NSF Robert Noyce Teacher Scholarship Program and CSU Grantees

Moderated by:
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Executive Director, STEM-NET
Office of the Chancellor

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

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The California State University
OFFICE OF THE CHANCELLOR

NSF Robert Noyce Teacher Scholarship Program and CSU Grantees

Speakers

Michael Ferrara, National Science Foundation
An Overview of the NSF Noyce Teacher Scholarship Program

Fred Uy, CSU Chancellor's office
The Partnership of MSTI and Noyce Programs Through the Years

Kimberly Seashore, San Francisco State
Transforming community through STEM Education - SFSU Noyce STAJES: STEM Teaching Toward a Just and Equitable Society

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Expanding The Reach of a Successful Pre-service Teacher Research Program

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Supporting Excellence, Effectiveness and Diversity in STEM Education

Mark Ellis, Cal State Fullerton
Advancing Teachers of Mathematics to Advance Learning for All: A Four-Year Journey of Growth and Transformation

An Overview of the NSF Noyce Teacher Scholarship Program NSF 21-578*

Michael Ferrara – National Science Foundation

*: Please see solicitation for full program requirements and other guidance.

Michael Ferrara, Program Director, Division of Undergraduate Education (DUE)

Directorate for Education and Human Resources (EHR)

mferrara@nsf.gov

Robert Noyce Teacher Scholarship Program

Act of Congress

- The primary program goal is to encourage talented STEM majors and STEM professionals to become K-12 STEM teachers.
- Scholarship, stipend, and fellowship recipients must teach in a **high-need** school district for a specified number of years.
- Institutions are responsible for tracking recipients and monitoring teacher service (or repayment).

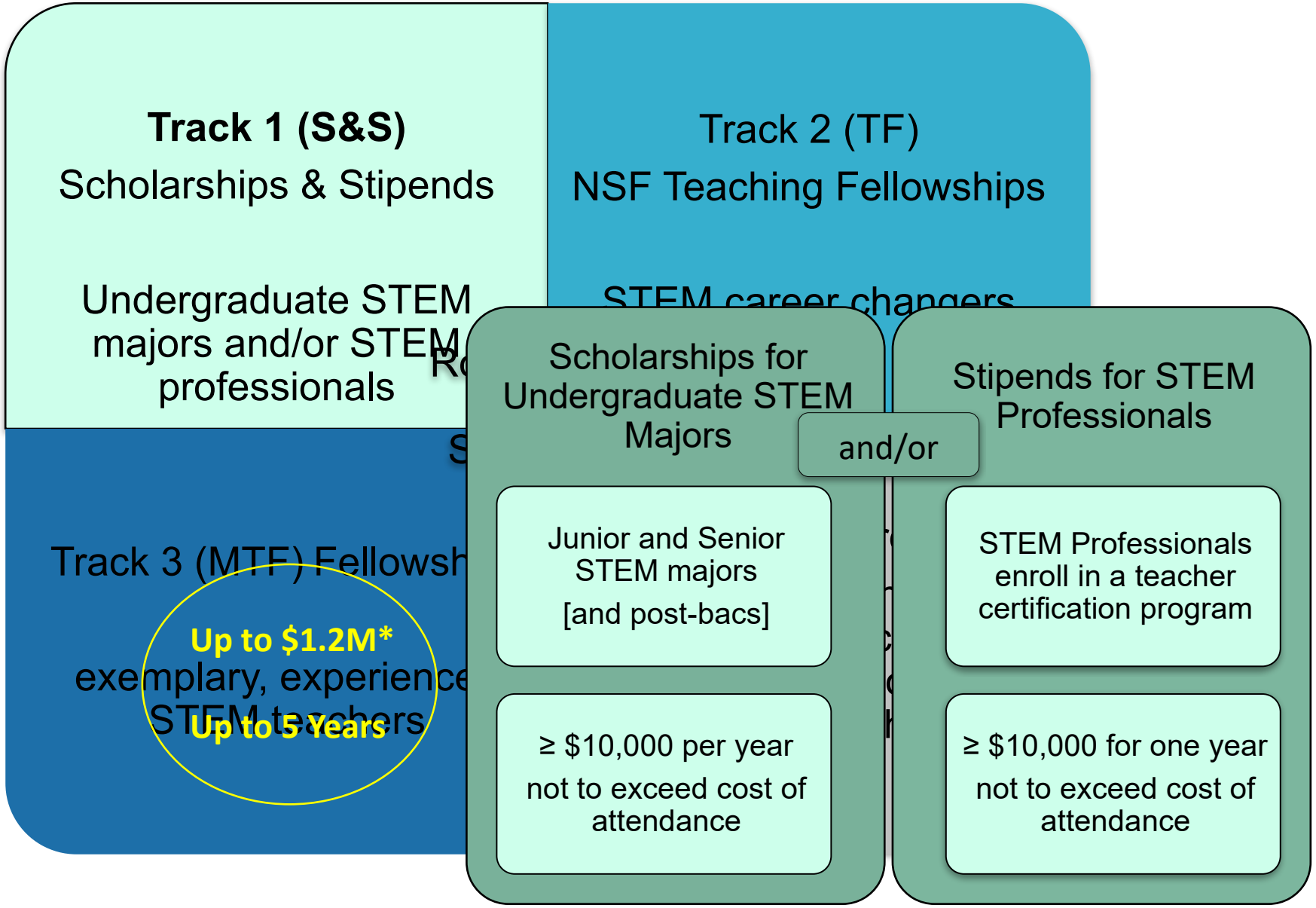
Definition of High-Need LEA

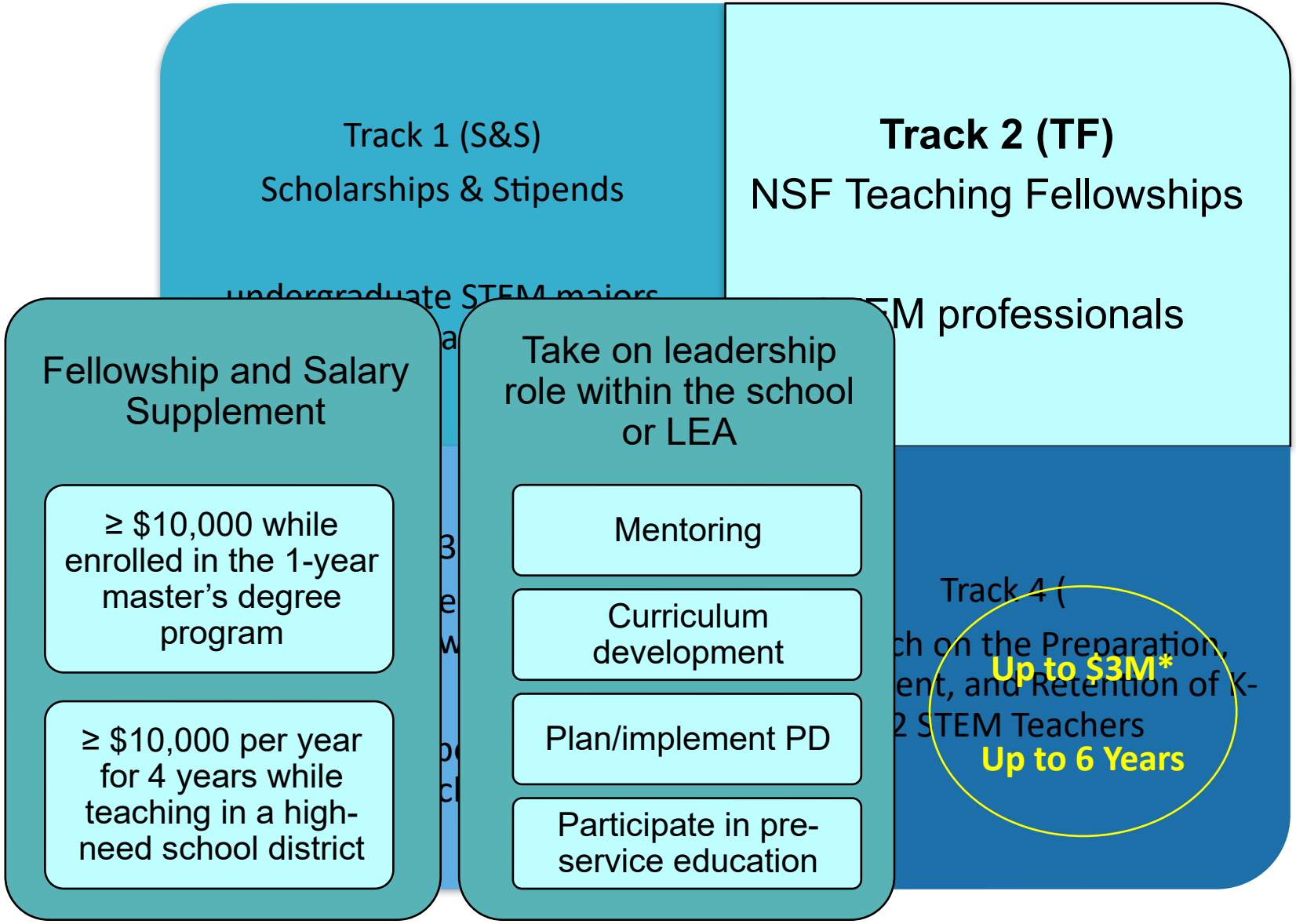
High-Need Local Educational Agency (LEA),(e.g., a high-need school district)

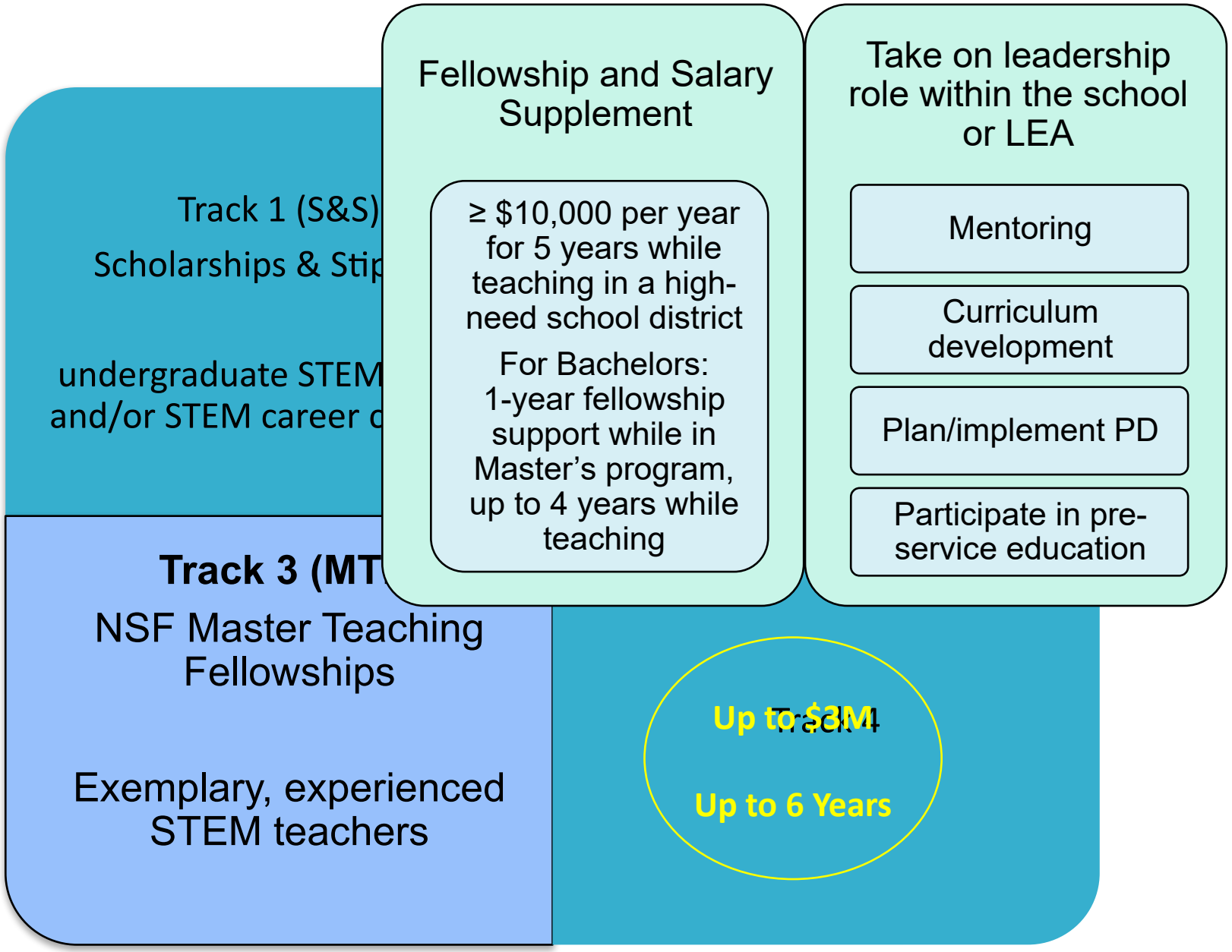
defined in section 201 of the Higher Education Act of 1965 (20 U.S.C. 1021), means a U.S. local educational agency (e.g., school district) that has at least one school that:

meets at least **one** of the following criteria: A. not less than 20% of the children served by the agency are from low-income families; B. serves at least 10,000 children from low-income families; C. is eligible for funding under the Small, Rural School Achievement Program under 20 U.S.C. 7345(b); **Or** D. is eligible for funding under the Rural and Low-Income School Program	**AND** meets at least **one** of the following criteria: A. has a high percentage of teachers not teaching in the academic subject areas or grade levels in which the teachers were trained to teach; **Or** B. has a high teacher turnover rate or a high percentage of teachers with emergency, provisional, or temporary certification or licensure.

Note: If one school meets one of these, the district is considered high-need


Track 1 (S&S)
Scholarships & Stipends
Undergraduate STEM majors and/or STEM professionals
Track 2 (TF)
NSF Teaching Fellowships
Track 3 (MTF) Fellowsh
exemplary, experience
STEM teachers
Up to $1.2M*
Up to 5 Years
Scholarships for Undergraduate STEM Majors
Junior and Senior STEM majors
[and post-bacs]
≥ $10,000 per year
not to exceed cost of attendance
and/or
Stipends for STEM Professionals
STEM Professionals enroll in a teacher certification program
≥ $10,000 for one year
not to exceed cost of attendance


Track 1 (S&S)
Scholarships & Stipends
Track 2 (TF)
NSF Teaching Fellowships
Fellowship and Salary Supplement
≥ $10,000 while enrolled in the 1-year master's degree program
≥ $10,000 per year for 4 years while teaching in a high-need school district
Take on leadership role within the school or LEA
Mentoring
Curriculum development
Plan/implement PD
Participate in pre-service education
Up to $3M*
Up to 6 Years


Track 1 (S&S)
Scholarships & Stip
undergraduate STEM
and/or STEM career c
Track 3 (MT
NSF Master Teaching Fellowships
Exemplary, experienced STEM teachers
Fellowship and Salary Supplement
≥ $10,000 per year for 5 years while teaching in a high-need school district
For Bachelors: 1-year fellowship support while in Master's program, up to 4 years while teaching
Take on leadership role within the school or LEA
Mentoring
Curriculum development
Plan/implement PD
Participate in pre-service education
Track 4
Up to $3M
Up to 6 Years

Project Description - 15 pages
(Track 1: S&S, Track 2: TF, & Track 3: MTF)

Include descriptions of the proposed:

- Specific STEM majors to be recruited;
- Strategies for recruitment;
- Preparing teachers to provide successful learning experiences in high-need school districts;
- Induction supports;
- Strategies for monitoring and enforcing compliance with the teaching commitment/repayment;
- Evaluation and research plan;
- Plans for dissemination of the results of the project and for contributing to the knowledge base.

***See Section V of the solicitation for additional details.**

Capacity Building Proposals:
Project Description – 10 Pages

Clear Motivation: Why Capacity Building? Why Now? Which Track?

Plans for (Developing) Partnerships and Building Infrastructure: Entities to be engaged and processes to be employed in designing plan for recruiting, preparing, or supporting new or current STEM teachers.

Approaches: Evidence-based, innovative models and strategies for recruiting, preparing, & supporting STEM teachers.

Plans for Collecting Data to determine need, interest, capacity.

Discuss Existing Resources: What does your institution have already? Is there alignment with student strengths, needs, circumstances.

Discuss: How? Who? When?

Requirements/ Features	Track 1 (S&S)	Track 2 (TF)	Track 3 (MTF)	Capacity Building
STEM Major	✓	✓	Degree in field	
Scholarships/ Fellowships	✓	✓	✓	
High-Need District Partner	✓	✓	✓	
Non-Profit Partner		✓	✓	
PI/co-PI Team of STEM & ED Faculty	✓	✓	✓	Encouraged
Evaluation/ External Feedback	✓	✓	✓	✓
Cost Sharing		✓	✓	
Funding Amount	Up to $1.2M*	Up to $3M*	Up to $3M*	Up to $75K**

*$250K Community College Incentive and Minority Serving Institution Incentive (only one $250K incentive for an additional non-lead institution)

**$50K Community College Incentive and Minority Serving Institution Incentive (only one incentive for an additional non-lead institution)

Noyce Track 4 and
Noyce Research Experiences

Noyce Track 4: Supports exploratory studies and research projects that address STEM teacher effectiveness and retention in high-need districts.

Qualitative, quantitative, and mixed methodologies are all welcome, as are research syntheses.

Noyce Research Experiences for Pre-Service Teachers: Projects are intended to provide authentic STEM research experiences in formal or informal settings that can enhance student preparation for STEM teaching and their retention as teachers in STEM fields.

See Dear Colleague Letter NSF 21-086

Interfacing with Program Officers

- Make sure to fully read the PAPPG and the solicitation(s) of interest.
- Write a 1-page summary of your project covering main goals, activities, and research/evaluation questions.
- Send your summary to ONE program officer or the program's general email.
- In DUE, anticipate a 20 to 30-minute session – the goal is not to "sell" your idea, but to ask questions and get feedback.

True – False Quiz!

1. Education majors are eligible to receive a Noyce scholarship in Track 1: S & S projects.

2. Track 1: S & S, Track 2: TF, and Track 3: MTF projects all require a non-profit partner.

3. Cost sharing is allowable for any Track but only required for Track 2: TF and Track 3: MTF.

4. Teachers without a master's degree may receive fellowship support for Track 3: MTF projects.

5. I can ask questions or send a 1-2 page "white paper" to a Noyce PO and ask for a 30-minute consultation.

True – False Quiz!

1. Education majors are eligible to receive a Noyce scholarship in Track 1: S & S projects. False

2. Track 1: S & S, Track 2: TF, and Track 3: MTF projects all require a non-profit partner. False

3. Cost sharing is allowable for any Track but only required for Track 2: TF and Track 3: MTF. False

4. Teachers without a master's degree may receive fellowship support for Track 3: MTF projects. True

5. I can ask questions or send a 1–2-page proposal overview to a Noyce PO and ask for a 30-minute consultation. True

Noyce POs

Kathleen Bergin (*Program Lead*) kbergin@nsf.gov

John Haddock (*Program co-Lead*) jhaddock@nsf.gov

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Tom Kim tkim@nsf.gov

Kimberly Tanner ktanner@nsf.gov

If you are interested in serving as a Noyce reviewer and are not submitting a proposal in 2022, please contact a cognizant PO in August.

Questions?

Contact Information:

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Division of Undergraduate Education
Directorate for Education and Human Resources
mferrara@nsf.gov

The Partnership of MSTI and Noyce Programs Through the Years

Frederick Uy – California State University, Office of the Chancellor

Frederick Uy, Director, Educator Preparation

Co-Director, Center for the Advancement of Instruction in Quantitative Reasoning

Department of Educator Preparation & Public-School Programs

CSU Chancellor's Office, fuy@calstate.edu

CSU The California State University

The Partnership of MSTI and Noyce Programs Through the Years

Project Overview

Mathematics and Science Teacher Initiative (MSTI)

-since 2006, working with 22 campuses
-about 11250 mathematics and science teachers
-financial awards, scholarships, reimbursement of fees, offers fieldwork experience and practicum
-has been dedicated on the recruitment of candidates to increase STEM teaching workforce
-is readdressing its aim on not only recruitment but also in retention

Activities

Campus partnership in their Noyce programs

-provides letters of support
-additional funds
-assistance in field placement
-review courses
-examination preparation

CSU The California State University

The Partnership of MSTI and Noyce Programs Through the Years

Results

-steady supply of STEM teachers
-better understanding of the needs of LEAs...PDs, increase in AUTHORIZATION, placements/teaching experience, service, projects

Lessons Learned

-challenges: COVID, declining enrollment (TK-12 students and pre-service teachers), lack of diversity, equity, and inclusion
-Recruitment Coordinator helps
-financial assistance is important

Questions?

Contact Information:

Name: Frederick Uy

Campus/Department: CSUCO/EPPSP

Website *: https://www.calstate.edu/impact-of-the-csu/teacher-education/Pages/our-team.aspx*

Phone #: *(562) 951 - 4713*

Email: fuy@calstate.edu

Transforming Community through STEM Education - SFSU Noyce STAJES: STEM Teaching Toward a Just and Equitable Society

Kimberly Seashore – San Francisco State University

Program coordinator: Jamie Chan
Co-PIs: Kimberly Coble, Lawrence Horvath, Eric Hsu, Hao Yue

Kimberly Seashore, Assistant Professor
San Francisco State University, Department of Mathematics
kimseash@sfsu.edu

Project Overview

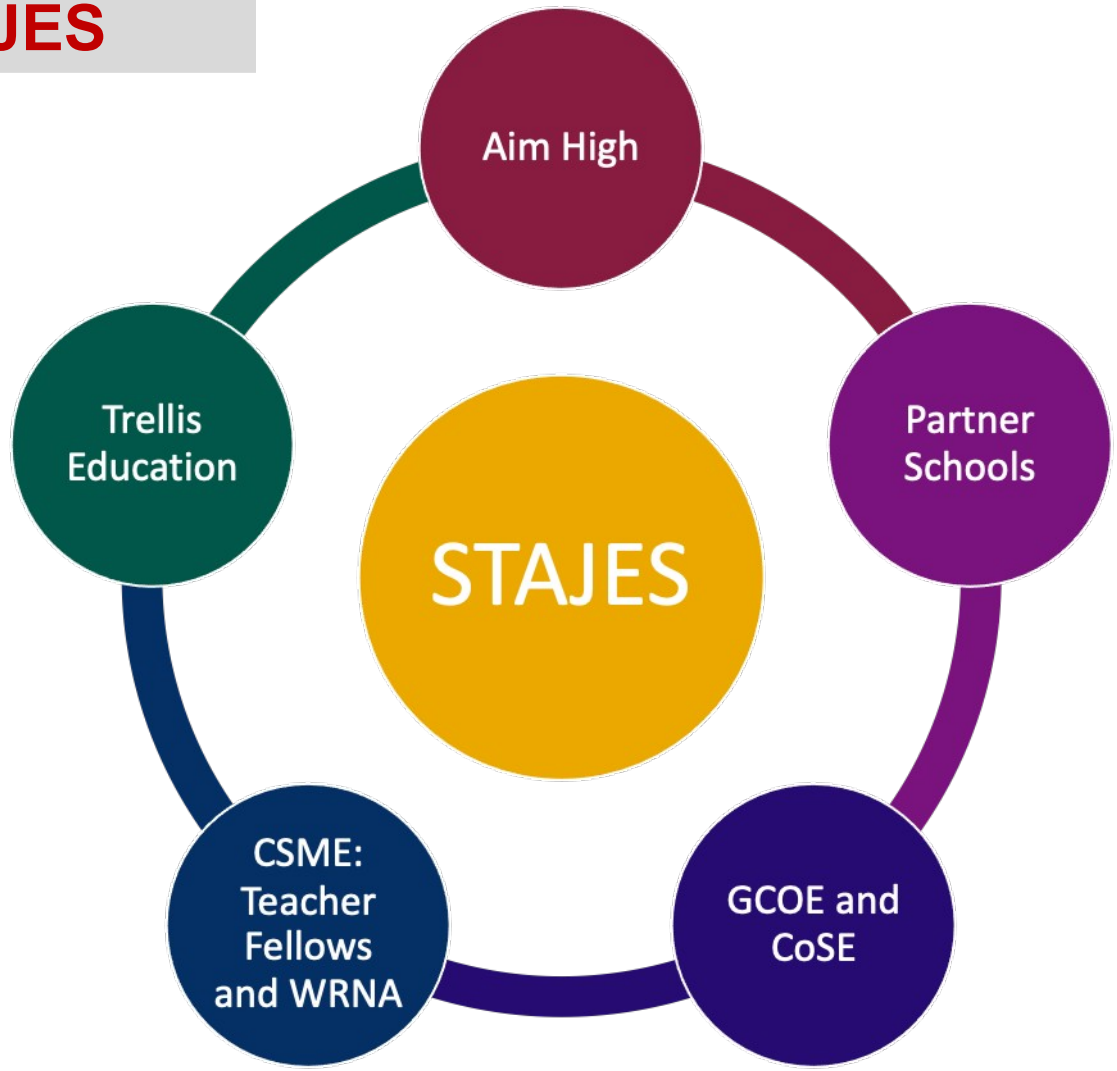
Noyce STAJES (**S**TEM **T**eaching toward **A** **J**ust and **E**quitable **S**ociety) provides financial and programmatic support to recruit, train and retain academically talented STEM majors as secondary teachers. STAJES scholars must commit to creating access and empowerment for students at high-needs secondary schools.

Noyce STAJES builds on the experience and success of prior Noyce Scholars program at SFSU from 2012-2017. The Noyce STAJES program was funded in June 2019, with the first STAJES scholars admitted in Spring 2020.

Noyce STAJES takes an explicit stance on the importance of teaching, and STEM teaching in particular, **to transform communities and disrupt unjust and inequitable systems.** STAJES seeks to support and empower STEM majors, particularly those from the communities that we seek to serve, to become STEM teachers and to thrive in that role.

STAJES: STEM Teaching Toward a Just and Equitable Society

Components of STAJES



Activities

1. **Financial support** for up to 9 STEM undergraduate and credential scholars per year;
   $14,000-$16,000 annual scholarship with two-year commitment to teaching in high-needs schools
2. **STAJES seminar** focusing on social justice and equity pedagogies (12 meetings per year)
3. **Field placements and summer internships** in high-needs schools and STEM education partner programs
4. **Professional pipeline** including leadership in MSTI Teacher Fellows program and continuing into teaching through partnerships with Trellis Education and the Western Regional Noyce Alliance

Results

In 5 semesters (Spring 2020- Spring 2022):

- 31 STEMS undergraduate and credential scholars have participated in STAJES
- 26 STAJES scholars have received funding through NOYCE
- 9 Scholars have received approximately $12,000 additional funding through TRELLIS EDUCATION
- 11 STAJES scholars have completed secondary STEM teaching credential
- 8 scholars are currently teaching in high needs public schools ; 4 have completed required service and are continuing to teach
- STAJES Scholars represent the diversity of SFSU and of the schools where they will teach:

  31% (8) Asian/Pacific Islander, 19% (5) Black, 31% (8) Latinx, 19% (5) White

Lessons Learned

Supporting scholars, who are low-income or from communities that are under-represented in STEM and STEM education, requires more than scholarships:

- Mentorship starting several years before applying for NOYCE/STAJES grant
- Support includes placement counseling, support with finding housing or office workspace
- Resources for food, transportation, etc.
- Networking between local teachers and graduating scholars

Lessons Learned

Scholars' reflections in the year-end survey captured the critical implications of the programs work:

The essential role of community for teachers striving to promote equity

"I was able to collaborate with my groupmates to develop ideas that help empower students…. I feel like I am more aware of what I can do to create engaging lessons/activities."

- Math Scholar (May 2020)

The biggest part for me has been when we did that check-in with June Jordan [teachers] and started that collaboration.. . . it was really valuable for us as a whole. It happened right at the beginning of corona [distance learning], and we had taken that earlier collaboration through stages and used it as a vehicle to have the math and science teams collaborate for distance learning. . . I think that that will totally change the way I teach. "

- Science Scholar (May 2020)

Lessons Learned

- Building partnerships with schools requires patience and persistence, especially during a pandemic
- Work to raise the professional status, include the salaries and job security, of teaching! We need to support our schools beyond providing them with teachers
- More attention needed to early recruitment of STEM teachers:
  - Develop early courses for Math for Teaching majors
  - Collaborations with SFSU Computer Science teaching initiatives
- Need to identify strategies for increasing funding for teaching candidates

Next Steps/Long-Term Plans

Developing and Maintaining Partnerships

- Changes in school leadership
- Transition to distance instruction
- Disparities in access to technology
- Community responses to anti-blackness and systemic racism

Preparation of STEM Teachers to Discuss Bias and Racism

- Collaborate on anti-bias and bystander training with teachers at partner schools
- Engage other Noyce projects through the Western Regional Noyce Alliance schools on shared action
- Develop shared language and materials with partner schools and organizations (Trellis Education, Aim High, Center for Science and Math Education)

Questions?

Contact Information:

Name: Kimberly Seashore or Jamie Chan

Campus/Department: Mathematics and Center for Science and Math Education

Website *: https://csme.sfsu.edu/noyce*

Email: kimseash@sfsu.eduEmail: kimseash@sfsu.edu or jmchan@sfsu.edu

Expanding the Reach of a Successful Teacher Research Program

Stamatis Vokos – California Polytechnic State University, San Luis Obispo

StarTeacherResearcher.org

Stamatis Vokos, Professor and STAR co-Director

Physics Department and CESAME, Cal Poly SLO

svokos@calpoly.edu

CAL POLY

Expanding the Reach
of a Successful Teacher Research Program

High-Impact Teacher-Researcher Experiences

STAR incorporates paid summer research experiences into the teacher preparation and induction pathways for pre-service and early-career STEM teachers.

Through this effort, the 22-campus California State University system aims to prepare a new generation of “teacher-researchers,” highly qualified to engage their students in science and engineering practices and serve as leaders in K-12 STEM education.

Since 2007, STAR has made 590 unique placements, 820 total placements.

STAR StarTeacherResearcher.org

Prior research on STAR participants:

In interviews, STAR **participants** report reflect **greater** sophistication on use of NGSS and Common Core State Standards-–Mathematics than those of comparison teachers.

Compared to students of teachers who did not participate in STAR, **students** of STAR teachers report **stronger** gains in STEM career awareness ($p<0.05$), value of learning STEM subjects ($p<0.05$), and student perseverance ($p<0.01$).

However, no statistical difference can be detected in student performance on high-stakes state tests.

Shaping STAR Fellows as *resilient* teacher-researchers and nuanced facilitators of productive student struggle

Intervention in STEM Workshop for STAR Fellows

- Helping normalize struggle that STAR Fellows experience in the laboratory as indispensable part of their learning
- Helping STAR Fellows develop a lens to interpret their students' productive struggle as indispensable part of *doing* STEM
- Helping STAR Fellows provide productive feedback to struggling students

Preliminary research on STAR participants:

On research-informed survey measuring fixed/growth and belongingness-in-STEM mindsets administered to STAR Fellows **before** and **after** the research experience, and **one academic year** later, STAR Fellows showed

- Statistically significant increase (but small effect size) in growth mindset, which persisted over time
- Large pre-/post-summer increase in belongingness, which however did not fully persist over time

Expanding the Reach of a Successful Teacher Research Program

Proposed STAR expansion, beyond CSU and institutions with Noyce scholarship programs:

Partnership with new universities to increase the capacity of the nation to include teacher STEM research as a component of STEM Teacher Education

- Southern University and A&M College, Baton Rouge, LA
- Heritage University, Yakama Reservation, WA
- CSU East Bay, Hayward, CA

Jason Thomas, Browning HS, Long Beach CA
STAR: 2018, 2019

CAL POLY

Expanding the Reach of a Successful Teacher Research Program

Measure effects of STAR Program on STAR Fellows from diverse institutions across the United States:

Partnership with new universities to increase the capacity of the nation to include teacher STEM research as a component of STEM Teacher Education

- Southern University and A&M College, Baton Rouge, LA
- Heritage University, Yakama Reservation, WA
- CSU East Bay, Hayward, CA

Document productive mindset changes, measure differences in Disciplinary Views of STEM between STAR Fellows and comparison teachers, and test a theoretical model

Lacee Sherman, Firebaugh MS, Firebaugh CA
STAR: 2013, 2014, 2015

STAR StarTeacherResearcher.org

Proposal-writing advice

Attend to:

Clear (and not unrealistically ambitious) Research Questions (RQs)

Tight research plan that helps reviewers see

- The methodology through which each RQ will be tackled
- The ways in which data will inform claims

Describe firewall separating research from evaluation

Questions? Please reach out

Contact Information:

Stamatis Vokos svokos@calpoly.edu (STAR Director)

Matt Beekman mbeekman@calpoly.edu (STAR co-Director)

Kaylene Wakeman kwakeman@calpoly.edu (STAR Coordinator)

Supporting Excellence, Effectiveness, and Diversity in STEM Teacher Education (SEED)

Kathy Hann, Ph.D., Professor
Department of Mathematics, College of Science

Michele Korb, Ph.D., Professor,
Department of Teacher Education/ Science
College of Education and Allied Studies

Co-PI Julie McNamara, Ph.D., Associate Professor
Department of Teacher Education/ Mathematics
kathy.hann@csueastbay.edu and michele.korb@csueastbay.edu

CALIFORNIA STATE UNIVERSITY EAST BAY

SEED - Supporting Excellence, Effectiveness, and Diversity in STEM Teacher Education

Project Overview

Did you know?

- CSUEB has enacted Noyce grants **since 2007** (in the early years, sometimes 2 per year!)
- CSUEB has been designated as a **Minority Serving** Institution by the Department of Education.
- Ranked **7th** in Greatest Racial and Ethnic Diversity by *U.S. News and World Report*, as well as **5th** in "Environment" / Diversity by the *Wall Street Journal* (2020)

The major goals of SEED are to:

- Increase the number, ethnic and socio-economic diversity of STEM majors entering the teaching profession through **early recruitment strategies**
- Strengthen the preparation, professional development and mentoring that these teachers receive especially to **support teaching in diverse schools**
- Provide a **network of interpersonal and professional support** that sustains their commitment to a teaching career.
- Increase the number of math and science credentials awarded at CSUEB by **10% each year** of the project

CALIFORNIA STATE UNIVERSITY EAST BAY

SEED - Supporting Excellence, Effectiveness, and Diversity in STEM Teacher Education

Activities

SEED works with the CSUEB Teacher Recruitment Task Force and collaborators, Encorps and the African American Regional Education Alliances (AAERA) to provide:

- Recruitment / Advising **events and activities**
- **$13,000 Noyce Scholarships** for STEM students to complete the CSUEB credential program
- **Mentoring** and advising from the three faculty leaders
- Professional Development opportunities at regional **STEM teaching conferences** and workshops designed especially for the CSUEB Noyce Scholars
- **Cohort based** credential program aligned with current standards
- **100% of the CSUEB Noyce Scholars** have successfully completed the credential program and are employed as STEM teachers.

CALIFORNIA STATE UNIVERSITY EAST BAY

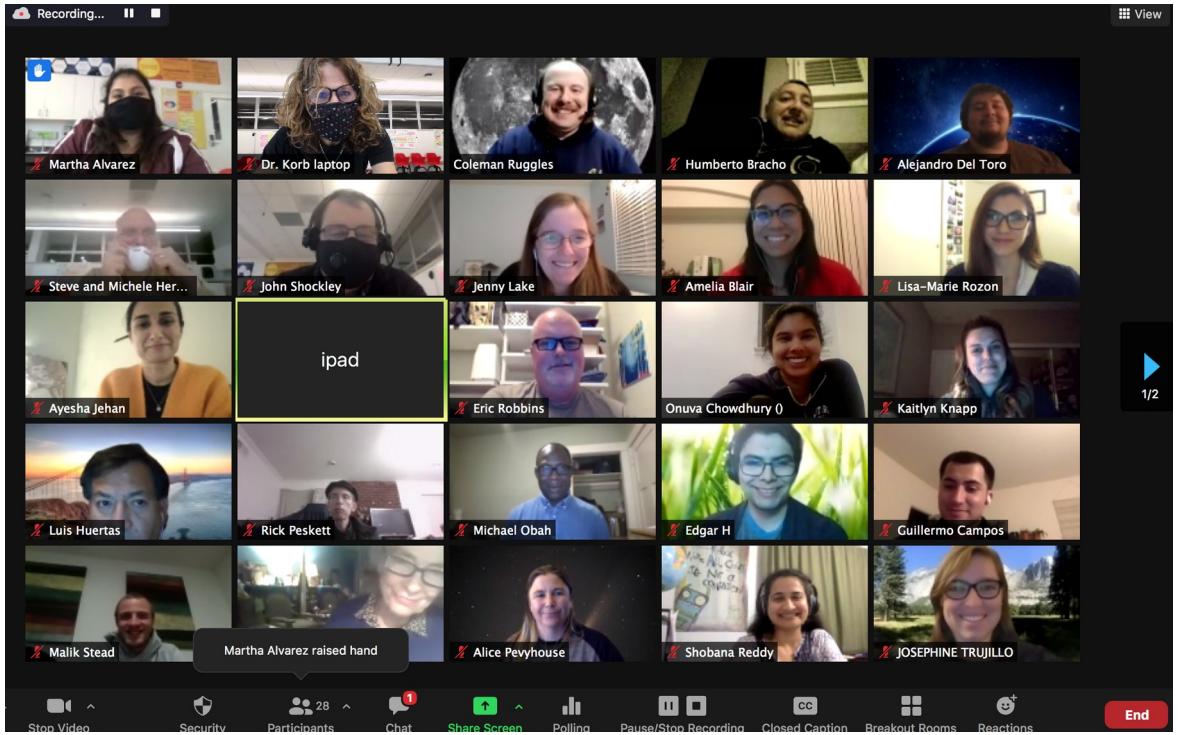
SEED - Supporting Excellence, Effectiveness, and Diversity in STEM Teacher Education

Results

- Recruited and supported Noyce **16 scholars** in the first two years of the project.
- Five-year goal is to produce **40-45 new** math/science teachers
- The SEED scholars are expected to furnish the tools that will enable **underrepresented groups** to be competitive in the workforce.
- The scholars serve as **role models for students to remain in school**, graduate from high school, go on to college, enter STEM disciplines and consider undertaking teaching careers.

Lessons Learned

- We have to be **creative and flexible to recruit and retain teachers i**n a particularly challenging time for educators.
- **We are aware of instructional program uncertainty** and district mixed messages, multiplied by exodus from the Bay Area both out of state and to other regions of California (California Policy Lab)
- Professional development activities must **include time for the scholars to informally share** their concerns and challenges.



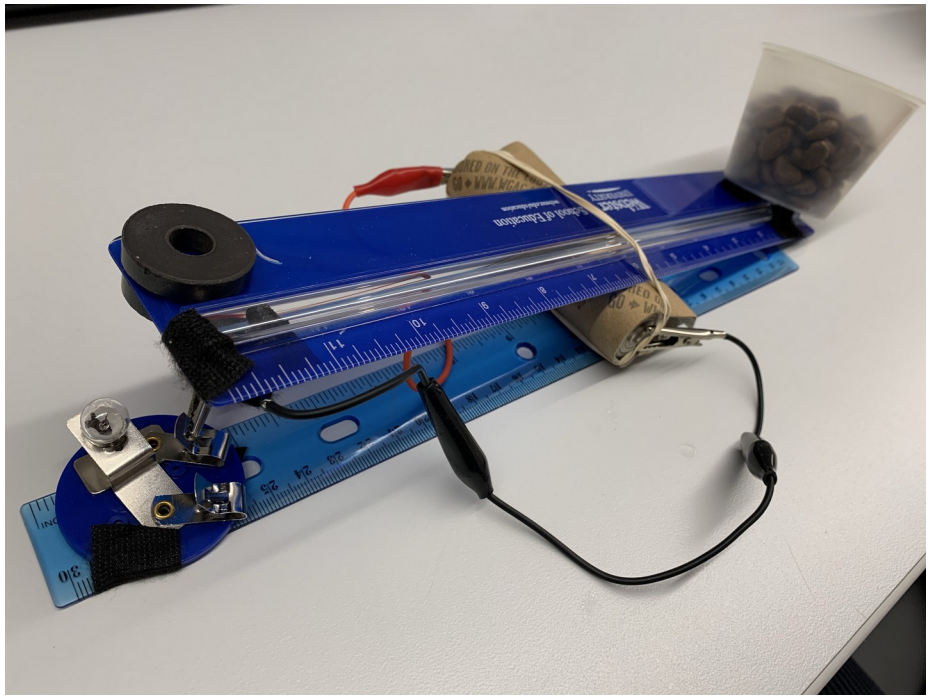
Next Steps/Long-Term Plans

- Although enrollment is down at CSUEB, we need to continue our **recruitment efforts** to meet the project goals and going into the future.
- The **Teacher Recruitment Taskforce at CSUEB** examines ways to address the ongoing gap in student **and teacher demographics in ethnic and racial proportional representation for subgroups**, primarily Hispanics, who compose the largest subgroup population in the state, and each county served by Noyce Scholars

CALIFORNIA STATE UNIVERSITY EAST BAY

SEED - Supporting Excellence, Effectiveness, and Diversity in STEM Teacher Education

Summary



- Collaborative efforts between project and existing education entities **bolster existing teacher preparation pipelines** into teacher education programs and beyond.
- Our **candidates have been reflective** regarding their experiences, value the mentorship, support from the grant, and professional development related to the project.
- **The project has a positive impact** not only on our future teachers, but on how classroom students learn.
- Students are **engaged** by a more highly trained science or math teacher.

CALIFORNIA STATE UNIVERSITY EAST BAY

SEED - Supporting Excellence, Effectiveness, and Diversity in STEM Teacher Education

Questions?

Kathy Hann, Department of Mathematics

Michele Korb, Department of Teacher Education (Science)

https://www.csueastbay.edu/noyce/

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This program is funded by the National Science Foundation DUE-1852961

Advancing Teachers of Mathematics to Advance Learning for All (ATMALA): A Journey of Growth and Transformation

Mark Ellis – CSU Fullerton

Collaborators:
Ruth Yopp-Edwards, Armando Martinez-Cruz (CSUF)
Julie Spykerman/Amy Kwon (Anaheim UHSD)

Mark Ellis, Professor

CSU Fullerton, Department of Secondary Education

mellis@fullerton.edu

Project Overview

The process of transforming mathematics teaching to transform student learning...

National Board Certification

Four Components in Three years

Candidates may decide to complete Component 1, 2, 3 and/or 4.

Component 1 Content Knowledge-computer based assessment with three-30-minute constructed response exercises, 45 selected response items. Assessment includes content and pedagogy.

Component 2 Differentiation in Instruction- Involves analyzing student work and differentiating instruction For all certificates except music this is not a video component.

Component 3 Teaching Practice and Learning Environment - Involves either small group or whole class video of content area instruction along with an analysis of that instruction. This shows how you engage students and impact their learning.

Component 4 Effective and Reflective Practitioner –Gather information from a variety of sources about student(s); use assessments to effectively plan for and positively impact learning; provide evidence of your collaboration with families, community, and colleagues; and of your contributions to learning communities to advance student's learning

Student-Centered Instruction

Elements of Culturally Responsive Mathematics Teaching

(Aguirre & Zavala, 2013)

1. Intellectual Support
2. Depth of Knowledge and Student Understanding
3. Mathematical Analysis
4. Mathematics Discourse and Communication
5. Student Engagement
6. Academic Language Support for English Learners
7. Cultural/Community-based Funds of Knowledge
8. Use of Critical Knowledge

Professional Learning and Mentoring

What is a micro-credential?

A form of competency-based recognition of professional learning that is personalized, valuable, and rigorous. Once you earn a micro-credential, it can be displayed as a digital badge.

Four design features define educator micro-credentials:

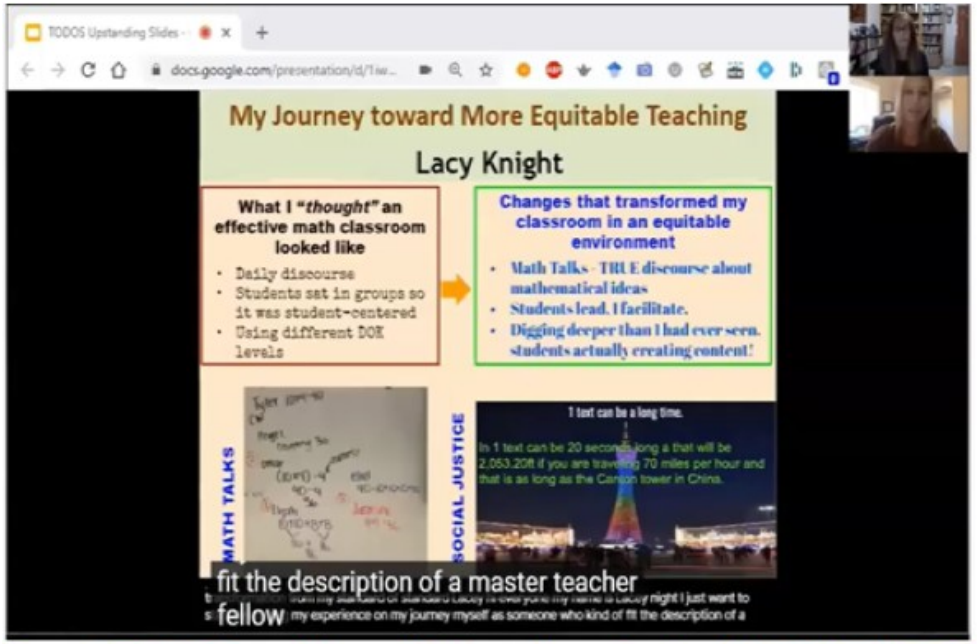
- Competency-Based
- On-Demand
- Shareable
- Personalized

ATMALA: A Journey of Growth & Transformation

Activities

- 20 teachers of mathematics, Grades 6–12
- Pursue National Board certification
- Learn about and put into practice Culturally Responsive Mathematics Teaching (CRMT) including three-unit graduate course about CRMT
- Serve as Mentor Teacher for CSUF Teacher Candidates
- Develop and facilitate online micro-credential modules around specific CRMT skills to support other teachers with shifting practices
- Use Teacher Leadership Competencies to set goals
- Serve as a leader from the classroom within site/district around issues of equity and justice

→ Monthly collaboration sessions, summer institute, online collaboration, conferences



From TODOS webinar: https://youtu.be/doSWt8ksOp4

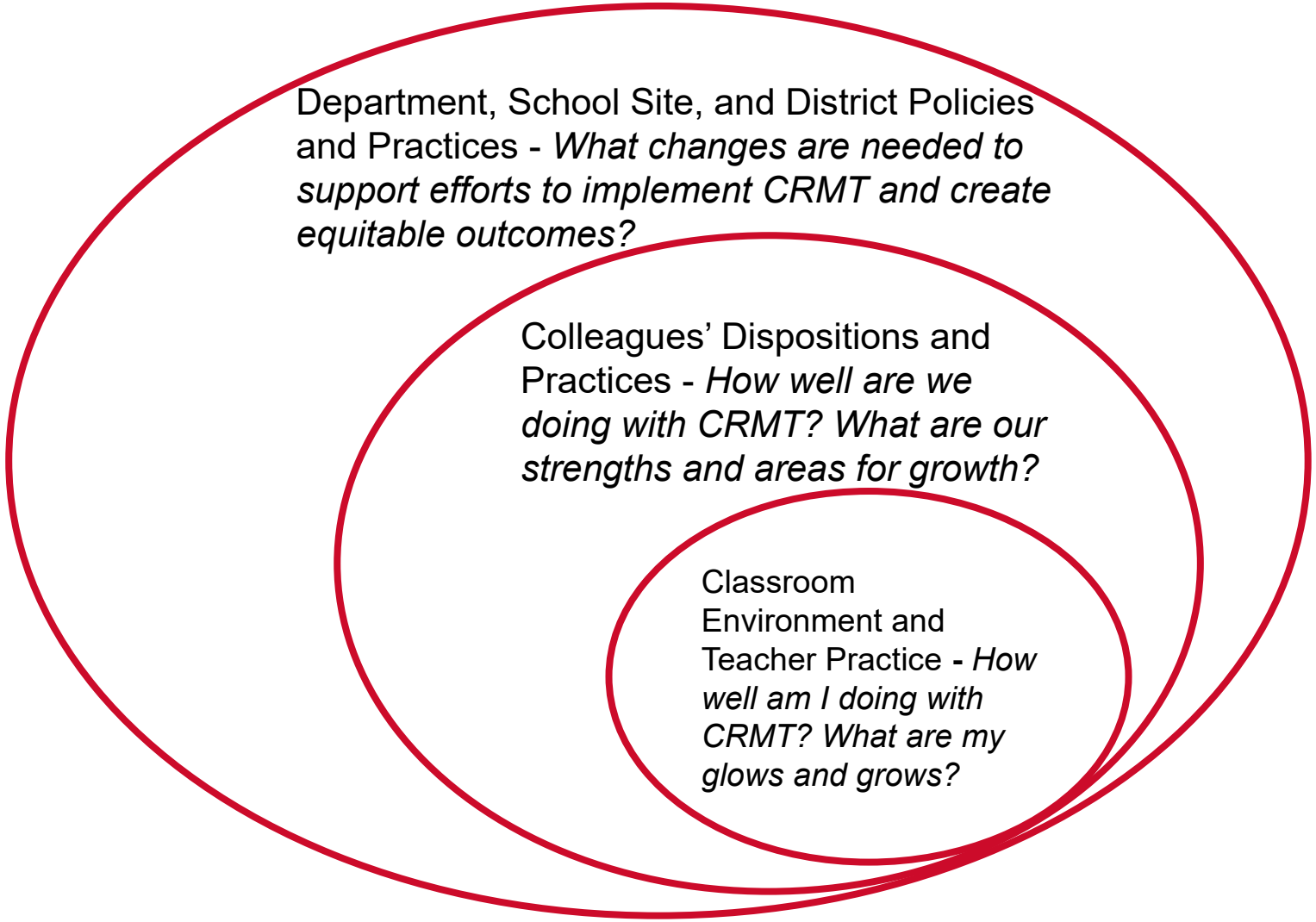
Results & Reflections

- 19/20 MTFs are National Board Certified Teachers
- MTFs supported 66 teacher candidates to earn credentials
- 45+ local and national presentations and webinars with MTFs about elements of CRMT
- Over 100 teachers have completed one of the 12 online, evidence-based micro-credential modules (MCMs)

MTF Reflections

- I have opened the doors to my AP Stats class students by not mandating any specific prerequisite math courses to take prior to enrolling. I have been successful in helping them grow and learn both in social justice projects and on their AP Exam scores. For example, last year was when I designated the most amount of time for PBL in my AP Stats classes, and the AP Exam pass rate was 100% for students!
- I have learned to build math tasks that apply elements of culturally responsive math teaching. My students explored 'Nutritional value of school lunch' , 'Benefits of Recycling', 'Homelessness in Anaheim' , and 'Climate Change' and presented their findings to their peers. These projects increased students' engagement and equipped them with skills they need to succeed not only in school but within their community.
- I have brought equity in teacher load and access to courses by "detracking" teaching assignments which has brought a better experience to students and more collaboration between teachers. We have begun a protocol for improving the honors pathway by doing early recruiting and I am personally ensuring that district policies are being applied consistently and

Lessons Learned



- Change must start at the individual/classroom level through processes of action, evidence, and reflection.
- Systemic change must move beyond the individual, but math teachers are traditionally not well prepared for this.
- Teacher-led professional learning is one effective lever for systemic change.
- Without evidence of the impact of changes to practice, it's only talk.

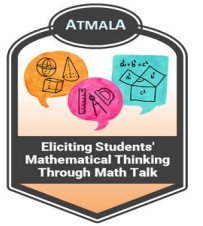
Next Steps/Long-Term Plans

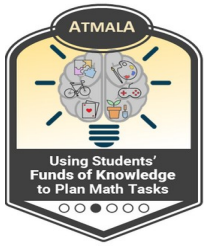
Near Term

- Invite teachers to half-day PD session in June 2022 to learn more about CRMT and the MCMs
- MTFs grow as leaders within their districts and use MCM materials to create PD for colleagues
- MTFs present at NCTM Annual Conference in Los Angeles, Sept 2022 (we hope!)

Long Term

- Use Micro-Credential Modules to amplify MTF impact on other teachers' use of CRMT practices
- MCMs offered to teachers nationwide through CSU Fullerton Extension
- Continue to involve MTFs with credential programs in mathematics and FLM





Summary

- Mathematics education is a cultural practice and should be with culturally responsive strategies.
- Never under-estimate the power of people to change and make change.
- One person can impact a classroom, but it takes collaboration, patience, and persistence to change a system (department, school, district).
- Online learning can be a space in which to challenge, disrupt, and reconstruct teacher practice.
- Five years is a long time…and even longer when there's a pandemic!

Questions?

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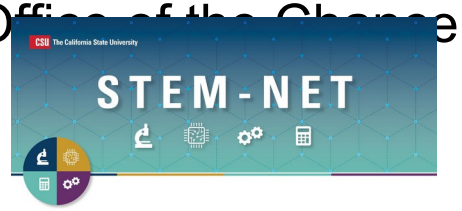
Next Steps/Closing Remarks

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



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STEM-NET Upcoming Events

STEM-NET April Webcast

Topic: United Nation's Sustainable Development Goals (SDG)
Date: Thursday, April 21, 2022
Time: 10am-11:30am

Register Here

STEM-NET May Webcast

Topic: NSF EHR Core Research (ECR) Program and CSU Grantees
Date: May 20, 2022
Time: 10am-11:30am

Register Here

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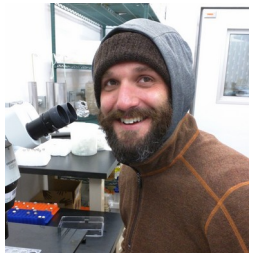
STEM-NET Upcoming Events

Virtual Research Café 10.0

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

Register Here

Dr. Ava Hedayatipour
Assistant Professor
Department of Electrical Engineering
Cal State Long Beach
Topic Title: Wearables of tomorrow



Dr. Jason Burke
Assistant Professor
Department of Chemistry and Biochemistry
Cal State San Bernardino
Topic Title: Understanding the Biochemistry of How Cancer-Associated Mutations Work in Cancer

Dr. Jaclyn Baughman
Assistant Professor
Department of Geology
Cal Poly Humboldt
Topic Title: Creating Equitable, Accessible, and Impactful Geoscience Field Experiences using Virtual Reality

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

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