

## The National Survey of Science and Mathematics Education

### Background

Horizon Research, Inc. (HRI), with funding from the National Science Foundation, conducted the 2012 National Survey of Science and Mathematics Education (NSSME). The 2012 NSSME, the fifth in a series of surveys dating back to 1977, was designed to provide up-to-date information and to identify trends in the areas of teacher background and experience, curriculum and instruction, and the availability and use of instructional resources. Data were collected from a nationally representative sample of over 1,500 schools and 7,700 teachers to answer several key questions, including:

1. What instructional/assessment practices do science and mathematics teachers use, and how well do these align with current understanding of learning?
2. What influences teachers' decisions about content and pedagogy?
3. What are the characteristics of the science/mathematics teaching force in terms of race, gender, age, content background, beliefs about teaching and learning, and perceptions of preparedness?
4. What are the most commonly used textbooks/programs, and how are they used?
5. What formal and informal opportunities do science/mathematics teachers have for ongoing development of their knowledge and skills?
6. How are resources for science/mathematics education, including well-prepared teachers and course offerings, distributed among schools in different types of communities and different socioeconomic levels?

Data from the 2012 National Survey are reported for each subject and by grade range (elementary, middle, and high school). Key indicators are also reported by a number of equity factors, including prior achievement level of the class, percentage of underrepresented minorities in the class, percentage of students eligible for free/reduced-price lunch in the school, school size, community type, and region of the country.

Some of the key findings from the 2012 NSSME follow:

- At the elementary level, 81 percent of teachers feel very well prepared to teach reading/language arts and 77 percent feel very well prepared to teach mathematics; only 39 percent feel very well prepared to teach science.
- Classes composed of mostly low-achieving students are less likely than classes composed of mostly high-achieving students to be taught by teachers who feel well prepared to teach science/mathematics.
- About one-quarter of high schools offer some form of engineering course. AP science and mathematics courses are each offered in about half of high schools.
- Female students are more likely than male students to be enrolled in advanced high school science courses. Students from racial/ethnic groups historically underrepresented in STEM continue to be underrepresented in advanced high school science and mathematics courses.
- Mathematics teachers are more likely than science teachers to feel they have sufficient resources for instruction.

- About half of all schools offer a professional learning community (PLC). Roughly three-quarters of secondary science and mathematics teachers participate in a PLC; two-thirds of elementary teachers participate in a mathematics-focused PLC, while just over half participate in a science-focused PLC.

In addition to the main results report, a compendium table with complete survey results is available. Subject-specific reports are also being created, including one each for the status of high school biology, chemistry, physics, and mathematics teaching.

Results from the 2012 National Survey of Science and Mathematics Education can inform the work of stakeholders at multiple levels of the education system, including national and state policymakers, district and school leaders, curriculum developers, and professional development providers.

### **For More Information**

Additional information about the 2012 National Survey can be found on the study's website, <http://www.horizon-research.com/2012nssme/>. The website includes copies of the survey instruments and links to reports and presentations. We can also be contacted at [nssme@horizon-research.com](mailto:nssme@horizon-research.com) or by calling 919-489-1725.