



Shaping Tomorrow's
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STEM EDUCATION & WORKFORCE

THE ISSUE

Strong education in science, technology, engineering and mathematics (STEM) to develop the future supply of technicians, engineers and scientists is critical to our future well-being and standard of living. Even students pursuing non-STEM specialties need basic knowledge of scientific and technological applications for effective participation in the workforce, success in their personal lives and responsible citizenship.

Moreover, there has been increased growth in jobs related to STEM that need to be filled. The U.S. Bureau of Labor Statistics projected that 65,000 new engineering jobs will be created from 2014 to 2024.¹ If you include retirees, the number of new engineering job openings in the U.S. rises to 500,000.²

The engineering workforce in North America remains a male-dominated employment sector, and the share of female workers in engineering and architecture has remained relatively constant since 1990. Additionally, people of color remain under-represented in the engineering and architectural sector.

ASHRAE's ROLE

As professionals focused on design, construction, operation and maintenance of the nation's buildings and infrastructure, and as educators of future generations of engineers, our members also recognize the importance of mentoring and helping students learn about STEM careers, which is why our members are active in their local communities and in national programs, bringing exciting science and engineering programs to students. ASHRAE is actively engaged in the Solar Decathlon, National Engineers Week and other STEM education efforts worldwide, including through its 440 active student branches.

ASHRAE is also a member of the National STEM Education Coalition, which supports new and innovative initiatives that will help improve the content, knowledge, skills and professional development of the K-12 STEM teacher workforce and informal educators. ASHRAE is dedicated to ensuring quality STEM programs for teachers and students all around the world by encouraging its members to get involved with their local school systems.³

ASHRAE's Board of Directors has committed to promoting diversity and inclusion in all levels of the society. This effort will include efforts to promote STEM education and training

¹ Fayer, Stella, et al. *STEM Occupations: Past, Present, And Future*. U.S. Bureau of Labor Statistics, Jan. 2017, www.bls.gov/spotlight/2017/science-technology-engineering-and-mathematics-stem-occupations-past-present-and-future/pdf/science-technology-engineering-and-mathematics-stem-occupations-past-present-and-future.pdf.

² Fayer, Stella, et al. *STEM Occupations: Past, Present, And Future*. U.S. Bureau of Labor Statistics.

³ For more information, see <https://www.ashrae.org/communities/student-zone/k-12-activities>.



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to children, schools, and educators, in a way that will attract, train, and retain more women, disabled, LGBTQ, and people of all socioeconomic and ethnic backgrounds to engineering education and employment.

ASHRAE's VIEW

Future generations need to possess the skills and critical competencies necessary to be successful in a highly competitive, global and technologically sophisticated economy. We must work cooperatively to ensure that students receive the STEM training essential for future success. ASHRAE encourages policymakers to implement the following recommendations:

- Increase government funded research to improve teaching and learning of STEM concepts and critical thinking skills.
- Recruit, train and retain qualified STEM teachers through the development of programs recognizing educators who excel in STEM education and incentives that encourage the best and brightest scientists and engineers to teach.
- Foster partnerships among educational institutions, industry and non-profit organizations and their members to introduce students of all backgrounds to STEM career opportunities.
- Encourage the adoption of curriculum standards that cultivate high student performance; the development of curricula that foster creativity, experiential problem solving and critical thinking; and the development of assessments aligned with these standards and curricula.
- Create opportunities and incentives for women to pursue STEM coursework and careers.
- Encourage diversity in STEM education and the engineering workforce.