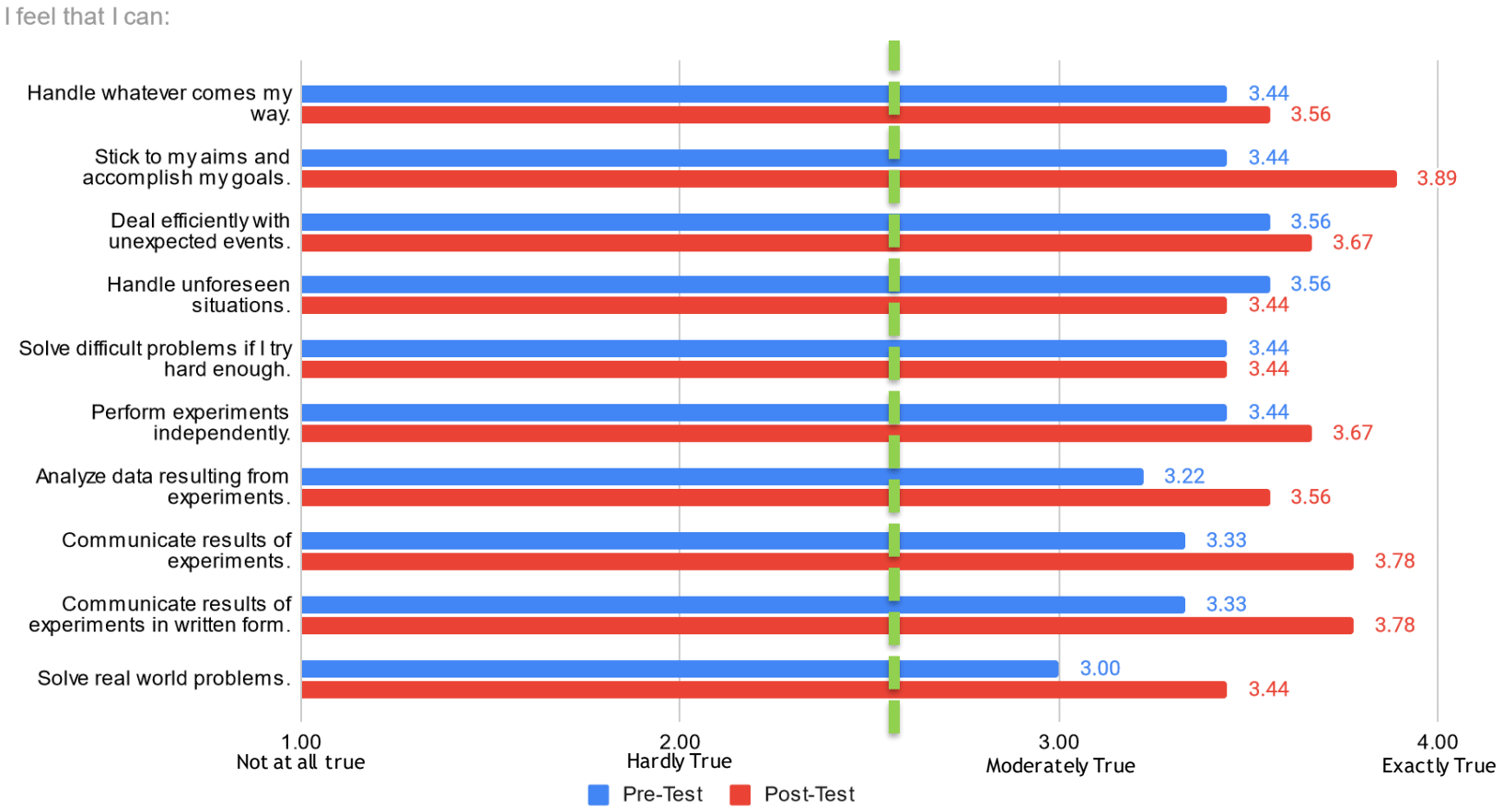


CASTRONOVO EVALUATIONS

Assessing Beyond Knowledge and Skills

Self Efficacy

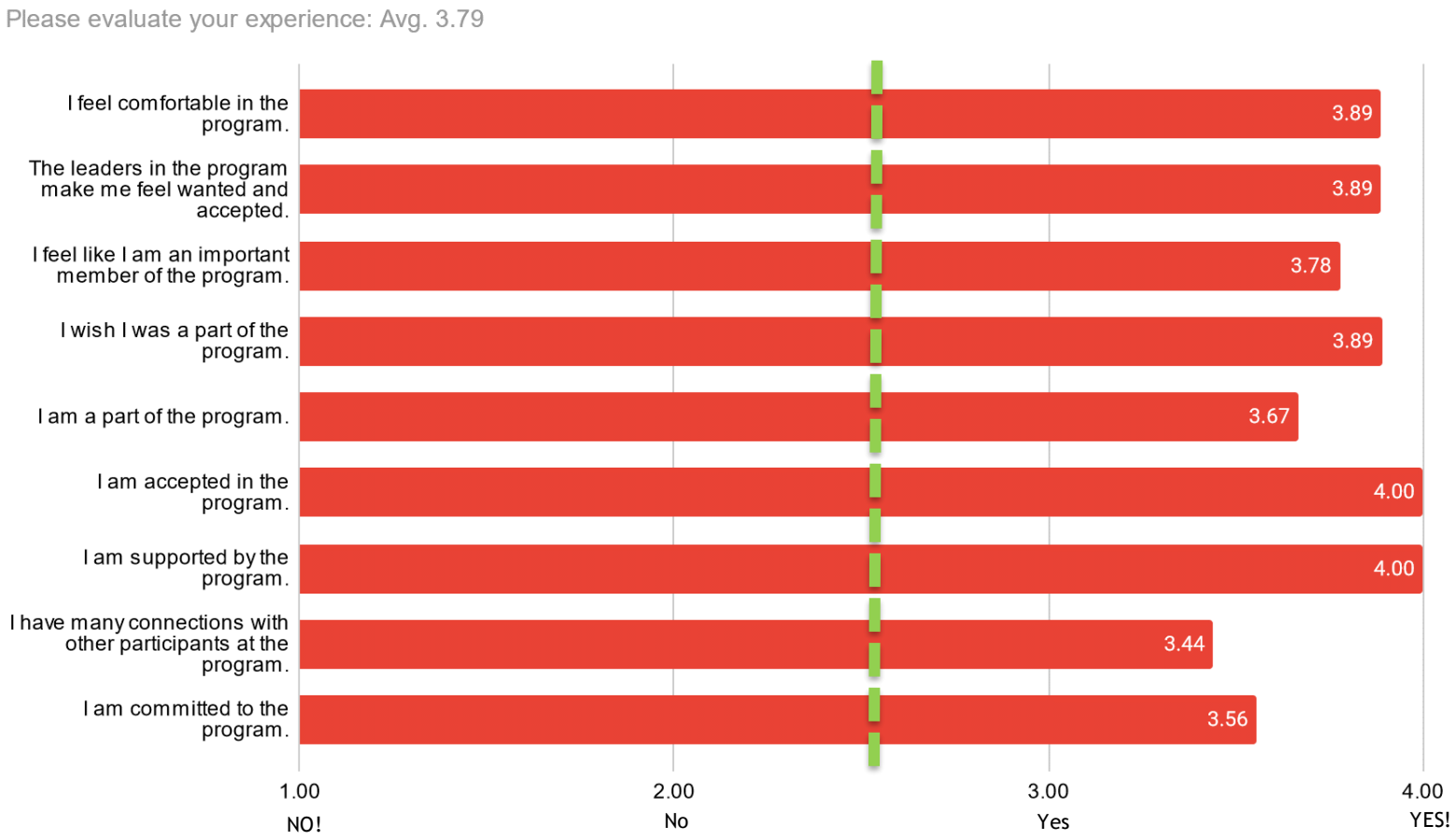
- Did students find the program to stimulate their STEM identity, sense of belonging, engagement, and self-efficacy?



CASTRONOVO EVALUATIONS

Sense of Belonging

- Did students find the program to stimulate their STEM identity, sense of belonging, engagement, and self-efficacy?

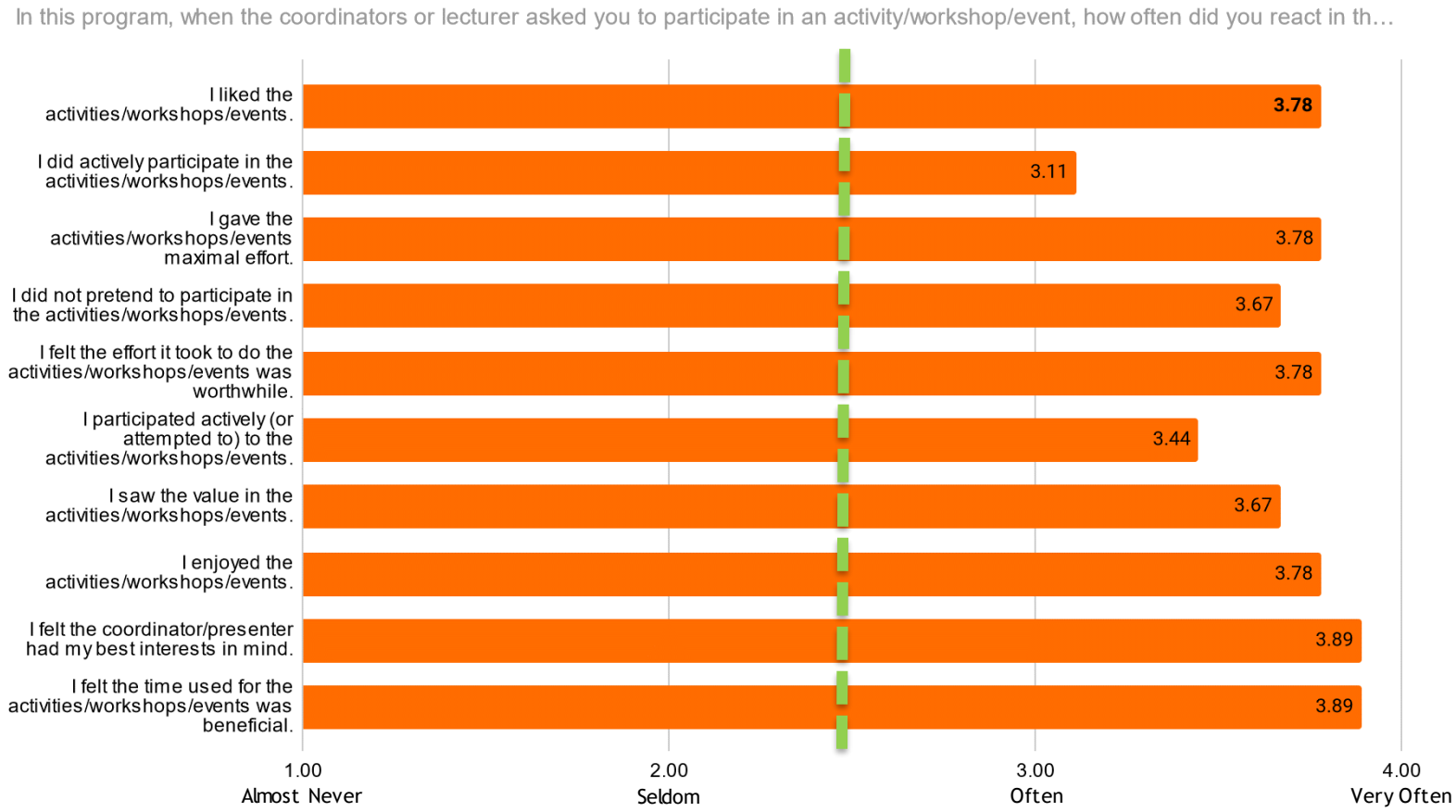


CASTRONOVO EVALUATIONS

Assessing Beyond Knowledge and Skills

Engagement

- Did students find the program to stimulate their STEM identity, sense of belonging, engagement, and self efficacy?



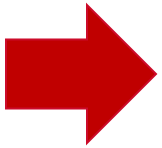
CASTRONOVO EVALUATIONS

Center Evaluation

The Center aims to support collaborative, interdisciplinary research efforts in the area of scientific research.

The Center is structured with one executive committee, two research groups (RGs), two outreach groups, and three teams composed of graduate and postdoctoral students.

The duration of the program is six years it is funded by the National Science Foundation.



Fragmented understanding of the Center's identity, values, opportunities, objectives, goals, and impact for students.

Missed opportunities of collaborations, attending events, and supporting students.

CASTRONOVO EVALUATIONS

Assessing Beyond Knowledge and Skills

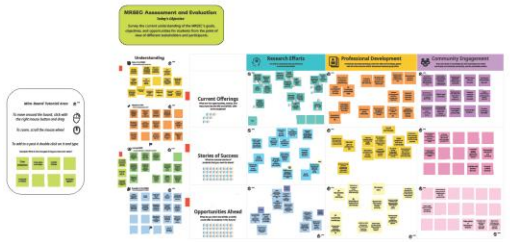
Project Phases

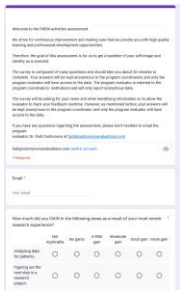
Phase 1
- Project Kickoff

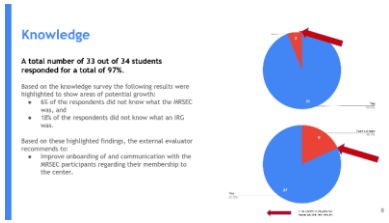
Phase 2
- Generate Collective Understanding

Phase 3
- Assessment Survey Development & Deployment

Phase 4
- Data Analysis & Presentation







CASTRONOVO EVALUATIONS

Assessing Beyond Knowledge and Skills

Knowledge

A total number of 33 out of 34 students responded for a total of 97%.

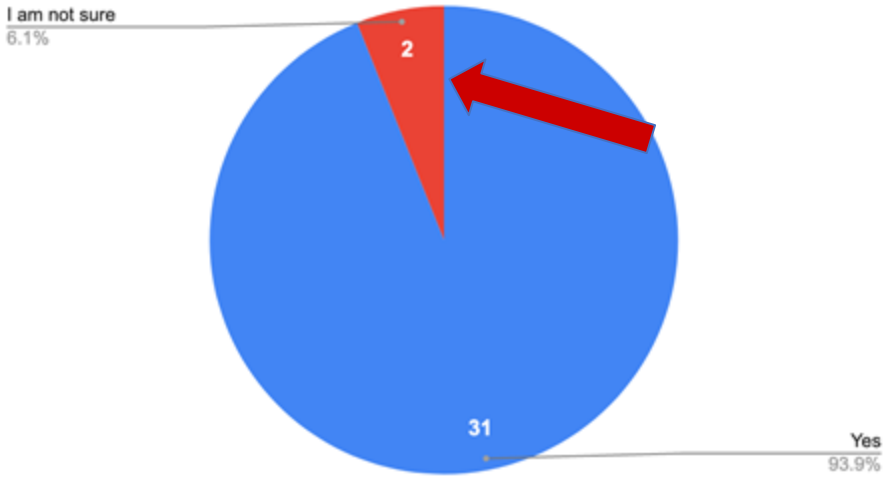
Based on the knowledge survey the following results were highlighted to show areas of potential growth:

- 6% of the respondents did not know what the Center was, and
- 18% of the respondents did not know what an RGs was.

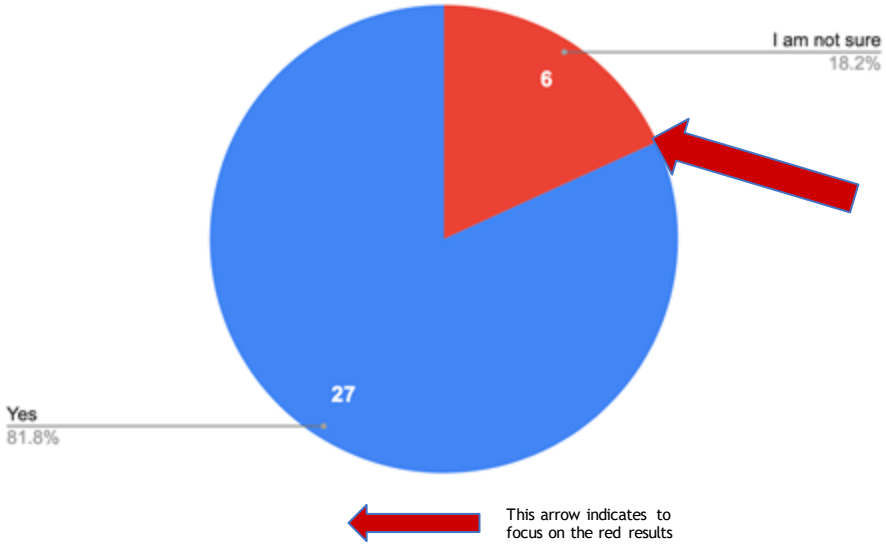
Based on these highlighted findings, the external evaluator recommends to:

- Improve onboarding of and communication with the Center participants regarding their membership to the center.

I know what the Center is



I know what an RG is



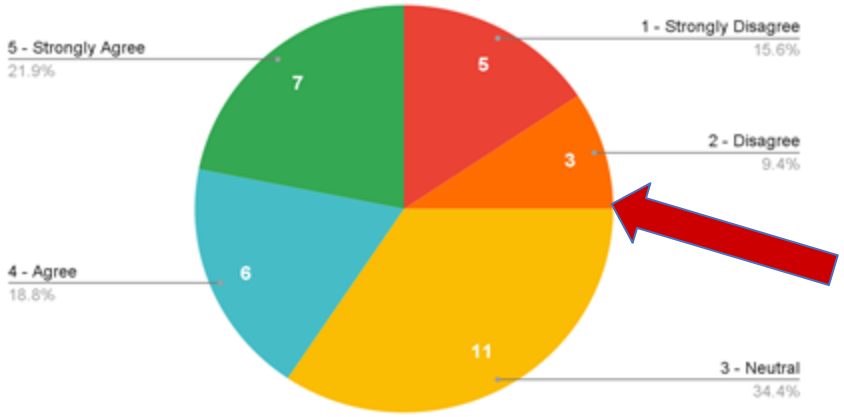
This arrow indicates to focus on the red results

CASTRONOVO EVALUATIONS

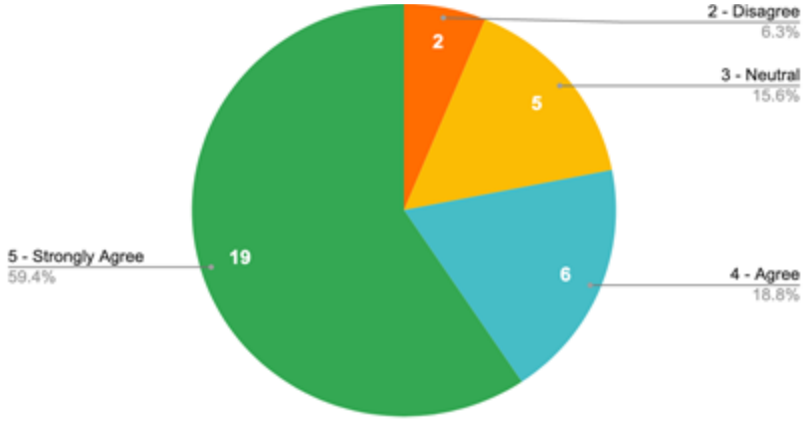
Assessing Beyond Knowledge and Skills

Joining the Program

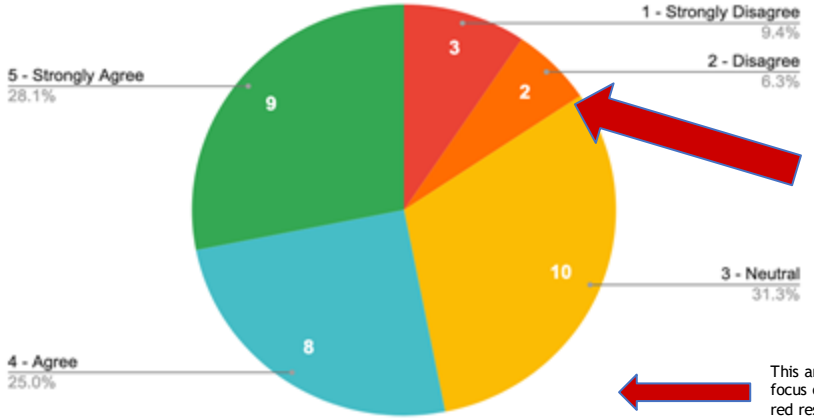
I was asked provided with an orientation or onboarding



I was asked to present my research topic or project

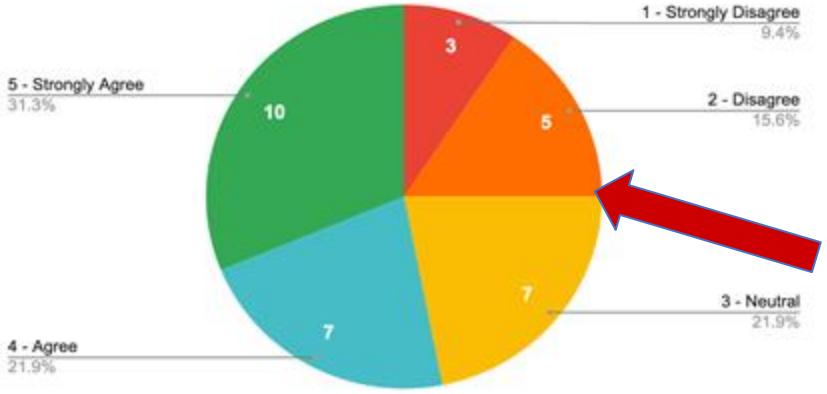


A short seminar was hosted by the RG leader and team



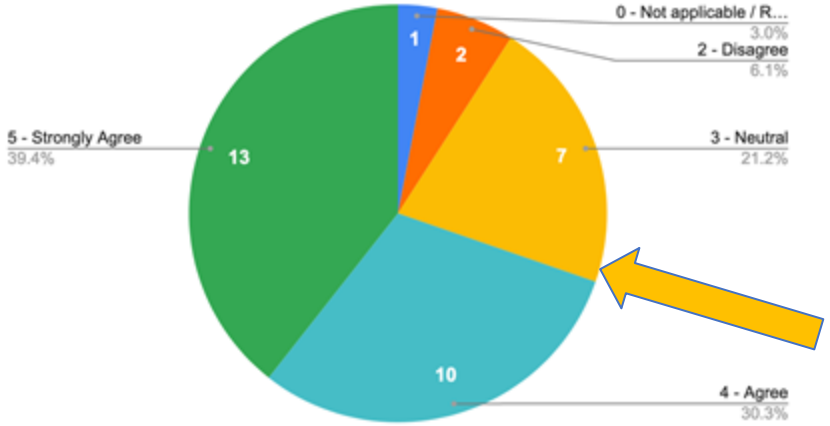
This arrow indicates to focus on the orange and red results

I was provided with an orientation regarding what are the goals of the Center and RG

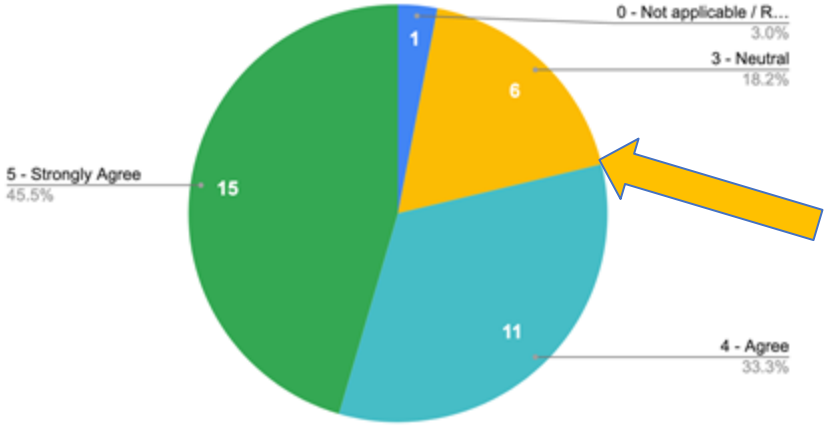


Strengths of the Program

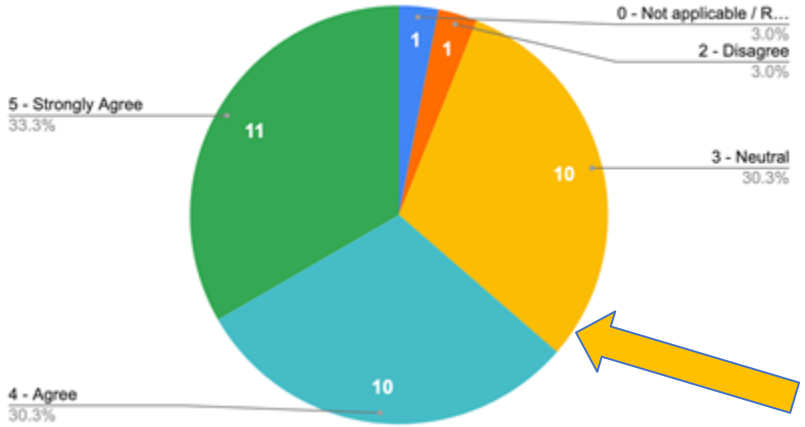
A strong sense of community



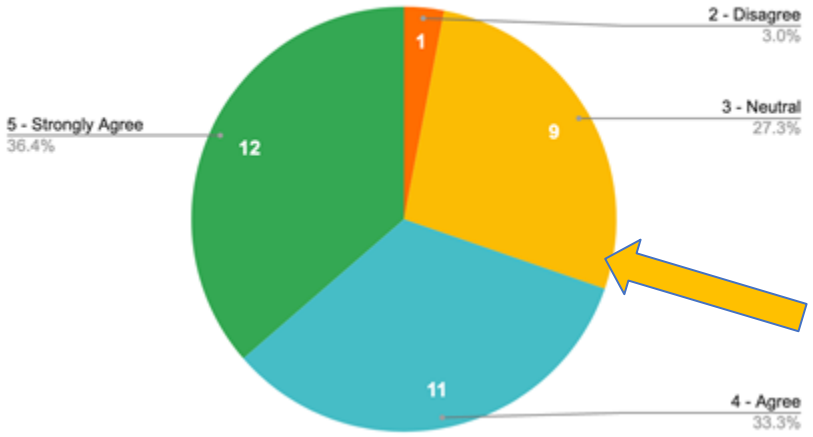
The community is diverse and inclusive



Engaged mentorship and supervision



Hosting social events to build a sense of community



CASTRONOVO EVALUATIONS

Evaluation is key for continuous improvement

- Supports program directors put students at the center by providing them a feedback platform.
- Helps in developing a program that goes beyond knowledge and skills.
- Informs the effectiveness of the onboarding process.
- Offers a to create a shared knowledge base of the program.
- Provides a bird's eye view of the program and identify areas where efforts are fragmented.
- Identifies opportunities for improvements and secure future funding.

Questions?

Contact Information:

FADI CASTRONOVO PhD EIT

Castronovo Educational Assessment and Evaluations LLC

www.castronovoevaluations.com

fadi@castronovoevaluations.com

Speaker Contacts

Heather Macias & Rachel Part, CSULB & Meta
Heather.Macias@csulb.edu, rachel.part@unlv.edu

Dalton Marsh, CSUSB
Dalton.Marsh@csusb.edu

Jane Lehr, Cal Poly SLO
jlehr@calpoly.edu

Nada Rayyes, CSULB
Nada.Rayyes@csulb.edu

Fadi Castronovo, , Castronovo LLC
fadi@castronovoevaluations.com

Next Steps/Closing Remarks

Dr. Frank A. Gomez
Executive Director, STEM-NET
Office of the Chancellor

https://www2.calstate.edu/impact-of-the-csu/research/stem-net

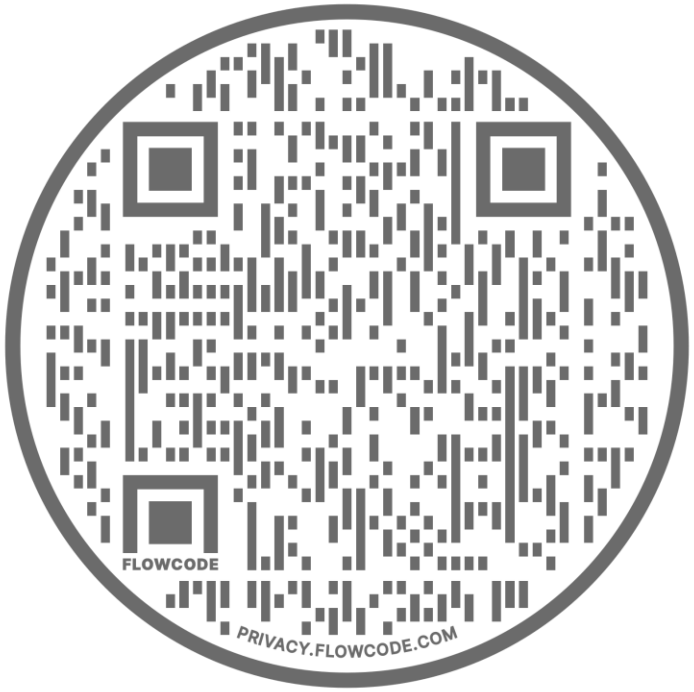
The California State University
OFFICE OF THE CHANCELLOR

STEM-NET FEEDBACK

Webcast Feedback Survey

Please take a few moments to tell us about your webcast experience.

Use the QR Scan Code to download it



The California State University
OFFICE OF THE CHANCELLOR

STEM-NET Upcoming Events

STEM-NET July Webcast

Topic: STEM Program Assessment and Evaluation
Date: Wednesday, July 20, 2022
Time: 10am- 11:30am

Register Here

Virtual Research Café 10.0

Date: Wednesday, July 13th, 2022
Time:11am-12pm

Register Here

Join our CSU STEM-NET Community listserv

csustemnet@lists.calstate.edu

Begin a Conversation with Colleagues and Join our Private CSU STEM-NET Facebook Group

https://www.facebook.com/groups/2629611737269292

THANK YOU FOR JOINING US TODAY!
For more information about STEM-NET visit our website:

Frank A. Gomez *CSU Office of the Chancellor* *fgomez@calstate.edu*