

109TH CONGRESS
2^D SESSION

H. R. 5477

To provide for the establishment at the National Science Foundation of a program to promote and assist the teaching of inventiveness and innovation.

IN THE HOUSE OF REPRESENTATIVES

MAY 25, 2006

Mr. HONDA introduced the following bill; which was referred to the Committee on Science, and in addition to the Committee on Education and the Workforce, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

A BILL

To provide for the establishment at the National Science Foundation of a program to promote and assist the teaching of inventiveness and innovation.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Innovations for our
5 Nation’s Vital Educational Needs for Technology Act”.

6 **SEC. 2. FINDINGS.**

7 The Congress finds the following:

1 (1) Invention, the wellspring of innovation, is
2 the basic source of the economic wellbeing and qual-
3 ity of life enjoyed in the developed world today.

4 (2) There have been enormous differences in
5 the capabilities of different societies to invent, to
6 carry the inventions into practice, and to adopt the
7 inventions of other societies, and maintaining those
8 capabilities will be key for the future wellbeing of
9 the United States.

10 (3) Federal support of individual investigators
11 doing basic research has been effective in leading to
12 scientific discovery, but less effective in enabling
13 those investigators to turn those discoveries into in-
14 vention.

15 (4) The process of invention and the traits of
16 the inventive mind can be enhanced by education
17 and fostered by appropriate societal support.

18 (5) In formal education, every student deserves
19 the opportunity to learn more about the nature of
20 invention and to acquire some simple basic skills and
21 generative attitudes.

22 **SEC. 3. INVENTIVENESS CURRICULUM MATERIALS.**

23 (a) ESTABLISHMENT OF PROGRAM.—The National
24 Science Foundation shall establish a competitive grant
25 program, with the goal of developing, and making avail-

1 able for use at the elementary, secondary, and under-
2 graduate levels within 2 years after the date of enactment
3 of this Act, curriculum tools that will help foster inventive-
4 ness.

5 (b) MATERIALS.—The curriculum materials devel-
6 oped under the program established under this section
7 shall—

8 (1) leverage existing knowledge on how the in-
9 ventive mind works on behalf of a more inventive so-
10 ciety to address key challenges of today’s world,
11 through—

12 (A) emphasizing adventure, excitement,
13 and mystery as much as the analytical and
14 technical side of invention;

15 (B) encouraging inventive thinking that
16 crosses boundaries of convention, expectation,
17 and disciplines; and

18 (C) anticipating that there will be unantici-
19 pated consequences of invention, an enduring
20 lesson from history;

21 (2) strengthen those aspects of the education
22 process that enhance creativity in general, and tech-
23 nological inventiveness in particular, including—

24 (A) open-ended, problem solving assign-
25 ments;

1 (B) historical study of the social and polit-
2 ical implications of inventions and new tech-
3 nologies;

4 (C) universities seeking research projects
5 and external collaborations, and policies that
6 promote inventive creativity of students and
7 faculty;

8 (D) appropriate supporting infrastructure,
9 which should be fostered to enable teachers to
10 utilize new teaching methods and materials; and

11 (E) hands-on activities, visual thinking ex-
12 periences, historical case studies, and “how
13 things work” exercises for all students, not just
14 engineering or science majors; and

15 (3) initiate, strengthen, and expand initiatives
16 to involve young people directly in the invention
17 process, including—

18 (A) efforts to support teams in high
19 schools and colleges that work collaboratively
20 with the private or local government sectors to
21 invent useful products or processes;

22 (B) realistic, open-ended, design-oriented
23 activities, which can be included in university
24 engineering courses, with the primary goal of
25 teaching the important principles of a field in

1 ways that will promote inventive creativity in
2 the application of these principles;

3 (C) a network of community centers, “in-
4 vention homes”, or “free workshops” that
5 would provide access to the tools, materials, and
6 flexible space so important to invention, to be
7 based in schools, museums, or other locations;

8 (D) workshops that would allow teachers
9 to learn by experience how to effectively lead a
10 project-based classroom; and

11 (E) networks of innovators and social en-
12 trepreneurs both domestically and internation-
13 ally.

14 (c) DISSEMINATION.—The National Science Founda-
15 tion shall develop and implement measures, including
16 workshops, for the dissemination of curriculum tools devel-
17 oped under this section.

18 **SEC. 4. INVENTIVENESS PUBLIC AWARENESS CAMPAIGN.**

19 Not later than 1 year after the date of enactment
20 of this Act, the National Science Foundation shall imple-
21 ment a public awareness and outreach campaign relating
22 to invention and inventiveness. The public awareness and
23 outreach campaign shall—

24 (1) foster public events, including competitions,
25 public displays, traveling exhibitions, and other ways

1 to increase the public profile of inventors and inven-
2 tiveness; and

3 (2) establish additional awards and prizes hon-
4 oring inventors, with the objective of stimulating in-
5 vention in areas of greatest need, as well as of rais-
6 ing the stature of inventors and invention in the eyes
7 of young people.

8 **SEC. 5. ENGINEERING AND SOCIAL SCIENCE RESEARCH**
9 **PROGRAM ON INVENTION.**

10 The National Science Foundation shall establish en-
11 gineering and social science research programs on the
12 process of invention and the teaching of inventiveness. The
13 research programs shall—

14 (1) be aimed at a deeper understanding of the
15 creative mind and creative environment, the meas-
16 urement of inventiveness, diffusion of teaching of in-
17 ventive creativity, and rapid learning as part of the
18 crossing of boundaries of convention, expectation,
19 and disciplines that is at the heart of invention;

20 (2) include study of the influence of flexible
21 learning environments and role of parents, teachers,
22 mentors, and broader social institutions;

23 (3) study the impact on inventive creativity of
24 past major programs of Federal and State support
25 for elementary, secondary, and higher education;

1 (4) identify the major societal sectors that have
2 had significant effects on major inventions and inno-
3 vations of the recent past, and study the role of each
4 such sector, the importance of intersector inter-
5 actions, and the impact of patent and other relevant
6 law; and

7 (5) assess how invention could make a dif-
8 ference to the sustainable development needs of the
9 poorest regions and nations, including research to
10 understand and promote social enterprise, cultiva-
11 tion of creativity on a local level, surveys of key
12 technology gaps, and surveys of available financial
13 resources.

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