As part of the federal government’s "No Child Left Behind" initiative, Pitt researchers are playing a major role in improving math and science education for school children across the country. Under a partnership program called Systemwide Change for All Learners and Educators (SCALE), mathematicians, scientists, social scientists, engineers, technologists, and education practitioners are working together to build a new approach to reforming math and science education for children from pre-K through 12th grade.

Announced in October 2002 and launched last year, the five-year, $35 million National Science Foundation (NSF)-funded project is being comanaged by Pitt’s Learning Research and Development Center (LRDC) and the University of Wisconsin-Madison’s Wisconsin Center for Education Research. Madison, Denver, Los Angeles, and Providence, R.I., are home to SCALE’s four partner urban school districts.

Christian Schunn, LRDC research scientist, is codirecting the project with LRDC Director Lauren Resnick. Schunn said that SCALE’s multipronged approach will provide students with more challenging and engaging math and science curricula, encourage them to work on exciting science projects—even at the elementary level—and improve the training of existing and new science and math teachers, while enticing more math and science college students into teaching careers.

"Reforming math and science education is an extremely complex task with many interconnected problems," Schunn said. "The goal is to make major improvements in the way almost a million kids in our partner schools learn math and science, and then to spread that success across the country."

The SCALE initiative, the largest, and one of the first, Math and Science Partnership (MSP) projects funded by NSF, follows years of disheartening reports on the academic shortcomings of America’s students compared to youngsters in other countries. In a 1998 survey, U.S. high school seniors ranked 19th out of 21 countries in science and math knowledge. Only students in Cyprus and South Africa fared worse.

The vision of the SCALE partnership is to make it the rule for students at every grade level to experience high-quality teaching of, and achievement in, math and science. In pursuing its vision, SCALE is implementing strategies to transform the daily systemwide teaching of K-12 science and math, all the while integrating into the curriculum authentic extended (four-week) scientific investigations at least once a year.

Concurrently, SCALE is developing strategies to increase the participation of minority and female students in secondary math and science courses, intending to build a more diverse pool of science, technology, engineering, and math (STEM) undergraduates, and, eventually, teachers and researchers.

SCALE is working with partner districts’ local institutions of higher education to design and implement new teacher preparation and professional development. It also is investing in research and evaluation to ensure that a culture of evidence permeates all lines of work; to that
end, SCALE is compiling documentation for policymakers and educational leaders about how to construct such a partnership.

Later this month, several SCALE participants will attend the 2004 NSF Math Science Partnership Learning Network Conference in Washington, D.C.