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

Insights From Current and Past NSF Grantees From Minority Serving Institutions

April 2, 2024
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Hosting and Participating in Meetings

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.
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@gem.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  
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Dr. Zahra Hazari  
Florida International University  
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Dr. Nastassia Jones  
Southern University and A&M College  
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Participatory Youth 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  Participatory  Science

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

Work supported by NSF Award #1720856
Youth Participatory Science

**Learning to Critique and Change Science & Society**

- Reflect, Disseminate, Act
- Define Social Justice Science Issues
- Apply Scientific Lens
- Plan & Carryout Investigation
- Analyze Data & Assess Learning

**Learning to Appropriate & Appreciate Science in Context**
What kinds of teacher learning support youth participatory science projects in high school classrooms?
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)
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
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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This project is funded by the National Science Foundation, grant # 2010563. 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 National Science Foundation.
An **Exploratory** proposal in the **Teaching Strand** of the NSF DRK-12 program that focuses on **secondary** teacher professional development (PD)
Building Environmental and Educational Technology Competence and Leadership Among Educators: An Exploration in Virtual Reality Professional Development

Using Partnerships & Effective PD tenants

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
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.
CADRE Resources

Uncovering the Hidden Curriculum of DRK–12 Video Series:
https://www.youtube.com/playlist?list=PLFe srj2Sg4Fj30T6J_1gsftzbIpUQAGN4

NSF Proposal Toolkit:
https://cadrek12.org/resources/nsf-proposal-writing-resources
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http://cadrek12.org/eqr-hub
Thanks for attending!