Shaping Tomorrow's Built Environment Today

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 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. According to a recent study, the U.S. ranks 38th in math and 24th in science.[1] This is a worrisome statistic that suggests we must work harder to make advances in the understanding and appreciation of science, technology, engineering and math (STEM) in the K-12 student population.

Moreover, there has been increased growth in jobs related to STEM that need to be filled. The Bureau of Labor Statistics projected that 65,000 new engineering jobs will be created from 2014 to 2024.[2] If you include retirees, the number of new engineering job openings rises to 500,000.[3]

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, ASHRAE members recognize the importance of a solid foundation in science, technology, engineering and mathematics. 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 in the U.S. and supports STEM worldwide through its Chapters and student activities programs.

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.[4]

ASHRAE's VIEW

Future generations need to possess the skills and critical competencies necessary to be successful in a

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[1] DeSilver, Drew. *U.S. Academic Achievement Lags That of Many Other Countries*. Pew Research Center, 15 Feb. 2017, www.pewresearch.org/fact-tank/2017/02/15/u-s-students-internationally-math-science/.

[2] 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.

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

[4] For more information, see https://www.ashrae.org/communities/student-zone/k-12-activities.

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.
- 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 and minorities to pursue STEM coursework and careers.