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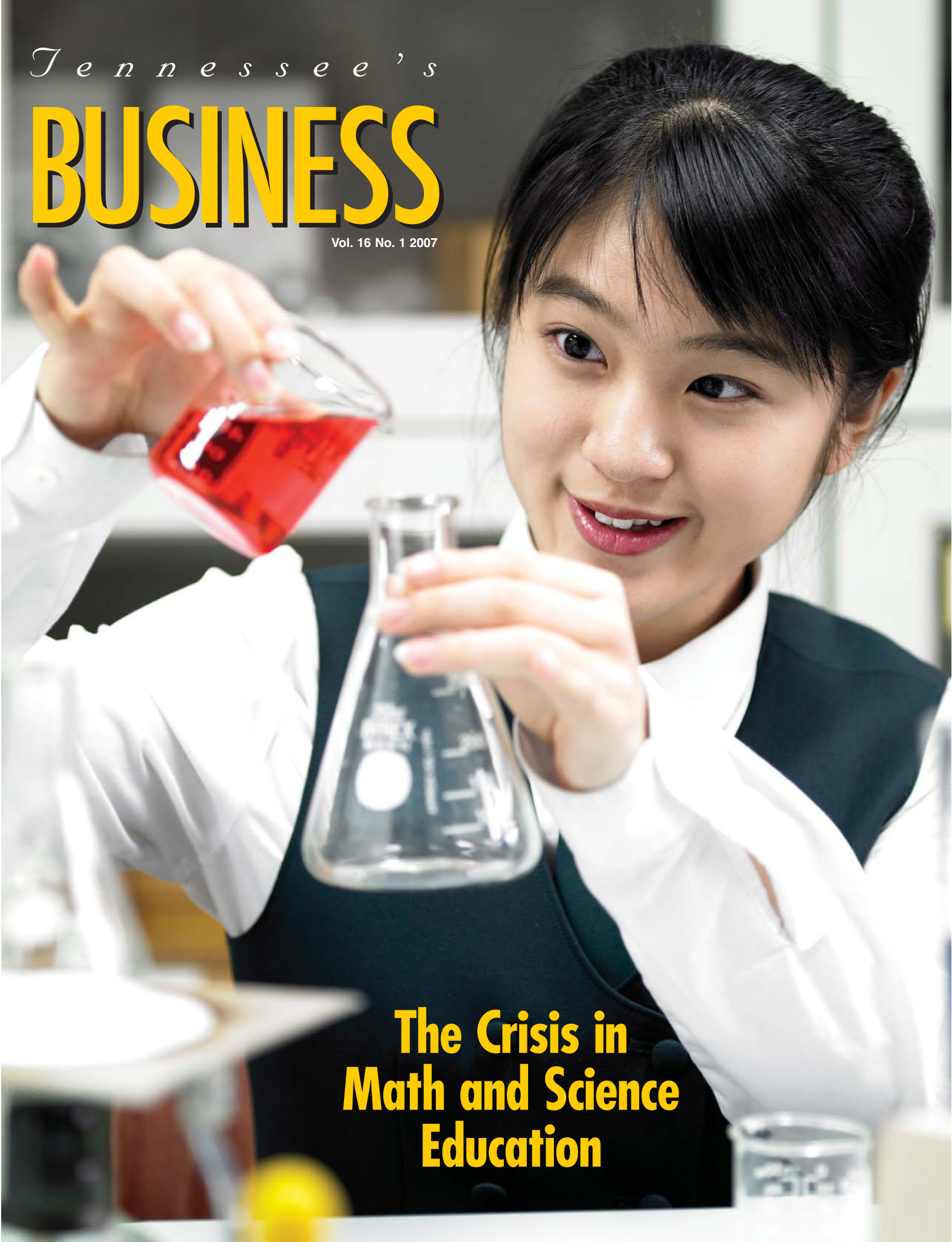

The Crisis in Math and Science Education

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EDITOR'S NOTE

The National Academy of Sciences (NAS) recently assessed America's ability to compete and prosper in the 21st century. In its report, *Rising Above the Gathering Storm*, the NAS identified key actions needed to ensure that the U.S. "continues to enjoy the jobs, security, and high standard of living that this and previous generations worked so hard to create."

The NAS noted that although the U.S. faces a big disadvantage—the cost of labor—in being economically competitive, science and technology can overcome this. If we create scientists and engineers, they can in turn create entirely new industries. America is not as competitive and dominant in science and technology as it once was. Although still the leader, we cannot remain so without renewing our effort to boost the foundations of our competitiveness: science and technology, in which we must accelerate progress or risk poorer prospects for future generations to enjoy the same prosperity, security, and good health Americans now take so much for granted.

The NAS report listed a number of worrisome indicators:

- The U.S. has become a net importer of high-tech products (we import more high-tech manufactured goods than we export).
- U.S. 12th graders recently performed below the international average for 21 countries in math and science.
- Low-wage employers (e.g., Wal-Mart and McDonald's) are creating more new jobs than high-wage employers.
- Considerably more than half of undergraduates in China and Japan earn degrees in science and engineering compared to one-third in the U.S.
- In 2004, China graduated 500,000 engineers, India 200,000, and America 70,000.

The NAS identified creating high-quality jobs and responding to the need for clean, affordable, reliable energy as challenges to improving our scientific and engineering education. Resulting NAS recommendations focus on (1) actions in K–12 education, (2) research, (3) higher education, and (4) economic policy, specifically:

- *Increase America's talent pool by vastly improving K–12 science and math education.* We should (a) annually recruit 10,000 science and math teachers by providing scholarships; (b) strengthen the skills of 250,000 existing teachers through training and education programs; (c) increase the number of students who take Advanced Placement and International Baccalaureate science and math courses.
- *Sustain and strengthen the nation's commitment to potentially transformational long-term basic research to maintain the flow of new ideas that fuel the economy, provide security, and enhance the quality of life.* We should implement actions to increase federal investment in long-term basic research.
- *Make the U.S. the most attractive setting in which to study and perform research so we can develop, recruit, and retain the best and brightest students, scientists, and engineers in the world.* We should (a) promote ways to increase the number of undergraduate and graduate students in science and math, and (b) facilitate visa extensions for international science and math graduates to remain in the U.S. to seek employment.
- *Ensure the U.S. is the premier location for innovation and the creation of high-paying jobs by modernizing the patent system, realigning tax policies to encourage innovation, and ensuring affordable broadband access.* Stronger research and development tax credits will encourage private investment in innovation, and broadband Internet access for home, school, and business must be ensured.

—Horace Johns, editor

CONTENTS

Competing for Tomorrow's Jobs
Bart Gordon 2

Education Summit: Bredesen Address
Phil Bredesen 6

GRITS: Girls Raised in Tennessee Science—
Expanding Your Horizons
Judith Iriarte-Gross 10

Math Is the Backbone
Camilla P. Benbow 14

Hurricane Katrina and Global Competitiveness
Calvin Mackie 18

Center (TMSTEC) to Focus on Improving
State Math and Science Education
E. Ray Phillips and Dovie Kimmins 22

The 21st Century: Answering the Challenge
U.S. Department of Education 28

College of Business:
Faculty Candidate Shortage
E. James Burton 33

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(Note: The model is shown under controlled circumstances. Safety gear should always be used when performing experiments.)