Evidence Quality and Reach Hub: How to Position Your Work for NSF DRK–12 STEM Education Research and Design Funding Opportunities

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Improving Lives.

Insights From Current and Past NSF Grantees From Minority Serving Institutions

April 2, 2024

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AIR Inclusive Meeting Guidelines

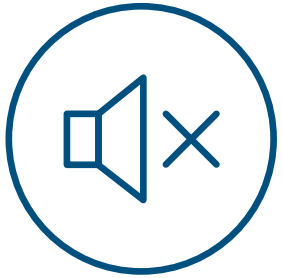
Hosting and Participating in Meetings

ENGAGE EVERYONE

BE HEARD AND SEEN

ACKNOWLEDGE SPEAKER

MAXIMIZE MICROPHONES



MINIMIZE NOISE

MAXIMIZE VISUAL DISPLAYS

Note. These guidelines are intended to improve the meeting experience for virtual participants, as well as people with hearing loss, visual impairment, and those for whom English is an additional language. Developed by the Access AIR and AIR CREW Employee Resource Groups with support from the AIR Diversity and Inclusion Office.

EQR Hub

The Evidence Quality and Reach (EQR) Hub will provide current and aspiring STEM education researchers **targeted learning opportunities regarding research methods, knowledge translation, and DEI**. The hub will develop and implement virtual webinars and workshops for researchers in the Discovery Research PK–12 (DRK–12) community, convene communities of practice, and engage in individualized consultations with DRK–12 projects.

This work is made possible by the National Science Foundation (NSF) under Grant No. 2101162.

Community of Practice Sessions

Session 1: Understanding the DRK–12 Program and Solicitation

Session 2: Insights From Current and Past NSF Grantees From Minority Serving Institutions

Session 3: Positioning Yourself and Your institution Using Asset-Based Framing

Session 4: Positioning Your Research for DRK–12

Working Assumptions

You are important to this process.

Everyone has wisdom; **we need your voice!**

Assume positive intent. **This is a safe space of mutual learning**. It is also a continual process.

These may be sensitive topics—patience and empathy are important.

Norms

Active listening and engagement. **Participate and share your ideas!**

Questions or comments? Use the "Raise Hand" feature.

Cameras on: Encouraged!

Audio: Mute and unmute. Be mindful of background noise.

Meet the Moderator

Dr. Mercy Mugo

Executive Director

Quality Education for Minorities Network

mmugo@qem.org

Session 2 Agenda and Objectives

Session 2 Agenda

1. Review Session Objectives
2. Panel Insights and Whole-Group Discussion on DRK–12 Proposal Writing and Execution of Funded Projects
3. Next Steps and Resources

Session 2 Objectives

By participating in this session, attendees will:

- gain insights into key essentials of DRK–12 proposal writing and project execution,
- reflect on what they need (e.g., resources, skills) to pursue DRK–12 funding, and
- meet with peers and current and past DRK–12 awardees.

Panel Insights and Discussion

Mercy Mugo

Meet the Panelist

Dr. Daniel Morales Doyle

University of Illinois Chicago

Associate Professor

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Dr. Zahra Hazari

Florida International University

Professor

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Dr. Nastassia Jones

Southern University and A&M College

Professor

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Work supported by NSF Award #1720856

Youth Participatory Science to Address Urban Heavy Metal Contamination

PI: Daniel Morales-Doyle
University of Illinois Chicago

Pathway towards DRK-12 Proposal

Initial partnerships 2004 - 2014

Reinvigorated passion, expanded partnerships 2015-2016

DRK-12 Funded collaboration

2017-2023

A collective of teachers, scientists, organizers, youth...

Youth **P**articipatory **S**cience

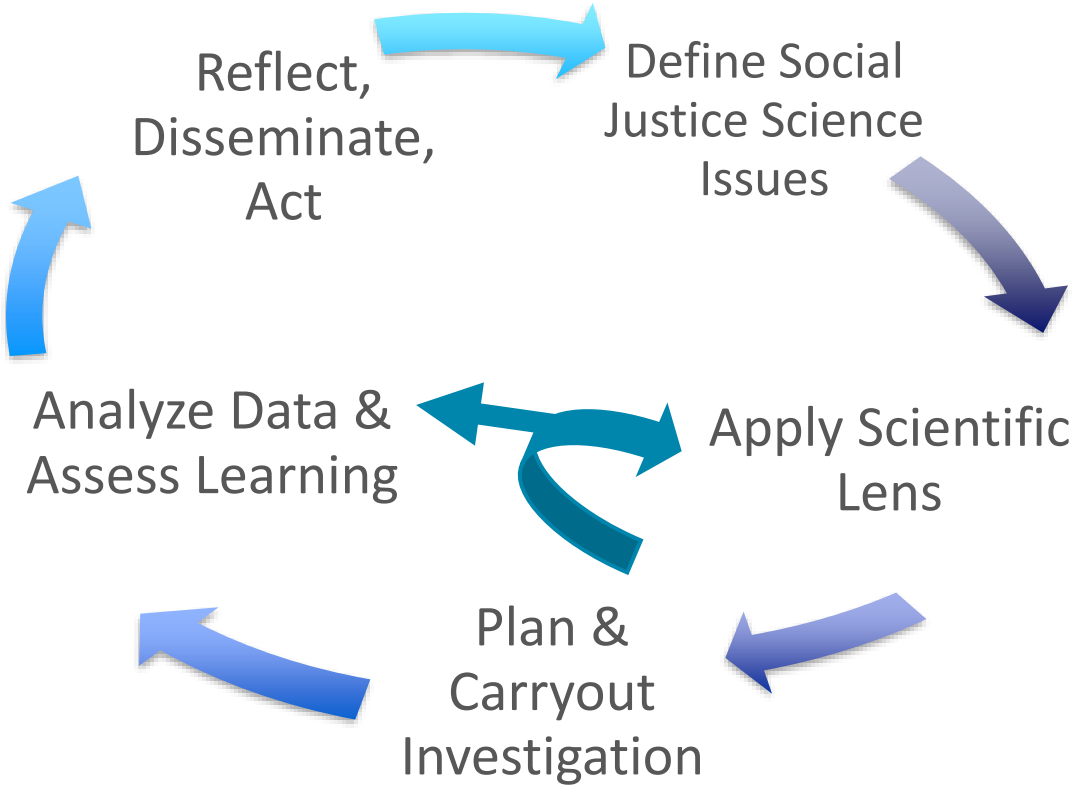
...to facilitate community-based projects that confront environmental racism through high school chemistry classes.

Work supported by NSF Award #1720856

Youth Participatory Science

Morales-Doyle, D. & Frausto, A. (2021). Youth participatory science: A Grassroots curriculum framework. *Educational Action Research 29*(1), 60-78.

Learning to Critique and Change Science & Society



Learning to Appropriate & Appreciate Science in Context

What kinds of teacher learning support youth participatory science projects in high school classrooms?

- Humility
- Praxis
- Hope

STEP UP: An NSF DRK-12 Journey

Zahra Hazari
Professor of Science Education
Florida International University

April 2nd, 2024

DRK-12 Funding Journey

- 2023 Late Stage Design & Development, Teaching Strand, Level II
  - Collaborative Research: Mobilizing Physics Teachers to Promote Inclusive and Communal Classroom Cultures through Everyday Actions (#2300607)
- 2017 Impact Studies, Learning Strand, Level II
  - Collaborative Research: Mobilizing Teachers to Increase Capacity and Broaden Women's Participation in Physics (#1721021)
- 2010 Faculty Early Career Development Program
  - CAREER: Changing the Landscape: Towards the Development of a Physics Identity in High School (#1431846, #0952460)

DRK-12 CAREER (2010)

- Focused on teacher actions impacting women's physics identity
  - Provided **strong motivation** for addressing the problem
  - Described how the research **pushed forward understanding/practice**
  - Presented **clear/detailed research** conceptualization and description
  - Created a **strong tie to practice** through working with teachers
- Built upon **impactful prior work/publications**
- Solicited **critical feedback** early and revised (Program Officer and senior faculty members)

DRK-12 Impact Study, Level II (2017)

- Focused on impacting women's physics identity through teacher actions and co-designed lessons
  - Draws upon **previous grant findings and major research developments**
- Includes **meaningful relationship with partners**: American Physical Society (APS) and American Association of Physics Teachers (AAPT)
- **Strong research design** that was revised after first submission
  - First Submission: 1 Excellent, 3 Very Good, 1 Good, 1 Fair (Highly Competitive, Not)
- Potential of **wide-scale impact** (through organizational partners)

DRK-12 Late Stage, Level II (2023)

- Focuses on teacher professional learning for actions
  - Draws upon emergent issues from **previous grant**
  - **Expands goals to women and minoritized racial/ethnic groups**
- Includes **meaningful relationship with partners**: APS & AAPT
- **Strong conceptual/research design** that was revised after two submissions (conflicting reviews)
  - First submission: 4 Very Goods, 1 Excellent (Highly competitive, Not Funded)
  - Second submission: 1 Very Good, 2 Fairs (Not competitive, Not Funded)
- Potential of **wide-scale impact** and **sustainability**

Thank You!

Physics Together!

These projects are funded by the National Science Foundation, grant #1431846, 0952460, 1721021, 1720810, 1720869, 1720917, 2300607, 2300608, 2300609, and the Gordon & Betty Moore Foundation. Any opinions, findings, and conclusions or recommendations expressed in these materials are those of the author(s) and do not necessarily reflect the views of the funders.

STEPUPphysics.org

EQR Hub:
"How to Position Your Work for NSF DRK-12 Program STEM Education Research and Design Funding Opportunities"

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Proposal Development

2018
- New faculty position
- Submitted Nov '18

2019
- Declined Apr '19
- Resubmitted Nov '19

2020
- Awarded June 2020

An **Exploratory** proposal in the **Teaching** Strand of the NSF DRK-12 program that focuses on **secondary** teacher professional development (PD)

YouTube link to video

Building Environmental and Educational Technology Competence and Leadership Among Educators: An Exploration in Virtual Reality Professional Development

Using Partnerships & Effective PD tenants

PI: Dr. Nastassia N. Jones

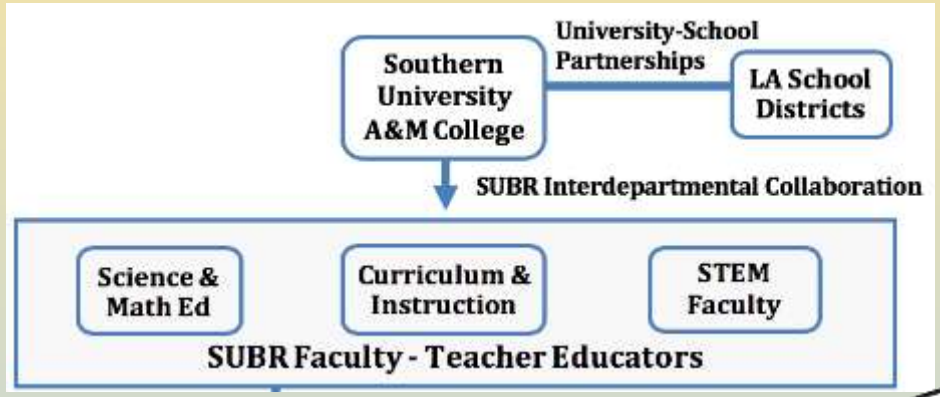
Co-PI: Dr. Christopher Chappell

Co-PI: Dr. Christopher Guillory

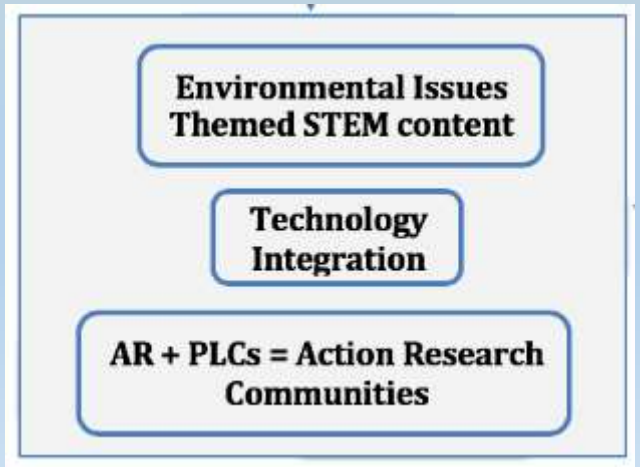
Co-PI: Dr. Emily Jackson-Osagie

Co-PI: Dr. Jodi Morton

Senior Personnel: Dr. Francesca Mellieon-Williams



To develop an effective PD program



For more info: beetech@sus.edu

CHALLENGES

Implementation:

- ❖GOOGLE EXPEDITIONS ended June 2021 → ROBOT LABS & LENOVO
- ❖Internal operations → paying teacher stipends, settling invoices, completing PSAs (advisory board)
- ❖Team management → replace people and reassign roles

FINAL THOUGHTS

Questions

Whole-Group Discussion

Time: 15 minutes

Instructions: Participants share anticipated challenges and brainstorm solutions to DRK–12 proposal preparation processes.

Panelists reflect on emerging themes.

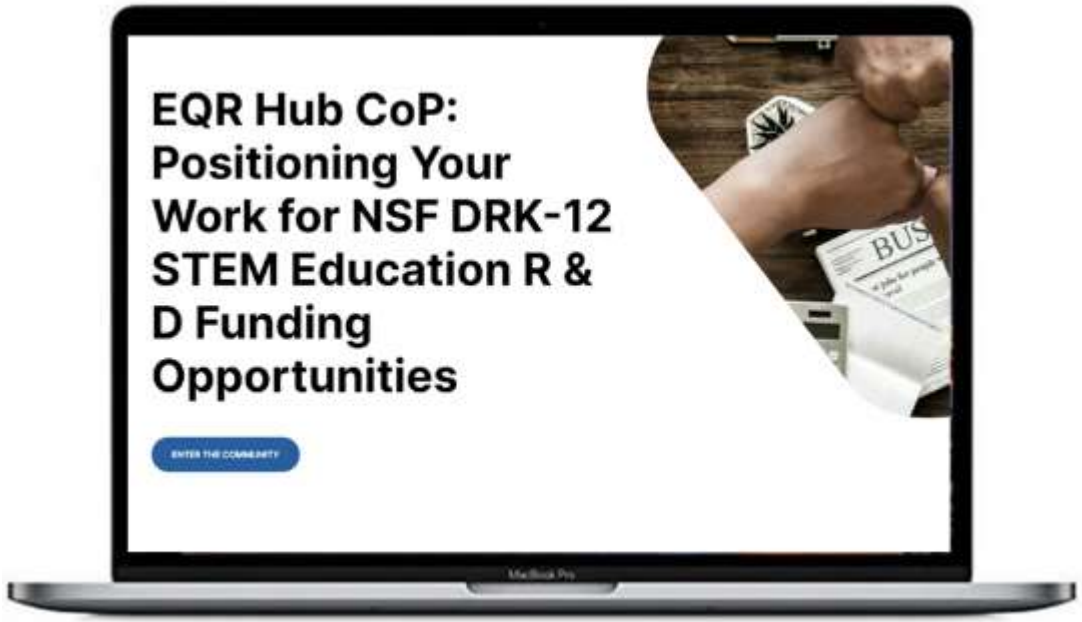
Next Steps

Mercy Mugo and Susan Brown

Intersessional Activity

Time: Complete prior to Session 3

Instructions: Use the *Reflection and Asset Mapping* template to reflect your identified gaps, institutional needs, and response strategy; and identify the personal, professional, and institutional assets that can be highlighted in your proposals.



CoP Learning Space

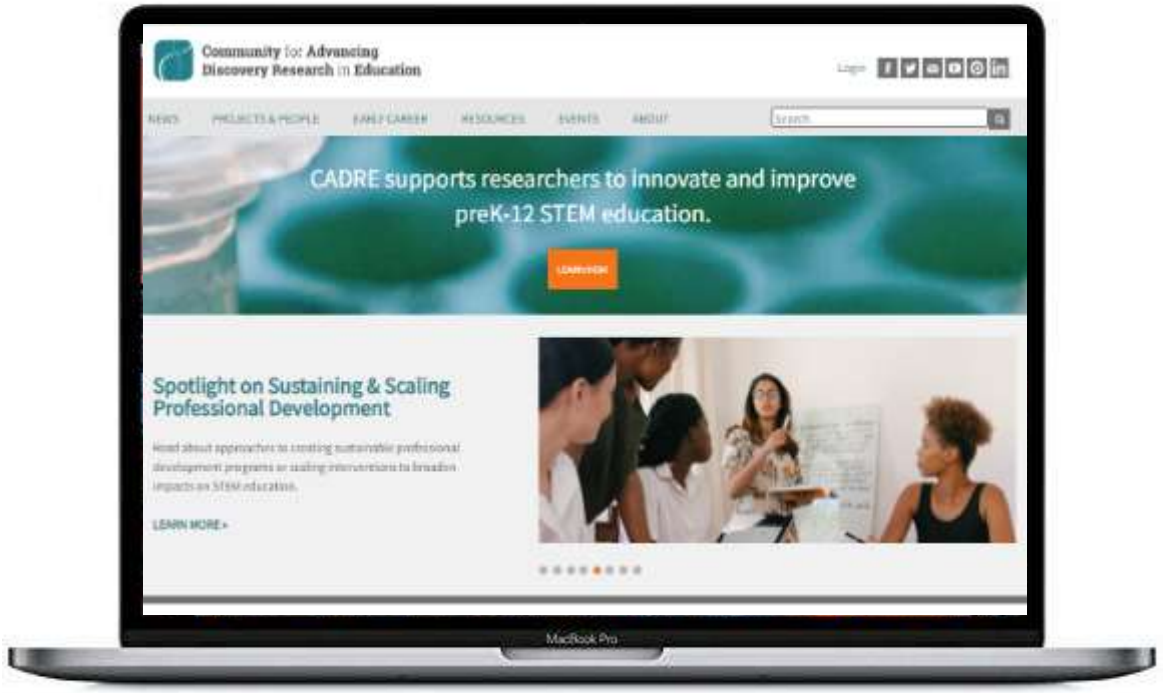
CADRE Resources

Uncovering the Hidden Curriculum of DRK–12 Video Series:

https://www.youtube.com/playlist?list=PLFesrj2Sg4Fj30T6J_1gsftzbIpUQAGN4

NSF Proposal Toolkit:

https://cadrek12.org/resources/nsf-proposal-writing-resources



Stay Connected

Visit the CADRE resources

https://cadrek12.org/**resources**

and EQR Hub page

http://cadrek12.org/**eqr-hub**

Thanks for attending!

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