

# Policy Brief: Next Generation Science Standards (NGSS)

## What are the Next Generation Science Standards (NGSS)?

The NGSS are K-12 science education standards, published in 2013, which have been adopted by 20 states plus the District of Columbia and have served as a basis for changes to science education standards in an additional 24 states.

## Why are the NGSS a problem?

The NGSS were never pilot-tested or vetted prior to adoption. The Thomas B. Fordham Institute, the leading American education reform think tank and **the foremost organization in the country that rates state science standards**, **rated** the NGSS as mediocre with a grade of C on a scale of A to F. Numerous omissions and inadequacies are found in the standards, as well as political indoctrination and a thrust toward environmental activism.

## The Findings

- The scientific method is missing entirely in the standards.
- There are numerous omissions of important content across all domains For example, in the life sciences, missing content includes study of whole-body systems, cell & tissue types, viruses and bacteria, DNA, RNA and cell division. In the physical sciences omissions include Newton's law, thermodynamics, the pH scale, magnetism, sonar and radar.
- In the physical sciences, standards in chemistry and physics are the most deficient, with barely enough standards to constitute a one-year physical science course or one semester chemistry course.
- The pedagogy of the NGSS shifts focus from concepts to action - that is, the NGSS are mostly performance-based, resulting in a disproportionate emphasis on action-oriented, project-based learning where students "do" something rather than understand something. This education method provides far too little factual knowledge.

- The standards include integration of the four domains (physical sciences, life sciences, engineering, and earth and space sciences) within a single grade level. This can be demanding for schools with only one teacher for all four domains as well as those that have “team teaching.”
- The NGSS standards contain an abundance of climate- and sustainability- related terms, worded to reflect unfounded assumptions that climate change is human-made.
- The NGSS appendices reveal that they are devoted to so-called “diversity” and “equity,” a radical identity-group ideology whose explicit commitment to eliminate achievement gaps led the NGSS to remove challenging science content, leaving students uneducated and unprepared to study STEM majors in college and pursue STEM careers.

### **Recommendations**

- If a state has not adopted new science standards and wishes to update and improve its existing standards, it should use the science standards graded as ‘A’ by the Fordham Review as a template. It should compare them with, and find any helpful additions from, the NGSS, such as the engineering standards that will introduce students to a new discipline, but with the understanding that NGSS fails to provide sufficient mathematics preparation for rigorous engineering standards in the upper grades.
- States that have already adopted the NGSS should compare them with the other state science standards graded as ‘A’ by Fordham and make changes, additions, and deletions as needed.
- Chemistry and physics standards should be supplemented with previous existing standards to provide solid, complete high-school level courses for students who plan to pursue STEM in college.
- States which choose to incorporate engineering in K-12 science education should adopt rigorous standards that require substantial amounts of mathematics.
- School districts using the NGSS should encourage science teachers to use pedagogies that emphasize knowledge retention rather than project learning.
- States should remove all political commitments from science education, especially those to *diversity*, environmentalism, and activism.
- States should ensure that science standards emphasize that devotion to science and engineering is its own reward, without reference to any “societal need,” and that all research and learning should, above all, aim for excellence.

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