

# Solutions to America's STEM Education Challenge

## *Battelle Center for Mathematics and Science Education Policy Rises to the Challenge*

The Battelle Center for Mathematics and Science Education Policy at the John Glenn School of Public Affairs supports Ohio's education leaders and policymakers, strengthening their capacity to deliver high-quality, high-impact education for all students and to make Ohio a national leader in effective STEM education.

STEM means more than the sum of science, technology, engineering and mathematics. STEM is a comprehensive education philosophy based on student inquiry and experience. It is rooted in the knowledge and skills used to solve complex problems. STEM-literate graduates are innovators, logical thinkers, and problem solvers. They are able to work independently, make sense of the world around them, and apply their knowledge and skills across disciplines both inside and out of the scientific and technological realms.

### **Why STEM?**

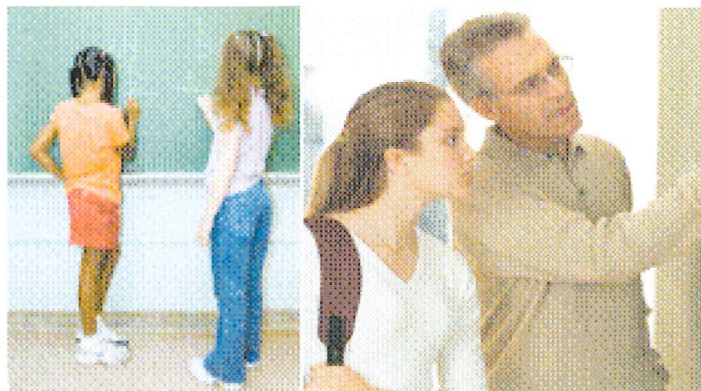
We live in a global, knowledge-based economy and face increasingly complex problems, ranging from health, energy, and the environment, to security and sustainable well-being. To meet these challenges and succeed in the global economy, the U.S. educational system must provide every student with essential competencies in science, technology, engineering and mathematics. We must prepare a larger number of students for STEM-competent leadership in business, government and the STEM professions.

The National Science Board, the National Academies and other highly respected panels, task forces and commissions point to major deficiencies in STEM curriculum, STEM proficiency in K-12, student interest in STEM majors, numbers of STEM majors pursuing STEM careers, and teacher quality in the STEM disciplines. With scientific and technological innovations becoming increasingly competitive in the 21st century, the U.S. education system must raise the bar on STEM proficiency and recruit a new generation of highly qualified students to enter the STEM fields.

### **What is the Battelle Center for Mathematics and Science Education Policy?**

In May 2006, the Battelle Memorial Institute, the world's largest non-profit independent research and development organization, established the Battelle Center at the John Glenn School with a gift of \$4 million. The center was tasked with developing policies and practices that will increase the number of students energized and prepared to be

leaders in the STEM fields.



The Center has established the following four initiatives.

#### ***Networks in STEM Education Innovation:***

How do networks, especially public-private networks, affect the launch, scaling and sustainability of STEM education improvement efforts? What leadership, management and knowledge-sharing capacities do effective networks require? The Battelle Center sponsored a pilot study at one of Ohio's flagship STEM schools and will expand the scope of this work to additional case study sites and longitudinal analysis.

#### ***System Dynamics Modeling:***

How might systems modeling help us better understand the complexities of the STEM education enterprise? Can it guide the design of education policy or programmatic interventions? The Battelle Center has joined a small set of partners to develop open-source modeling tools and a new national research collaborative.

#### ***Ohio STEM Learning Network:***

The Battelle Center is helping define the research agenda for this novel statewide initiative and supporting the capacity-building efforts of the technical assistance group.

#### ***Data Visualization:***

Can advanced data visualization tools help policymakers and administrators extract more meaningful information from vast amounts of data confronting them? The Battelle Center is experimenting with "Starlight," a powerful, three-dimensional and geo-referenced visualization application developed by the Battelle Memorial Institute.

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