

US still leads the world in science and technology

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Despite perceptions that the nation is losing its competitive edge, the United States remains the dominant leader in science and technology worldwide, according to a RAND Corporation study issued today.

The United States accounts for 40 percent of the total world's spending on scientific research and development, employs 70 percent of the world's Nobel Prize winners and is home to three-quarters of the world's top 40 universities.

An inflow of foreign students in the sciences -- as well as scientists and engineers from overseas -- has helped the United States build and maintain its worldwide lead, even as many other nations increase their spending on research and development. Continuing this flow of foreign-born talent is critical to helping the United States maintain its lead, according to the study.

"Much of the concern about the United States losing its edge as the world's leader in science and technology appears to be unfounded," said Titus Galama, co-author of the report and a management scientist at RAND, a nonprofit research organization. "But the United States cannot afford to be complacent. Effort is needed to make sure the nation maintains or even extends its standing."

U.S. investments in research and development have not lagged in recent years, but instead have grown at rates similar to what has occurred elsewhere in the world -- growing even faster than what has been seen in

Europe and Japan. While China is investing heavily in research and development, it does not yet account for a large share of world innovation and scientific output, which continues to be dominated by the United States, Europe and Japan, according to RAND researchers.

However, other nations are rapidly educating their populations in science and technology. For instance, the European Union and China each are graduating more university-educated scientists and engineers every year than the United States.

Policymakers often receive advice from ad hoc sources. Although their viewpoints are valuable, they should be balanced by more complete and critical assessments of U.S. science and technology, said report co-author James Hosek, a RAND senior economist. The absence of a balanced assessment can feed a public misperception that U.S. science and technology is failing when in fact it remains strong, even preeminent.

"There is a pressing need for ongoing, objective analyses of science and technology performance and the science and technology workforce. We need this information to ensure that decision makers have a rigorous understanding of the issues," Hosek said.

Among the study's recommendations:

- Establish a permanent commitment to fund a chartered body that would periodically monitor and analyze U.S. science and technology performance and the condition of the nation's science and engineering workforce.

- Make it easier for foreigners who have graduated from U.S. universities with science and engineering degrees to stay indefinitely in the United States.

- Make it easier for highly skilled labor to immigrate to the United States to ensure the benefits of expanded innovation are captured in the United States and to help the United States remain competitive in research and innovation.

- Increase the United States' capacity to learn from science centers in Europe, Japan, China, India and other countries.

- Continue to improve K-12 education in general, and science and technology education in particular.

The inflow of foreign students, scientists and engineers has been a key factor that has enabled the U.S. science and engineering workforce to grow faster than the U.S. is graduating native-born scientists and engineers, according to the report. Researchers found that foreign-born scientists and engineers are paid the same as native born, suggesting their quality is on par.

But a recent reduction in the cap on skilled immigrant visas (H1-B) has the potential to reduce the inflow of foreign science and engineering workers, and the report argues that curtailing the supply of these scientists and engineers can lead U.S. firms to outsource more research and development to foreign countries and locate new facilities overseas. Rather than protecting jobs, this could lead to reduced investment and employment at home.

Among potential weaknesses faced by the United States are the persistent underperformance of older, native-born K-12 students in math and science and the heavy focus of federal research funding on the life sciences versus physical sciences. Another unknown is whether an increasing U.S. reliance on foreign-born workers in science and engineering makes the U.S. vulnerable. In recent years, about 70 percent of the foreign scientists and engineers who receive PhDs from U.S.

universities choose to remain here, but the stay rate could fall as research conditions and salaries improve abroad.

Source: RAND Corporation

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