Global Challenge Engages Diversity in STEM

Problem
Gender and ethnic diversity in engineering and science

Solution
Provide attractive and accessible opportunities for underrepresented minorities in STEM

Strategy
Choose global challenge

→ Engage

- Socially interesting
- Culturally important
- Economically valuable

→ Create

- Hands-on learning experiences
- Mentor relationships
- Diverse partner network
- Peer teaching opportunities
- Access to tools

Diversity in STEM workforce

Impact

1 in 10 people lack access to safe water — UNICEF

1 in 10

Every $1 invested in water and sanitation = $4 economic return — UNICEF

84% of professionals in U.S. science and engineering jobs are white or Asian males — National Science Foundation

National Science Foundation Award #1348266
Result

• Increase STEM self-efficacy and participation for female and URM high school students in partner areas
Target Population

• Whole: Females and URM students in K-12
  • Regional Focus: Females and URM students in partner states

➤ Focused for Program:
  ➤ females and URM students in partner high schools
Model: 3 E’s to engage URM-in-STEM students

• **Exposure**
  • connecting with STEM professionals and STEM challenges
  • demonstrating relationships among STEM challenges and student lives

• **Experience**
  • access to science and engineering activities and tools
  • enabling relationships with passionate mentors

• **Expectations**
  • Set the bar high but offer relationships & resources to achieve –
  • RISE UP!
RISE UP!

• I’m young, scrappy and hungry
  And I’m not throwing away my shot
  I’m ‘a get a scholarship to King’s College
  I prob’ly shouldn’t brag, but dag, I amaze and astonish
  The problem is I got a lot of brains but no polish
  I gotta holler just to be heard

• Come on, let’s go
  Rise up
  When you’re living on your knees, you rise up
  **Tell your brother that he’s gotta rise up**
  **Tell your sister that she's gotta rise up**
Indicators SMART will measure

• Self-efficacy in STEM using existing assessments - Exposure
  • Include control group of program applicants

• Interactions  STEM role models – Exposure, Experience, Expectations

• Strong relationships with mentors - Experience
• Knowledge of S&E of stormwater - Experience
• Fulfillment of program requirements - Expectations
Stakeholders Needed to Achieve Result

- K-12 Schools
  - Students & Families
  - Teachers
  - Administrators, School Board
- Higher Ed
  - STEM faculty and staff
  - Admissions & Financial Aid
- Sponsors
  - NSF, DOE, Local Business, Foundations
- Government
- Industry – Tech Companies with professionals in engineering, water, environmental science
NSF INCLUDES Collaborative: Creating a Diverse STEM Pathway with Community Water Research

Challenge
Gender and racial diversity in engineering and science

Vision
Provide attractive project-based learning opportunities for underrepresented K-12 minorities in STEM

Strategy
Choose global challenge

Engage K-12 students in engineering and science practices
- Socially interesting
- Culturally important
- Economically valuable

Create
- Hands-on learning experiences
- Mentor relationships
- Diverse partner network
- Peer teaching opportunities

Alliance
Broad participation
Evolving ecosystem for collective impact

84% of professionals in US science and engineering jobs are White or Asian males

1 in 10 people lack access to safe water

Every $1 invested in water and sanitation returns $4 in economic return

SMART
System-Managed Research Teams: NSF EPSCoR Track 3 FOCUSK 0 communities/teams
Collective Backbone

Pilot Backbone
Executives:
Mohamad,
Jennifer, Cary,
Casey, Allie

Alliance
Backbone
Executives:
Director, Data
Analyst,
Community
Engagement,
Program Expert +
Steering Crme.