

Advocating for stronger science standards in classrooms

Resources & talking points from the National Science Teachers Association

Why we need new standards for science education: Expanding our country's ability to compete in science and technology is critical to our ability to compete and lead in a global economy. We can only do this if American students get a solid science education that prepares them for college, careers, and opportunities in science-related fields.

What are the Next Generation Science Standards?

Next Generation Science Standards (NGSS) outline what students should be able to do at the end of instruction. The content of the standards is based on a National Research Council report that synthesizes **two decades of research** on how best to teach science. This document, called A Framework for K-12 Science Education, advocates for the teaching of core scientific content by practicing the very skills used by scientists and engineers and identifying unifying concepts across disciplines.

The Framework encourages the integration of math and English language arts with science instruction and highlights the cross-applications of skills such as using evidence, making persuasive arguments, modeling theories, and problem solving. With its interconnected approach to classroom instruction and curriculum design, the Framework establishes a foundation that schools can use to build and deliver world class STEM instruction.

What do we need from elected officials to implement new science standards?

Science teachers will need training to make these important shifts in their teaching. Teachers need frequent opportunities to learn what it means to teach in this new exciting way. They will need to make significant shifts in their approach to teaching. The majority of elementary teachers do not have science degrees and many do not feel comfortable teaching science content.

More time will be needed in the school day to teach science. The average number of minutes per day spent teaching science pales in comparison to other subjects. The typical elementary school class spends, on average, about 20 minutes a day on science instruction, compared to 60 minutes on math and 90 minutes on reading/language arts. Science is rarely taught every day of the week, every week of the year. (Horizon Research)

How were the standards developed?

The **Next Generation Science Standards** were developed by states, for states. Stakeholders from 26 states voluntarily joined the process to develop the standards. Educators, parents, the science community, and the public all provided extensive feedback to the NGSS. This was done without federal involvement or funding.



How will new standards make an impact?

The Next Generation Science Standards have the power to transform science education. The standards promote learning science the way it is practiced and experienced in the real world by real scientists and engineers. It engages students in not only finding answers to questions, but also understanding the process they go through to get to the answer. It also seeks a deeper understanding of content and how to apply it and integrates engineering alongside science.

The NGSS and A Framework for K-12 Science Standards on which they are built are already having a significant impact on science education nationwide. States that have gone through the process of developing and/or updating state standards since the release of the Framework have used this seminal document as a guide.

What states have adopted the new standards?

Nineteen states and the District of Columbia (representing over 35% of the students in U.S.) have adopted the NGSS and are working to implement them in districts and schools. The 18 states include Arkansas, California, Connecticut, Delaware, Hawaii, Illinois, Iowa, Kansas, Kentucky, Maryland, Michigan, Nevada, New Hampshire, New Jersey, New Mexico, Oregon, Rhode Island, Vermont and Washington.

West Virginia and New York have standards that are extremely similar to the NGSS.

Other states where you can see influence of the Framework for K-12 Science Education include Alabama, Georgia, Indiana, Massachusetts, Missouri, Montana, Oklahoma, South Carolina, South Dakota, Tennessee, Utah, and Wyoming (comprising another 30 percent of US students).

Numerous individual districts and schools have adopted the NGSS, especially in states like Wisconsin that give districts the option to adopt their own standards.

There is tremendous enthusiasm for the standards. Science teachers from all states—not just those from adoption states—are seeking professional learning tools and opportunities on NGSS.

References

[NSTA: About the Next Generation Science Standards](#)

[A Framework for K-12 Science Education](#)

[Horizon Research: Report of the 2012 National Survey of Science and Mathematics Education](#)