

**Written Testimony of Caroline King, Chief Policy and Strategy Officer,
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U.S. Senate Appropriations Committee Subcommittee on Labor, Health and
Human Services, and Education**

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Science, technology, engineering, and math (or STEM) education is an engine for economic growth for our country and opportunity for our children. My home state of Washington is a prime example. Washington is third in the nation in the creation of STEM jobs ([U.S. Chamber of Commerce Foundation](#), 2017). These jobs span every industry and geography in Washington. In companies from Amazon to Zulily, software engineers program the smart phones in our hands and the satellites in our skies. Drone operators monitor the health of crops in Eastern Washington and renewable energy engineers dot our landscape with wind turbines. Health care experts program robots to perform previously impossible lifesaving surgeries. Machinists, plumbers, and mechanics – solid, family-wage jobs – need STEM knowledge to program the machines, make complicated measurements, and read codes in automobiles.

While job creation is at a high, employers from Microsoft in Redmond to Matson Fruit in rural Washington starve for STEM talent. A [2016 report](#) by the Boston Consulting Group and Washington Roundtable estimates 740,000 job openings across the state over the next five years. Over one-third of these are STEM specific jobs. In today's technology driven workplace, 100 percent of these jobs require STEM fundamentals such as basic computer skills, problem-solving, and data analysis.

STEM jobs are not just plentiful, they pay well. While the median earning of all jobs in Washington is \$20.23 per hour, the median earnings for STEM jobs in Washington is \$42.12 per hour – if you're doing your STEM calculations now - that's more than double (Economic Modeling Specialists International, 2015). Increasing the number of Americans who are STEM educated and trained isn't just the right thing to do to help our businesses thrive and grow, it is also the right thing to do to put our citizens on a path to family-wage jobs and the middle class.

Washington voters overwhelmingly understand the importance of STEM and support increased investment. According to a [poll](#) of Washington voters in January 2017, 94 percent of Washington voters believe every child should have access to a high-quality STEM education. 82 percent of voters agree that increased focus on STEM education in Washington will improve the state's economy, and 79 percent agree that increased focus on STEM education will improve the economy in their specific region.

As a nation and in Washington state, we are at a crossroads. We're falling behind in preparing our youth and adult workers with the STEM skills and training they need to

secure good jobs. U.S. students are outperformed on international tests of core subject knowledge in math and 21st century skills such as problem solving. ([PISA 2015](#))

The production of technical and science/engineering degrees has fallen/has not kept pace with the needs of our country's employers. Washington's technology companies must recruit their talent outside of the United States as our schools are not producing enough homegrown talent with needed skills.

And within that homegrown talent, there's a lack of representation of women and people of color. In fact, less women earn computer science degrees today than they did 20 years ago. (Solving the Equation, AAUW, 2015). Training programs like apprenticeships, workforce training, and technical degrees need support to rapidly retool and adapt for new high-growth industries like advanced manufacturing, technology, and health care.

Youth and adults in rural or other underserved communities are at an even greater disadvantage. While STEM skills are just as crucial in agricultural tech and the maritime industry as they are at Amazon, there's limited opportunities for students to prepare and train in STEM. In Washington, for example, only 11 percent of students have access to computer science education, and many of the students without access are in schools not served by broadband or schools without educators trained to teach computer science or engineering. Strategic investments by our state in partnership with private funders have made some positive impact, but overall states struggle to adequately fund the STEM education and training needs demanded by our 21st century economy.

Bold and swift actions are needed; federal investment is a vital part of the solution. Our state leaders in Washington, in both public and private sectors, recognize the need for a strong STEM education. We are fortunate to have demonstrated leadership from Washington State Governor Jay Inslee, State Superintendent of Public Instruction Chris Reykdal, and Microsoft's President and Chief Legal Officer Brad Smith, among others. A strong partnership with the federal government is crucial to ensure all of our students are prepared for the careers of the future.

When the federal government invests in STEM education and workforce training in Washington, these funds make an impact far beyond the dollars themselves.

Federal funds are catalytic.

Strategic federal investments have helped jumpstart the creation of innovative new programs that accelerate the pace at which Washingtonians get trained for the good paying job available in our state.

Federal funds have encouraged leverage and coordination of funds among state, local, philanthropy, and business investors. Again, these investments accelerate the pace,

impact, and return on dollars spent for all investors, and, most importantly, they increase opportunity for our students.

Federal funds increase access to STEM education for rural and underserved communities. Rural communities often struggle to find private investment partners, particularly in economically depressed areas of our state. Federal funds provide the spark needed to make state and local dollars go further.

Federal funds work across all areas of education – from early learning to K-12 to post high school career training. The following examples demonstrate the unique and significant role federal funds play in educating and training Washington’s future workforce.

Example I: Federal Funds Support Early Learning and Elementary STEM Education in Bremerton, Washington

Federal funding supports early learning and elementary STEM education in many communities in Washington. One strong example of federal dollars making a difference to students receiving STEM education can be seen at West Hills STEM Academy in Bremerton, Washington.

Bremerton, Washington is a port town a one-hour ferry ride from Seattle, Washington. Their economy is fueled by the Navy shipyard, where many of our military’s ships undergo repairs and upgrades. West Hills STEM Academy is a public pre-Kindergarten to eighth grade school hosting special education pre-K and Head Start programs and is located in West Bremerton, a working class neighborhood in a working class town.

Prior to conversion to a STEM school in 2011, West Hills was perceived by many in the community as one of the least desirable schools to attend in the area. Now that it has been converted to a STEM school, West Hills STEM Academy has some of the most innovative programs in the state and its students outperform their peers in math, science, and the English language arts.

This conversion to a STEM school happened in part with federal funds, including Title I funding to support the complete redesign and ongoing implementation of the program. The funds helped 630 students, 50 percent of whom are students of color and 75 percent of whom live in poverty, get access and a comprehensive 21st century skill set in their own neighborhood school. Thanks to Title I funding, the school engages in professional development and additional academic support for students. It’s a great example of a school using Title I funding flexibly to design and support a high impact STEM education program.

Students who are part of the program from pre-K to eighth grade participate in daily, integrated, researched-based STEM instruction. In third through eighth grade, students

leave the site monthly for STEM field experiences, and in middle school levels, students engage in career technical education learning focused on STEM education.

West Hills STEM was recently granted a \$1.5 million DoDEA grant to spread STEM education to K-8 schools throughout the district based on lessons learned at West Hills STEM Academy. Title I funds made this scaling up possible.

The Head Start program housed at West Hills STEM Academy is fully integrated with the Bremerton School District special education pre-K STEM program. Educators in Head Start collaborate with West Hills STEM Academy STEM instructors to receive professional development, team based instruction, and shared special events and assemblies focused on STEM education. Head Start classes are also able to leverage opportunities through an early learning STEM program funded by The Boeing Company, which created early learning STEM units in which over 800 children across the district currently participate.

Example II: Perkins Grant Connects Rural High School Students to the New Economy

Federal funds also support STEM education on the middle and high school levels. The Toppenish School District serves over 4,000 students – 97 percent of them students of color - in a rural area in South Central Washington.

Federal Perkins funds have allowed Toppenish to engage students in daily STEM educational opportunities through middle and high school core academic and career technical education programs. Thanks to Perkins funds, Toppenish offers all facets of the STEM Engineering/Career Integrated Manufacturing pathway. Toppenish middle school students are able to take several pre-engineering and computer science courses, which include Energy and the Environment and Robotics and Animation, as part of their core academic experience in seventh and eighth grade.

At the high school, the updated computers and engineering equipment have also allowed Toppenish to offer college level courses. Seniors can qualify for up to 12 articulated college credits. Through this STEM engineering program, students are learning to design and build, but they are also taught to reverse engineer, troubleshoot, and then rebuild. This school year, Toppenish is developing courses to add Drone Technology/Advanced Robotics, including Computer Science Programming, into the STEM Engineering/Computer Integrated Manufacturing pathway. This could not be done without the purchase of the computer technology.

Toppenish School District's Perkins Funds go a long way to increase opportunities for rural students in the courses most relevant to local future careers.

Example III: Federal Funding Develops New Programs Tailored to the Needs of STEM Employers and Students

In addition to support for these educational opportunities, federal funds have allowed Washington state to develop and grow **new** programs directly suited to the STEM needs of employers in our state. Specifically, federal investments in Washington have developed the first large-scale technology industry apprenticeship in the nation. Federal funds have also enabled the creation of Washington state's first registered youth apprenticeship for high school students.

In 2015, a \$5 million grant from the Federal Department of Labor catalyzed the development of registered apprentices in the information technology (IT) industry with a focus on women, minorities, and veterans. The state partnered with the Washington Technology Industry Association to develop an innovative program – called [Apprenti](#) – which is establishing apprenticeships in several high-demand IT fields. These apprenticeships offer a pathway for tech employers to attract and train diverse non-traditional candidates to their ranks. Washington state and private industries have provided critical supports and supplemental funding.

The goal over the next four years is to train over 600 registered IT apprentices in the state of Washington. That's 600 Washington residents prepared to meet the needs of industry. And Apprenti is quickly becoming a best-in-class model for the country. The Federal Department of Labor recently awarded a \$7.5M expansion grant to take the Apprenti model to other states.

Federal funds from the Department of Labor also helped our state launch youth apprenticeships for 16 and 17 year olds. This means young people in our state can get key on-the-job experience and training that will lead to family wage careers before they have even left high school. One of the first programs launched with this funding is an Aerospace apprenticeship program. The [Aerospace Joint Apprenticeship Committee – or AJAC](#) – is partnering with Tacoma Public Schools to train high school students as Manufacturing Production Technicians. As of this month, AJAC has registered their first cohort of 15 students, linking them with structured, paid, on-the-job training and related classroom/lab training over a 2000-hour term of apprenticeship. A second cohort will launch in Yakima soon. The goal is for ten registered youth apprenticeships cohorts to be launched by next year.

These examples are just a few of many that demonstrate the positive impact federal funding makes across the state. Other key federal programs include the 21st Century Community Learning Center program which supports out-of-school, hands-on learning in programs ranging from environmental science to robotics, as well as funding for ANEW, which supports young women preparing for welding apprenticeships. In all of

these cases, federal funding increases access for our state's students and prepares them with the skills they need to excel in 21st century jobs.

Federal Investment in STEM Education Creates A Positive Impact for Students and Washington State

Recent federal laws, such as the *Every Student Succeeds Act* (ESSA) and the *Workforce Innovation and Opportunity Act*, give states and local districts the flexibility to design effective STEM education and workforce training programs and deliver outcomes that are appropriate for our states and communities.

Washington STEM has committed to support the Washington State Superintendent of Public Instruction in the development of our state's plan to implement ESSA. We believe STEM is critical to deliver on the goals of ESSA – ensuring students of every zip code receive a well-rounded education that prepares them for full participation and success in our economy and democracy. We have strongly encouraged the state to prioritize the use of Title I and IV funds to increase students' equitable access to STEM courses, experiences, and career pathways, and Title II funds to support teachers with the professional learning they need and deserve to provide cutting edge STEM education.

In Washington state, the appropriate outcomes are those that will drive the continued growth of our economy as well as allow our state's students to be prepared for the good paying jobs created in our economy. If our economy does well, but a Washingtonian does not have the skills to find a job, we've failed.

Now more than ever, we need federal investment to support and encourage bold and swift action at the state level. Your investments in our state have driven and will continue to drive Washington's children to great, family-wage jobs. We encourage you to continue and increase federal investments in public education and workforce training –such as the Title I and IV, Perkins, and Department of Labor grants I've discussed today – and to explore new areas federal investment can accelerate results, such as dedicated funding for K-12 computer science.

States like Washington need the federal government's partnership. Federal investments help drive equity; leverage private, state and local funds; and catalyze the innovative and large scale STEM solutions our employers demand and our youth and adult workers need to thrive in the middle class.

Thank you.