This month’s Commentary on the Next Generation Science Standards is by Randy Dorn, Superintendent of Public Instruction for the state of Washington. In Washington, the state superintendent is elected and also sits as a voting member of the State Board of Education.

Commentaries are occasionally published writings by members of state boards of education, other education leaders, researchers or practitioners, and NASBE staff. NASBE welcomes submissions for new Commentaries as well as responses to current articles. Please send all correspondence to David Kysilko, Director of Knowledge Resources, at davidk@nasbe.org.

Why My State Adopted the Next Generation Science Standards

by Randy Dorn
Washington State Superintendent of Public Instruction

When I was elected the state superintendent of Washington in November 2008, one of my first tasks was to create a list of priorities for my administration. Most were standard education priorities such as more funding for education and increased achievement for all students. One concerned increased opportunities for science, technology, engineering, and mathematics—STEM.

Why is STEM so important to Washington State and me? There are several reasons:

- **Economics.** According to the U.S. Bureau of Labor Statistics, one out of every two jobs requires technological skills. Ten years from now, that ratio will be three out of every four jobs. It makes good financial sense to give our students technology skills so they can compete in the global marketplace. No matter what career they may choose, all students must have a set of basic technological skills.

- **Solutions.** The future success of our society rests on training people who can solve some pretty big problems, including conserving water, finding new sources of energy, and curbing pollution and global warming, to name just a few. They all require a firm grounding in STEM education.

- **Pathways.** Many STEM classes approach learning as an activity. Classes on woodworking, architecture, and computer hardware require students to do more than sit in a chair and learn new material. As a student I felt I learned more in the “doing” classrooms than the “sitting” classrooms, and I’m sure there are many others like me. We need to make sure those students don’t get bored or overwhelmed and end up falling through the cracks and dropping out. STEM education acknowledges that students learn at different rates and in different settings.

All of this led me to the Next Generation Science Standards (NGSS), the revised science standards written by 26 lead states. Washington was one of these lead states. The NGSS describe—at each grade from kindergarten through fifth grade, at middle school and at high school—what each student should know in the four domains of science: physical science; life science; earth and space science; and engineering, technology and science application.

The Washington State Board of Education adopted the NGSS, with full support from Gov. Jay Inslee and me, in October 2013. We did it because the standards will help students become literate in science. We did it because the standards are mindful of student diversity and equity. We did it because the standards are cross-disciplinary (as students learn about science they are simultaneously enhancing their reading, writing, and math skills). And we did it because it’s right for our students.

How do we know it’s right for our students? For one thing, while our science test scores have been improving,
it’s not by enough. This past year, about two out of every three fifth and eighth grade students passed the statewide science test. When we began science testing in 2005, the ratio was one out of every three students in fifth and eighth grade. So there has been improvement.

But a big reason why improvement hasn’t been greater has been the lack of consistent programs in or substantive time for science education. In 2005, the National Assessment of Education Progress (NAEP) surveyed teachers about this. Washington state came in first in the nation—but not in the way I wanted. We had the highest percentage of fourth-grade teachers—20 percent—who spend less than one hour a week on science instruction. By 2009, we had improved: only 11 percent said they spend less than an hour a week on science instruction. But that number still placed us seventh in the nation.

The implication of those numbers is very disturbing. There are quite possibly students in this state who aren’t receiving any science education at certain grades.

That’s not where I want Washington to be. Students beginning in the Class of 2018—this year’s freshmen—will be required to pass a biology end-of-course exam or a comprehensive exam based on the Next Generation Science Standards. It simply isn’t fair to require the current students to pass a test when they may not have had consistent science education up through high school. The new standards will give us a great road map so we can provide our students with that consistency.

To move us forward in a careful but timely manner, our adoption process comprised four steps:

1. Comparing the new standards against the existing ones;
2. Conducting a bias and sensitivity review to ensure the new standards aren’t culturally biased;
3. Receiving input from the public and a variety of stakeholders, such as the Education Opportunity Gap Oversight and Accountability Commission and the State Board of Education; and
4. Providing sufficient time to let our state legislators understand the change in standards.

Once the State Board of Education officially adopted, we could move on to the next steps—with implementation obviously the biggest one. We’ll be building awareness and capacity through 2016. Full implementation will occur in the 2016-17 school year, and testing on the new standards will occur in the 2017-18 school year.

We’re excited about the Next Generation Science Standards in Washington state. The computer is the pen and the pencil of the 21st century. The new standards will help us educate our students for a future we can only imagine.