STEM the competitiveness gap

By Stan Ahalt
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Congress recently got a polite — but firm — earful from one of the world's richest men, Bill Gates, who warned lawmakers that there's much to be done if the United States is to remain the world's richest nation.

Most importantly, from Gates' perspective, political leaders must invest in STEM fields — science, technology, engineering and mathematics — to keep America from falling behind its technological rivals. Interestingly, according to the National Science Foundation, the overall unemployment rate of scientists and engineers in the U.S. dropped from 3.2 percent in 2003 to 2.5 percent in 2006, the lowest unemployment rate for scientists and engineers since the early 1990s.

The U.S. continues to fall behind the rest of the world in training the next generation of leaders in the critical STEM fields.

Congress made a good first step to close the gap last year with passage of the America Competes Act, which provides new money for mathematics and science education, emphasizes teacher training at all levels, and doubles NSF's budget. Unfortunately, congressional appropriators failed to make funding the act a fiscal priority.

Such an investment is small given the stakes, particularly with the global supercomputing race in which we are once again playing catch-up to major countries such as China and Japan. Today, everything from weather prediction to paper production and golf club design uses increasingly sophisticated scientific capabilities.

Here in the Buckeye State, the Ohio Supercomputer Center and its state-of-the-art broadband backbone are using the latest in technology to help provide an economic boost to the manufacturing sector. An innovative partnership program named "Blue Collar Computing" takes the same high-end, high-performance computing systems and applications used almost exclusively by Fortune 500 companies and makes them scalable, accessible and affordable to small and midsize manufacturing companies.

With access to supercomputing tools, manufacturers can test a design in a few hours, make changes and test it again without needing to create physical prototypes.

Of course, supercomputing horsepower is meaningless without an educated workforce to run those systems. Sadly, U.S. education is not producing enough leaders in computational science, the interdisciplinary field that uses computers to simulate and model complex problems.

Today, there are fewer than 20 formal undergraduate programs in computational science offered around the country. The bigger, more systemic issue is one of national commitment to science, technology, engineering and math education from junior high to graduate school.

It's fitting that one of the nation's most successful technology geniuses has asked Congress to reboot its thinking and fund STEM programs for the next generation of innovators who will keep America competitive. The question now: Will Congress listen?

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