NATIONAL SCIENCE FOUNDATION FUNDING PROGRAMS

DRK12 PI Meeting
June 13-15, 2012
Sharon Tettegah, Program Officer and Facilitator
Education and Human Resources Directorate

Presentation Outline

Sharon Tettegah, Facilitator

- Gerhard Salinger, ATE

- Julio Lopez-Ferrao, CAREER

- Janet Kolodner, CTE

- Edith Gummer, BIG DATA

- David Hanych, ISE

- Darryl Williams, ITEST

- James Hamos, MSP

- Nafeesa Owens, PAEMST

- Janice Earle, PRIME

- Sandra Martell, REESE

Advanced Technological Education (ATE)

Gerhard Salinger

ATE

The ATE program promotes improvement in the _education_ of science and engineering _technicians_ at the two-year college and secondary school levels and the educators who prepare them. It focuses on preparation for _middle skill jobs_ in high-technology fields that drive the nation's _economy_. The program, in its 19th year, focuses on two-year colleges and expects **two-year colleges** to have a leadership role in all projects.

ATE

- **Opportunities**
  - **Material development**
  - **Professional development**
  - **Research into technician education**
- **Attributes**
  - **Industry Driven**
  - **21st Century Skills**
- **Resources**
  - **www.nsf.gov/ate**
  - **Atecentral.net**

Deadline: October 18, 2012

NSF/DRL Faculty Early Career Development (CAREER) Program

Julio Lopez-Ferrao

CAREER PROGRAM SOLICITATION NSF 11-690

- Established in 1994 to recognize efforts by **junior faculty members** in integrating research and education, and fostering the connections between learning and discovery.

- The **Presidential Early Career Award for Scientists and Engineers** (PECASE) is the highest honor bestowed by the U.S. Government on outstanding scientists and engineers beginning their independent careers.

DRL 2012 Dear Colleague Letter

- **Scope of Work**
- **Research Design and Methodology**
- **Integration of Research and Education**

Critical Considerations

- **Integration of Research and Education**
    - **Research Plan**
        *Rigor of the research design--whatever kind of design is proposed
    - **Education Plan must be assessed as well**
    - **Synergy between the proposed research and education plans**
- **Integrating Diversity into NSF Programs, Projects, and Activities**

Integrating Research and Education in the Context of DRL

- Fostering the natural connections between the processes of learning and discovery (e.g., research enhanced by inspired teaching and enthusiastic learning).

- Each proposal must describe a research plan and an education plan reflective of the proposer's own interest and goals and the needs of the institution.

- Research and Education plans do not need to be addressed separately.

CAREER Budgets

- A minimum of **$400K** over a five-year period

Related Links

- The new CAREER program solicitation can be accessed at http://www.nsf.gov/pubs/2011/nsf11690/nsf11690.htm

- The new DRL CAREER Dear Colleague Letter can be accessed at http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf12005

Cyberlearning: Transforming Education

Janet Kolodner

Cyberlearning: Transforming Education

- Using technology to amplify, expand, and transform opportunities people have for learning, and better draw in, motivate, and engage learners
- By integrating advances in technology with advances in what is known about how people learn to help us
  - Better understand how people learn with technology and how technology can help people learn
  - Better use technology for collecting, analyzing, sharing, and managing data to shed light on learning
  - Design new technologies for these purposes, and advance understanding of how to use these technologies and integrate them into learning environments
- To cultivate a citizenry that
  - engages productively in learning and
  - has knowledge and capabilities that allow informed decision making and judgment about problems ranging from those affecting our immediate lives to global challenges such as war and peace, economics, health and wellbeing, and the environment.

Cyberlearning (cont.)

- Four types of projects:
  - Exploratory, 2-3 yrs, up to $550,000
  - Development and Implementation, 3-5 yrs, up to $1,350,000
  - Implementation and Deployment; 5 yrs, up to $2,500,000
  - Capacity-Building
- Any learning population, any learning environment, but must be potentially transformational
- Projects must make two important types of contributions:
  - Add to the literature on how people learn (with technology)
  - Through iterative refinement of the design, development, or way of deploying innovative technology, a model technology product that others can learn from
- Research must be done in the real-world contexts the technology is designed for and in which it will be used
- Three types of data collection: for assessing learning, to inform refinement of the innovation, for answering research questions

BIG DATA

Edith Gummer

Big Data at NSF

- Building Community and Capacity for Data-Intensive Research in the Social, Behavioral, and Economic Sciences and in Education and Human Resources (BCC-SBE/EHR)
- Dear Colleague Letter

BCC-SBE/EHR - Areas of Interest

1. Seek to enable research communities to develop visions, teams, and capabilities dedicated to creating new, large-scale, next-generation data resources and relevant analytic techniques to advance fundamental research for the SBE and EHR sciences.

2. Emphasize the development of activities that will have significant impacts across multiple fields by enabling new types of data-intensive research.

3. Develop research and management teams for the integration of research, data, and data infrastructure, including automated and other analysis tools; and to prototype aspects of a proposed next-generation infrastructure.

DCL - Data-Intensive Education-Related Research Funding Opportunities

- Solicitation will call for participants for an Ideas Lab on the topic of advancing teaching and learning focused on transforming large datasets into knowledge that leads to actions that can improve learning environments.

- Ideas Lab - an intensive, interactive workshop aimed to develop bold approaches to address grand challenges that could benefit from a new dimension in thinking.

Advancing Informal STEM Learning (AISL)

Formerly Informal Science Education (ISE)

David Hanych

Advancing Informal STEM Learning (AISL)

The AISL program will invest in research and development of **innovative** and **field advancing** out of school STEM learning and emerging STEM learning environments.

Why the Name Change from ISE to AISL?

- **Advancing -** Seeking innovative projects that advance the field
- **Informal** – Emphasis on out-of-school learning that makes learning lifelong, life wide (occurring across multiple venues) and life deep (occurring at different levels of complexity).
- **STEM** – Recognizes that the program is not just focused on science, but all of STEM.
- **Learning -** "Learning" is more connected with what people do for themselves, compared to "education" which is perceived as something that is done to them.

AISL Solicitation #12-560

AWARD TYPES

- Research (≤ $1.5M)
- Pathways (≤ $250K)
- Full Scale Development (≤$2.5M)
- Broad Implementation (≤$2.5M)

Major Solicitation Changes

- FSD & BI projects can receive up to an additional $500K, if the project has a research component.
- CRPA activity has been dissolved.
- Specific review criteria have been revised.

Submission Dates: Preliminary Proposals Due -**August 14, 2012**
Full Proposals Due - **January 14, 2013**

Innovative Technology Experiences for Students and Teachers (ITEST)

Darryl Williams

Innovative Technology Experiences for Students and Teachers (ITEST)

- ITEST supports:
  - Students' interest in STEM careers through authentic, relevant experiences using technology
  - Teachers' ability to support students interest in STEM careers
  - Research on student engagement, interest, and motivation to pursue STEM
- ITEST is supported by H1-B visa funds

ITEST impacts more than:

- Students: 225,800 (K–12)
- Educators: 8,000
- Parents and caregivers: 3,000

ITEST: Award Types

Project Types	Description	Award Amounts and Duration
Strategies Grants	Design, implement, and evaluate models for engaging K-12 students in authentic, relevant experiences that may lead to career trajectories in the STEM and ICT workforce of the future. ***Must involve students***, and may involve teachers.	Up to $1,200,000; Up to 3 years
Research Grants	Focus is on enriching the understanding of issues related to enlarging the STEM and ICT workforce (particularly for students from groups traditionally underrepresented in STEM and ICT careers).	Up to $900,000; Up to 3 years
Scale-Up Grants	The expansion (in a large-scale setting such as at state or national level) of proven strategies.	Up to $2,000,000; 3-5 years

ITEST: New Solicitation

Anticipate a late summer release date. For updates concerning the program and the new solicitation, please subscribe to NSF Update, an e-mail alert service, at http://www.nsf.gov/publications/obtain.jsp.

Math and Science Partnership (MSP)

James Hamos

MSP Solicitation NSF 12-518
(Proposals Due December 18, 2012)

Targeted Partnerships

- *Focal Areas*
  - Community Enterprise for STEM Learning
  - Current Issues Related to STEM Content
  - Identifying and Cultivating Exceptional Talent
  - K-12 STEM Teacher Preparation

- *Types*
  - Implementation: $5 - 7$ **maximum, $8 million, 5 years**
  - Prototype: $5 - 8$ **maximum, $1.5 million, 3 years**

Requirements of ALL MSP Proposals

Partnership Driven

- At least one IHE and one school district as Core Partners
- Engagement of STEM disciplinary faculty members (i.e., mathematicians, engineers, or scientists) appropriate to the intents of the project and with clearly defined roles

Teacher Quality, Quantity and Diversity

Challenging Courses and Curriculum

Evidence-based Design and Outcomes

- Linkages of current research and studies, including theoretical foundations, used to inform the project design
- One or more educational research questions, of import to the STEM education community, and associated research design

Institutional Change – Identifiable institutional change that will result from the work for each Core Partner

Presidential Awards for Excellence in Mathematics and Science Teaching

Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST)

Nafeesa Owens

Presidential Awards for Excellence in Mathematics and Science Teaching

President Obama with 2010 PAEMST Awardees at the White House

PAEMST is the highest honor bestowed by the United States government specifically for K-12 math and science teaching.

Awardees receive a certificate signed by the President of the United States, a **$10,000** award and a trip to Washington, D.C. for professional development and recognition events.

More than 4,200 teachers have been recognized for their contributions in the classroom and to their profession.

Nafeesa Owens, Ph.D.; PAEMST Program Lead; nowens@nsf.gov

Your Involvement

Presidential Awards for Excellence
in Mathematics and Science Teaching

- ◘ **Nominate a teacher**
  - ◘ Nominations open at **www.paemst.org** in October for 7-12 grade teachers.
  - ◘ Form takes 2 minutes to complete; only need teacher's contact information.
  - ◘ Teachers can also apply directly at **www.paemst.org**.
  - ◘ Don't forget to support and mentor teacher throughout process!

- ◘ **Serve as a reviewer**
  - ◘ Contact us at **nsc@paemst.org** where you will be added to our list.
  - ◘ Send you an invite to participate in late July or August panels.
  - ◘ Panels are held at NSF and/or virtually.

- ◘ **Connect with Alumni**

Nomination Deadline: April 1, 2013
Application Deadline: May 1, 2013

PRIME Program Overview

The **primary** goal of the PRIME program is to support the development, demonstration, and validation of innovative new methodologies and approaches to the evaluation of STEM education programs.

PRIME - Areas of Interest

1. **Innovative approaches that explore ways of** determining the impact and usefulness of evaluation of STEM education projects or programs, with appropriate rigor.

2. **Theoretical foundations that expand perspectives on** evaluating STEM education and human workforce initiative, including translating approaches from other fields.

3. **Development of capacity and infrastructure that increases** the number of researchers and evaluators who can produce conceptually sound and methodologically appropriate evaluations of STEM education and workforce projects, portfolios and programs

Proposal Types

- Exploratory Projects: Small-scale explorations such as proof-of-concept and feasibility studies.

  $250,000 for 2 years. 3-5 awards

- Full-scale Projects: Large projects related to the 3 tracks.

  $800,000 for 3 years. 5-8 awards

- Workshops and Conferences: Focus on PRIME areas of interest. Submission at any time. ~ $100,000

- RAPIDS and EAGERS, pending availability of funds

Research and Evaluation on Education in Science and Engineering (REESE)

Sandra Martell

Research and Evaluation on Education in Science and Engineering

- Catalyze discovery and innovation at frontiers of STEM learning and education
- Stimulate production: high quality and robust research results through progress of theory, method, analysis, and human resources
- Coordinate and transform advances in research on learning and education

REESE Research Strands

- Neural bases of STEM learning
- Cognitive underpinnings of STEM learning
- STEM learning in formal and informal settings
- Learning technologies
- Research on Diffusion
- Methods, models, and measures for STEM education and learning research
- Secondary analysis of large datasets
- Broadening participation research

Questions

Please direct your questions to the program officers' table based on the program of interest