

(2) Advancing of the health and welfare of the American public.

(3) Supporting the national defense of the United States.

(4) Enhancing partnerships between academia and industry in the United States.

(5) Developing an American STEM workforce that is globally competitive through improved pre-kindergarten through grade 12 STEM education and teacher development, and improved undergraduate STEM education and instruction.

(6) Improving public scientific literacy and engagement with science and technology in the United States.

(7) Expanding participation of women and individuals from underrepresented groups in STEM.

**(b) Policy**

Not later than 6 months after January 4, 2011, the Director shall develop and implement a policy for the Broader Impacts Review Criterion that—

(1) provides for educating professional staff at the Foundation, merit review panels, and applicants for Foundation research grants on the policy developed under this subsection;

(2) clarifies that the activities of grant recipients undertaken to satisfy the Broader Impacts Review Criterion shall—

(A) to the extent practicable employ proven strategies and models and draw on existing programs and activities; and

(B) when novel approaches are justified, build on the most current research results;

(3) allows for some portion of funds allocated to broader impacts under a research grant to be used for assessment and evaluation of the broader impacts activity;

(4) encourages institutions of higher education and other nonprofit education or research organizations to develop and provide, either as individual institutions or in partnerships thereof, appropriate training and programs to assist Foundation-funded principal investigators at their institutions in achieving the goals of the Broader Impacts Review Criterion as described in subsection (a); and

(5) requires principal investigators applying for Foundation research grants to provide evidence of institutional support for the portion of the investigator's proposal designed to satisfy the Broader Impacts Review Criterion, including evidence of relevant training, programs, and other institutional resources available to the investigator from either their home institution or organization or another institution or organization with relevant expertise.

(Pub. L. 111-358, title V, § 526, Jan. 4, 2011, 124 Stat. 4019; Pub. L. 114-329, title I, § 102(c), Jan. 6, 2017, 130 Stat. 2972.)

CODIFICATION

Section was enacted as part of the America COMPETES Reauthorization Act of 2010, also known as the America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science Reauthorization Act of 2010, and also as part of the National Science Foundation Authorization Act of 2010,

and not as part of the National Science Foundation Act of 1950 which comprises this chapter.

AMENDMENTS

2017—Subsec. (a). Pub. L. 114-329 amended subsec. (a) generally. Prior to amendment, text read as follows: “The Foundation shall apply a Broader Impacts Review Criterion to achieve the following goals:

“(1) Increased economic competitiveness of the United States.

“(2) Development of a globally competitive STEM workforce.

“(3) Increased participation of women and underrepresented minorities in STEM.

“(4) Increased partnerships between academia and industry.

“(5) Improved pre-K-12 STEM education and teacher development.

“(6) Improved undergraduate STEM education.

“(7) Increased public scientific literacy.

“(8) Increased national security.”

DEFINITIONS

For definitions of terms used in this section, see section 2 of Pub. L. 111-358, set out as a note under section 6621 of this title, and section 502 of Pub. L. 111-358, set out as a note under section 1862p of this title.

**§ 1862p-15. Twenty-first century graduate education**

**(a) In general**

The Director shall award grants, on a competitive, merit-reviewed basis, to institutions of higher education to implement or expand research-based reforms in master's and doctoral level STEM education that emphasize preparation for diverse careers utilizing STEM degrees, including at diverse types of institutions of higher education, in industry, and at government agencies and research laboratories.

**(b) Uses of funds**

Activities supported by grants under this section may include—

(1) creation of multidisciplinary or interdisciplinary courses or programs for the purpose of improved student instruction and research in STEM;

(2) expansion of graduate STEM research opportunities to include interdisciplinary research opportunities and research opportunities in industry, at Federal laboratories, and at international research institutions or research sites;

(3) development and implementation of future faculty training programs focused on improved instruction, mentoring, assessment of student learning, and support of undergraduate STEM students;

(4) support and training for graduate students to participate in instructional activities beyond the traditional teaching assistantship, and especially as part of ongoing educational reform efforts, including at pre-K-12 schools, and primarily undergraduate institutions;

(5) creation, improvement, or expansion of innovative graduate programs such as science master's degree programs;

(6) development and implementation of seminars, workshops, and other professional development activities that increase the ability of graduate students to engage in innovation, technology transfer, and entrepreneurship;

(7) development and implementation of seminars, workshops, and other professional development activities that increase the ability of graduate students to effectively communicate their research findings to technical audiences outside of their own discipline and to nontechnical audiences;

(8) expansion of successful STEM reform efforts beyond a single academic unit to other STEM academic units within an institution or to comparable academic units at other institutions; and

(9) research on teaching and learning of STEM at the graduate level related to the proposed reform effort, including assessment and evaluation of the proposed reform activities and research on scalability and sustainability of approaches to reform.

**(c) Partnership**

An institution of higher education may partner with one or more other nonprofit education or research organizations, including scientific and engineering societies, for the purposes of carrying out the activities authorized under this section.

**(d) Selection process**

**(1) Applications**

An institution of higher education seeking a grant under this section shall submit an application to the Director at such time, in such manner, and containing such information as the Director may require. The application shall include, at a minimum—

(A) a description of the proposed reform effort;

(B) in the case of applications that propose an expansion of a previously implemented reform effort at the applicant's institution or at other institutions, a description of the previously implemented reform effort;

(C) evidence of institutional support for, and commitment to, the proposed reform effort, including long-term commitment to implement successful strategies from the current reform effort beyond the academic unit or units included in the grant proposal or to disseminate successful strategies to other institutions; and

(D) a description of the plans for assessment and evaluation of the grant proposed reform activities.

**(2) Review of applications**

In selecting grant recipients under this section, the Director shall consider at a minimum—

(A) the likelihood of success in undertaking the proposed effort at the institution submitting the application, including the extent to which the faculty, staff, and administrators of the institution are committed to making the proposed institutional reform a priority of the participating academic unit or units;

(B) the degree to which the proposed reform will contribute to change in institutional culture and policy such that a greater value is placed on preparing graduate students for diverse careers utilizing STEM degrees;

(C) the likelihood that the institution will sustain or expand the reform beyond the period of the grant; and

(D) the degree to which scholarly assessment and evaluation plans are included in the design of the reform effort.

(Pub. L. 111-358, title V, §527, Jan. 4, 2011, 124 Stat. 4020.)

CODIFICATION

Section was enacted as part of the America COMPETES Reauthorization Act of 2010, also known as the America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science Reauthorization Act of 2010, and also as part of the National Science Foundation Authorization Act of 2010, and not as part of the National Science Foundation Act of 1950 which comprises this chapter.

DEFINITIONS

For definitions of terms used in this section, see section 2 of Pub. L. 111-358, set out as a note under section 6621 of this title, and section 502 of Pub. L. 111-358, set out as a note under section 1862p of this title.

**§ 1862q. Informal STEM education**

**(a) Grants**

The Director of the National Science Foundation, through the Directorate for Education and Human Resources, shall continue to award competitive, merit-reviewed grants to support—

(1) research and development of innovative out-of-school STEM learning and emerging STEM learning environments in order to improve STEM learning outcomes and engagement in STEM;

(2) research that advances the field of informal STEM education; and

(3) a national partnership of institutions involved in informal STEM learning.

**(b) Uses of funds**

Activities supported by grants under this section may encompass a single STEM discipline, multiple STEM disciplines, or integrative STEM initiatives and shall include—

(1) research and development that improves our understanding of learning and engagement in informal environments, including the role of informal environments in broadening participation in STEM;

(2) design and testing of innovative STEM learning models, programs, and other resources for informal learning environments to improve STEM learning outcomes and increase engagement for K-12 students, K-12 teachers, and the general public, including design and testing of the scalability of models, programs, and other resources;

(3) fostering on-going partnerships between institutions involved in informal STEM learning, institutions of higher education, and education research centers; and

(4) developing, and making available informal STEM education activities and educational materials.

(Pub. L. 114-59, §3, Oct. 7, 2015, 129 Stat. 540; Pub. L. 114-329, title III, §311, Jan. 6, 2017, 130 Stat. 3013.)

CODIFICATION

Section was enacted as part of the STEM Education Act of 2015, and not as part of the National Science Foundation Act of 1950 which comprises this chapter.