

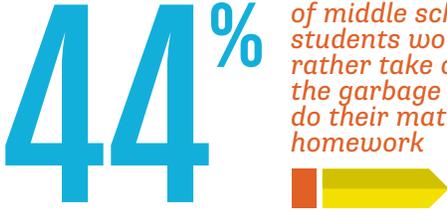
# CONSIDER THE FACTS

The following science, technology, engineering, and math (STEM) facts tell the story of STEM today and tomorrow—nationally and in Washington state. Together, they illustrate the growing need and opportunity to power student success in STEM.

## NATIONAL

- By 2022, there will be 9 million STEM-related jobs in the United States.<sup>1</sup>
- In the next decade, many of the 30 fastest-growing jobs will require some STEM skills.<sup>2</sup> Yet 44 percent of middle school students would rather take out the garbage than do their math homework (things are improving – that’s down from 61% in 2009!).<sup>3</sup>
- If the United States is to maintain its leadership in STEM, we must produce approximately one million more STEM professionals over the next decade than is currently projected.
- Fewer than 40 percent of students who enter college intending to major in a STEM field complete college with a STEM degree.<sup>5</sup>
- In 2014, only 43 percent of U.S. high school graduates were ready for college work in math; 37 percent were ready in science.<sup>6</sup>
- Women earned 57.3% of bachelor’s degrees in all fields in 2011 and 50.4% of science and engineering bachelor’s degrees. However, women’s participation in science and engineering at the undergraduate level significantly differs by specific field of study. While women receive over half of bachelor’s degrees awarded in the biological sciences, they receive far fewer in the computer sciences (18.2%), engineering (19.2%), physics (19.1%), and mathematics and statistics (43.1%).<sup>7</sup>
- STEM employment has risen more than 30 percent between 2000 and 2013.<sup>8</sup>

**44%** *of middle school students would rather take out the garbage than do their math homework*



## WASHINGTON

- Washington state is a national leader in STEM: we rank second in the concentration of STEM jobs,<sup>9</sup> first in the concentration of software publishing companies,<sup>10</sup> and fourth in the “New Economy” index for innovation and entrepreneurship.<sup>11</sup>
- 740,000 job openings will be available in Washington in the next 5 years. Of those jobs, 33% (245,000) will be STEM jobs which highlights and even greater need for quality education that prepares students to be future ready.<sup>12</sup>
- A 2011 Georgetown University study found that our state’s STEM economy will only grow stronger. By 2018, we will see a 24 percent increase in STEM jobs, which is 7 points above the national average. 94 percent of these jobs will require some post-secondary education.<sup>13</sup>
- There are currently 25,000 unfilled jobs in Washington due to a lack of qualified candidates (2013). Eighty percent of those jobs are in high-demand health care and STEM fields, such as computer science and engineering.<sup>14</sup>

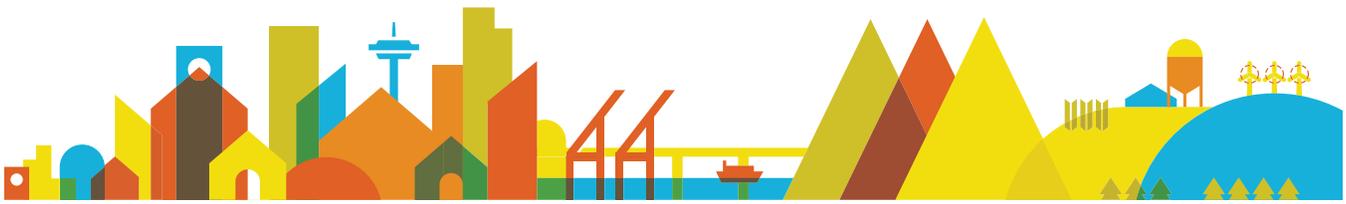


- In the next four years, 45,000 jobs in Washington will go unfilled due to lack of qualified candidates.<sup>15</sup>
- Filling the job skills gap would have big impact on our state economy, generating an additional 110,000 jobs, in addition to \$720 million in annual state tax revenues and \$80 million in local tax revenues by 2017.<sup>16</sup>
- Washington state ranks 34th when it comes to participation in science and engineering bachelors programs, 40th in participation of STEM master's degrees, and 30th in PhDs.<sup>17</sup>
- Only 47 percent of Washington's fourth-graders and 39 percent of eighth-graders scored proficient or above in math on the 2015 National Assessment of Educational Progress. But good news, fourth grade student's scored at 42 percent proficient and eighth grade students score scored 38 percent. A 7 point and 4 point increase, respectively, since 2009.<sup>18</sup>
- Washington's achievement gaps in math and science have not improved in over a decade and are the 12th largest in the nation.<sup>19</sup> If we continue to address the achievement gap at the current glacial rate, it would take 150 years for our African American students to realize the same levels of academic achievement as their peers.<sup>20</sup>
- Washington 4th grade African American and Hispanic students respectively scored 31 points and 29 points lower on the National Assessment of Educational Progress in Science.<sup>21</sup>
- Too many students in Washington are unprepared for college-level work. 51% of new, first-time college students entering Washington community colleges in 2009-2010 enrolled in remedial - meaning non-credit bearing - math classes.<sup>22</sup> In addition to student tuition, the state expenditure for remedial math was estimated to cost the state over \$47 million.<sup>23</sup>
- Washington state universities are not producing enough teachers to meet the growing demand in the coming years, leading to a shortage of nearly 1,000 STEM teachers.<sup>24</sup>
- Only 1048 students in our state took the AP computer science test last year. Of those, 260 were girls, 23 were African American, and 25 were Hispanic.<sup>25</sup>
- Only 23% of Washington's public high schools currently offer AP computer science.<sup>26</sup>
- Girls who take AP computer science are likely to major in it in college, and Black and Latino students are 7 times more likely. - Code.org
- In 1984, 37% of all computer science graduates were women, but today that number is just 18%. - Code.org



Washington state is a national leader in STEM: we rank second in the **concentration of STEM jobs.**<sup>9</sup>





- <sup>1</sup> Occupational Outlook Quarterly, U.S. Bureau of Labor Statistics, 2014. < <http://www.stemedcoalition.org/wp-content/uploads/2010/05/BLS-STEM-Jobs-report-spring-2014.pdf>>
- <sup>2</sup> The 30 fastest growing occupations 20012-22, U.S. Bureau of Labor Statistics, 2012. < [http://www.bls.gov/emp/ep\\_table\\_103.htm](http://www.bls.gov/emp/ep_table_103.htm)>
- <sup>3</sup> Math Relevance to U.S. Middle School Students, Raytheon Corporation, 2012. < [http://www.raytheon.com/news/rtnwcm/groups/corporate/documents/content/rtn12\\_studentsmth\\_results.pdf](http://www.raytheon.com/news/rtnwcm/groups/corporate/documents/content/rtn12_studentsmth_results.pdf)>
- <sup>4</sup> “Engage to excel: Producing one million additional college graduates with degrees in science, technology, engineering, and mathematics,” Report by the President’s Council of Advisors on Science and Technology, 2012. < [https://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-engage-to-excel-final\\_2-25-12.pdf](https://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-engage-to-excel-final_2-25-12.pdf)>
- <sup>5</sup> “Engage to excel: Producing one million additional college graduates with degrees in science, technology, engineering, and mathematics,” Report by the President’s Council of Advisors on Science and Technology, 2012. < [https://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-engage-to-excel-final\\_2-25-12.pdf](https://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-engage-to-excel-final_2-25-12.pdf)>
- <sup>6</sup> The Condition of College & Career Readiness. Iowa City, IA: ACT, Inc., 2014 < <http://www.act.org/research/policymakers/cccr14/readiness.html>>
- <sup>7</sup> NSF, Women, Minorities, and Persons with Disabilities in Science and Engineering (2015) - <https://www.nsf.gov/statistics/2015/nsf15311/>
- <sup>8</sup> The US News/Raytheon STEM Index (2016) - <http://www.usnews.com/news/stem-index>
- <sup>9</sup> US Chamber of Commerce Foundation, 2015 - <https://www.uschamberfoundation.org/enterprisingstates/#WA>
- <sup>10</sup> Cyberstates 2015: The Definitive State-by-State Analysis of the U.S. High-Tech Industry, Tech-America Foundation, 2015. < <https://www.comptia.org/resources/2015-cyberstates?c=62499>>
- <sup>11</sup> Atkinson, Robert D. and Adams Nager and the Information Technology and Innovation Foundation (ITIF). The 2010 State New Economy Index, 2014. <<http://www.itif.org/publications/2014/06/11/2014-state-new-economy-index>>
- <sup>12</sup> 2015 National Assessment of Educational Progress (NEAP) Nation’s Report Card - <http://nces.ed.gov/nationsreportcard/states/>
- <sup>13</sup> Georgetown University Center on Education and the Workforce, 2011.
- <sup>14</sup> Great Jobs Within Our Reach: Solving the Problem of Washington state’s growing job skills gap. The Boston Consultancy Group and the Washington Roundtable. March 2013. [https://www.bcgperspectives.com/content/articles/education\\_public\\_sector\\_opportunity\\_all\\_investing\\_washington\\_state\\_stem\\_education/](https://www.bcgperspectives.com/content/articles/education_public_sector_opportunity_all_investing_washington_state_stem_education/)>
- <sup>15</sup> Ibid.
- <sup>16</sup> Ibid.
- <sup>17</sup> Benchmarking Washington’s Innovation Economy, Technology Alliance, June 2015. <<http://static1.squarespace.com/static/545b1745e4b0a4696b7278fd/t/5584325ee4b0421b3f3dc01bd/1434727006229/Benchmarking2015.pdf>>



- <sup>18</sup> National Assessment of Educational Progress (NAEP), Science 2015 and Math 2015.
- <sup>19</sup> Ibid.
- <sup>20</sup> Center for Education Policy, The Achievement Gap: Slow and Uneven Progress for Students, 2010.
- <sup>21</sup> 2015 National Assessment of Educational Progress (NAEP) Nation's Report Card - <http://nces.ed.gov/nationsreportcard/states/>
- <sup>22</sup> Washington State Board for Community & Technical Colleges: Role of Pre-College (Developmental and Remedial) Education for Recent High School Graduates Attending Washington Community and Technical Colleges, 2009-10. Revised April, 2012.
- <sup>23</sup> Washington State Board for Community & Technical Colleges: Role of Pre-College (Developmental and Remedial) Education for Recent High School Graduates Attending Washington Community and Technical Colleges, 2009-10. Revised April, 2012.
- <sup>24</sup> The New Teacher Project, 2010.
- <sup>25</sup> The Office of the Superintendent of Public Instruction, Washington (2015)
- <sup>26</sup> Ibid.

