

115TH CONGRESS
1ST SESSION

H. R. 4023

To amend the Elementary and Secondary Education Act of 1965 to award grants to States educational agencies and local educational agencies to support, develop, and implement formal and informal engineering education programs in elementary schools and secondary schools.

IN THE HOUSE OF REPRESENTATIVES

OCTOBER 11, 2017

Mr. RYAN of Ohio (for himself, Mr. TONKO, and Mr. REED) introduced the following bill; which was referred to the Committee on Education and the Workforce

A BILL

To amend the Elementary and Secondary Education Act of 1965 to award grants to States educational agencies and local educational agencies to support, develop, and implement formal and informal engineering education programs in elementary schools and secondary schools.

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 “Developing Tomor-
5 row’s Engineering and Technical Workforce Act”.

6 **SEC. 2. FINDINGS.**

7 The Congress makes the following findings:

1 (1) The vitality of the innovation economy in
2 the United States depends on the availability of an
3 educated technical workforce. A key component of
4 this workforce consists of engineers, engineering
5 technicians, and engineering technologists.

6 (2) There is a widening skills gap between what
7 schools teach and the types of skills presently needed
8 in the job market and the higher skills sets needed
9 for the 21st century workforce.

10 (3) Available evidence suggests that formal and
11 informal engineering education both in and after
12 school can stimulate interest and improve learning in
13 mathematics and science as well as improve under-
14 standing of engineering and technology.

15 (4) Early engineering education is a vital com-
16 ponent in attaining licensure as a professional engi-
17 neer that requires rigorous education, training, expe-
18 rience, and continuing education.

19 (5) Few States have included engineering in
20 their science or technology and vocational standards,
21 and few local educational agencies and nonprofit en-
22 tities provide informal or after-school engineering
23 education programs.

24 (6) According to the National Academy of En-
25 gineering there is not at present a critical mass of

1 teachers qualified to deliver formal and informal en-
2 gineering instruction.

3 (7) It is imperative that teachers have relevant
4 professional training that coordinates concepts in en-
5 gineering with the diverse learning styles of stu-
6 dents.

7 **SEC. 3. GRANT PROGRAM.**

8 Part F of title IV of the Elementary and Secondary
9 Education Act of 1965 (20 U.S.C. 7251 et seq.) is amend-
10 ed—

11 (1) in section 4601—

12 (A) in subsection (a), in the matter pre-
13 ceding paragraph (1), by inserting “(other than
14 subpart 5)” before “part”; and

15 (B) by adding at the end the following:

16 “(c) AUTHORIZATION OF APPROPRIATIONS FOR SUB-
17 PART 5.—There are authorized to be appropriated to carry
18 out subpart 5—

19 “(1) \$20,000,000 for each of fiscal years 2019
20 and 2020; and

21 “(2) \$21,000,000 for each of fiscal years 2021
22 and 2022.”; and

23 (2) by adding at the end the following:

1 **“Subpart 5—Engineering Education**

2 **“SEC. 4651. GRANT PROGRAM AUTHORIZED.**

3 “(a) IN GENERAL.—From amounts appropriated
4 under section 4601(c), the Secretary shall award grants,
5 on a competitive basis, to eligible entities to implement
6 formal and informal engineering education programs in el-
7 ementary schools and secondary schools to—

8 “(1) teach students the overall analytical and
9 experimental approaches used in engineering and en-
10 gineering technology; and

11 “(2) increase participation of underrepresented
12 student groups in the engineering and engineering
13 technology pipeline.

14 “(b) MAXIMUM GRANT AMOUNT.—A grant awarded
15 under this subpart may not exceed \$1,000,000.

16 “(c) MATCHING FUNDS.—An eligible entity receiving
17 a grant under this subpart shall provide non-Federal
18 funds in amount equal to the grant amount. Such non-
19 Federal funds may include in-kind support (such as equip-
20 ment, supplies, materials, and participation of personnel
21 in the development and implementation of activities to be
22 carried out under the grant).

23 “(d) USES OF FUNDS.—

24 “(1) IN GENERAL.—An eligible entity receiving
25 a grant under this subpart shall use such funds to
26 carry out a program that—

1 “(A) provides engineering instructional
2 materials based on review and analysis of the
3 effectiveness of existing formal, or informal re-
4 search-based and evidenced-based locally rel-
5 evant instructional materials;

6 “(B) provides professional development for
7 pre-service and in-service teachers to teach en-
8 gineering;

9 “(C) provides instructions on engineering
10 and engineering technology during normal
11 classroom hours or after school;

12 “(D) incorporates evidence-based practices
13 to increase diversity of student groups partici-
14 pating in the program;

15 “(E) encourages participation of engineers
16 from local private and public organizations to
17 mentor the teachers and students; and

18 “(F) encourages engineering faculty and
19 students from institutions of higher education
20 as mentors for the elementary school or sec-
21 ondary school students, and teachers as appro-
22 priate.

23 “(2) STATE EDUCATIONAL AGENCIES.—In the
24 case of an eligible entity that is a State educational
25 agency, such entity shall award subgrants to local

1 educational agencies to carry out the program de-
2 scribed in paragraph (1).

3 “(3) PUBLIC-PRIVATE PARTNERSHIPS.—Each
4 eligible entity awarded a grant under this subpart
5 shall be encouraged to carry out the program funded
6 under the grant in partnership with one or more of
7 the following:

8 “(A) Elementary schools or secondary
9 schools receiving assistance under this subpart.

10 “(B) Institutions of higher education.

11 “(C) Private sector businesses.

12 “(D) Nonprofit organizations.

13 “(E) Community-based organizations.

14 “(F) Public or private entities with dem-
15 onstrated record of success in delivering edu-
16 cational support.

17 “(e) APPLICATIONS.—An application for a grant
18 under this subpart submitted by an eligible entity shall
19 demonstrate long-term commitment for the proposed pro-
20 gram through—

21 “(1) providing laboratory and instructional
22 space;

23 “(2) establishing ongoing professional training
24 programs for pre-service and in-service teachers and
25 teachers in-residence;

1 “(3) commitment to scaling successful pro-
2 grams for engineering and engineering technology
3 education in elementary schools and secondary
4 schools under the jurisdiction of the eligible entity;
5 and

6 “(4) commitment to serving diverse student
7 groups such as underrepresented or economically
8 disadvantaged student groups.

9 “(f) DEFINITIONS.—In this section:

10 “(1) ELIGIBLE ENTITY.—The term ‘eligible en-
11 tity’ means—

12 “(A) a State educational agency; or

13 “(B) a local educational agency that is not
14 receiving a subgrant under this subpart for the
15 fiscal year for which the agency is applying for
16 a grant under this subpart.

17 “(2) INSTRUCTIONAL MATERIALS.—The term
18 ‘instructional materials’ means materials that—

19 “(A) emphasize—

20 “(i) engineering fundamentals and
21 concepts, problem-based learning; and

22 “(ii) essential skills such as systems
23 thinking, creativity, teamwork, communica-
24 tion, and ethical considerations;

1 “(B) are designed to introduce students to
2 modern engineering and engineering technology
3 tools such as computer-aided design, computer-
4 aided manufacturing, statistical analysis, codes
5 and standards, human factors, and reliability
6 analysis; and

7 “(C) are aligned with and integrated into
8 relevant science, engineering, and mathematics
9 standards that may exist in the applicable State
10 or may be developed.

11 **“SEC. 4652. ANNUAL REPORT TO CONGRESS.**

12 “Not later than 1 year after the first grant is award-
13 ed under this subpart, and annually thereafter, the Sec-
14 retary shall provide a report to Congress on activities and
15 results under this subpart. Such reports shall describe—

16 “(1) the total number of grant applications re-
17 ceived for the preceding each year;

18 “(2) the number and geographic distribution of
19 the grants for such year and for all grants awarded
20 under this subpart;

21 “(3) participation of minority-serving institu-
22 tions of higher education, such as historically Black
23 colleges and universities and Hispanic-serving insti-
24 tutions;

1 “(4) participation of underrepresented and eco-
2 nomicallly disadvantaged student groups;

3 “(5) plans for collaboration among eligible enti-
4 ties receiving a grant under this subpart;

5 “(6) overall program outcomes and issues of
6 concern; and

7 “(7) recommendations for program revisions to
8 achieve the desired program outcome.”.

9 **SEC. 4. TABLE OF CONTENTS.**

10 The table of contents in section 2 of the Elementary
11 and Secondary Education Act of 1965 is amended by in-
12 serting after the item relating to section 4644 the fol-
13 lowing:

“SUBPART 5—ENGINEERING EDUCATION

“4651. Grant program authorized.

“4652. Annual report to Congress.”.

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