

New science standards will transform students' science identities

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Next Generation Science Standards aim to facilitate students to act and think like scientists

When we return to school in the fall, teachers and students will dive into an exciting new era of learning in science.

Thanks to Oregon's adoption of new, stronger science standards, we are transforming how we engage young people in science and broadening students' understanding of how the tools of science can enhance any profession they may choose. In doing so, teachers are helping students recreate what I call their science identities—including those students who may have shied away from science in the past.

The Next Generation Science Standards (NGSS), which Oregon teachers helped to develop and adopt in 2013, aim to facilitate students acting and thinking like scientists. These standards emphasize not only knowledge, but also the scientific process that creates that knowledge. This is a remarkable transformation. Although knowledge is important, the critical thinking skills to create new knowledge and solutions will have a far larger impact on students' careers and lives.

Here's an example.

When I started my career, many of my students felt studying motion was boring, despite its importance. It was difficult to challenge my students and empower them to find joy and value in what they learned. Now, with the kind of teaching encouraged by our new science standards, I begin not with a formula or a lecture, but with a real-world question: How do we assess the risks of texting while driving? To answer that question, my students must create a multistep action plan that includes measuring the time to read a text, write a text, their reaction time, as well as two more traditional motion experiments for velocity and acceleration. They feed this data into the mathematical models they construct, and ultimately evaluate and modify that model to account for alternative scenarios, like driving while impaired.

This kind of science learning empowers students as it shifts their sense of accomplishment from what they know to what they can do. That's revolutionary.

Now more than ever, students need a solid understanding of science and technology, not only because science drives the innovations that shape our daily lives (who's reading this on a computer screen or a smartphone?), but also because the skills and resiliency gained through the scientific process are critical for young people as they move on to college and into the rapidly changing workplace. Problem solving is a transferable skill that will lead more students to take future science courses or apply what they've learned in other disciplines, careers and passions.

Throughout the summer, our hard-working and talented teachers participated in statewide and local workshops to prepare for this important shift in instruction, including those led by the Oregon Science Teachers Association and Portland Metro STEM Area Partnership.

Oregon's students have always possessed what it takes to change the world. This fall, our young people will be equipped with the skills and knowledge they need to accomplish their goals because the NGSS reflect the kind of high-quality, rigorous science education that my peers and I had always hoped to teach.

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