

# Good investment in young minds

INSIDE BUSINESS  
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It's back-to-school season. So let's put an apple on Mr. Greenspan's desk.

Five years ago this month, the Federal Reserve chairman appeared before Congress and offered some valuable lessons worth revisiting concerning the incredible economic importance of improving math and science education in elementary and secondary school.

Though the world has changed in many ways since then, the core message remains one that the local business community must act upon. "Addressing this issue is crucial for the future of our nation," the teacher reminded us. "It is obviously just a matter of time before the bulk of our workforce will require a much higher level of problem-solving skills than currently evident."

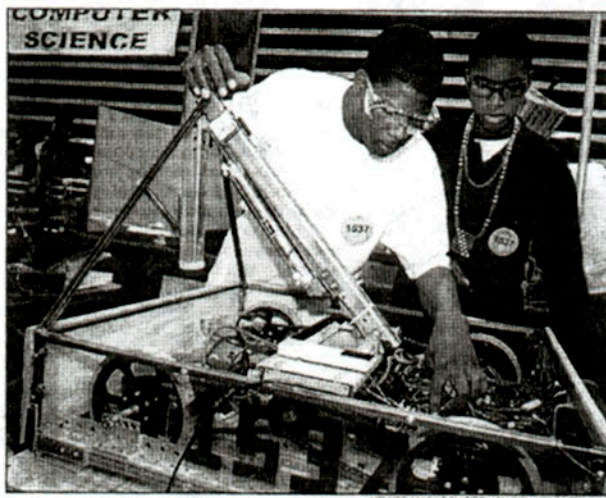
As far as Alan Greenspan is concerned, science is nice. But it's the glory of mathematics that "enhances a person's ability to handle the more ambiguous and qualitative relationships that dominate our day-to-day decision making." Early technical success generates self-perpetuating confidence, Greenspan suggests, warning that a superficial understanding of arithmetic will never "galvanize an enhanced, reality-based sense of self-esteem."

Work to eliminate "math anxiety," Greenspan suggested, saying it was discouraging that "so many students who clearly demonstrate impressive verbal or other conceptual skills find mathematical procedures intimidating."

A proven method of bolstering young people's confidence in their computational and analytical skills is offering them fun and compelling ways to use what they have studied to create actual technology. And one of the best ways our business community can encourage that is by supporting the Long Island Regional FIRST Robotics Competition.

High-tech companies, engineers and area scientists help finance and mentor teams of students who design and build problem-solving robots using a parts kit and rules set by FIRST (For Inspiration and Recognition of Science and Technology).

In March, more than 10,000 spectators gathered at Hofstra University Arena to watch about 40 teams of Long Island and New York City high school students compete by programming their FIRST robots place tetrahedrons — four-sided pyramidlike structures — onto large triangular frames. Teams from six area high



Gerard Chang, left, and Najee Boucarot of Uniondale High School work on their robot at the FIRST Robotics Competition in March.

schools later competed at the national championships in Atlanta.

School districts, corporate sponsors or the teams themselves put up the roughly \$10,000 needed to buy extra parts, make components and pay other costs, including the \$6,000 paid to Manchester, N.H.-based FIRST that covers the entrance fee and the basic kit of wheels, motors, framing, software and other parts.

Teams begin meeting in the fall. Once the kits arrive in January, they have six weeks to design and assemble their robot.

Doug Ports, an engineer and manager at Brookhaven National Laboratory who mentors a team from Miller Place, said the kids in his group developed skills related to engineering, software programming, pneumatics, drive trains, detectors, gear configurations and the physics of momentum.

Ports sees FIRST as a tool to motivate students to pursue careers in science and technology and to ensure the availability of a workforce capable of meeting future national and industrial needs.

The program starts earlier, with kids ages 9-14, who play in a January junior varsity LEGO League Tournament. They work with their mentors to solve problems and think creatively as a team by using the plastic toy blocks to make robotic devices that perform everyday actions. Teams budget about \$1,000.

Organized in 1999 through the School-Business Partnerships of Long Island Inc., the regional competitions in robotics have grown, according to Partnerships president Fred Breithut. College scholarships have been created in conjunction with the program, and eight students from the six schools

that competed nationally last year won awards to study at Rochester Institute of Technology, Boston University and other schools.

Over four years, Long Island team members who competed nationally have received college engineering scholarships totaling \$1 million, Breithut said, adding that his colleagues have been helping robotics competition alumni network and find engineering jobs locally after graduation.

More CEOs are joining executives, engineers and scientists from Northrop Grumman, EDO Systems, Festo Corp., OSI Pharmaceuticals, Suffolk National Bank and Brookhaven National Laboratory in offering funding for the annual \$200,000 administrative costs, sponsoring teams and mentoring students as part of the program, which was created by Segway scooter inventor Dean Kamen about 16 years ago.

One hundred years ago, the need for workers able to read manuals and understand formulas sparked the expansion of high school education. As the economy evolved along with technology, greater emphasis was placed on economic value added from new ideas and concepts, as distinct from physical labor, Greenspan said. Whereas one in 10 jobs created value through "intellectual endeavor" back in 1900, today these jobs account for nearly one-third of the nation's workforce.

Bottom line: Our kids had better broaden their technical skills, or the United States will face the prospect of never recovering at least some of the dominance national experts say it has lost to Asia and Europe in key areas of innovation and science.