

CALL TO ACTION
FOR SCIENCE
EDUCATION

BUILDING
OPPORTUNITY
FOR THE FUTURE

Science Education As a Pillar of Workforce Development

High-quality science education is not the national priority it needs to be. There are also deep disparities that have shut too many students out of science learning and careers.

The National Academies of Sciences, Engineering, and Medicine convened a committee of experts to present a detailed vision of better, more equitable science learning from kindergarten to postsecondary education, and to outline recommendations for how policymakers can achieve this vision.

QUALITY SCIENCE LEARNING IS CRITICAL TO NURTURE THE U.S. STEM WORKFORCE AND SUPPORT THE PURSUIT OF LIVING WAGE JOBS

Without quality science education, our country will be ill-prepared to meet society's future needs.

Knowledge and skills gained through science learning have always been important for many kinds of technical work. Today, these skills are becoming increasingly valuable for an array of jobs held by workers who have not traditionally been thought of as part of the science labor force, such as welders and electricians, farmers, healthcare technicians, and mechanics.

In addition, the nation needs a cadre of talented scientists, engineers, medical personnel, and other STEM professionals to advance knowledge, design new technology, and drive a robust economy. Scientific disciplines—ranging from chemistry and biology to physics and earth sciences— at all levels of education— from elementary school to higher education— are vital for the successful preparation for, and pursuit of, these STEM careers.

**Only
15%
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26%
of those employed
in computer and
mathematical
science fields
are women**

SOURCE: National Science Board, National Science Foundation. (2018). *Science and Engineering Indicators 2018*. NSB-2018-1.

Why it matters:

- Science-related careers are high-paying and increasing in demand.
- STEM jobs are much more likely to provide living wages for those employed in them compared with non-STEM jobs. The U.S. Bureau of Labor Statistics reports that in 2019, the wage of a STEM professional averaged \$86,980. For a non-STEM worker, it was \$38,160. That's a difference of nearly \$50,000 annually.
- The U.S. STEM workforce demand is expected to grow 10.5% by 2030 and we will need to fill 10.7 million STEM jobs.

EQUITABLE SCIENCE LEARNING AND OPPORTUNITY FOR ALL ARE CRITICAL TO OUR STEM WORKFORCE

Quality and inclusive science instruction creates equity of opportunity, so that students across all geographies and populations, including people of color and women, can become part of this cadre of STEM professionals. However, states and local communities are not yet delivering high-quality, rigorous science learning experiences in equal measure to all students, thereby creating barriers for many to access science-related careers.

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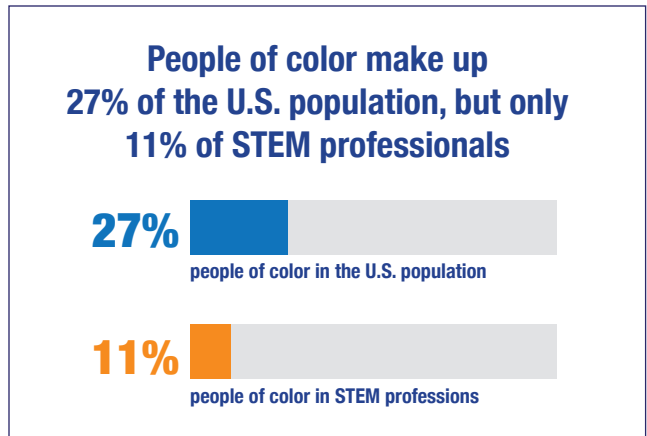
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Equitable science learning includes equity of resources, quality science instruction, and time spent learning science in and beyond the classroom. When communities prioritize equitable science education, they open pathways for success for students who were once shut out of STEM careers, and at the same time, invest in a stronger STEM workforce that utilizes everyone's talents and experiences. A diverse STEM workforce is the strongest STEM workforce.

Why it matters:

- Evidence shows that workforce diversity produces better, more innovative results.
- Students historically underrepresented in science-related fields experience a multitude of barriers that deter them from pursuing science careers.
- Only 15 percent of engineers and 26 percent of those employed in computer and mathematical science fields are women.
- Black, Latino/a, and American Indian/Alaska native people make up 27 percent of the U.S. population ages 21 and older but occupy only 11 percent of STEM positions.



SOURCE: National Science Board, National Science Foundation. (2018). *Science and Engineering Indicators 2018*. NSB-2018-1.

Diversity in the workplace not only expands the available talent pool, but also increases the range of perspectives and expertise available to solve grand challenges in STEM. Without clear and accessible pathways of opportunity for people to enter STEM careers, the country is missing out on their talents and limiting their futures. Research shows that diversity in the STEM workforce improves work performance and engagement, enhances the quality of research and provision of health care, and supports innovation and growth.

How to make it happen:

- Through quality, hands-on science instruction, ensure that every student experiences the joy, beauty, and power of science, and learns how science can be used to solve local and global problems.
- Use guided pathways to keep students on a personalized path toward a science-related career. These pathways are being implemented at some community colleges, where many students are Black and Latino/a.
- Ensure that students feel welcomed and valued in science classrooms.

Scientific thinking and understanding are essential for all people navigating the world, not just for scientists and other STEM professionals.

The Call to Action committee has provided clear, actionable recommendations for federal and state lawmakers, education leaders, advocates and local communities. To learn more, visit nationalacademies.org/cta-science-education.