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**Future Challenges for Higher Education:
The Role of the Community Colleges**

by

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Thank you and good morning everyone! It's a pleasure to be here. I realize this is the final session of a four-day conference, so I want to thank all of you hardy souls who are still hanging in here!

I'm pleased to say that I retired 4 years ago and have been enjoying retirement very much ever since. In fact, I highly recommend it to all of you! However, as I approach my 72nd birthday, I often remind myself of Mark Twain's observation in his later years when he said, "*When I wake up in the morning and feel no pain, I'm probably dead!*" So, even though I may feel more aches and pains as I grow older, I ain't complaining!

This is the first ACCT Annual Congress I've ever attended, so I hope my comments are relevant to your interests. Although I've worked in four-year institutions during my entire career, I have also worked closely with many community colleges and developed a number of partnerships with them over the years. In the process, I have developed a great deal of respect for the important and vital role they play in higher education.

My retirement has given me the luxury to reflect on my experiences in higher education and to gain new insights into how institutions dramatically transform the lives of our students. So, what I'd like to do today is to talk about some of those experiences and the lessons I've learned from them, and what I see as one of the major challenges facing all of higher education in the years ahead.

Let me begin with the challenge, which is directly related to the theme of your conference. This challenge is the pressing national need to increase the numbers of students pursuing careers in the so-called STEM disciplines; that is, in Science, Technology, Engineering and Mathematics. Programs for this purpose have been conducted for almost three decades now by such agencies as NSF and NIH, among others. While there has been significant progress in some areas, this progress has not been sufficient to avert the impending crisis which was well described by Shirley Ann

Jackson, the president of Rensselaer Polytechnic Institute, when she wrote (and I quote):

“There is a quiet crisis building in the United States—a crisis that could jeopardize the nation’s pre-eminence and well-being. The crisis has been mounting gradually... over several decades. If permitted to continue unmitigated, it could reverse the global leadership Americans currently enjoy.”

“The crisis stems from the gap”, she writes, “between the nation’s growing need for scientists, engineers, and other technically skilled workers, and its production of them. As the generation educated in the 1950s and 1960s prepares to retire, our colleges and universities are not graduating enough scientific and technical talent to step [into their places].”

“We ignore this gap at our peril,” she continues. “Closing it will require a national commitment to develop more of the talent of all our citizens, especially the under-represented majority—the women, minorities, and persons with disabilities who comprise a disproportionately small part of the nation’s science, engineering, and technology workforce.” (end of quote)

That, of course, is the bad news. The good news is that we have the know-how to solve this problem. As I indicated, over the past three decades, a number of successful programs to increase the numbers of women, minorities and persons with disabilities in the STEM disciplines have been mounted at the institutional, regional and even state levels. We know how to do this.

However, we have not been able to scale up these efforts sufficiently to meet the shortfall in the nation’s science, engineering, and technology workforce. The fact that we still have this shortfall after three decades of effort clearly indicates this is a formidable challenge and will require extraordinary commitment and national will not only by our institutions of higher education, but also by federal and state governments, the K-12 educational sector, private foundations, and the corporate sector. However, before I discuss this challenge further, let me share some personal experiences related to these issues based on my work in this area for the past 30-plus years. More specifically, I would like to talk about the importance of diversity.

Back in the late 1980’s, I served as the Vice President for Academic Affairs at Cal State Northridge, a large urban campus in Los Angeles, which enrolled nearly

30,000 students at the time, about 15% of whom were Asian Americans, the largest minority student group on that campus. The campus had one of the largest Counseling Centers in the California State University system, employing around 30 professional counselors. However, I discovered that there was not a single Asian counselor on the staff. When I inquired as to why they had not hired any Asian counselors, I was told that they were very difficult to find. And besides, they said, almost no Asian students ever came to the Center, leading some counselors to conclude that Asian students were so well adjusted that they had no need for counseling.

I didn't buy that rationale and kept putting pressure on the Center to hire an Asian counselor. Finally, after about 2 years of prodding, the Center hired their first Asian counselor. Well, guess what? Within 6 months, this Asian counselor was overloaded with Asian students who flocked to see her. By the end of the year, she was so backlogged that she had to stay late into the evening hours to counsel all the students who wanted to see her.

At the end of the year, she went to the Center Director and told him, *"I can't continue this workload. You either have to hire another Asian counselor, or you're going to have to let me cross-train some of the other counselors."* Since they couldn't hire another counselor right away, they decided on the latter course of action, and she proceeded to cross-train a number of the other counselors, helping them understand the kinds of problems faced by Asian students and how she counseled them. She then distributed her backlog of students to these other counselors. Well, guess what? They found they were able to counsel these students almost as effectively as the Asian counselor.

So what's the point of this story? The point is that even that small increase in the diversity of the counseling staff made a huge difference in improving and extending the services provided by the staff. The example I've given could've been true for any other racial or ethnic group. And what was true for that Counseling Center is probably true for many other units in a university, including academic departments. In other words, diversity does matter, and can make a significant impact in improving services to students, as well as in improving their education.

I have been a strong supporter and proponent of diversity because I believe the diversity of American society is one of the most valuable cultural assets we have. That diversity nurtured in an environment supportive of individual freedom and expression is, I believe, the basic source of American creativity and ingenuity. It has enabled the U.S. to lead the world in innovation and inventiveness, which, in turn, has made this country the world's leading economic and military power.

Speaking of American creativity and ingenuity, I am reminded of a conversation I had several years ago with Dr. Leo Esaki, a Nobel Laureate and president of Tsukuba Science University, often referred to as the MIT of Japan. Dr. Esaki had spent 30 years in the United States working at the research labs of IBM before returning to Japan to assume the presidency at Tsukuba.

Dr. Esaki advocated a radical reform of the Japanese educational system to promote greater creativity. He believed that a creative person had to often be non-conforming and individualistic, not be wedded to the past, and be willing to take risks. These characteristics go against the very grain of traditional Japanese cultural values. Japanese society is a very group-oriented society in contrast to the individualistic orientation of American society. This group orientation, according to Dr. Esaki, was strongly reinforced by Japan's educational system and needed to be changed to encourage greater individuality and creativity. He believed this was the only way the Japanese could become more innovative and inventive, and enable Japan to continue competing with the West.

I tell this story because many educators have decried the fact that American elementary and secondary students score way below their counterparts in Asia on international tests in math and science. As a consequence, the federal and state governments are placing much greater emphasis on standardized testing in programs to raise test scores in math and science, such as President Bush's "No Child Left Behind" program. Unfortunately, it has led many schools to focus primarily on raising test scores and to neglect or ignore the development of other important cognitive skills, such as critical thinking and creativity. While these skills are not measured by standardized tests, they may be among the most important skills students can acquire. These skills nurtured in an environment supportive of individual freedom and expression have enabled Americans to lead the world in innovation and inventiveness.

As trustees, you must certainly support programs that will help raise test scores in math and science. However, at the same time, I hope you will also make sure that these other skills, such as critical thinking and creativity, even though they may not be measurable by standardized tests, are developed in your students as well. These skills can be enhanced through the instructional strategies employed by faculty that encourage more active in-class learning by students. But that's another major topic I don't have time to go into here.

Let me, then, return to my discussion of diversity. When an organization diversifies its workforce, it can improve its performance and productivity, a lesson learned by the Counseling Center I just mentioned. It's also a lesson learned by many corporations that have continued their efforts to diversify their workforces despite court

rulings and legislation against affirmative action. These companies know that a diverse workforce helps to improve their competitiveness and their bottom lines.

Therefore, as our society becomes more and more diverse, I believe it is imperative that we embrace diversity if we are to continue to progress as a nation. It becomes an even greater imperative with the increasing globalization of the world, and our increasing interaction with people of color in other countries. Americans need to gain a much better understanding of the rest of the world in which people of color constitute 80% of the population.

For these reasons, I would urge all of you, as trustees, to support campus efforts to promote diversity. Contrary to what many opponents of diversity are claiming: Promoting diversity is not just about having a mixture of people of different racial, ethnic and gender backgrounds; it's about achieving true excellence by providing quality services and education to each and every student. This can only be accomplished by having a diverse faculty and staff who can bring a broader range of perspectives, skills and knowledge to better serve our increasingly diverse student bodies.

In this regard, I want to mention another issue I've been concerned about for a long time. Most of you probably view Asian Americans as a highly successful minority group, especially in the area of higher education. They are one of the most highly educated groups in the country and are well represented on our student bodies, faculties and staffs. However, ironically enough, they are also the most severely under-represented minority group in senior leadership positions, not only in higher education, but also in all other sectors of our society. Very few Asian Americans have been selected for presidencies and vice presidencies, or for that matter, even deanships, of our institutions of higher education despite the huge pool of Asian American faculty and staff from which candidates could come.

What some have called the "bamboo ceiling" clearly exists for Asian Americans. This discriminatory barrier has not been widely recognized or acknowledged, partly because of the stereotype held by many that Asian Americans are a "model minority," facing no discrimination. Nothing could be further from the truth especially when it comes to senior leadership positions as shown by the available statistical data. For example, less than 1 percent of all the presidencies in our institutions of higher education are held by Asian Americans despite the fact that they constitute over 7% of all faculty nationwide, the primary pool from which candidates for administrative positions are drawn.

As trustees, you can help ameliorate this problem by making it clear to your campuses that Asian Americans must be encouraged to seek senior leadership positions

and considered for these positions without the usual stereotypic assumption that they don't have the requisite leadership qualities.

You may also be interested to know that a program to train more Asian Americans for these positions has been conducted for some 10 years now by an organization called Leadership Education for Asian Pacifics, or LEAP. More than 200 Asian-American faculty, staff and administrators from both 4-year and 2-year institutions across the country have been trained through this intensive, 4-day program and gone on to higher-level leadership positions. Presidents and vice presidents from several community colleges, including such leaders as Ding-Jo Currie and Frank Chong, have been among the trainers. This program will have to continue for several more years before the pipeline to senior leadership positions is sufficiently filled by Asian Americans. Again, as trustees, you can help by encouraging your campuses to participate in this program.

Let me finally relate one other experience I had at Cal State Northridge. The College of Engineering on that campus had conducted a very successful Minority Engineering Program (or MEP) for several years. It was not based on a remedial model of education, but one that emphasized academic excellence. Minority students entered the program voluntarily, but had to commit themselves to joining a peer study group in which they would work together on solving problems related to the courses they were taking. It's actually a very efficient way of studying and students in this program did very well academically. In fact, their gpa's were higher than the average gpa in the college.

Consequently, I thought it made sense to extend this program to the College of Business Administration and that it would be an easy sell given the success of the MEP program. So, I talked the Dean of the College into proposing a similar program to his faculty. However, it generated quite a debate among the faculty, many of whom were sure it would lower standards in the college. When it was finally voted on by the faculty, it was rejected by a pretty significant margin.

As you may have gathered by now, I'm a pretty persistent fellow, and I continued to prod the college about mounting this program. Two years later, probably because they were tired of my nagging, the faculty voted on the program again and this time, to my surprise, it narrowly passed. So, the college implemented the program, but with a lot of trepidation and concerns that it would lower standards in the school.

I didn't hear much about the program for 3 or 4 years, until I was invited to a graduation celebration of the first graduates of the program. What amazed me at this event was the enthusiasm and support expressed for the program by a couple of faculty who were among its most vociferous critics earlier. What turned them around, they

told me, were the evaluations which showed the participants in the program had higher gpa's than students in general in the college. Instead of lowering standards in the college, the program was actually raising them. It's no wonder these faculty were so high on the program!

This result, by the way, has also been replicated in studies at other institutions and was not idiosyncratic or unique to this university. In fact, this peer-study group approach has been extended to even non-minority students and found to be effective for them as well. It has also been implemented and found to be effective in a number of community colleges.

Let me now return to the challenge of increasing the numbers of students pursuing careers in the STEM disciplines. We know from the MEP program and other related efforts that under-represented students who participate in peer study groups, combined with other supportive services, do very well academically.

This was borne out by a study conducted in the early 1990's by Martin Bonsangue, a doctoral student at the Claremont Graduate School. His study focused on two cohorts of under-represented students at Cal Poly Pomona who were majoring in math, science and engineering. One cohort consisted of students who participated in peer study workshops, and the other cohort consisted of students with nearly identical entry characteristics who did not participate in these workshops.

Bonsangue's study showed that three years later, 40% of the non-workshop students had withdrawn or been academically dismissed from the institution, compared to 5% of the workshop students. Moreover, only 58% of the non-workshop students were still pursuing majors in math, science and engineering; whereas, 91% of the workshop students were still in these majors. The study also showed that the gpa=s of the workshop students were nearly one grade point higher than that of the non-workshop students. Moreover, more recent data from the MEP program at Cal Poly Pomona show that the average gpa of students in this program is higher than the average gpa for engineering students as a whole.

These results should give all of us considerable encouragement and hope as we pursue the goal of making up the shortfall in the nation=s STEM workforce. While K-12 education clearly needs to undergo major reform and improved dramatically to raise the achievement level of students in math and science, it will probably be years before this happens. In the meantime, as Bonsangue=s study suggests, we can still have a significant impact at the higher education level through programs such as MEP.

As I mentioned earlier, several programs funded by NSF, NIH, NASA and other federal agencies have been successful in increasing the numbers of under-represented students pursuing degrees in the STEM disciplines. The focus of these programs has been on women, minorities and persons with disabilities because these groups are so severely under-represented in these disciplines and, yet, are the largest potential talent pool for these disciplines.

The challenge is not only to recruit more students from these groups to participate in these proven programs, but also to scale them up so that far more under-represented students are pursuing and completing degrees in the STEM disciplines. Although there have been a number of efforts to scale these programs up, such as the NSF's Alliances for Minority Participation, they have only slightly increased the numbers of STEM degrees awarded to under-represented students. It is, thus, becoming clear that a more massive, comprehensive, and long-term effort is going to be required to make a significant difference.

By the way, there is a greater need for technicians, perhaps with associate degrees from the community colleges, and for bachelor's and master's degrees in the STEM disciplines, than for Ph.D.'s which, it appears, are being produced by the research institutions at a rate greater than the job market can absorb, especially in higher education.

Clearly, higher education alone cannot makeup this shortfall. It will also take concerted, sustained and coordinated efforts by other sectors of our society. State and federal agencies must provide both short-term startup funding and long-term supplementary funding, as well as leadership at the state and national levels. The K-12 educational sector must dramatically improve math and science education so that the achievement of our students is at least on par with that of students in other industrialized countries. Right now, as many of you know, we are way below them. In addition, private foundations must direct much more funding than they currently do, perhaps on a leveraged basis, to this critical area. And finally, the corporate sector, which has the most to lose or gain, must invest more heavily in this area if they wish to continue receiving the large returns on investment they have enjoyed over the past several decades.

The changes and efforts that would have to be made by these various institutions will take years, probably decades. As trustees, you can be advocates for such a massive, comprehensive and long-term effort with your legislative and Congressional representatives, corporate executives, foundation trustees, and other policy- and decision-makers. You can also encourage, perhaps even mandate, your institutions to partner with other institutions, including the four-year institutions, in such an effort.

Some of you may find my perspectives on the situation quite discouraging. You may be asking yourselves, *Why should I commit myself to an effort whose goals may not be achievable until two decades or more in the future? Isn't there a better way to spend my time?@*

Perhaps the best answers I can give to those questions is to refer back to Shirley Ann Jackson's statement I quoted earlier in which she warned that a quiet crisis was building in the United States. It is developing gradually and quietly, and when the crisis hits, it will be too late because it will take at least two decades or more to increase our output of STEM degrees by the thousands we will need to compete with other nations.

Experts have been warning us for at least two decades about the impending crisis in STEM education. Because the crisis doesn't seem to be imminent, actions to address the crisis have tended to be minimal, delayed or ignored. Things may seem quiet now, but could explode in a couple of decades if we don't take action now to address the impending crisis. Given the global nature of today's economy, the impact will be rapid and the consequences will be devastating for our economy and our way of life.

For this reason, I hope all of you and your institutions will work with others to mount a major effort to begin solving this problem. It may be trite, but it would not be an over-statement, to say that your efforts will be critically important to the future well-being of our nation. Thank you very much.