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HIGHER EDUCATION

Federal Science, Technology, Engineering, and Mathematics Programs and Related Trends

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Highlights

Highlights of GAO-06-114, a report to the Chairman, Committee on Rules, House of Representatives

Why GAO Did This Study

The United States has long been known as a world leader in scientific and technological innovation. To help maintain this advantage, the federal government has spent billions of dollars on education programs in the science, technology, engineering, and mathematics (STEM) fields for many years. However, concerns have been raised about the nation's ability to maintain its global technological competitive advantage in the future.

This report presents information on (1) the number of federal programs funded in fiscal year 2004 that were designed to increase the number of students and graduates pursuing STEM degrees and occupations or improve educational programs in STEM fields, and what agencies report about their effectiveness; (2) how the numbers, percentages, and characteristics of students, graduates, and employees in STEM fields have changed over the years; and (3) factors cited by educators and others as affecting students' decisions about pursing STEM degrees and occupations, and suggestions that have been made to encourage more participation.

GAO received written and/or technical comments from several agencies. While one agency, the National Science Foundation, raised several questions about the findings, the others generally agreed with the findings and conclusion and several agencies commended GAO for this work.

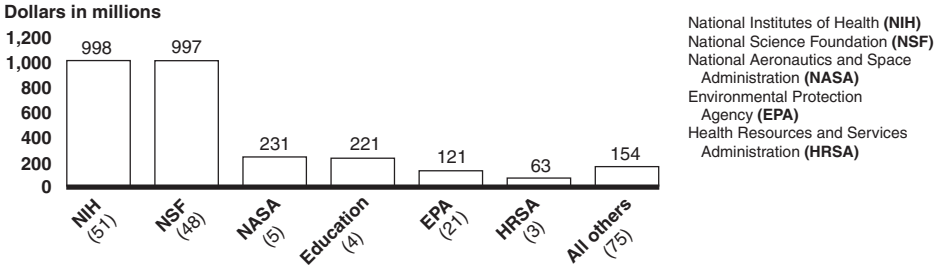
www.gao.gov/cgi-bin/getrpt?GAO-06-114.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Cornelia M. Ashby at (202) 512-7215 or ashbyc@gao.gov.

What GAO Found

Officials from 13 federal civilian agencies reported spending about $2.8 billion in fiscal year 2004 for 207 education programs designed to increase the numbers of students and graduates or improve educational programs in STEM fields, but agencies reported little about their effectiveness. The National Institutes of Health and the National Science Foundation had most of the programs and spent most of the funds. Officials also reported that evaluations were completed or under way for about half of the programs.

Federal STEM Education Programs and Funding by Agency, Fiscal Year 2004



Source: GAO survey responses from 13 federal agencies.

While the total numbers of students, graduates, and employees in STEM fields increased, changes in the numbers and percentages of women, minorities, and international students varied during the periods reviewed. From academic year 1995-1996 to 2003-2004, the percentage of students in STEM fields increased from 21 to 23 percent. Changes in the percentages of domestic minority students varied by group. From academic year 1994-1995 to 2002-2003, the number of graduates in STEM fields increased 8 percent, but this was less than the 30 percent increase in graduates in non-STEM fields. International graduates continued to earn about one-third or more of the advanced degrees in three STEM fields. Between calendar years 1994 and 2003, employment in STEM fields increased 23 percent compared to 17 percent in non-STEM fields, and there was no statistically significant change in the percentage of women employees.

Educators and others cited several factors that affected students' decisions about pursuing STEM degrees and occupations, and made suggestions to encourage more participation. They said teacher quality at the kindergarten to 12th grades, the mathematics and science courses completed in high school, and a mentor, especially for women and minorities, influenced domestic students' decisions. Also, these sources said that opportunities outside the United States and the visa process affected international students' decisions. To encourage more participation in STEM fields, educators and others made several suggestions. But before adopting any of them, it is important to know the extent to which existing STEM education programs are appropriately targeted and making the best use of available federal resources.