Federal Agency Funding Opportunities
Within and Beyond NSF

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Washington, DC
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Program Director
Division of Research on Learning in Formal and Informal Settings
Directorate for Education and Human Resources
National Science Foundation
Within NSF:
Karen King: ECR, CS for all
Arlene de Strulle: STEM+C
Robert Russell: AISL, ITEST, Cyberlearning

Beyond:
Elizabeth Albro and Christina Chhin
United States Department of Education

Tony Beck, National Institutes of Health
<table>
<thead>
<tr>
<th>EHR Division</th>
<th>Learning and Learning Environment</th>
<th>Broadening Participation in STEM</th>
<th>STEM Professional Workforce</th>
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<tbody>
<tr>
<td>Research on Learning (DRL)</td>
<td>ECR - <em>Learning</em> DR-K12 AISL ECR + REAL =FY2015</td>
<td>ECR includes: • Research on Gender in Science and Engineering (GSE) • Research in Disabilities Education (RDE)</td>
<td>STEM+C Partnerships for the 21&lt;sup&gt;st&lt;/sup&gt; Century <em>formerly Math and Science Partnership</em> ITEST - Innovative Technology Experiences for Students and Teachers</td>
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<td>Graduate Education (DGE)</td>
<td>Project and Program Evaluation (PPE) Building Community &amp; Capacity in Data (BCC)</td>
<td>ECR- <em>STEM Professional Workforce</em> CyberCorps: Scholarship for Service (SFS) Graduate Research Fellowship (GRF) National Research Traineeship (NRT)</td>
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<td>Undergraduate Education (DUE)</td>
<td>ECR- <em>Learning Environment</em> Improving Undergraduate STEM Education (IUSE)</td>
<td></td>
<td>Advanced Technological Education (ATE) Robert Noyce Teacher Scholarship Program S-STEM Scholarship Program</td>
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EHR Core Research (ECR) across all themes: EHR invests in foundational research for the strategic improvement of STEM education.
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<td>Research on Learning in Formal and Informal Settings (DRL)</td>
<td>Core Research &amp; Development (ECR)</td>
<td>ECR* includes:</td>
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<td>DR-K12- (Discovery Research K-12 )</td>
<td>• Research on Gender in Science and Engineering (GSE)</td>
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<td>AISL- Advancing Informal STEM Learning</td>
<td>• Research in Disabilities Education (RDE)</td>
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# Program Focus in DGE

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| Graduate Education (DGE) | Project and Program Evaluation (PPE)/Promoting Research and Innovation in Methodologies for Evaluation (PRIME) | • EHR Core Research: Workforce Development (ECR)*  
• SFS- CyberCorps: Scholarship for Service  
• GRF - Graduate Research Fellowship  
• NRT- National Research Traineeship  
• INSPIRE-Integrated NSF Support Promoting Interdisciplinary Research and Education  
• NSF Innovation Corps (I-Corps) |                                                            |
## Program Focus in HRD

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<td>Human Resource Development (HRD)</td>
<td>• ADVANCE-Increasing the Participation and Advancement of Women in S &amp; E careers&lt;br&gt;• AGEP-Alliances for Graduate Education and the Professoriate&lt;br&gt;• HBCU-UP-Historically Black Colleges and Universities Undergraduate Program&lt;br&gt;• TCUP- Tribal Colleges and Universities Programs</td>
<td>*Core Research &amp; Development (ECR)&lt;br&gt;LSAMP- Louis Stokes Alliances for Minority Participation</td>
<td>• PAEMST- Presidential Awards for Excellence in Mathematics and Science Teaching&lt;br&gt;• PAESMEM- Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring&lt;br&gt;• CREST- Centers of Research Excellence in Science and Technology</td>
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## Program Focus in DUE

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<td>IUSE- Improving Undergraduate STEM Education</td>
<td>Robert Noyce Teacher Scholarship Program (NOYCE)</td>
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<td></td>
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<td>S-STEM = Scholarship in STEM Program</td>
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Graduate Research Fellowship Program

NSF Research Traineeship Program

CyberCorps Scholarship for Service

EHR Core Research: Workforce Development

Project and Program Evaluation
STEM + Computing Program

STEM+C

- Integrating Computing in K12 STEM Education
- Advancing Computer Science in HS
- Expanding Research on Broadening Participation in Computing
By integrating computing in STEM teaching and learning, the program seeks to:

- Effect the way STEM is taught
- Improve the understanding of STEM through creative scientific exploration made possible by computational approaches
- Expose students to the effectiveness of using computational approaches to solve real world problems in STEM fields
- Prepare teachers to use computational thinking and computational approaches in their practice
Proposals should:

- Emphasize R&D on the integration of computing in one or more STEM disciplines
- Have interdisciplinary collaboration with computing
- Seek to advance new models for teaching and learning, innovative courses, curriculum, course materials, and R&D on new pedagogical strategies and environments that advance integration of computing in STEM disciplines.
Examples of research questions:

✓ What are the strategies and tools needed for developing computing skills within specific STEM disciplines for teachers and/or students?

✓ How might strategies need to be modified for different disciplines?

✓ How do students acquire skills in the use of computing methods and computational ways of knowing within a specific K-12 learning environment?

✓ What teacher education courses need to be modified or PD offered for preparing teachers to cultivate computing skills?
Integration of Environmental Chemistry and Computing to Advance Evidence-based Reasoning, Problem Solving, and Computational Thinking in Middle School Students
Award Number: 1543022
Principal Investigator: Deborah Tatar
Organization: Virginia Polytechnic Institute and State University

Integrating Computational Thinking and Environmental Science: Design Based Research on Using Simulated Ecosystems to Improve Student Understanding of Complex System Behavior
Award Number: 1543144
Principal Investigator: Stephen Uzzo
Organization: New York Hall of Science

Research on Effects of Integrating Computational Science and Model Building in Water Systems Teaching and Learning
Award Number: 1543228
Principal Investigator: John Moore
Organization: Colorado State University

Research on the Development of Computational and Systems Thinking in Middle School Students through Explorations of Complex Earth Systems
Award Number: 1542954
Principal Investigator: Gillian Puttick
Organization: TERC Inc.

Spatial Thinking Curriculum for Building Computational Skills in Elementary Grades K-5
Award Number: 1543204
Principal Investigator: Steven Moore
Organization: University of Redlands