2014 Changes in STEM Education Research Initiatives

In FY2014, the Federal Government significantly shifted its funding and research priorities in relation to STEM Education. The shifts impacted dozens of programs and millions of dollars of funding as administrated across numerous agencies.

At the highest level, there were shifts that focused on the responsibilities of three main agencies: the Department of Education, the National Science Foundation and the Smithsonian Institute.

As numerous researchers at Purdue regularly apply for research grants in the general area of STEM education, this page provides information to help faculty understand and navigate key changes.

Why are so many STEM ed programs now ‘sunsetted’?
What new programs can I apply to for my research at NSF?
I see that some of these new STEM Education RFPs refer to the “Common Guidelines” document. What is this document?
Can I get help on my STEM ed grant proposal?

Why are so many STEM ed programs now ‘sunsetted’?
These changes to funding in STEM ed reflect a growing concern about the impact of the billions of dollars being spent on hundreds of programs that lacked coordination, management, and proven value. As a government noted in 2012:

“Despite an annual federal investment of almost $3 billion, too many American students are unprepared in math and science, particularly students from underrepresented groups, and the nation’s STEM workforce needs are not being met. Reform in this area is stymied by the Federal’s government’s fragmented approach to STEM education, which is reflected by Federal investments in over 220 programs across 13 different agencies.”

And Federal STEM Ed 5-year Strategic Plan (May 2013) (PDF)

Recommendations made by the Progress Report included:

- Comprehensive reorganization of 114 STEM Ed programs across 11 agencies
- Desire to increase impact of Federal investments in:
  - P-12 Instruction
  - Undergraduate Education
  - Graduate Fellowships
- Increase in STEM graduates at all levels
- Increase informal STEM activities
- Improve delivery, impact and visibility of STEM efforts

In attempt to meet these goals, the FY2014 budget included provisions to shift of over $180 million dollars to ‘consolidated programs’ led by NSF, the Dept. of Education and the Smithsonian Institution.
The following diagram summarizes the primary roles given to these agencies:

What new programs can I apply to for my research at NSF?
Various programs have been sunsetsed, consolidated and replaced while others remain. Below, we summarize the most significant changes to STEM ed programs managed by NSF. Funding information is taken from the FY2014 budget summary document (PDF).

NSF has re-organized many programs; in addition to reviewing new programs such as EHR Core Proposals, review the opportunities listed under the four divisions of EHR listed below.

EHR Core Programs (NSF 13-555) (from 0 in FY2013 to $25M FY2014)
Two types of proposals are invited: Core Research Proposals (maximum 5 years, $1.5 million) that propose to study a foundational research question/issue designed to inform the transformation of STEM learning and education and Capacity Building Proposals (maximum 3 years, $300,000) intended to support groundwork necessary for advancing research within the four core areas.

Due dates: February 14, 2014, first Tuesday in February annually thereafter

Divisions within EHR
- **STEM Learning--Division of Research on Learning in Formal and Informal Settings (DRL)**
  The program encourages projects that focus on such areas as: the learning of specific STEM subject matter content and practices; learning progressions, assessments and instruction-assisted development to support STEM learning; STEM learning and engagement outside of formal schooling; and dissemination of knowledge and learning within social networks.
- **STEM Learning Environments--Division of Undergraduate Education (DUE)**
  Of particular interest are proposals that examine changing and emerging environments such as online/media learning at scale, blended instruction, virtual reality, personalized learning environments, and evidence-based approaches to undergraduate STEM teaching.
- **STEM Workforce Development--Division of Graduate Education (DGE)**
  Evidence-based understanding of STEM learning is necessary with respect to STEM career pathways and transitions; academic and non-academic STEM careers; emerging practices and changing contexts of STEM workforces; and the changing higher education climate and capacity for reforming STEM workforce development efforts.
- **Broadening Participation in STEM--Division of Human Resource Development (HRD)**
  This program seeks proposals that will pursue fundamental research questions about what it takes to broaden participation in STEM effectively, including better understanding how to build institutional

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capacity and informal learning environments that foster the untapped potential of underrepresented
minority groups in STEM fields.

I see that some of these new STEM Education RFPs refer to the “Common
Guidelines” document. What is this document?
This document, geared towards agency personnel, researchers, evaluators/reviewers, was released jointly
by Institute for Education Sciences (IES) and NSF in August 2013 and, in summary, the document:

- outlines a shared framework for 6 types of STEM ed research supported by both agencies.
- identifies purpose, theoretical & empirical justifications, expectations for design and products,
and expectations for how to review and evaluate products for STEM ed research projects.
- follows principles set out in NRC 2002, “Scientific Research in Education” and AERA’s
Standards for Reporting on Empirical Social Science Research in AERA Publications (PDF).

As new RFP’s are published by NSF and IES/the Department of Education, these Guidelines are being
referenced and recommended to researchers. Essentially, the agencies are, jointly, asking researchers to
prepare their research plans, budgets, evaluations and methodologies following the recommendations
provided in this document. As the committee writes in the document itself:

“Fundamentally, these shared, cross-agency expectations are intended to (1) help organize and guide
NSF’s and ED’s respective decisions about investments in education research and (2) clarify for potential
grantees and peer reviewers the justifications for and evidence expected from each type of study, as well
as relevant aspects of research design that would contribute to high-quality evidence. The primary
audiences for this document are agency personnel, scientific investigators who seek funding from these
agencies for education research projects, and those who serve as peer reviewers of proposals for scientific
research”

More information and FAQ’s on the document are available at:

Frequently Asked Questions (FAQs) for NSF 13-126, Common Guidelines for Education Research and
Development

Can I get help on my STEM ed grant proposal?
Yes, we provide numerous services and resources to Purdue faculty and researchers that are listed on our
website.