

# **Innovation America Forum: Generating a Pipeline of 21st Century Talent**

**Remarks by Dr. Martha Kanter, Chancellor  
Foothill-De Anza Community College District  
Cypress Hotel, Cupertino, CA  
April 17, 2007**

At the invitation of Arizona's Governor, the Honorable Janet Napolitano, and John Thompson, Chairman and CEO of Symantec, I am delighted to represent California's community colleges to the panel this morning and would like to share some innovative strategies and partnerships that the Foothill-De Anza Community College District has undertaken to produce the well-trained and well-skilled talent pool critical for our 21<sup>st</sup> century economy.

First, a few words about the role of community colleges.

The California Community Colleges comprise the largest system of higher education in the world, serving more than 2.5 million students in its credit, non-credit and fee-based programs. Half of all undergraduates in America attend a community college. In California, more than 80 percent of students who are Hispanic, African American, Asian American and Native American enter higher education through our doors as we prepare for a state that will be 50 percent Hispanic by the year 2025.

Here in Silicon Valley, Foothill College and De Anza College together serve 44,000 students four quarters of the year. Our primary mission is three-fold: we prepare our increasingly diverse student body for university transfer, the workforce and lifelong learning. Sometimes students begin with university preparation and then enter the workforce, but most often, especially since today's students expect to change jobs 5-10 times in their lifetime, workforce preparation and university transfer intertwine as our students become lifelong learners. More than two-thirds of our students work while they attend higher education and work is now an imperative for most postsecondary students in Silicon Valley.

Preparing the pipeline from K-12 to higher education is of paramount importance to our institutions and, toward this end, we partner with the University of California and California State University in a variety of innovative programs to increase the teaching workforce. We place special emphasis on preparing teachers who are competent in math and science fields. We also work with our universities to increase the performance outcomes of our high school students.

How are we doing this? Let me share several innovations in more detail.

In 2000, we created the Collaborative for Higher Education, a partnership with the University of California Santa Cruz, San Jose State University, Foothill-De Anza and the NASA Ames Research Center to advance our interdisciplinary work in Science, Technology, Engineering and Mathematics (STEM). Since then, we

have leveraged our collective resources and talent across the K-12 and higher education spectrum to put in place programs with more than \$5 million in grant and local funds to produce the following outcomes

1. **Developing Tomorrow's Workforce in Silicon Valley's Emerging Technologies** provides the education outreach for the \$300 million dollar University of California Bio-Info-Nano Research and Development Institute established in the past two years at NASA Ames. Our part of this effort focuses on methods to provide continuous professional development for faculty associated with the institute as a result of this partnership.
2. **Developing Effective Engineering Pathways**, has allowed us to create new pathways from our high schools through Foothill and De Anza colleges into the University of California, by motivating underrepresented students with applied engineering classroom experiences and supporting them to complete STEM courses. With significant National Science Foundation support, we've brought together high school, community college and university faculty to develop classroom materials that give students exciting, real-life problems to work on, like building robots and racing them against one other in competition, or building stereo systems that communicate across the Internet.
3. In our **Smart Skies program**, we are using e-learning, linking math and science standards with first-rate NASA space science materials, to ignite student achievement.
4. In our **High School STEM Enrichment Program**, we've given summer internships to high school students in local high-tech companies and an enriched high school math and science curriculum during the year that includes a course in engineering.
5. Through the Collaborative as well as at Foothill's Krause Center for Innovation, we are proud to offer several **STEM Professional Development Programs** for elementary, middle school and high school teachers. These programs include intensive summer math, science and technology workshops and monthly, school-year training and collaboration sessions. These activities bring together K-12 teachers with community college and university faculty. We are in the process of expanding this effort.
6. Our newest project, **Aurora in the Northern and Southern Skies: Community College Pathways for Teaching Science and Mathematics**, is completing its first year this spring. The project introduces 100 freshmen from 15 community colleges across our state to field experiences, internships and seminars designed to attract them to math and science teaching in middle and high schools. It is vital that community college students aiming to transfer to our universities have opportunities to be exposed to fulfilling careers as math and science

teachers. This year, these students have assisted elementary and middle school science and math teachers as interns and have completed an introduction to teaching course offered concurrently with the internship.

Now a few words about pathways to career-technical programs at Foothill and De Anza colleges.

After the dot-com bust in Silicon Valley, literally overnight, thousands of students re-enrolled at our colleges with an urgent goal to transition from high tech to bioscience and business. Today, five years later, many are returning to computer science but there remains high demand for workforce preparation programs in new and fast-growing fields such as Internet security, nanoscience, biotech, bioinformatics, manufacturing and computer numerical control machine operator training as well as numerous healthcare professional preparation programs, such as nursing, radiologic technology, and respiratory therapy and pharmacy technician, and medical laboratory technician training. Given these dramatic shifts, we must constantly reinvent ourselves as we respond to industry's needs in serving three populations: first-time entering freshmen, returning older students and lifelong learners.

We are actively participating in state and regional conversations about the new career-technical programs that are being planned for our local high schools. We advocate strenuously that the new programs incorporate California's A through G college-prep requirements so that high school students can choose either postsecondary education or the workforce or both at the same time, as many do, but won't be tracked out of college into dead-end jobs because they don't meet the college math, science and English standards expected of entering freshmen.

For business and industry across Silicon Valley and California, regional centers at our community colleges have become the innovative infrastructure for delivering high-cost training and technical support to our companies. At De Anza College, our Applied Competitive Technologies Center provides training for small- and medium-sized manufacturers in advanced and environmentally sound manufacturing technologies and techniques, enhancing their competitiveness. We offer training for workforce skills enhancement and a demonstration site built around computer-integrated manufacturing, engineering design, and process technology. We also have the capacity to provide educational and technical services to small- and medium-sized businesses in engineering, advanced management, and manufacturing process technologies. California's community colleges have similar regional centers across our state in the fields of multimedia/entertainment; international trade; environment, health, safety and homeland security; applied biotechnologies; and advanced transportation and energy, to name a few. Each has its special focus area and receives guidance from state and regional industry advisory experts.

In closing, as I look to the future, I am mindful that in November 1999 and then again in June 2006 the residents of our college district voted twice in less than a decade, with overwhelming approvals both times, to help us reinvent our

campuses for current and future generations of students. Our residents voted to invest more than \$738 million dollars through their local property taxes to renovate our 50-year-old classrooms and build 21<sup>st</sup> century laboratories to accommodate our growing enrollment. At De Anza College, we've already opened a 21<sup>st</sup> century science center to house our biology and chemistry programs and a new interdisciplinary center for environmental studies. Right now at Foothill College we are in design to construct a new interdisciplinary science center for physics, chemistry and mathematics.

Why did we make these choices? For two good reasons: first, because Silicon Valley's high-tech and bioscience companies need well-trained technicians to support their senior scientists on a 3 to 1 ratio, and, second, because our universities want ready-to-go undergraduates at the upper division level in science, technology, math and engineering to finish their degrees well-prepared to enter America's graduate programs in order to become the senior scientists of tomorrow.

In Silicon Valley, there is an unusual, almost mystical, synergy between academia, high tech, biotech, venture capital and business that energizes and inspires us to take risks, work together and innovate. Last week in the Silicon Valley Business Journal, John Doerr, one of Silicon Valley's uniquely visionary venture capital partners, said: "Biology is the future!" He described his latest venture into synthetic life forms that would turn sugar into fuel, as one part of a multi-pronged strategy to innovate the end to global warming.

For our part in this venture, by graduation this June, more than 9,000 Foothill and De Anza students will have taken our biology courses; more than 4,000 our chemistry classes, and more than 20,000 mathematics at all levels. Our challenge is to work on higher rates of success, especially for those students who come to us under-prepared for college level courses. As Innovation America reported in its national data, we too have only one-third of high school students completing intermediate algebra by the 11<sup>th</sup> grade. Our mathematics professors at Foothill and De Anza have spent the last few years redesigning our mathematics programs, creating Math Performance Success, Math My Way and EnableMath, using the latest software and technologies to help our students succeed. Institutional research shows that these programs increase our student success rates by 10-20 percent across the board, but it's not enough. We're not satisfied! In fact, we're now working to create open educational resources to provide community college courses to our students via the Internet that will be universally available. There's so much more that we can and will do for our students. And that's the hallmark of Foothill-De Anza and the California Community Colleges.

Thank you for allowing me to talk with you this morning.

## **SUPPORTING NOTES FROM THE 2006-07 INNOVATION AMERICA REPORT**

<http://www.nga.org/portal/site/nga/menuitem.751b186f65e10b568a278110501010a0/?vgnnextoid=e34e2bad2b6dd010VgnVCM1000001a01010aRCRD&vgnnextchannel=92ebc7df618a2010VgnVCM1000001a01010aRCRD>

- In 2005 in both mathematics and science, fewer than two-fifths of U.S. 4th and 8th grade students performed at or above a proficient level.
- U.S. 15-year-olds ranked 24th out of 39 countries that participated in a 2003 examination, which assessed students' ability to apply mathematical concepts to real-world problems.
- Approximately 1/3 of math teachers and 1/5 of science teachers in grades 7-12 lack a postsecondary major or minor in their respective subject-matter.

The Innovation America initiative will highlight two areas that are critical to our future success. **First, we will focus on increasing student proficiency in math and science by modernizing the teaching force, benchmarking academic standards and aligning assessments and creating new models for math and science education. Second, we will strive to enhance innovation by implementing statewide strategies as well as those that target existing high growth regional centers of innovation;** together these approaches will reduce existing barriers to innovation, support entrepreneurship, fund research and development and create 21st century university systems. While the education and economic development components of the initiative are — to some extent — independent, they are also complementary. Both are critical to our mission of turning individual states into innovative states — and transforming the United States into a nation of innovation.

### OUTPUTS

The goal of the Innovation America initiative is to assist governors in developing and implementing short and long run strategies to enhance the innovative capacity of their states, particularly in existing regions of innovation. A combination of Governor's Guides, direct technical assistance and forums for exchanging ideas and best practices will enable governors to attain the goal of creating innovative states. As part of the initiative, the National Governors Association will:

- raise national awareness of the urgent need to embrace innovation as the U.S. path to maintaining competitiveness;
- share examples of best practices and provide a "tool box" of effective policies and strategies; present each governor with an economic profile specific to their state, including high growth innovation centers and science and math proficiencies;
- host regional learning labs and workshops to help states improve education in the areas of science, technology, engineering and math; and create new science and math academies to improve student achievement and grow a workforce in emerging occupations and services.

As part of the initiative, NGA will:

1. raise national awareness of the urgent need to embrace innovation as the U.S. path to maintaining competitiveness;
2. share examples of best practices and provide a "tool box" of effective policies and strategies;
3. present each governor with an economic profile specific to their state, including high growth innovation centers and science and math proficiencies;
4. host regional learning labs and workshops to help states improve education in the areas of science, technology, engineering and math; and
5. create new science and math academies to improve student achievement and grow a workforce in emerging occupations.