To Keep America Great, Students Must Be Taught to Innovate

Winners in tomorrow's economy will be those who create, not just consume, the next great technologies.

By Rodney C. Adkins | June 16, 2011 | 1:30 p.m. EDT + More

Rodney C. Adkins is senior vice president of IBM's Systems & Technology Group

Innovation has always been a mainstay of successful enterprises. Think about how innovations like the steam engine, the transistor, and the Internet-built business created industries and powered economic growth. The same can be said for individuals. Those who create the next great innovations—and not just consume them—will be the biggest winners in tomorrow's economy.

That is why it is increasingly important for students to study science, technology, engineering, and math (STEM). History has shown that those who have strong math and science skills will be the innovators of tomorrow. And the United States needs these creators to grow our economy and generate new jobs. According to the U.S. Department of Labor, only 5 percent of U.S. workers are employed in fields related to science and engineering, but they are responsible for more than 50 percent of our sustained economic expansion.

Yet there are some alarming trends that indicate we are at risk of becoming a country of consumers, not creators. According to the National Science Foundation, the percentage of U.S. students studying math, science, and engineering has decreased from 21 percent in the 1980s to approximately 16 percent today. And overall math and science test scores of 15-year-old students in the United States continue to lag behind those of many other countries. In fact, in the most recent Organization for Economic Co-operation and Development (OECD) test scores, the United States was below the average score in math and only at the average in science. [Check out the best high schools in the nation.]

A look at the latest U.S. census data is also a cause for concern. America's shifting demographics make it especially important that we encourage minority students to pursue science and engineering education. Today, 43 percent of school-age children are of African-American, Latino, or Native American descent. Yet of more than 70,000 U.S. engineering bachelor's degrees in 2009, less than 13 percent were awarded to under-represented minorities, according to the National Action Council for Minorities in Engineering. If the United States is to remain competitive in a global economy, we will need to reconcile these opposing trends.

Just as successful companies invest in research and development to produce future innovations, so too must all levels of government invest in STEM education to produce future innovators. But to fully develop a new generation of innovators, the United States also needs greater public-private partnerships that encourage more students to study STEM.

The Obama administration started its "Educate to Innovate" campaign with that goal in mind. The national program aims to improve the participation and performance of America's students in science, technology, engineering, and math through combined efforts from the federal government and leading companies, foundations, and nonprofits. [Check out a roundup of political cartoons on the economy.]

The private sector can also make a difference at the local level. The James Dyson Foundation, for example, sponsors after-school engineering clubs at 20 public schools in Chicago. And IBM is a partner in a new school for grades 9 to 14 in Brooklyn, N.Y., called Pathways in Technology Early College High School. The school—a collaboration between IBM, the New York City Department of Education, New York City College of Technology, and City University of New York—is focused on STEM education. Its students will graduate with an associate's degree, along with the skills and knowledge they need to continue their studies or transition directly into jobs in the information technology industry.

Another simple yet successful private-sector approach lies in "transition to teaching" programs. Such programs help fill the demand for new math and science teachers by streamlining the teacher certification process and making second careers in education more attractive to employees who are near retirement. IBM's program, for example, includes company-paid tuition, leaves of absence, and other support, such as mentoring, to interested employees. [See the top 10 cities to find a job.