

## MATH AND SCIENCE EDUCATION AND UNITED STATES COMPETITIVENESS: DOES THE PUBLIC CARE?

Conducted for American Council on Education

By The Winston Group

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[http://www.solutionsforourfuture.org/site/DocServer/Global\\_Competitiveness\\_Executive\\_Summary.pdf?docID=641](http://www.solutionsforourfuture.org/site/DocServer/Global_Competitiveness_Executive_Summary.pdf?docID=641)

Americans are divided about whether college students need to study more mathematics and science to preserve America's global economic competitiveness, according to survey findings released by the American Council on Education. The results suggest that colleges and the council need to do a better job of persuading students to take such courses and to disseminate successful teaching methods, said David Ward, the council's president. President Bush, members of Congress, and a series of blue ribbon panels have raised the alarm and called for more U.S. citizens to study those topics. The poll results, however, suggest that the idea might be a hard sell: Forty six percent of respondents said they believed that colleges and universities should not require students to take more courses in math and science, while 46 percent said students should be required to do so. Mr. Ward said colleges should work to ensure that all students, not just those intending to become scientists and engineers, graduate with "some threshold, minimum level of quantitative competency," because jobs of all types will increasingly require it. "We simply have to start saying, Where have some institutions done good works, and how can we make these general practices?" "We've not done enough. And I do feel bad that we've not held ourselves more accountable to this issue."

Recognizing the changing nature of the global economy, policy makers and opinion leaders have recently placed much attention on the subject of American economic competitiveness. The following study, commissioned to evaluate the opinion environment regarding higher education's role in promoting policies that will ensure a competitive 21<sup>st</sup> Century workforce, seeks the input of a wide variety of audiences, both directly and indirectly linked to American colleges and universities. Following a series of focus groups nationwide and a national survey of 1000 registered voters, topics such as career choice, American economic positioning in an increasingly competitive global economy, curriculum rigor, incentive programs for academic programs in science, technology, engineering, and math (STEM), the relationship between colleges and students, and the value of college education were all analyzed. The findings lay the groundwork for understanding the environment in which policy reform will take place.

- Americans understand that global competitiveness is an issue in the short-to mid-term time frame.
- Americans tend to have a fairly positive view of the current position of the United States in the global economy, though there is a sense that that position may be slightly weakened in twenty years. Overall, 62 percent of respondents place the United States at the top or near the top of the global economy. However, less than half, 49 percent believe the United States would be at or near the top of the global economy in twenty years.

- Americans believe overall math and science education is important to U.S. global competitiveness, but are unsure about the importance of math and science after graduation.

Most of those surveyed (70 percent) believe that general math and science skills will be very important to all college graduates in the 21<sup>st</sup> Century. However, less than a third (31 percent) said they believe math and science classes offered to students not majoring in those fields are very relevant to life after graduation. The lack of strong feeling about the importance of math and science skills for all college graduates may be due to the fact that there still remains a lack of awareness about the factors attracting companies to hire workers overseas. While most (86 percent) Americans believe that some countries, such as China and India, are putting in place policies intended to create a highly skilled technical workforce, most of those surveyed do not believe these policies explain the current attraction of overseas workers. Eighty-five percent believe that cheaper labor is the main motivation corporations have for seeking to tap workforces overseas, compared to only 12 percent believing that more skilled labor is the primary motivation.

Despite the belief among most that general math and science skills are important, many do not believe that colleges and universities should require all students to take more math and science courses. Americans are split evenly on whether colleges and universities are currently requiring enough math and science (46 percent agreed and 46 percent disagreed). Only a slight majority believe that all students should have to take more math and science courses, 54 percent compared to 44 percent. The mixed feelings about the amount of math and science that should be required is likely due to the belief among Americans that math and science are difficult subjects that may negatively impact some students. When asked why students avoid math and science, 44 percent said, “they think it is too difficult,” while “they believe it will hurt their Grade Point Average” received 10 percent. Of all respondents, those who think interest and presentation of the topics are the chief concern comprise 33 percent, with 17 percent attributing it to “they find it uninteresting” and 16 percent attributing it to “the subject material is not presented in an engaging way”.

- The prospect of employment after graduation and likelihood of success in a subject are seen as the key motivating factor in student course selection.

Practical concerns appeared to be the most important drivers of thought regarding academic major and career choice according to survey respondents, who rated “likelihood of getting a good job after graduation” as the most important factor (7.61 out of 10.00). Following this were “natural talents and preferences” (7.34) which is supported by the finding that many believe that students avoid math and science courses because, “they think it is too difficult,” (44 percent). Next came parental encouragement (7.26) and inspiration by a role model or teacher (7.26). Trailing these by a distance are university academic advisors (6.03) and peer influence (5.88). Parents of college students tend to agree with this estimation and ranking, though they de-emphasize the importance of peers even further while attributing slightly higher levels of influence to all other options. Among parents, there are major gender differences between mothers and fathers of college students, with mothers tending to give higher scores overall, especially on the role of parental encouragement and inspiration by a role models.

- Americans have a very practical view of the benefits of a college education.

In a variety of ways, respondents expressed that higher education today is primarily a means to gainful and productive employment and real-world success. Nearly 2 out of 3, 64 percent, said they believed the goal of receiving a college education was, “to get a good job after graduation.” This is particularly true among women, who consistently place a high premium on the practical, real-world uses and benefits of a college education. While aggregate level of support for the idea that having a college degree is important remains comparable between the genders, the portion of women who believe the degree is “very important” (66 percent) outpaces that of men (54 percent), and the difference is most noticeable among middle aged voters, where 69 percent of women believe a bachelor’s is very important, compared to 51 percent of similarly aged men.

As a corollary to the notion that colleges and universities now primarily serve to produce employable graduates, there is a strong perception that colleges and universities no longer function solely as institutions of learning but also as businesses providing a degree to paying customers. Students, graduates, and parents support this view and generally feel they deserve a quality education, a skill set, and employability for their money, while faculty and administrators lament this shift away from cultivating an erudite crop of graduates to a newer era of bringing in tuition dollars and producing a viable crop of workers.