



The Case for STEM Education as a National Priority: *Good Jobs and American Competitiveness*

Why is STEM Education a National Priority?

“Employment in STEM occupations grew much faster than employment in non-STEM occupations over the last decade (24.4 percent versus 4.0 percent, respectively), and STEM occupations are projected to grow by 8.9 percent from 2014 to 2024, compared to 6.4 percent growth for non-STEM occupations.”¹

-U.S. Department of Commerce, Office of the Chief Economist, 2017

The median annual wage for all STEM occupations was \$84,880.00 in May 2018, significantly above the U.S. average of \$37,020.00 for non-STEM occupations.²

-Bureau of Labor Statistics, 2018

“There are many more workers with a STEM degree (11.9 million) than there are workers in STEM occupations. Thus, in addition to STEM jobs, STEM degrees also open the door to many other career opportunities.”³

-U.S. Department of Commerce, Office of the Chief Economist, 2017

“Despite the fact that women earn the majority of college degrees, they still make up only a quarter of graduates in STEM fields. These fields tend to have the greatest earnings potential, and women's underrepresentation in these fields is considered a major contributor to the gender pay gap.”⁴

-Forbes, 2019

“STEM-related jobs grew at three times the rate of non-STEM jobs between 2000 and 2010. By 2018, it is projected that 2.4 million STEM jobs will go unfilled. At the same time, minorities are deeply underrepresented in STEM fields—just 2.2% of Latinos, 2.7% of African Americans, and 3.3% of Native Americans and Alaska Natives have earned a university degree in STEM fields.”⁵

-Smithsonian Education Center, 2019

How is the U.S. Doing in STEM Higher Education?

“Fewer than 40 percent of students who enter college intending to major in a STEM field complete a STEM degree.”⁶

-Office of Science and Technology and Policy, 2012

“About half of workers with college training in a STEM field are working in a non-STEM job. Among workers ages 25 and older with at least a bachelor's degree, one-in-three (33%) have an undergraduate degree in a STEM field of study. But only about half (52%) of these STEM-trained workers are employed in a STEM occupation.”⁷

-Pew Research Center of American Community Survey, 2014-2016

¹ <https://files.eric.ed.gov/fulltext/ED594354.pdf>

² <https://www.bls.gov/emp/tables/stem-employment.htm>

³ <https://files.eric.ed.gov/fulltext/ED594354.pdf>

⁴ <https://www.forbes.com/sites/kimelsesser/2019/07/02/now-theres-more-college-educated-women-than-men-in-workforce-but-women-still-lag-behind-men-in-pay/#74b16d6a4c31>

⁵ <https://ssec.si.edu/stem-imperative>

⁶ <http://www.whitehouse.gov/blog/2012/12/18/one-decade-one-million-more-stem-graduates>

⁷ <https://www.pewresearch.org/fact-tank/2018/01/09/7-facts-about-the-stem-workforce/>

“Completion rates in STEM majors were lower at Hispanic-serving institutions and historically black colleges and universities. These institutions typically enroll larger numbers of students from low-income, first-generation, and underrepresented groups who have lower completion rates at many colleges and often do not have the same level of resources as students at selective predominantly white institutions.”⁸

-The National Academies of Sciences, Engineering, and Medicine, 2016

“In STEM fields, a lower percentage of bachelor’s degrees were awarded to females than to males (36 vs. 64 percent). This pattern—in which females received higher percentages of bachelor’s degrees overall but lower percentages of bachelor’s degrees in STEM fields—was observed across all racial/ethnic groups.”⁹

-The National Center for Education Statistics, 2015-2016

How can the U.S. support success in STEM fields for undergraduates and graduates?

“The efforts to increase STEM graduation rates include more advising and tutoring support in college.”¹⁰

-The American Society for Engineering Education, 2017

“Undergraduate involvement in scientific research is valuable for students. Undergraduates who gain experience in research have higher grade point average and higher rates of acceptance to graduate program.”¹¹

-“How to Successfully Incorporate Undergraduate Researchers into a Complex Research Program at a Large Institution”, 2015

“Institutions should invest in faculty development and ensure good teaching is rewarded at the same level as research and publications. Faculty can be trained to provide effective mentoring and advising and should be given more resources to assess and improve their teaching. STEM departments can lead the way by providing such training to graduate students—our nation’s future faculty.”¹²

-The American Council on Education, 2013

“Expand university-employer partnerships. For example: College and University Presidents should designate a high-level administrator or faculty member to serve as the initial point of contact with local businesses, and give this individual the power and authority to enter into formal relationships with them (and, where appropriate, with third-party intermediaries).”¹³

-Promising Practices for Strengthening the Regional STEM Workforce Development Ecosystem, 2016

“Both the public and private sectors are clamoring for more American students to pursue degrees and careers in STEM related fields, including environmental science, clean energy, exercise science, among others. And, as a result, everyone from private organizations to the federal government is offering attractive STEM scholarships and grants.”¹⁴

-U.S. News Report, 2011

“Creating opportunities for students to not only develop content knowledge but also to have hands-on experiences and feel a sense of belonging and identity as scientists seem to be particularly important. For example, students from underrepresented minority backgrounds, and women of color specifically, are more likely to be retained in science and engineering programs if they have opportunities to discuss and deeply engage STEM course content with peers, participate in undergraduate research, and join science clubs and organizations.

-Higher Education Today, 2018

⁸ <https://www.nap.edu/read/21739/chapter/4#36>

⁹ https://nces.ed.gov/programs/raceindicators/indicator_reg.asp

¹⁰ <https://www.asee.org/public/conferences/papers/download>

¹¹ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4521737/>

¹² <https://www.higheredtoday.org/2013/12/19/the-times-takes-on-stem-what-can-higher-ed-do/>

¹³ <http://sites.nationalacademies.org/PGA/bhew/stemworkforce/index.htm>

¹⁴ <https://www.usnews.com/education/blogs/the-scholarship-coach/2011/11/03/scholarships-award-stem-majors>