November 28, 2022

The Honorable Patty Murray
Chair
Senate Appropriations Subcommittee on Labor, HHS, Education and Related Agencies

The Honorable Roy Blunt
Ranking Member
Senate Appropriations Subcommittee on Labor, HHS, Education and Related Agencies

The Honorable Jeanne Shaheen
Chairman
Senate Appropriations Subcommittee on Commerce, Justice, Science, and Related Agencies

The Honorable Jerry Moran
Ranking Member
Senate Appropriations Subcommittee on Commerce, Justice, Science, and Related Agencies

The Honorable Rosa DeLauro
Chairwoman
House Appropriations Subcommittee on Labor, HHS, Education, and Related Agencies

The Honorable Tom Cole
Ranking Member
House Appropriations Subcommittee on Labor, HHS, Education, and Related Agencies

The Honorable Matt Cartwright
Chairman
House Appropriations Subcommittee on Commerce, Justice, Science, and Related Agencies

The Honorable Robert Aderholt
Ranking Member
House Appropriations Subcommittee on Commerce, Justice, Science, and Related Agencies

Dear Appropriations Leaders:

As Congress turns its attention to finalizing its priorities for Fiscal Year 2023 Appropriations, our organizations urge you to provide robust funding for the CHIPS and Science Act of 2022 and for related science, technology, engineering, and math (STEM) education programs authorized by this groundbreaking bipartisan legislation.

According to the Bureau of Labor Statistics, the last decade has seen considerable and sustained shortages of STEM workers to meet the demands of the labor market. Numerous reports detail the growing concern of policymakers and industry leaders regarding the lack of STEM workers necessary to sustain the U.S. innovation enterprise, global competitiveness, and national security.[1] These longstanding trends have been greatly exacerbated by the lingering economic impacts of the COVID pandemic.

The U.S. education system is one of the finest in the world. Yet, challenges in the U.S. education system are and will continue to further complicate this labor supply-demand mismatch. According to a 2021 National Academies review, only 22 percent of American high school graduates are proficient in science, the average elementary classroom devotes less than 20 minutes per day to science, and 69 percent of elementary teachers say they are not well prepared to teach science.[2] In math, the average score for 9-

[1] https://www.bls.gov/opub/mlr/2015/article/stem-crisis-or-stem-surplus-yes-and-yes.htm#:~:text=or%20STEM%20surplus%3F-,Yes%20and%20yes,of%20a%20STEM%20worker%20surplus

[2] https://www.nationalacademies.org/news/2021/07/science-education-should-be-national-priority-new-report-calls-on-federal-government-to-encourage-focusing-resources-on-high-quality-science-for-all-students

year-old students fell 7 percentage points between 2020 and 2022, representing a 2 decade backslide in performance.[3] Elementary and secondary education in mathematics and science, particularly that which includes competencies for digital literacy is the foundation for entry into postsecondary STEM majors and STEM-related occupations.

Congress has an excellent opportunity to utilize the 5-year $81 billion authorization of programs by the CHIPS and Science Act of 2022 at the National Science Foundation (NSF), which would support vital teacher training and collaboration with the scientific workforce, improved STEM education in afterschool programs, and a dedicated focus to diversify STEM fields through higher education programs. There has never been a time in American public education when learning the application of skills in science, mathematics, and technology are as critical as they are today in ensuring our ability to sustain global leadership in innovation, as well as our collective futures.

As you work towards finalizing appropriations for Fiscal Year 2023, we offer the following recommendations:

We support full funding of NSF STEM education programs at the authorized level of $1.95 billion (Sec. 10303), which includes the following top-level programmatic investments:

- Robert Noyce Teacher Scholarship Program to support STEM educators: $73.7 million
- NSF Research Traineeship program for STEM students and future scholars: $59.5 million
- Graduate Research Fellowship program for students earning advanced STEM degrees: $416.3 million
- Education and Human Resources Directorate operations and award management to support established STEM programs in K-12, informal, and other education settings: $620 million
- Office of the Inspector General to oversee effective STEM education investments: $23.39 million

Additionally, we support the establishment by NSF of the following new programs authorized by the CHIPS and Science Act:

- The Scaling Innovations in PreK-12 STEM Education (Sec. 10395) within the EHR Directorate to support multidisciplinary research and translation Centers for Transformative Education Research and Translation to expand and grow effective innovations in STEM education.
- The Fostering STEM Research Diversity and Capacity Building Program (Sec. 10325 (b)). This program is an important way to recruit diverse students to STEM and build capacity at emerging research institutions.
- The Undergraduate Education research program to study current and future STEM workforce needs (Sec. 10312) and programs supporting graduate students (Sec. 10313) to encourage greater collaboration and coordination between institutions of higher education, including community colleges, and industry to enhance education, foster hands-on learning experiences, and improve alignment with workforce needs;
- The STEM Teacher Corps pilot program (Sec. 10311) to recognize outstanding STEM educators and raise the profile of teaching STEM as a career path for the next generation of teachers.

[3] https://www.npr.org/2022/09/01/1120510251/reading-math-test-scores-pandemic

Our view is that funding that includes support for physically immersive learning environments, and for teacher training and student curriculum focused on applying STEM skills, are just as important as funding for STEM academic skill programs themselves.

Further, we strongly urge Congress to provide robust support for several aspects of the CHIPS and Science Act specifically designed to broaden participation in the STEM fields, including:

- Subtitle A: STEM Opportunities to empower Federal agencies and universities to identify and lower barriers to the recruitment, retention, and advancement of women, minorities, veterans, and other groups underrepresented in STEM studies and careers and require agencies to collect comprehensive demographic data on the merit review process and on STEM faculty at U.S. universities.
- Subtitle B: Rural STEM Education Research to provide for research and development to increase access to STEM education opportunities in rural schools and to provide teachers with the resources they need to teach more effectively.
- Subtitle C: Minority-Serving Institutions STEM Achievement to direct Federal science agencies and the Office of Science and Technology Policy (OSTP) to undertake activities to broaden and improve the quality of undergraduate STEM education and enhance the research capacity within our Nation's Historically Black Colleges and Universities, Tribal Colleges and Universities, Hispanic Serving Institutions, and Minority Serving Institutions.
- Subtitle D: Combating Sexual Harassment in Science to establish a National Science Foundation program to award grants for research into the factors contributing to and the consequences of sexual harassment in the scientific workforce.

Finally, we support rapid implementation of the $200 million CHIPS for America Workforce and Education Fund (Sec. 102) included in the CHIPS and Science Act to kick start development of the domestic semiconductor workforce, which faces near-term labor shortages, by leveraging activities of the National Science Foundation.

In closing, we strongly urge Congress to complete the final Fiscal Year 2023 appropriations bill before the conclusion of the 117$^{th}$ Congress and fully fund the STEM education programs authorized by the CHIPS and Science Act. The CHIPS and Science Act represents a groundbreaking and bipartisan shift in U.S. policy toward a more innovative, better educated, and more competitive America. Let's take advantage of this opportunity to work together across party lines to ensure this promising effort is fully realized as quickly as possible.

We appreciate the opportunity to share our views and we look forward to working with you to be helpful in any way to accomplish our shared goals.

Sincerely,

STEM Education Coalition
Semiconductor Industry Association
Afterschool Alliance
AMD, Inc.
American Association of Colleges for Teacher Education
American Chemical Society
American Mathematical Society
American Society for Biochemistry and Molecular Biology

American Society for Engineering Education
American Society of Civil Engineers
American Statistical Association
Analog Devices
AnitaB.org
Applied Materials, Inc.
ASME
Association of Science-Technology Centers
Battelle
Education Development Center
EMD Electronics
Envision Excellence in STEM Education
Federation of American Scientists
FIRST
Girlstart
HP Inc.
IEEE-USA
IGNITE Worldwide
Information Technology Industry Council (ITI)
Intel
MediaTek Inc.
Micron
National Consortium of Secondary STEM Schools
National Council of Teachers of Mathematics
National Math and Science Initiative
National Science Teaching Association
National Society of Black Engineers
NI (formerly National Instruments)
Qualcomm
Samsung Semiconductor, Inc.
Siemens USA
Society of Hispanic Professional Engineers
Society of Women Engineers
STEM Learning Ecosystems Community of Practice
STEMx
Teaching Institute for Excellence in STEM (TIES)
Texas Instruments
Universal Technical Institute
Western Digital

cc: Members of the House Appropriations Committee and Members of the Senate Appropriations Committee