

National science standards likely to raise 'ruckus'

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(Photo: Mark Henle, The Arizona Republic, via AP)

Story Highlights

- Standards heavy on critical thinking, less on rote memorization
- Emphasis on climate change will surely be met with protest
- Kindergartners asked to show how people affect environment

Academic standards out Tuesday promise to revive simmering debates about how to teach science in the USA's public schools.

In the works for two years, the "next-generation" standards push schools to teach fewer topics, but in a more integrated, coherent way. They prescribe a healthy dose of engineering and ask schools to rely less on rote memorization and more on critical thinking, constructing arguments and building demonstrations.

One standard, aimed at kindergartners, asks them to "construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs." Another, for first-graders, asks them to "use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance."

The new standards are voluntary, but many states will find them much more demanding than their current standards, said Chester Finn of the Washington-based Thomas B. Fordham Institute, a right-leaning think tank that has looked closely at previous drafts. "There will surely be some states for which they're better because what they're using now is abysmal," he said.

The so-called Next Generation Science Standards were developed by the National Research Council, the National Science Teachers Association, the American Association for the Advancement of Science and the non-profit group Achieve.

Founded in 1996 by "leading governors and business leaders," Achieve led recent efforts to rewrite the USA's math and reading standards. Most states have adopted the Common Core standards, but not without complaint. After President Obama championed them, critics dubbed the standards "Obamacore." The new effort will probably get a raucous reception, especially from conservatives uncomfortable with the inclusion of human evolution and a clear link between global climate change and human activity.

The [standards](#) — a 71-page set of guidelines developed by scientists and educators in 26 states — assert that "human activities, such as the release of greenhouse gases from burning fossil fuels, are major factors in the current rise in Earth's mean surface temperature (global warming)." Slowing climate change and its risks, the authors say, depends "on the understanding of climate science, engineering capabilities and other kinds of knowledge, such as understanding of human behavior, and on applying that knowledge wisely in decisions and activities."

Finn, whose group isn't taking a stand on the topics, said the reaction "could be quite a ruckus." Frank Niepold, a climate educator for the National Oceanic and Atmospheric Administration's climate program office, said many of the nation's 3 million science teachers need help finding clarity on the topic. "Some of them are confused about where the science is," he said. "Some of them feel some pressure to 'balance it out,' and it's really a tall order for them."

He noted that educators recently reviewed 15,000 climate-related educational materials but found only about 500 that passed muster.

Finn's group is in the middle of a lengthy review of the new standards, but he said he's worried after scanning them Tuesday. Most elementary schools teach science for just a few minutes a week, he said, so an emphasis on constructing arguments and devices could be problematic. Teachers "are going to be deflected into activities that are related to content but are not themselves content. The doing may supplant the knowing."

Margaret Honey, president and CEO of the New York Hall of Science, a hands-on science museum in Queens, N.Y., said an information-rich age requires that science teachers teach children "how to learn and how to be discerning" about information. "When I was a kid,

education was memorizing and learning lots of facts — that methodology of teaching absolutely no longer makes sense. That's not the world we live in anymore."