

Why we need more Latino scientists and engineers

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The U.S. Census Bureau's recent declaration that Hispanics are now the largest and fastest-growing minority group in the nation should be a cause for celebration, an affirmation of our country's rich cultural diversity and heritage.

But this rapidly expanding Latino majority, projected to make up a quarter of the nation's population by the middle of the century, is still a minority when it comes to science and engineering. And that should be a cause for concern for anyone worried about our economic future beyond the state's current fiscal crisis.

Only 3 percent of the nation's scientists and engineers are Hispanic, a depressingly low proportion when you consider that Hispanics in the 2000 census accounted for 13.5 percent of the nation's population, almost 27 percent of San Diego County's population and more than 32 percent of Californians. In contrast, 84 percent of our nation's scientists and engineers are non-Hispanic whites and 10 percent are Asians, who account for 4 percent of the U.S. population.

Why is it so critical that we have more Latino scientists and engineers?

The answer is simple: Our economy has become more dependent on science and technology than ever before. California's high-tech sector produces more than \$150 billion in annual revenues and employs more than 1.2 million people with an average annual wage of \$65,000, nearly double the state's annual average of \$35,350 for all industries. In San Diego, the diverse high-tech industry has become the fastest-growing sector for employment and a main factor in the region's continued economic prosperity.

San Diego County also has the second largest concentration of biotechnology companies in the nation, with some 499 companies that employ more than 29,000 people, up from 18,000 10 years ago. These biotech companies brought in over \$1.8 billion to San Diego County in the year 2000.

But we Latinos are not reaping the economic benefits of this technology boom. The vast majority of us are simply not trained to take advantage of the employment opportunities and higher salaries made possible by this plethora of modern industries. Indeed, the vast majority of us are employed in service-industry jobs, averaging an annual salary of \$20,000, with no benefits such as health care or retirement, and little hope of improvement

for subsequent generations.

And what is the impact of this shortage of Latino scientists on our state's technology industry, which we have come to rely upon so heavily for the generation of tax and other revenue?

California, which employs about one-half of the nation's biotechnology work force, is forced to recruit heavily from out of state and even overseas, rather than drawing on local talent. Nationally, over the next decade, one industry projection estimates that U.S. biotechnology companies will need to boost their combined work force from 200,000 to 3 million to remain globally competitive.

Where will the scientists and engineers come from to fill these future jobs?

If our future scientists and engineers don't start coming in greater numbers from the largest and fastest-growing segment of our population, if we don't start training our own technical work force, we could risk losing our competitive edge in global markets.

Sadly, nearly one-half of Latinos do not have a simple high school diploma. Only 57 percent of Latinos 25 and older in this country have graduated from high school, according to the Census Bureau's 2002 survey, compared to 79 percent of African-Americans and 89 percent of non-Hispanic whites. And only 9 percent of Latinos 25 and older have college degrees, compared to 18 percent of African-Americans and 36 percent of non-Hispanic whites. If we want to produce more Latino scientists and engineers, we first need to get more Latinos through high school and into higher education.

At UCSD, we're working with local secondary schools in a variety of programs designed to improve high school graduation rates and college admission among students from underrepresented and economically disadvantaged backgrounds. Many of our Latino students at UCSD also serve as mathematics tutors for Spanish-speaking students in local schools and provide help with science fair projects in economically disadvantaged school districts.

Within my own Division of Biological Sciences at UCSD, many of our students and alumni are serving as mentors to Latino students interested in biology. We've also started a life-sciences education Web site in Spanish that we hope will reach Spanish-speaking Latino parents and students and get them interested in science.

We need, of course, to do much more. We need to find ways of attracting more science teachers into the inner-city schools. We need to train more Latino science and mathematics teachers to serve as role models and to inform their students about career opportunities in the technology sector. And we need to find ways within the current political and fiscal climate to maintain diversity in the University of California system, where many of our state's future leaders in science and other fields will obtain their education.

The lack of sufficient diversity not only impacts the future economy, but our nation's human intellectual resource, which is being deprived of the views of Latino and African-American scholars. If we desire to build our economic prosperity, if we want to continue to create high-wage jobs that increase our tax base and reduce dependence on public assistance programs, we must find ways of expanding the pool of technical brainpower that will allow our technology industries to continue their impressive expansion.

We must remove the barriers that prevent all ethnically underrepresented populations from pursuing careers in science. And especially in California, we must do a better job in particular at removing those barriers for our rapidly growing Latino population.

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