HR 4254 CortezMasto_1

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AMENDMENT NO._____ Calendar No._____

Purpose: To amend the American Innovation and Competitiveness Act in order to support efforts to encourage young girls to participate in computer science and other STEM activities, and for other purposes.

IN THE SENATE OF THE UNITED STATES—115th Cong., 2d Sess.

H. R. 4254

To amend the National Science Foundation Authorization Act of 2002 to strengthen the aerospace workforce pipeline by the promotion of Robert Noyce Teacher Scholarship Program and National Aeronautics and Space Administration internship and fellowship opportunities to women, and for other purposes.

Referred to the Committee on _____ and ordered to be printed

Ordered to lie on the table and to be printed

AMENDMENT intended to be proposed by Ms. CORTEZ MASTO

Viz:

At the end, add the following

SEC. ___. EFFORTS TO ENCOURAGE YOUNG GIRLS TO PARTICIPATE IN COMPUTER SCIENCE AND OTHER STEM ACTIVITIES.

(a) FINDINGS.—The Congress finds the following:

(1) Growth in the science, technology, engineering, and mathematics (referred to in this Act as "STEM") workforce is dominated by new computing

jobs, and the Nation needs to leverage all of its human capital to meet the demand. The Bureau of Labor Statistics projects that, of all the new STEM occupations created from 2014 to 2024, nearly 2/3 will be computing jobs.

(2) More work is needed to ensure women are equally represented in the computer science workforce. According to the Bureau of Labor Statistics, in 2016, women held more than 51 percent of all professional occupations in the United States, but only 26 percent of the computing-related occupations. This is compared with the all-time peak of 26 percent of the computing-related occupations in 1991.

(3) The gender disparity in computer science extends down through all levels of education. In 2016, only 23 percent of AP Computer Science exam takers were female. The number of computer science degrees awarded to women has steadily declined for bachelor's degree earners from 29 percent in 1995 to just 18 percent in 2014.

(4) A 2010 study funded by the National Science Foundation found that a majority of both women and men scientists and doctorate students became interested in science before middle school.

Women scientists in this study were more likely than men to mention teachers as the source of their initial interest in science, substantiating the need for teachers to engage young girls in the classroom.

(5) Gender disparities are also observed at the earliest levels of education. Studies have shown that, at around 6 years old, girls develop the belief that brilliance is a male characteristic. This negative stereotype, once adopted, is shown to have an immediate effect, as girls start to lose interest in activities they perceive as requiring brilliance.

(6) Research into the cause of the early adoption of this stereotype is limited, but implicit biases held by teachers have been shown to have a negative impact on girls' academic achievement in math and science and on their future decisions to enroll in advanced courses in these subjects.

(7) While significant work is being done to expand access to high-quality computer science education for female students at the secondary and postsecondary level, there are few research funding opportunities focused exclusively on girls in early childhood education.

(8) Despite the limited attention being paid to this age group, research has shown that interven-

tions with girls at an early age can reduce the negative impact of gendered stereotypes. Scientists have found that positive experiences with robotics and computing lead to greater interest and self-confidence among girls, even after gender stereotypes about computing have been adopted.

(b) GRANTS FOR RESEARCH REGARDING YOUNG GIRL PARTICIPATION IN STEM FIELDS.—Section 305(d) of the American Innovation and Competitiveness Act (42 U.S.C. 1862s–5(d)) is amended by adding at the end the following:

"(3) RESEARCH REGARDING YOUNG GIRL PARTICIPATION IN STEM FIELDS.—Grants awarded under this subsection may include grants for research regarding—

"(A) the role of teacher training and professional development in encouraging or discouraging young girls from participating in STEM activities, including effective incentive structures to encourage teachers to participate in such training and professional development;

"(B) the role of implicit bias in the classroom in shaping the perceptions of young girls regarding STEM fields and discouraging such girls from participating in STEM activities;

"(C) the role of other facets of the learning environment on the willingness of young girls to participate in STEM activities, including learning materials and textbooks, classroom decorations, seating arrangements, use of media and technology, classroom culture, and gender composition of students during group work;

"(D) the role of parents and other caregivers in encouraging or discouraging young girls from participating in STEM activities; and

"(E) the types of STEM activities that encourage greater participation by young girls.".

(c) GRANTS OVERCOMING GENDER BIAS IN THE COMPUTING FIELD.—Section 310(b) of the American Innovation and Competitiveness Act (42 U.S.C. 1862s–7(b)) is amended—

(1) in paragraph (1)—

(A) by striking "to eligible entities to research" and inserting the following: to eligible entities "to—

"(A) research";

(B) by striking the period at the end and inserting "; and"; and

(C) by adding at the end the following:

"(B) develop innovative methods to address gender bias in the computing field.";

(2) in the matter preceding subparagraph (A) of paragraph (2), by striking "paragraph (1)" and inserting "paragraph (1)(A)"; and

(3) by adding at the end the following:

"(3) ELIGIBLE ACTIVITIES.—The activities described in paragraph (1)(B) may include—

"(A) offering training and professional development programs, including summer or academic year institutes or workshops, designed to strengthen the capabilities of prekindergarten and elementary school teachers and to familiarize such teachers with the role of gender bias in the classroom;

"(B) offering innovative pre-service and in-service programs that instruct teachers on gender-inclusive practices for teaching computing concepts;

"(C) developing distance learning programs for teachers or students, including developing curricular materials, play-based computing activities, and other resources for the in-service professional development of teachers,

that are made available to teachers through the Internet;

"(D) developing a cadre of master teachers who will promote reform and the adoption of gender-inclusive practices in teaching computer science concepts in early childhood education;

"(E) developing or adapting prekindergarten and elementary school computer science curricular materials that incorporate contemporary research on the science of learning, particularly with respect to gender inclusion;

"(F) developing and offering gender-inclusive computer science enrichment programs for students, including after-school and summer programs;

"(G) providing mentors for girls in-person and through the Internet to support such girls in participating in computer science activities;

"(H) educating girls and their guardians about the opportunities and challenges for women in the computer science field and encouraging girls to consider careers in the field; and

"(I) developing tools to evaluate activities conducted under this section.".