

THE NATION'S REPORT CARD: 2019 SCIENCE



Our nation's future depends on scientifically literate citizens armed with a strong understanding of scientific principles and the capacity to use scientific thinking to address complex issues within their local, national, and global communities.

The COVID-19 pandemic highlighted the importance of science achievement – whether you are an average citizen trying to understand mask-wearing guidance or a scientist racing to create an effective vaccine, scientific knowledge and understanding are critical.

The National Assessment of Educational Progress (NAEP), also known as The Nation's Report Card, measures students' scientific knowledge and skills. In 2019, NAEP assessed what students in grades 4, 8, and 12 across the country know and can do with regard to science, using a digital platform for the first time in this subject area.

NAEP SCIENCE ASSESSMENT DESIGN

NAEP science assesses students' knowledge and skills in three content areas:

Physical Science

Fundamental ideas about matter, energy, and motion.



Life Science

Structures and functions of living systems and changes in these systems.



Earth and Space Sciences

Earth in space and time, and Earth structures and systems, such as climate and weather.





NAEP also assesses how well students engage in four science practices:

- **Identifying Science Principles:** Recognizing, recalling, defining, relating, and representing basic science principles.
- **Using Science Principles:** Explaining and predicting observations of phenomena; suggesting examples of observations that illustrate a science principle; as well as proposing, analyzing, or evaluating alternative explanations or predictions.
- **Using Scientific Inquiry:** Designing or critiquing aspects of scientific investigations, conducting scientific investigations, identifying patterns in data or relating these patterns to theoretical models, as well as using empirical evidence to validate or criticize conclusions about explanations and predictions.
- **Using Technological Design:** Applying scientific knowledge and skills to solve problems in a real-world context.



HOW PERFORMANCE IS REPORTED

NAEP reports student performance using both average scale scores and percentages of students performing at or above three achievement levels: **NAEP Basic**, **NAEP Proficient**, and **NAEP Advanced**.

NAEP Basic denotes partial mastery of prerequisite knowledge and skills that are fundamental for performance at the *NAEP Proficient* level.

NAEP Proficient represents solid academic performance for each NAEP assessment. Students reaching this level have demonstrated competency over challenging subject matter, including subject-matter knowledge, application of such knowledge to real-world situations, and analytical skills appropriate to the subject matter.

NAEP Advanced signifies superior performance beyond *NAEP Proficient*.

NAEP Proficient is defined differently from other uses of the term. This variation in terminology is often a source of confusion when it comes to understanding the NAEP achievement levels. For example, the federal Every Student Succeeds Act refers to student “proficiency.” State assessment systems may use the terms “proficient” and “proficiency,” but state definitions of proficient vary widely. It is important to note that *NAEP Proficient* represents the NAEP program’s goal for what all students should know.

NAEP science results are only for the nation but can be understood by student demographics and by the characteristics of students, teachers, and schools.