113TH CONGRESS
1ST SESSION

S. 854

To improve student academic achievement in science, technology, engineering, and mathematics subjects.

IN THE SENATE OF THE UNITED STATES

APRIL 25, 2013

Mr. MERKLEY (for himself, Mr. FRANKEN, and Mr. BEGICH) introduced the following bill; which was read twice and referred to the Committee on Health, Education, Labor, and Pensions

A BILL

To improve student academic achievement in science, technology, engineering, and mathematics subjects.

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

SECTION 1. SHORT TITLE.

This part may be cited as the “STEM Education for the Global Economy Act of 2013”.

SEC. 2. STEM AMENDMENT.

The Elementary and Secondary Education Act of 1965 (20 U.S.C. 6301 et seq.) is amended by striking part

B of title II and inserting the following:
“PART B—STEM EDUCATION

“SEC. 2201. PURPOSE.

“The purpose of this part is to improve student academic achievement in science, technology, engineering, and mathematics subjects (referred to in this part as ‘STEM subjects’) by—

“(1) improving instruction in such subjects in preschool through grade 12;

“(2) improving student engagement in, and increasing student access to, courses in such subjects;

“(3) improving the quality and effectiveness of classroom instruction by recruiting, training, and supporting highly effective teachers and providing robust tools and supports for students and teachers in such subjects;

“(4) closing student achievement gaps, and preparing more students from groups traditionally underrepresented in STEM subjects to enter and succeed in postsecondary education and careers, in such subjects;

“(5) increasing access to quality after school programs; and

“(6) recognizing that STEM subjects are diverse subject areas and that STEM subject programs must expose students to content and skills in a host of constantly changing and evolving STEM
subject content areas, as specifically identified by each State or eligible entity in section 2204.

“SEC. 2202. DEFINITIONS.

“In this part:

“(1) ELIGIBLE ENTITY.—The term ‘eligible entity’ means—

“(A) a State educational agency; or

“(B) a State educational agency in partnership with—

“(i) another State educational agency;

or

“(ii) a consortium of State educational agencies.

“(2) ELIGIBLE SUBGRANTEE.—The term ‘eligible subgrantee’ means—

“(A) a high-need local educational agency;

“(B) an educational service agency serving more than 1 high-need local educational agency;

or

“(C) a consortium of high-need local educational agencies.

“(3) OUTSIDE PARTNER.—The term ‘outside partner’ means an entity that has expertise and a demonstrated record of success in improving student learning and engagement in the identified subjects
described in section 2204(b)(2), including any of the following:

“(A) A nonprofit organization with a demonstrated record of success in improving student learning in STEM subjects, including educational and teacher-focused organizations, professional societies, museums and after school and informal learning organizations, and community-based and cultural organizations.

“(B) A business.

“(C) A STEM faculty or teacher training department of an institution of higher education.

“(D) An educational service agency.

“(E) Another appropriate entity.

“(4) STATE.—The term ‘State’ means—

“(A) any of the 50 States;

“(B) the District of Columbia;

“(C) the Bureau of Indian Education; or

“(D) the Commonwealth of Puerto Rico.

“(5) STEM EDUCATION.—The term ‘STEM education’ means the subjects of science, technology, engineering, and mathematics, including other academic subjects that build on these disciplines, such as computer science, and other academic subjects
that a State identifies as important to the workforce of the State.

"SEC. 2203. GRANTS; ALLOTMENTS."

“(a) Reservations.—

“(1) In general.—From the amounts appropriated to carry out this part for a fiscal year, the Secretary shall reserve—

“(A) 2 percent to carry out technical assistance to States, including technical assistance with implementation of programs consistent with the purpose of this part;

“(B) 3 percent to the Institute of Education Sciences to enable the Director of the Institute of Education Sciences to carry out the evaluation activities described in section 2207;

“(C) 10 percent to carry out the STEM master teacher corps grant program under section 2208; and

“(D) in any year for which grants are also awarded competitively, as described in subsection (b), 5 percent for State capacity-building grants in accordance with paragraph (2).

“(2) Capacity-building grants.—

“(A) In general.—The Secretary may award, on a competitive basis, 1 capacity-build-
ing grant to enable a State to become more competitive in future grant competitions under subsection (b). The Secretary may award the capacity building grant to—

“(i) a State that does not receive (and is not part of an eligible entity that receives) a competitive grant under subsection (b), in the case of a fiscal year for which such competitive grants are awarded; or

“(ii) a State that does not successfully apply for a formula grant under subsection (e).

“(B) Duration.—Grants awarded under subparagraph (A) shall be for a period of 1 year.

“(b) Competitive Grants.—

“(1) In general.—For each fiscal year for which the amount appropriated to carry out this part is more than $450,000,000, the Secretary shall award grants totaling the amount appropriated in excess of $450,000,000, on a competitive basis and in accordance with paragraph (2), to eligible entities to enable such eligible entities to carry out the activities described in this part.
“(2) COMPETITIVE GRANT AWARDS.—The Secretary shall annually award a competitive grant under paragraph (1) to not less than 5 and not more than 10 eligible entities. Each eligible entity that receives a grant award under this subsection shall receive such award in an amount that is equal to not less than 3 times and not more than 4 times the amount of the grant award that each State that is part of the eligible entity receives under the formula grant described in subsection (c).

“(3) DURATION.—Grants awarded under this subsection shall be for a period of not more than 3 years.

“(4) RENEWAL.—

“(A) IN GENERAL.—If an eligible entity demonstrates progress, as measured by the metrics described in section 2206(a), the Secretary may renew a grant for an additional 2-year period.

“(B) REDUCED FUNDING.—Grant funds awarded under subparagraph (A) shall be awarded at a reduced amount.

“(e) FORMULA GRANTS.—

“(1) IN GENERAL.—For each fiscal year for which amounts are appropriated to carry out this
part, the Secretary shall award grants to States totaling the lesser of $450,000,000 or the total amount appropriated to carry out this part, based on the formula described in paragraph (2).

“(2) DISTRIBUTION OF FUNDS.—The Secretary shall allot to each State—

“(A) an amount that bears the same relationship to 35 percent of the excess amount as the number of individuals ages 5 through 17 in the State, as determined by the Secretary on the basis of the most recent satisfactory data, bears to the number of those individuals in all such States, as so determined; and

“(B) an amount that bears the same relationship to 65 percent of the excess amount as the number of individuals ages 5 through 17 from families with incomes below the poverty line, in the State, as determined by the Secretary on the basis of the most recent satisfactory data, bears to the number of those individuals in all such States, as so determined.

“(3) FUNDING MINIMUM.—No State receiving an allotment under this subsection may receive less than one-half of 1 percent of the total amount allotted under paragraph (1) for a fiscal year.
“(4) Reallocation of Unused Funds.—If a State does not successfully apply for or receive an allotment under this subsection for a fiscal year, the Secretary shall reallocate the amount of the State’s allotment to the remaining States in accordance with this subsection.

“SEC. 2204. APPLICATIONS.

“(a) In General.—Each eligible entity or State desiring a grant under this part, whether through a competitive grant under section 2203(b) or through an allotment under section 2203(c), shall submit an application to the Secretary at such time, in such manner, and accompanied by such information as the Secretary may require.

“(b) Contents.—At a minimum, an application submitted under subsection (a) shall include the following:

“(1) A description of the needs identified by the State or eligible entity, based on a State analysis, which—

“(A) may include results from a pre-existing analysis of STEM subject education quality and outcomes in the State or States served by the eligible entity;

“(B) shall include data for elementary school and secondary school grades, as applica-
ble and to the extent that such data are available, on—

“(i) student achievement in science and mathematics, including such data collected in accordance with the requirements of section 1111(b), and student achievement in technology and engineering;

“(ii) science, technology, engineering, and mathematics teacher evaluation results or ratings;

“(iii) student access to mathematics and science courses needed to enroll in credit-bearing coursework at institutions of higher education in the State or States served by the eligible entity;

“(iv) access to STEM subject courses for students in preschool through grade 12 who—

“(I) are eligible to receive a free or reduced priced lunch under the Richard B. Russell National School Lunch Act (42 U.S.C. 1751 et seq.); or

“(II) come from families with an income that is below the poverty line;
“(v) student achievement gaps in STEM subjects;

“(vi) the percentage of students successfully—

“(I) completing Advanced Placement (AP) or International Baccalaureate (IB) courses in science, technology, engineering, and mathematics subjects; or

“(II) completing rigorous post-secondary education courses in STEM subjects;

“(vii) rates of college remediation in mathematics; and

“(viii) teacher shortages and teacher distribution among local educational agencies and schools in STEM subjects;

“(C) shall include a review of the workforce needs in the State or States served by the eligible entity in occupations and sectors that require knowledge or training in STEM subjects;

“(D) shall include an analysis of the quality of preservice preparation at all public institutions of higher education (including alter-
native pathways to teacher licensure or certification) for individuals preparing to teach STEM subjects in a preschool, elementary school, or secondary school in the State; and

“(E) shall include an analysis of the implementation of any multi-tiered systems of support that have been employed in the State or States served by the eligible entity to address the learning needs of students in any STEM subjects.

“(2) An identification of the specific STEM subjects that the State or eligible entity will address through the activities described in section 2205, consistent with the needs identified under paragraph (1) (referred to in this part as ‘identified subjects’).

“(3) A description, in a manner that addresses any needs identified under paragraph (1), of—

“(A) how grant funds will be used by the State or eligible entity to improve instruction in identified subjects using evidence-based programs of instruction that are aligned with high-quality standards and assessments;

“(B) how grant funds will be used to support subgrantees and other high-need local educational agencies in the employment of multi-
tiered systems of support to provide early inter-
vening services and to increase student achieve-
ment in identified subjects;

“(C) the procedures and criteria that the
State or eligible entity will use for reviewing ap-
plications and awarding funds to eligible sub-
grantees, including how the State or eligible en-
tity will ensure that subgrants will be provided
to high-need local educational agencies and
high-need schools;

“(D) how the State’s or eligible entity’s ac-
tivities and subgrants will be coordinated with
other Federal, State, and local programs and
activities, including career and technical edu-
cation programs authorized under the Carl D.
Perkins Career and Technical Education Act of
2006 (20 U.S.C. 2301 et seq.);

“(E) the technical assistance that the
State or eligible entity will provide to sub-
grantees to support the activities undertaken by
the subgrantees;

“(F) how the State or eligible entity will
evaluate the activities funded, both at the State
and subgrantee level, with funds provided under
this part, and in a manner consistent with any
evaluation activities carried out by the Institute of Education Sciences under section 2207, or the National Science Foundation;

“(G) how the State or eligible entity will allocate funds in a manner that will provide services to both elementary schools and secondary schools;

“(H) how the State or eligible entity will provide targeted support to improve instruction in high-need local educational agencies and high-need schools;

“(I) how the State or eligible entity’s proposed project will ensure an increase in access for students who are traditionally underrepresented in STEM subject fields (including female students, minority students, students who are limited English proficient, students who are children with disabilities, and students from low-income families) to high-quality courses and other learning experiences in 1 or more of the identified subjects; and

“(J) a description of the steps that the State or eligible entity has taken to involve a variety of stakeholders in the development of the application and a description of how the
State or eligible entity will continue to involve stakeholders in any education reform efforts related to science, technology, engineering, and mathematics instruction.

“(4) Assurances that the State or eligible entity will monitor implementation of approved subgrantee plans.

“(5) A description of how the State or eligible entity will emphasize experiential and hands-on learning activities and field experiences and use grant funds to provide equipment and materials to support these activities.

“(c) COMPETITIVE GRANT APPLICATIONS.—In addition to the other application requirements in this section, a State that desires to receive a competitive grant under section 2203(b) shall submit, as part of the application described in subsection (a), a statewide STEM plan that describes how the State will integrate the proposed activities to be supported with existing STEM education related efforts in the State.

“(d) ADDITIONAL FUNDING.—A State or eligible entity that submits a request to use the additional State activities reservation described in section 2205(d)(2), shall provide, in a manner that addresses the needs identified under subsection (b)(1), a description of the activities that
the eligible entity will carry out with such funds, con-
sistent with section 2205.

“SEC. 2205. AUTHORIZED ACTIVITIES.

“(a) REQUIRED ACTIVITIES.—Each State or eligible
entity that receives a grant under this part shall use the
grant funds to carry out each of the following activities:

“(1) Increasing access for students in preschool
through grade 12 that belong to groups that are tra-
ditionally underrepresented in STEM subject fields
(including female students, minority students, stu-
dents who are limited English proficient, students
who are children with disabilities, and students from
low-income families) to high-quality courses in the
identified subjects.

“(2) Implementing evidence-based programs of
instruction based on high-quality standards and as-
essments in the identified subjects.

“(3) Providing professional development and
other comprehensive systems of support for teachers
and school leaders to promote high-quality instruc-
tion and instructional leadership in the identified
subjects.

“(4) Providing technical assistance to sub-
grantees and other high-need schools and local edu-
cational agencies in order to improve student
achievement and narrow achievement gaps in identified subjects, including through—

“(A) the development and implementation of multi-tiered systems of support; and

“(B) the development of curricula consistent with the principals of universal design for learning as defined in section 103 of the Higher Education Act of 1965.

“(5) Providing equipment and materials to support experiential learning activities in STEM subjects.

“(b) PERMISSIBLE ACTIVITIES.—Each State or eligible entity that receives a grant under this part may use the grant funds to carry out 1 or more of the following activities:

“(1) Recruiting qualified teachers and instructional leaders who are trained in identified subjects, including teachers who have transitioned into the teaching profession from a career in science, technology, engineering, and mathematics fields.

“(2) Providing induction and mentoring services to new teachers in identified subjects.

“(3) Providing opportunities for teachers to partner with after school program providers to offer
hands-on engaging STEM programming that complements and supplements the school day.

“(4) Developing instructional supports, such as curricula and assessments, which shall be evidence-based and aligned with State academic standards under section 1111(b), and may include Internet-based curricula and Internet-based instructional supports.

“(5) Implementing an interdisciplinary approach, by integrating instruction in 1 or more STEM subjects with reading, English language arts, or instruction in other core academic subjects (as defined in section 9101) and noncore academic subjects.

“(6) Establishing and operating a STEM master teacher corps program.

“(c) SUBGRANTS.—

“(1) IN GENERAL.—Each State or eligible entity that receives a grant under this part shall award subgrants, on a competitive basis, to eligible subgrantees.

“(2) MINIMUM SUBGRANT.—A State or eligible entity shall award subgrants under this subsection that are of sufficient size and scope to support high-
quality, evidence-based, effective programs that are consistent with the purpose of this part.

“(3) Subgrantee application.—

“(A) In general.—Each eligible subgrantee desiring a subgrant under this subsection shall submit an application to the State or eligible entity at such time, in such manner, and accompanied by such information as the State or eligible entity may require.

“(B) Contents of subgrantee application.—At a minimum, the application described in subparagraph (A) shall include the following:

“(i) A description of the activities that the eligible subgrantee will carry out, and how such activities will improve teaching and student academic achievement in the identified subjects, in a manner consistent with scientifically valid research.

“(ii) A description of how the eligible subgrantee will use funds provided under this subsection to serve students and teachers in high-need schools.

“(iii) A description of how funds provided under this subsection will be coordi-
nated with other Federal, State, and local programs and activities, including career and technical education programs authorized under the Carl D. Perkins Career and Technical Education Act of 2006 (20 U.S.C. 2301 et seq.).

“(iv) If the eligible subgrantee is working with outside partners, a description of how such outside partners will be involved in improving instruction and increasing access to high-quality learning experiences in the identified subjects.

“(4) SUBGRANTEE USE OF FUNDS.—

“(A) REQUIRED USE OF FUNDS.—Each eligible subgrantee that receives a subgrant under this subsection shall use the subgrant funds to carry out activities for students in preschool through grade 12, consistent with the activities described in the subgrantee’s application, which shall include—

“(i) high-quality teacher and instructional leader recruitment, support, evaluation, and professional development in the identified subjects;
“(ii) professional development, which may include development and support for instructional coaches, to enable teachers and instructional leaders to increase student achievement in identified subjects, through—

“(I) implementation of classroom assessments; and

“(II) differentiation of instruction in identified subjects for all students, including for students who are children with disabilities and students who are limited English proficient;

“(iii) activities to—

“(I) improve the content knowledge of teachers; and

“(II) facilitate professional collaboration, which may include providing time for such collaborations;

“(iv) the development, adoption, and improvement of high-quality curricula and instructional supports that—

“(I) are aligned with State academic standards under section 1111(b); and
“(II) the eligible subgrantee will use to improve student academic achievement in identified subjects;
“(v) the development or improvement, and implementation, of multi-tiered systems of support to provide early intervening services and to increase student achievement in 1 or more of the identified subjects; and
“(vi) integrating instruction in the identified subjects with instruction in reading, English language arts, or other core and noncore academic subjects.
“(B) PERMISSIBLE USE OF FUNDS.—In addition to the required activities described in subparagraph (A), each eligible subgrantee that receives a subgrant under this subsection, may also use the subgrant funds to—
“(i) support the participation of low-income students in nonprofit competitions, out-of-school activities, and field experiences related to STEM subjects (such as robotics, science research, invention, mathematics, and technology competitions), including—
“(I) the purchase of parts and supplies needed to participate in such competitions;

“(II) incentives and stipends for teachers and instructional leaders who are involved in assisting students and preparing students for such competitions, if such activities fall outside the regular duties and responsibilities of such teachers and instructional leaders; and

“(III) paying expenses associated with the participation of low-income students in such local, regional, or national competitions; and

“(ii) broaden secondary school students’ access to, and interest in, careers that require academic preparation in 1 or more identified subjects.

“(C) LIMITATION.—Each subgrantee that receives a subgrant under this subsection shall not expend more than 15 percent of the subgrant funds on the activities described in subparagraph (B).

“(D) MATCHING FUNDS.—
“(i) In general.—A State or eligible entity may require an eligible subgrantee receiving a subgrant under this subsection to demonstrate that such subgrantee has obtained a commitment from 1 or more outside partners to match, using non-Federal funds, a portion of the amount of subgrant funds, in an amount determined by the State or eligible entity.

“(ii) Required minimum.—Notwithstanding clause (i), if an eligible subgrantee partners with an outside partner that is a for-profit entity, such subgrantee shall obtain matching funds from the outside partner in an amount equal to not less than 25 percent of the amount of the subgrant.

“(d) State activities.—

“(1) In general.—Each State or eligible entity that receives a grant under this part may use not more than 5 percent of grant funds for—

“(A) administration costs;

“(B) monitoring the implementation of subgrants;
“(C) providing technical assistance to sub-
grantees; and
“(D) evaluating subgrants in coordination
with the evaluation described in section 2207.
“(2) RESERVATION.—Each State or eligible en-
tity that receives a grant under this part may sub-
mit a request to the Secretary to reserve not more
than 15 percent of grant funds, inclusive of the
amount described in paragraph (1), for additional
State activities, consistent with subsections (a) and
(b).

“SEC. 2206. PERFORMANCE METRICS; REPORT.
“(a) ESTABLISHMENT OF PERFORMANCE
METRICS.—The Secretary, acting through the Director of
the Institute of Education Sciences, shall establish per-
formance metrics to evaluate the effectiveness of the ac-
tivities carried out under this part.
“(b) ANNUAL REPORT.—Each State or eligible entity
that receives a grant under this part shall prepare and
submit an annual report to the Secretary, which shall in-
clude information relevant to the performance metrics de-
scribed in subsection (a).

“SEC. 2207. EVALUATION.
“From the amount reserved under section
2203(a)(1)(B), the Secretary shall—
“(1) acting through the Director of the Institute of Education Sciences, and in consultation with
the Director of the National Science Foundation—
“(A) evaluate the implementation and impact of the activities supported under this part,
including progress measured by the metrics established under section 2206(a); and
“(B) identify best practices to improve instruction in STEM subjects; and
“(2) disseminate, in consultation with the National Science Foundation, research on best practices to improve instruction in STEM subjects.

“SEC. 2208. STEM MASTER TEACHER CORPS GRANT PROGRAM.
“(a) GRANTS AUTHORIZED.—From the funds reserved under section 2203(a)(1)(C), the Secretary shall award 1 or more grants, on a competitive basis, to entities described in subsection (b)(1) to enable such entities to establish and operate a STEM master teacher corps program.
“(b) STEM MASTER TEACHER CORPS.—The term ‘STEM master teacher corps’ (referred to in this section as the ‘corps’) means a program—
“(1) operated by 1 or more State educational agencies, or a consortium of local educational agen-
cies, acting in partnership with 1 or more outside partners that have a demonstrated record of success in improving the effectiveness of science, technology, engineering, and mathematics teachers or increasing the retention of such teachers;

“(2) that selects a group of highly rated teachers (through a process, and for a duration, determined by the entity described in paragraph (1)), as members of the corps, that constitutes not less than 5 percent and not more than 10 percent of elementary school, middle school, and high school teachers who teach science, technology, engineering, and mathematics subjects and who—

“(A) teach in a participating high-need school in the region served by the entity described in paragraph (1); or

“(B) agree to teach in a participating high-need school in the region served by the entity described in paragraph (1) if accepted as a member of the corps; and

“(3) that aims to attract, improve, and retain teachers who teach science, technology, engineering, and mathematics subjects and to increase student achievement in such subjects, including by—
“(A) providing instructional leadership responsibilities for corps members in their schools, local educational agencies, or States, such as mentoring beginning science, technology, engineering, and mathematics teachers and leading professional development activities for teachers not participating in the corps;

“(B) providing corps members with research-based professional development on instructional leadership and effective teaching methods for science, technology, engineering, and mathematics subjects;

“(C) providing each teacher who is a corps member with a salary supplement of not less than $10,000 per year, in recognition of such teacher’s teaching accomplishments, leadership, and increased responsibilities, for each year such teacher serves as a member of the corps; and

“(D) building a community of practice among corps members to enable such members to network, collaborate, and to share best practices and resources with each other.

“(c) DURATION.—
“(1) IN GENERAL.—Grants awarded under this section shall be for a period of not more than 3 years.

“(2) RENEWAL.—

“(A) IN GENERAL.—If a grantee under this section demonstrates progress, as measured by the metrics described in section 2206(a), the Secretary may renew a grant under this section for an additional 2-year period.

“(B) REDUCED FUNDING.—Grant funds awarded under subparagraph (A) shall be awarded at a reduced amount.

“(d) APPLICATION.—

“(1) IN GENERAL.—Each entity described in subsection (b)(1) desiring a grant under this section shall submit an application to the Secretary at such time, in such manner, and accompanied by such information as the Secretary may require.

“(2) CONTENTS.—At a minimum, an application submitted under paragraph (1) shall include the following:

“(A) A plan to implement a corps program that is of sufficient size and scope to have a substantial, measurable effect on—
“(i) student academic achievement in science, technology, engineering, and mathematics subjects in the schools where corps members teach; and

“(ii) the effectiveness and retention of—

“(I) corps members; and

“(II) other teachers of science, technology, engineering, and mathematics subjects who work with, or are mentored by, corps members.

“(B) A description of how the entity described in subsection (b)(1) plans to sustain the program after the expiration of the grant under this section.

“(e) COMPETITIVE PRIORITY.—In awarding grants under this section, the Secretary shall give priority to applicants that will include rural schools among the schools that the applicant will serve through the program.

“(f) MATCHING FUNDS.—The Secretary may require a grantee under this section to provide non-Federal matching funds in an amount equal to the amount of grant funds awarded under this section.

“(g) EQUITABLE ACCESS.—If the entity described in subsection (b)(1) includes a State educational agency,
such entity shall ensure that rural schools located in the region that will be served by the entity have equitable access to the STEM master teacher corps program.

"SEC. 2209. SUPPLEMENT NOT SUPPLANT.

"Funds received under this part shall be used to supplement, and not supplant, funds that would otherwise be used for activities authorized under this part.

"SEC. 2210. MAINTENANCE OF EFFORT.

"A State that receives funds under this part for a fiscal year shall maintain the fiscal effort provided by the State for the subjects supported by the funds under this part at a level equal to or greater than the level of such fiscal effort for the preceding fiscal year.

"SEC. 2211. AUTHORIZATION OF APPROPRIATIONS.

"There are authorized to be appropriated to carry out this part such sums as may be necessary."