

Next Generation Science Standards Fact Sheet for the Business Community

Students who are well prepared for college and careers in science and STEM (science, technology, engineering and math) fields are vital for shaping our future through innovation and invention, and are the key to maintaining our economic competitiveness. The need for high-quality science education—beginning at the very earliest grades—is more essential now than ever. Students need the kind of preparation that not only supports their learning now, but also gives them the tools and skills necessary to succeed in a rapidly and continuously changing world. The Next Generation Science Standards (NGSS) are a key component toward advancing high-quality teaching and learning in science.

Overview

- It has been 17 years since the National Research Council and the American Association for the Advancement of Science produced their reports from which most state science standards are based. Since then, there have been major advances in science and our understanding of how students learn science. Our students deserve to learn the most current science available taught using the most effective methods.
- The NGSS are a new set of K–12 science standards developed by states, for states. The NGSS identify science and engineering practices and content that all K–12 students should master in order to prepare for success in college and 21st-century careers. Districts, schools, and classroom teachers will determine their own curriculum, including what is taught throughout the year and how it is taught.
- The NGSS were built upon a vision for quality science education for ALL students—not just a select few.
- The NGSS were benchmarked against countries whose students perform well in science and engineering fields, including Finland, South Korea, China, Canada, England, Hungary, Ireland, Japan, and Singapore.

21st Century jobs

- By 2015, 60% of the new jobs being created will require skills currently being mastered by only 20% of the population, according to a recent report from the American Society for Training and Development.¹
- According to the same report, job skills in STEM are among the skills experiencing the greatest increase in demand. In 1991, fewer than 50% of U.S. jobs required highly-skilled technical workers. But by 2015, 76% of all newly created U.S. jobs will require highly-skilled workers with proficiency in STEM.
- Educational attainment will continue to be a critical factor in building a skilled workforce. The Bureau of Labor Statistics estimates that more than half of the fastest-growing occupations will require an associate degree or higher.²
- Meanwhile, worldwide, U.S. students rank 20th in science compared to their peers in other countries, according to the latest international data on student achievement (PISA).³ If U.S. businesses want to remain globally competitive, and if the U.S. wants to remain number one in scientific discovery and innovation, then science education must be improved.

¹ “Bridging the Skills Gap,” American Society for Training and Development (2010).

<http://www.astd.org/%20About/~/%20media/Files/About%20ASTD/Public%20Policy/%20BridgingtheSkillsGap2010.pdf>

² Bureau of Labor Statistics (2010). <http://stats.bls.gov/opub/mlr/2009/11/art5full.pdf>

³ “Programme for International Student Assessment (PISA) Results from PISA 2012,” Organisation for Economic Co-operation and Development (2013). <http://www.oecd.org/pisa/keyfindings/PISA-2012-results-US.pdf>

What the NGSS means for your business

- A strong science education equips students with skills that are necessary for all careers—within and beyond STEM fields. Students need the right foundation to tackle long-term and difficult issues that face our generation and future generations.
- The NGSS will prepare students to enter the workforce with enhanced communication, problem-solving, and critical thinking skills as well as greater resilience—all essential skills for competing and succeeding in today’s workforce.
- The NGSS were created so that students *understand* scientific concepts and content not just memorize them.
 - With the NGSS, students are required to provide evidence of their own learning, gain skills important for future employment such as communication, collaborate, and engage in inquiry, and systems-thinking.
 - The NGSS help students develop a sense of contextual understanding with regard to science knowledge and solutions, helping them to become better informed and well-equipped citizens of the world they will enter.
 - The NGSS connect scientific principles to real-world situations, allowing for engaging and relevant content and instruction that clearly covers complicated topics.

Why science education matters now more than ever

- Science—and science education—has a big impact on the daily lives of all Americans. We increasingly have to make informed decisions on issues ranging from healthcare to energy policy that affect ourselves, our families, and our communities. According to the 2003 National Assessment of Adult Literacy, we are currently unprepared: Fewer than one in three college graduates can perform tasks such as interpreting a data table about blood pressure and physical activity.⁴
- Students will not only face unprecedented competition in the workforce within their state and country but also from global markets.
- Science education, however, is about more than building a strong future workforce; it helps students become resilient critical thinkers with the knowledge needed to become capable adults in a technology-driven world. Science education also creates greater adaptability and flexibility in students—character traits all businesses need their employees to possess.
- Because entry-level workers in STEM fields will be better prepared for the workplace, the need for training expenditures will be greatly reduced.

What the business community can do to promote science education

- If your state is considering legislation that threatens the quality of science education and strong science standards, then voice your position on why quality science education is integral to the success of local businesses and your state’s economy.
- Consider such actions as organizing local businesses, the Chamber of Commerce, or other civic organizations to provide testimony; submitting an op-ed or letter to the editor to your local newspaper; or submitting articles to business and education magazines and blogs vocalizing your support for the NGSS in your state. Your actions may be individual, collective, or both.
- Partner with a local school to encourage students to apply what they’re learning in the science classroom to real-world situations in the workforce and marketplace. Help students connect their science education to their future.
- Engage with local school districts and educators about existing workforce strengths and gaps to inform their instruction on preparing students prior to graduation.

⁴ National Assessment of Adult Literacy, 2003. <http://nces.ed.gov/naal/>

- Share relevant news and advocacy items on business engagement in science education through your personal and professional social media channels (Twitter, Facebook, LinkedIn).

Background

The Next Generation Science Standards (NGSS) were developed through a collaborative state-led process. Twenty six states volunteered to work with the 41 members of the writing team to lead the development of the standards. The science supervisors from these state education agencies worked with the writers to provide feedback from their state broad-based committees. These state committees consisted of representatives from the K-12 education, education policy, scientific, post-secondary education, and informal science communities. In addition, a critical stakeholder team comprised of hundreds of members representing K-12 educators, administrators, higher education faculty, scientists, engineers, business leaders, policymakers, and key organizations provided confidential feedback at critical points in the development process. The draft standards also received comments from more than 10,000 individuals during two public review periods. These comments came from teachers, school and school district discussion groups, scientific societies, parents, and students. The writers used this feedback to make substantial revisions to each draft. The final standards were released in April 2013. As of December 2014, 13 states and the District of Columbia have adopted the NGSS as their state science education standards: California, Delaware, Illinois, Kansas, Kentucky, Maryland, Nevada, New Jersey, Oregon, Rhode Island, Vermont, Washington and West Virginia.