

STEM Education Coalition



Science, Technology, Engineering and Mathematics

October 9, 2008

Dr. Cora Marrett
Assistant Director, Education and Human Resources Directorate
National Science Foundation
4201 Wilson Blvd
Arlington, VA 22230

Dear Dr. Marrett:

The undersigned members of the Science, Technology, Engineering, and Mathematics (STEM) Education Coalition are pleased to have the opportunity to offer strategic recommendations for the National Science Foundation Education and Human Resources Directorate programs.

The STEM Education Coalition is composed of a diverse range of organizations representing all sectors of the technological workforce – from knowledge workers, to educators and education researchers, to scientists, engineers, and technicians. Our Coalition works to raise awareness in Congress and throughout the Executive Branch about the critical role that STEM education – both formal and informal – plays in enabling the U.S. to remain the economic and technological leader of the global marketplace of the 21st century. In the last few years we have been very active on key STEM legislative initiatives, including America Competes, No Child Left Behind, and the Higher Education Act.

The STEM Education Coalition is very supportive of the NSF EHR Directorate and its efforts to support and improve U.S. STEM education at all levels and in all settings. We respectfully request that these suggestions be considered as you discuss future EHR initiatives.

1. Enhance the Dissemination of Current EHR Research and Products

More funding should be allotted to the external dissemination and implementation of current NSF education research and products to reach a wider audience. NSF should develop a systemic approach to disseminating these resources to broad STEM education audiences, especially school and university administrators and decision makers and informal education programs. These efforts should emphasize statewide coordination among NSF programs to capitalize on synergies and other public investments.

2. Further Define the NSF Education Research Agenda

Programs under the Research on Learning in Formal and Informal Settings (DRL) division focus on learning and teaching, despite the lack of a broad consensus on a STEM education research agenda. Clearly, a newly focused research agenda should complement, not duplicate, the research already underway in the other NSF directorates and work within the context of NSF's desire for more transformative research.

3. Coordinate Education Programs Across the NSF Directorates

The Directorates should build capacity for an integrated internal dissemination and effective cross-directorate linkages, yielding better understanding and coordination of the education component(s) of each directorate's programs, and how they interact with EHR programs. Initiatives that strengthen the transitions between segments of the pathway, e.g., high school to college and advanced degree to workforce, should be encouraged, as should cross-directorate investments in undergraduate research, which feed the STEM pipeline while meeting other agency objectives.

4. Boost Funding and Support for Instructional Materials and Curriculum

Additional funding for applied research and innovation that leads to the creation of curriculum, new assessments, technology tools, exhibits or films should be considered. While the newly enacted America Competes will drive the S&E and education research agenda at NSF for years to come, the field also needs specific funding for tools that will allow professionals to move promising ideas from research to practice, to develop new and improved materials and assessments, to explore new uses of technology to enhance K-12 instruction (both in and after school) and baccalaureate education, and to create better teacher training techniques, including those that are effective with underrepresented groups.

5. Strengthen the Connections Between NSF and State STEM K-20 Initiatives

NSF should become more actively engaged in the discussion of state and national standards and other state STEM education initiatives and programs, especially by bringing to bear the NSF research base on teaching and learning in STEM fields. There is also an important role for NSF to play in assisting in the coordination of state and federal STEM education programs.

6. Scale-Up Effective Existing Programs

Connections among EHR programs that have been evaluated and have potential for replication and expansion should be identified so that their overlapping efforts and goals can be streamlined, coordinated, and expanded accordingly.

7. Promote Public Understanding of Science and Engineering

NSF should build upon best practices identified through the informal science education program at EHR to expand and coordinate efforts across directorates targeted at increasing the public's understanding of science.

We applaud your efforts to ensure that NSF EHR Directorate initiatives work to advance discovery and innovation at the frontiers of STEM learning and teaching, support highly innovative models and approaches to learning in formal and informal settings, advance equity and participation for all by building and strengthening participation in the scientific-

technical and research enterprise, and foster linkages between STEM education research and practice.

If you would like any additional information on the STEM Education Coalition or have any questions, please do not hesitate to contact James Brown with the American Chemical Society at 202-872-6229 or Jodi Peterson with the National Science Teachers Association at 703-312-9214.

Sincerely,

Allegheny-Singer Research Institute

Altshuller Institute

American Association of Physics Teachers

American Chemical Society

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

American Statistical Association

ASME Center for Public Awareness

Association for Computing Machinery

Association for Science Teacher Education

Association of Science-Technology Centers

Association for Women in Science

ASTRA, The Alliance for Science & Technology Research in America

Baltimore/Washington Corridor Chamber of Commerce

Chicago Educational Publishing

Council on Undergraduate Research

Education Development Center, Inc.

Exploratorium

Girls Incorporated

International Technology Education Association

Knowledge Alliance

National Center for Optics and Photonics Education (OP-TEC)

National Science Teachers Association

NASA STEM SCHOOL ADMINISTRATORS ASSOCIATION

Museum of Science, Boston

National Center for Technological Literacy

National Council of Teachers of Mathematics

National Girls Collaborative Project

National Society of Professional Engineers

Pathways into Science

Project Lead the Way

Society of Women Engineers

SPIE – The International Society for Optics and Photonics

STEMES

Triangle Coalition