

The US faces a shortage of graduates in science, technology, engineering, and math (STEM) fields.

By 2018, STEM occupations are projected to increase to 8.6 million jobs, or 5.3 percent of the nation's 162 million total positions.¹ However, in the US, STEM degree production has stagnated, despite employment projections forecasting a 17% growth in the STEM field over the next decade."²

- **Too few 12th grade students are both STEM interested and math proficient.** Only 17% of 12th grade students are proficient in math *and* interested in majoring in a STEM field in college. Males, Caucasian and Asian-American students are over-represented.
- **African-Americans are least likely to pursue STEM degrees:** Over 62% are neither interested in STEM nor proficient in math.²

US STEM workforce by ethnicity³

If current trends continue, new STEM jobs will be shared disproportionately across ethnic groups. The % of black, Hispanic, Asian and white US citizens who currently hold a STEM job is

- 2 % of Non-Hispanic Blacks
- 3% of Hispanics
- 6% of Non-Hispanic whites
- 15% Non-Hispanic Asians

Early interest in STEM is key

Students who expect by eighth grade to have careers in science are *two or three times more likely* to graduate from college with science degrees than those with no interest in science at the same age.⁴

"Researchers have shown that an early interest in pursuing science and engineering is a better indicator of

whether a student will pursue a career in these fields than a student's grades in school. Increasing interest early on is critical so that students are motivated to develop the knowledge and skills required to pursue more rigorous math and science courses in high school"⁵

Regular attendance at afterschool programs pays off. But program capacity is low.

Students who regularly attend well-run afterschool program perform significantly better in school than comparable students who do not.⁶ But there are still not enough afterschool programs to keep pace with an increasing demand.

- Among US children, 8.4 million (15%) participate in regular afterschool programs – compared with 6.5 million children in 2004 (11 %) These children are disproportionately from African-American, Latino and low-income households.
- Parents of 18.5 million children (38%) not currently attending an afterschool program say they would enroll their children if a program were available – up from 15.3 million (30%) in 2004.⁷



Testing the strength of paper columns.
Six hollow paper tubes holding up 43 lbs of water.

Well-run afterschool science programs can change students' attitudes and career choices – especially among girls, and students from minority, low-income, and traditionally under served populations. To achieve this outcome on a broad, national scale, very large numbers of new afterschool workers, volunteers, technical specialists, and program managers must be trained to deliver high quality science programming to the millions of students who attend the nation's afterschool programs every day of the school year.

*NPASS Afterschool Science Briefings are copyrighted to Education Development Center, Inc. in Waltham, MA.
NPASS Principal Investigator is Charlie Hutchison: chutchison@edc.org <http://npass2.edc.org>*

References

- ¹ Carnevale, A. P., Smith, N., & Strohl, J. (2010, June). *Help wanted: Projections of jobs and education requirements through 2018*. Washington, DC: Georgetown University Center on Education and the Workforce.
- ² Business-Higher Education Forum. (2011, August). *Creating the workforce of the future: The STEM interest and proficiency challenge*. Washington, DC: Author.
- ³ Beede, D., Julian, T., Khan, B., Lehrman, R., McKittrick, G., Langdon, D., et al.. (2011, September). *Education supports racial and ethnic equality in STEM*. Washington, DC: U.S. Department of Commerce, Economics and Statistics Administration.
- ⁴ Tai, R. H., Liu, C. Q., Maltese A. V., and Fan, X. (2006). Planning early for careers in science. *Science* 312, 1143-1144.
- ⁵ Afterschool Alliance. (2011, September). *STEM learning in afterschool: An analysis of impact and outcomes*. Washington, DC; Author.
- ⁶ Vandell, D. L., Reisner, R. R., & Pierce, K. M. (2007, October). *Outcomes linked to high-quality afterschool programs: Longitudinal findings from the study of promising afterschool programs*. Irvine, CA: Policy Associates.
- ⁷ Afterschool Alliance. (2009, October). *America After 3PM: The most in-depth study of how America's children spend their afternoons*. Washington, DC: Author. <http://esa.gov/Reports/education-supports-racial-and-ethnic-equality-stem>