

# Merck Institute for Science Education



Children eager to investigate the wonders of the natural world . . . Teachers steeped in scientific knowledge and masterful at guiding students' investigations . . . Parents and school administrators who value, expect, and support standards-based science education . . . Leaders in business and government who understand the importance of science education for all citizens. This is the vision of the Merck Institute for Science Education.

Founded in 1993, the Merck Institute is moving from vision to reality by deepening current and future teachers' knowledge of science and education, providing access to exemplary curriculum materials, and supporting policies at the local, state, and national levels that promote science education.

Focusing on students in kindergarten through eighth grade, the Institute seeks to nurture children's curiosity through investigations of key scientific concepts. The hallmark of the Institute's work is the establishment of vital partnerships with educators, parents, Merck employees and policy makers. The product of this work is science teaching and learning that parallel the methods of inquiry scientists use to investigate the natural world. The Merck Institute's ultimate goal is to improve student performance and participation in science.

## Comprehensive Professional Development

Deepening teachers' knowledge of science is crucial to improving student performance in science. Equally important is strengthening their expertise in how to teach science. Providing teachers with opportunities to build this strong foundation of science knowledge and teaching skills is an Institute priority.

The Institute's professional development programs focus on K-8 schools adjacent to Merck's largest facilities. Working closely with teachers, curriculum supervisors and administrators in these districts, the Institute helps to improve the teaching and learning of science through programs focused on inquiry-centered learning.

Central to the Institute's professional development program are the **Peer Teacher Workshops** that focus specifically on each districts' science curricula. Led by district teachers and experts in science education, these one-week workshops target specific grade levels and immerse teachers in science investigations directly related to their classroom. These investigations are integrated with the teaching of instructional skills.

## Enhancing the Learning Environment

Teachers' knowledge and skills are critical factors in the classroom learning experience, but not the only ones. Teachers also need access to standards-based curricula and teaching materials, support from school and district-level administration, parents, and the community. The Institute addresses these needs in several ways.

**Resource Centers:** Teachers, administrators, school board members, and Merck employees access exemplary K-8 science and mathematics education materials at the Institute's Resource Centers. Located in Rahway, New Jersey, and West Point, Pennsylvania, the Resource Centers house hundreds of curriculum modules, books, periodicals, and videos focused on the teaching and learning of science and mathematics. Teachers use these resources to expand their teaching repertoire. School districts preview these materials before selecting new curricula. Merck employee volunteers research activities and borrow materials to support their partnerships with classroom teachers. Institute staff members guide educators and volunteers, working with them to find what best meets their needs.

**Merck Employee Volunteers:** Merck employees support efforts to engage students in science investigations through partnerships with classroom teachers. Each partnership is unique but may include assisting teachers with science investigations, introducing investigations that extend the science curriculum, serving as a science

resource for teachers and developing e-mail relationships with students and/or teachers in the classroom. These partnerships not only support teachers but also expose students to real-world applications of science and mathematics, and create relationships that help students realize their full potential.

**Parent Involvement:** Building awareness of science education reform among parents is vital to sustaining long-term changes in the classroom. The Institute engages parents in science education through its support of Family Science events at Merck facilities and within partner school districts. Family Science events provide opportunities for families to learn science together, using investigations similar to those students conduct in the classroom.

## Making Science Education a Priority

The Merck Institute is committed to making science education a local, state, and national priority. As a leader in science education reform, the Institute:

- Local Level**
  - Develops leaders through partnerships with targeted school districts in New Jersey and Pennsylvania. Participation in Institute programs raises the awareness and ability of teachers, administrators, parents, school board members, and Merck employees to play active roles in sustaining science education reform.
  - Collaborates with school districts in their development of K-8 science education frameworks. Frameworks outline what all students should know and be able to do at each grade level, in alignment with state and national standards.
- State Level**
  - Influences science education reform through leadership on the New Jersey Science Curriculum Standards and Framework Committees.
  - Provides leadership to the New Jersey Statewide Systemic Initiative for Mathematics, Science and Technology Education Reform, a National Science Foundation-funded project.
- National Level**
  - Partners with leading educational organizations, such as the National Science Resources Center and Educational Testing Service, to develop inquiry-centered curriculum and assessment tools.
  - Advocates to other corporations the importance of strategic, long-term support of science education.
  - Creates model professional development programs for elementary and middle school teachers and administrators. Representatives from universities, corporations, school districts, and museums visit the programs every year.

## Looking Ahead . . . Growing Stronger

Working with teachers, administrators, parents and volunteers, the Merck Institute has helped make standards-based science education a reality in its partner school districts.

The challenge now facing the Institute is to leverage the success of these efforts so that increasing numbers of classrooms throughout the state and country become centers of standards-based teaching and learning. The Institute has learned a host of lessons about reform and recognizes fully the magnitude of the challenges ahead. Nevertheless, its charge to improve student performance and participation in science is much closer to reality than it was nine years ago; and the need for successfully achieving this goal is more urgent than ever.



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