Dear Colleague letter: Leveraging GLOBE to Increase Student Engagement and diversity

NSF 16-031

GLOBE "boot camp" April 22, 2016

David B. Campbell, Ph.D. dcampbel@nsf.gov

Program Director

Division of Research on Learning in Formal and Informal Settings

Directorate for Education and Human Resources

National Science Foundation

The background

Although GLOBE has been implemented primarily within formal education settings, it is well-poised to reach a much larger informal education audience and support public participation in STEM research.

NSF is particularly interested in expanding GLOBE operations within highly diverse communities or within schools and informal learning programs that serve traditionally underserved and underrepresented populations in the STEM disciplines, including women, minorities, and persons with disabilities, in order to achieve its strategic goals for broadening participation.

The goal

Thus, the Directorates for Geosciences (GEO) and Education and Human Resources (EHR) are partnering with GLOBE to build capacity for engagement of diverse student populations in the environmental sciences and geosciences and to evaluate GLOBE's impacts on student attitudes and learning.

The Requirements

(1) targeted training of educators in the use of GLOBE measurement protocols, data entry systems, and visualization tools; (2) implementation and on-going support for educators and students in formal and informal educational settings that use GLOBE resources; and, (3) documenting through evaluation and assessment the impacts of GLOBE activities on student attitudes toward STEM and STEM learning outcomes, particularly among traditionally underrepresented student groups, and on the impact of the GLOBE databases on scientific research. **Successful projects are expected to both build on and contribute to the evidence base regarding effective STEM learning and learning environments.**

3 ways to submit funding requests

- New proposals submitted for consideration by either the Discovery Research Pre K-12 (DRK-12) program or Advancing Informal STEM Learning (AISL) program
- Requests for supplemental funding for awards previously funded through the DRK-12 program that will remain active through the end of Fiscal Year 2016.
- The Early-concept Grants for Exploratory Research (EAGER) proposals submitted for consideration by the Directorate for Geosciences (deadline was April 1)

The DRK-12 solicitation [NSF 15-592] is available at: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=500047. The next deadline for DRK-12 proposals is December 5, 2016.

The Discovery Research PreK-12 program (DRK-12) seeks to significantly enhance the learning and teaching of science, technology, engineering and mathematics (STEM) by PreK-12 students and teachers, through research and development of STEM education innovations and approaches. Projects in the DRK-12 program build on fundamental research in STEM education and prior research and development efforts that provide theoretical and empirical justification for proposed projects. Projects should result in research-informed and field-tested outcomes and products that inform teaching and learning. Teachers and students who participate in DRK-12 studies are expected to enhance their understanding and use of STEM content, practices and skills.

The A ISL solicitation [NSF 15-593] is available at: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504793. The next deadline for AISL proposals is November 8, 2016.

The **Advancing Informal STEM Learning** (AISL) program seeks to advance new approaches to and evidence-based understanding of the design and development of STEM learning opportunities for the public in informal environments; provide multiple pathways for broadening access to and engagement in STEM learning experiences; and advance innovative research on and assessment of STEM learning in informal environments.

Other Opportunities

ITEST is a program that promotes PreK-12 student interests and capacities to participate in the science, technology, engineering, and mathematics (STEM) and information and communications technology (ICT) workforce of the future. To achieve this objective, ITEST supports the development, implementation, and selective spread of innovative strategies for engaging students in experiences that: (1) increase student awareness of STEM and ICT careers; (2) motivate students to pursue the education necessary to participate in those careers; and/or (3) provide students with technology-rich experiences that develop their knowledge of related content and skills (including critical thinking skills) needed for entering the STEM workforce. Deadline is August 10, 2016

Other Opportunities

Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (NSF INCLUDES)
NSF INCLUDES supports efforts to develop talent from all sectors of society to build the STEM workforce. The initiative aims to improve the preparation, increase the participation, and ensure the contributions of individuals from groups that have traditionally been underrepresented and underserved in the STEM enterprise, including women, members of racial and ethnic groups, persons with disabilities, and persons with low socio-economic status.

Preliminary proposals required; deadline has passed; but will most likely be re-issued next year.

Directorate for Education and Human Resources

Investments that accumulate and build upon knowledge, through evidence-improving and evidence-amassing processes, to

- Prepare the next generation of STEM professionals
- Develop a robust research community in STEM education
- Increase technological, scientific, and quantitative literacy of all Americans
- Broaden participation in all STEM fields

Program Focus in the EHR Directorate

EHR Division	Learning and Learning Environment	Broadening Participation in STEM	STEM Professional Workforce
Research on Learning (DRL)	ECR -*Learning* DR-K12 AISL ECR + REAL =FY2015	ECR includes: • Research on Gender in Science and Engineering (GSE) • Research in Disabilities Education (RDE)	STEM+C Partnerships for the 21st Century *formerly Math and Science Partnership* ITEST - Innovative Technology Experiences for Students and Teachers
Graduate Education (DGE)	Project and Program Evaluation (PPE) Building Community & Capacity in Data (BCC)	ECR- *STEM Professional Workforce* CyberCorps: Scholarship for Service (SFS) Graduate Research Fellowship (GRF) National Research Traineeship (NRT)	
Human Resource Development (HRD)	ADVANCE AGEP HBCU-UP TCUP	ECR-*Broadening Participation and Capacity Building* LSAMP	Excellence Awards in Science and Engineering - PAEMST & PAESMEM CREST
Undergraduate Education (DUE)	ECR-*Learning Environment* Improving Undergraduate STEM Education (IUSE)		Advanced Technological Education (ATE) Robert Noyce Teacher Scholarship Program S-STEM Scholarship Program

Prospective Principal Investigators

- Engage with NSF
- Answer fundamental questions
- Seek Collaborations
- Strengthen Interdisciplinary Partnerships
- Communicate – early and often!

Answer fundamental questions

What are you trying to accomplish? What will be the outcomes?	} *Goals*
Why do you believe that you have a good idea? Why is the problem important? How does it tie into previous literature/efforts? Why is your approach promising?	} *Rationale*
How will you manage the project to ensure success? How will you know if you succeed?	} *Evaluation*
How will others find out about your work? How will you interest them? How will you excite them?	} *Dissemination*

Engage with NSF

- Submit Proposals
- Serve as Reviewers & Panelists
- Be Active as Workshop Participants and Organizers
- Consider Being a Rotator http://www.nsf.gov/about/career_opps/rotators/index.jsp

For information on a particular EHR division and program, go to the EHR website and choose a division.
http://www.nsf.gov/dir/index.jsp?org=EHR

Contact NSF Program Directors for questions and suggestions

Stay connected with NSF

- **NSF:** www.nsf.gov
- **Proposal and Award Policies and Procedures Guide (PAPPG):** http://www.nsf.gov/pubs/policydocs/pappguide/nsf16001/
- **Guide to Programs:** www.nsf.gov/funding/browse_all_funding.jsp
- **Award Information:** www.nsf.gov/awardsearch
- **FastLane:** www.fastlane.nsf.gov
- **Broader Impacts:** www.nsf.gov/pubs/gpg/broaderimpacts.pdf
- **Data Management Plan:** www.nsf.gov/bfa/dias/policy/dmp.jsp
- **Funding Opportunities:** www.nsf.gov/funding

Thank You!

David Campbell
703-292-5093
dcampbel@nsf.gov