

113TH CONGRESS
1ST SESSION

S. 1178

To better integrate engineering education into kindergarten through grade 12 instruction and curriculum and to support research on engineering education.

IN THE SENATE OF THE UNITED STATES

JUNE 18, 2013

Mrs. GILLIBRAND introduced the following bill; which was read twice and referred to the Committee on Health, Education, Labor, and Pensions

A BILL

To better integrate engineering education into kindergarten through grade 12 instruction and curriculum and to support research on engineering education.

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 “Educating Tomorrow’s
5 Engineers Act”.

1 **TITLE I—AMENDMENTS TO THE**
2 **ELEMENTARY AND SEC-**
3 **ONDARY EDUCATION ACT OF**
4 **1965**

5 **PART A—ENGINEERING STANDARDS AND**
6 **ASSESSMENTS**

7 **SEC. 111. ACADEMIC STANDARDS, ACADEMIC ASSESS-**
8 **MENTS, AND ACCOUNTABILITY.**

9 Section 1111(b) of the Elementary and Secondary
10 Education Act of 1965 (20 U.S.C. 6311(b)) is amended—

11 (1) in paragraph (1), by adding at the end the
12 following:

13 “(G) INTEGRATION OF ENGINEERING
14 SKILLS AND PRACTICES INTO SCIENCE STAND-
15 ARDS.—By not later than the 2016–2017
16 school year, each State plan shall demonstrate
17 that the State has incorporated engineering de-
18 sign skills and practice into the State science
19 challenging academic content standards and
20 student academic achievement standards that
21 are required under this paragraph.”; and

22 (2) in paragraph (3)(C)(v)(II), by inserting
23 “(including, beginning not later than the 2016–2017
24 school year, engineering design skills and practices)”
25 after “science”.

1 **SEC. 112. GRANTS FOR STATE ASSESSMENTS AND RELATED**
 2 **ACTIVITIES.**

3 Section 6111(1) of the Elementary and Secondary
 4 Education Act of 1965 (20 U.S.C. 7301(1)) is amended
 5 by inserting “, including the integration of engineering
 6 concepts into science assessments,” before “and stand-
 7 ards”.

8 **PART B—PROFESSIONAL DEVELOPMENT AND**
 9 **INSTRUCTIONAL MATERIALS**

10 **SEC. 121. TEACHER AND PRINCIPAL TRAINING AND RE-**
 11 **CRUITING FUND.**

12 Section 2113 of the Elementary and Secondary Edu-
 13 cation Act of 1965 (20 U.S.C. 6613) is amended—

14 (1) in subsection (a)—

15 (A) in paragraph (1), by striking “95” and
 16 inserting “85”;

17 (B) in paragraph (2), by striking “and”
 18 after the semicolon;

19 (C) by redesignating paragraph (3) as
 20 paragraph (4); and

21 (D) by inserting after paragraph (2) the
 22 following:

23 “(3) reserve 10 percent of the funds made
 24 available through the grant to make subgrants in ac-
 25 cordance with subsection (e);”;

1 (2) by redesignating subsections (e) and (f) as
2 subsections (f) and (g), respectively; and

3 (3) by inserting after subsection (d) the fol-
4 lowing:

5 “(e) STEM PROFESSIONAL DEVELOPMENT AND IN-
6 STRUCTIONAL MATERIALS GRANTS.—A State educational
7 agency that receives a grant under this part shall use the
8 funds described in subsection (a)(3) to award grants, on
9 a competitive basis, to nonprofit organizations, and other
10 entities, with expertise and a demonstrated record of suc-
11 cess in STEM fields to enable such organizations and enti-
12 ties to develop and provide professional development and
13 instructional materials for STEM in the State.”.

14 **SEC. 122. STEM PARTNERSHIPS.**

15 Part B of title II of the Elementary and Secondary
16 Education Act of 1965 (20 U.S.C. 6661 et seq.) is amend-
17 ed—

18 (1) in the part heading, by striking “**MATHE-**
19 **MATICS AND SCIENCE PARTNERSHIPS**” and in-
20 serting “**STEM PARTNERSHIPS**”;

21 (2) in section 2201—

22 (A) by striking “mathematics and science”
23 each place the term appears and inserting
24 “STEM”; and

1 (B) in subsection (a)(4), by striking “engi-
2 neering, mathematics, and science” and insert-
3 ing “STEM”; and

4 (3) in section 2202—

5 (A) in the section heading, by striking
6 “**MATHEMATICS AND SCIENCE**” and insert-
7 ing “**STEM**”;

8 (B) in subsection (b)(2)—

9 (i) in subparagraph (A), by striking
10 “mathematics and science” and inserting
11 “STEM”;

12 (ii) in subparagraph (B), by striking
13 “student academic achievement in mathe-
14 matics and science” and inserting “student
15 academic achievement in STEM”; and

16 (iii) in subparagraph (C), by striking
17 “mathematics and science” and inserting
18 “STEM”;

19 (C) in subsection (c)—

20 (i) in each of paragraphs (1) and (2),
21 by striking “mathematics and science” and
22 inserting “STEM”;

23 (ii) in paragraph (3), in the matter
24 preceding subparagraph (A), by striking

1 “mathematics and science” each place the
2 term appears and inserting “STEM”;

3 (iii) in paragraph (4)—

4 (I) in the matter preceding sub-
5 paragraph (A), by striking “mathe-
6 matics, engineering, and science ma-
7 jors” and inserting “individuals with a
8 baccalaureate degree in a STEM
9 field”;

10 (II) in each of subparagraphs (A)
11 and (C), by striking “mathematics,
12 engineering, or science” each place
13 the term appears and inserting “a
14 STEM field”;

15 (III) in subparagraph (B), by
16 striking “mathematics and science”
17 and inserting “STEM”; and

18 (IV) in subparagraph (D), by
19 striking “mathematics, engineering, or
20 science backgrounds” and inserting
21 “backgrounds in STEM fields”;

22 (iv) in paragraph (5), by striking
23 “mathematics and science curricula” each
24 place the term appears and inserting
25 “STEM curricula”;

1 (v) in paragraph (6), by striking
2 “mathematics and science” and inserting
3 “STEM”;

4 (vi) in paragraph (7), by striking
5 “mathematics or science” each place the
6 term appears and inserting “STEM”;

7 (vii) in paragraph (8)—

8 (I) by striking “mathematics and
9 science” and inserting “STEM”;

10 (II) by striking “and engineers”
11 and inserting “engineers, and other
12 professionals in STEM fields”; and

13 (III) by striking “science and
14 mathematics” and inserting “STEM”;

15 (viii) in paragraph (9), by striking
16 “mathematics and science” and inserting
17 “STEM”; and

18 (ix) in paragraph (10)—

19 (I) by striking “mathematics and
20 science teachers” and inserting
21 “STEM teachers”; and

22 (II) by striking “mathematics
23 and science careers (including engi-
24 neering and technology)” and insert-
25 ing “careers in STEM fields”;

1 (D) in subsection (d)(2), by striking
2 “mathematics and science teaching” and insert-
3 ing “STEM teaching”; and

4 (E) in subsection (e)(2)—

5 (i) in subparagraph (A), by striking
6 “mathematics and science” and inserting
7 “STEM”;

8 (ii) in subparagraph (B), by inserting
9 “and a strategy for integrating engineering
10 into the science assessments in accordance
11 with section 1111(b)(3)” before the semi-
12 colon at the end; and

13 (iii) in subparagraph (C)—

14 (I) in clause (i), by striking
15 “mathematics and science” and in-
16 sserting “STEM”;

17 (II) in clause (ii), by striking “in
18 mathematics, engineering, or the
19 sciences” and inserting “in a STEM
20 field”; and

21 (III) in clause (iii)—

22 (aa) by striking “mathe-
23 matics and science” and inserting
24 “STEM subjects”; and

1 (bb) by striking “mathe-
 2 matics, engineering, and science”
 3 and inserting “a STEM field”.

4 **PART C—AFTER SCHOOL PROGRAMS**

5 **SEC. 131. 21ST CENTURY LEARNING CENTERS.**

6 Section 4205(a)(2) of the Elementary and Secondary
 7 Education Act of 1965 (20 U.S.C. 7175(a)(2)) is amended
 8 by striking “mathematics and science” and inserting
 9 “STEM”.

10 **PART D—RURAL EDUCATION**

11 **SEC. 141. RURAL AND LOW-INCOME SCHOOL PROGRAM.**

12 Section 6222(a)(2) of the Elementary and Secondary
 13 Education Act of 1965 (20 U.S.C. 6351a(a)(2)) is amend-
 14 ed by inserting “and professional development in the area
 15 of engineering education” before the period at the end.

16 **PART E—GENERAL PROVISIONS**

17 **SEC. 151. DEFINITIONS.**

18 Section 9101 of the Elementary and Secondary Edu-
 19 cation Act of 1965 (20 U.S.C. 7801) is amended—

20 (1) by redesignating paragraphs (37) through
 21 (43) as paragraphs (38) through (44), respectively;
 22 and

23 (2) by inserting after paragraph (37) the fol-
 24 lowing:

25 “(38) STEM.—The term ‘STEM’ means—

1 “(A) science, technology, engineering, and
2 mathematics; and

3 “(B) other academic subjects that build on
4 the subjects described in subparagraph (A),
5 such as computer science.”.

6 **TITLE II—AMENDMENTS TO THE**
7 **EDUCATION SCIENCE RE-**
8 **FORM ACT OF 2002**

9 **SEC. 201. NATIONAL CENTER FOR EDUCATION RESEARCH.**

10 The Education Sciences Reform Act of 2002 (20
11 U.S.C. 9501 et seq.) is amended—

12 (1) in section 131(b)(1)(C) (20 U.S.C.
13 9531(b)(1)(C)), by striking “mathematics, science,”
14 and inserting “STEM (as defined in section 9101 of
15 the Elementary and Secondary Education Act of
16 1965 (20 U.S.C. 7801)),”; and

17 (2) in section 133(a)(11) (20 U.S.C.
18 9533(a)(11)) by striking “mathematics and science”
19 and inserting “STEM (as defined in section 9101 of
20 the Elementary and Secondary Education Act of
21 1965 (20 U.S.C. 7801))”.

22 **SEC. 202. RESEARCH ON ENGINEERING EDUCATION.**

23 (a) IN GENERAL.—The Secretary of Education, act-
24 ing through the Director of the Institute of Education
25 Sciences, shall support, directly or through grants or con-

1 tracts, research on engineering education, including stud-
2 ies and evaluations that—

3 (1) identify and assess how science inquiry and
4 mathematical reasoning can be connected to engi-
5 neering design in kindergarten through grade 12
6 curricula and teacher professional development;

7 (2) identify best practices and promising inno-
8 vations in the field of kindergarten through grade 12
9 engineering education; and

10 (3) include any other information or assess-
11 ments the Secretary of Education may require.

12 (b) DISSEMINATION.—The Secretary of Education
13 shall, based on the results of the research described in sub-
14 section (a), disseminate information and analysis to the
15 public, and provide technical assistance to State edu-
16 cational agencies, on best practices and promising innova-
17 tions in the field of kindergarten through grade 12 engi-
18 neering education.

19 (c) AUTHORIZATION OF APPROPRIATIONS.—There
20 are authorized to be appropriated to carry out this section
21 such sums as may be necessary for each of fiscal years
22 2014 through 2018.

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