Losing Sleep Over

By Francé A. Córdova

As university presidents, least among our concerns are the 500 students partying on the lawn of the rental house across the street from the president’s residence. A president might, instead, spend Monday night wondering if tomorrow’s announcement about the state budget will bring tuition increases and further cuts in money for academic preparation. Tuesday night, a president might lie awake fearing that the neighborhood association will file suit against the university for its expansion plans to accommodate an influx of new students. Wednesday night, the president could wonder if Mrs. K will give her alma mater the gift she has mentioned on several occasions, a gift that would provide for a much-needed performance center on campus. Thursday night, the president might toss and turn about whether the basketball team will rank last, or next to last, in the athletic conference. Friday night, the president will be anxious over whether the regents will approve the university’s business plan for a.

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Student SUCCESS?
new medical school. Saturday night, the president could ruminate about the academic senate: Did the faculty understand the urgent need for curriculum reform at its meeting last week? And Sunday night, the president might read a fat book about China in the 21st century, its proliferation of universities and accelerating numbers of science and engineering baccalaureates, and its rising competitiveness in world markets—and get really worried.

Whether our concerns are about the future of an individual student, our nation’s competitiveness, or the health and security of the world’s people, the underlying issue is the challenge of making our students’ college experience successful.

Over the past year, a number of journals have reprised many of the questions plaguing higher education—providing a full year’s worth of sleepless nights. While each of these issues justifies considerable dialogue and attention, the one issue on which parents, students, the public, and educators can agree is the importance—and the challenge—of student success. Whether our concerns are about the future of an individual student, our nation’s competitiveness, or the health and security of the world’s people, the underlying issue is the challenge of making our students’ college experience successful.

Nurturing Real Success
What does student success mean? The challenge is about throughput (will Megan graduate?), education (will Raoul learn?), career preparation (will Raoul acquire skills and interest for a career?), and inspiration (will Megan find her passion, challenge her world views, and learn to value different cultures and perspectives?). It is about our future (will enough students go into science and technology fields?), our competitiveness (are foreign students better prepared?), and what we want our society to be (will our students be inspired to contribute to our culture, to shepherd our fragile environment, to give back to those who are less fortunate?).

Approximately 17.4 million students attend our nation’s colleges and universities. Roughly 75 percent of those students are in public institutions of learning. The public is spending its money, directly or indirectly through taxation, to educate those students. It wants them to be successful because it equates education with opportunity and with quality of life. It links an educated workforce to innovation and economic prosperity, improved health care, global competitiveness, and smart defense at home and abroad. So, what could be more in the public interest than student success?

It is dismaying, then, to see what is happening with students at many of our colleges. Graduation rates for all but the top-tier private universities are relatively low. According to the National Center for Education Statistics, the four-year graduation rate at Title IV four-year institutions hovers around 54 percent, increasing to just 56 percent after six years. Who would guess that the leak in the education pipeline would persist even to college—to students who, in principle, have “made it”?

The situation becomes even bleaker when we focus on student defection in college from potential careers in science, technology, engineering, and math (STEM). A recent issue of Science magazine reported that an annual survey of incoming freshmen shows that nearly one in three declares an interest in
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STEM fields—but a much lower percentage of students actually graduate with a STEM degree.\(^5\)

The National Science Foundation's *Science and Engineering Indicators 2006* reported that, of the 3 million bachelor's degrees in S&E granted worldwide in 2002, Asian universities accounted for almost 1.5 million degrees, more than 600,000 of them in engineering; students across Europe (including Eastern Europe and Russia) earned about 950,000, and students in North and Central America earned almost 600,000 S&E degrees. In engineering specifically, the report indicates that universities in Asian countries now produce six times as many bachelor's ("first university") degrees as the United States.\(^6\)

This situation is one of the roots of the "quiet crisis" first enunciated in the BEST report and reinforced in many recent studies, including Thomas Friedman's book, *The World Is Flat*. They warn us of a "perfect storm" that is gathering, setting up our nation for a loss of global competitiveness.

Friedman describes an "ambition gap," holding that students in this country are not as hungry for technology careers as their foreign counterparts in emerging economies; they lack passion for science and engineering. Here I would disagree: While this may be the anecdotal truth, it is not the whole truth.

Igniting the spark of curiosity in our U.S.-born students is not the problem—keeping the flame alive is. Not every child can become a Nobel Prize winner or Fortune 500 entrepreneur, but every child can be helped to realize his or her potential, to fulfill his or her dream. We must stimulate and nurture our young people, whether their passion is music or literature, business or anthropology.

We must examine those factors that lead to student success and those that end up being obstacles—sometimes insurmountable. Success requires encouragement and nurturing every step of the way—from well-qualified, credentialed K-12 teachers to professors who recognize what it takes to reach today's student and to tap into his or her creative or scholarly potential.

What we face might be not so much an "ambition gap" or even a "perseverance gap" as it is a gap in our support system. Megan began as an engineering major, and is now considering switching majors. She didn't give up; she was detailed. I have eaten lunch with Megan, and listened as she recounted how, on the first day of class her sophomore year, an instructor announced that half the students in the large (gateway) class would fail this course. The instructor then proceeded to teach the course in a way that was unintelligible to most of the students. Perhaps their early preparation wasn't all that he could have hoped. But instead of helping students overcome their academic shortcomings (real or
perceived), the instructor discouraged Megan and many others from continuing with their initial major of choice.

Universities and colleges offer boutique choices within their large environs, from honors programs and colleges within colleges, to specialty programs in cross-disciplinary areas and research and creative experiences. Yet, these are accessible only after a student negotiates several large “gatekeeper” classes. Megan can give up in frustration or be failed for lack of performance in such classes before she has the opportunity to experience the more interesting options that her institution offers.

**What’s to Be Done**

National initiatives that address the science of teaching and learning at the university level are critical. Within institutions, teaching methodologies should be redesigned to nurture and cultivate the young scientific detective, the new social policy change agent, and the budding philosopher and humanist. A recent University of California (UC) study found that students who report more faculty contact and greater exposure to faculty research are more satisfied with their university experience than those who had less such contact. We can learn by listening—and responding—to our students.

We need to increase awareness within all universities that a rigid and exclusive—and sometimes outdated—curriculum should be amended to be more attuned to the backgrounds and experiences of our new and diverse student body. Students today are technology savvy, results oriented, and career focused. Yet, many also come from non-English-speaking or bilingual homes and are the first in their families to seek a higher education. Notably, in that same UC study, survey responses indicated that students from disadvantaged backgrounds or who were among the first generation in their families to attend college were more likely to be academically engaged than their more advantaged counterparts. So, we have sure signs that we have their attention to start with; the question is how to keep it.

A number of experiments are underway nationwide to teach large classes differently, to employ technology in more interesting ways, and to evaluate and modify the core curriculum to respond to the needs of new faces in our classrooms. Among the methods being tried to improve large group instruction is collaborative learning, which employs strategies to break large classes into smaller, more interpersonal activities that allow for more student involvement and inter-student exchange—both proven effective in promoting knowledge retention.

Another factor to consider is the application process itself. For example, are college application and admissions practices turning away would-be S&E majors? Look at how tightly guarded the engineering programs are in our large public universities. At age 17, high school students applying to these institutions have to know (a) that they want to be engineers (most have never taken an engineering course in high school) and (b) exactly what kind of engineer they want to be (mechanical, electrical, chemical, materials, and so forth)—again, without education about these differences. If they fail to apply to a specific engineering program, choosing instead “undecided,” they may find it difficult to transfer into an engineering major at a later time because of a rigid curriculum that has few or no entry points.

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*We should examine admissions practices like this that may curb our objective of exposing students to a broad education and many career options. One solution might be to admit all students into a general, core curriculum, and give them the opportunity to look around and be exposed to different subject matter before deciding on a major. For the most demanding disciplines, engineering included, we need to provide multiple entry points for students.*

In truth, however, the single most important agent of change is the faculty, whose commitment to student success and innovation in teaching is essential if Megan and Raoul are to succeed. Faculty must frame the appeal of both art and technology—of learning in general—to our students, revealing its truth, its beauty, its excitement. They must tell stories that bring to life the colorful personalities who changed the course of the world through philosophy, the arts, and scientific discovery. They must develop more research experiences for students to make science tangible and personal. And they must create
classrooms that foster crosstalk among the disciplines and encourage students to address the most fundamental of questions and national challenges.

What is student success really about? It's about curiosity, wonder, immersion in subject, and the belief that Raoul not only can be a funnel for knowledge, but also can become its fountainhead.

For three years, I have taught a freshman class called “The Search for Life in the Universe.” It focuses on one of humankind's fundamental questions. The class provides an opportunity to weave together the laws of physics, the wonder of the cosmos, the tools of paleobiology, the principles of genetics, the concepts of chemistry, and the joy of exploration. I tell my students that I would never have guessed three decades ago, when I started studying science, that the resolution to that fundamental question would have advanced so far.

I tell my students that the flood of discoveries expanding our understanding of the origin of life and the search for life elsewhere continues unabated. In just the last three years, from the time when these students started taking SAT tests as high school juniors until the present, their freshman year, the discoveries have been almost overwhelming. Consider the satellite Stardust that came back to Earth in January, after seven years spent collecting dust from a comet and from its journey through space. Might space debris pummeling the early Earth have carried the ingredients for life? What could be more intellectually exciting than to consider and debate this question?

How accessible is the universe for Megan, Raoul, and the majority of students filling our university classrooms today? Do they arrive at the knowledge that there is no final frontier, that the universe yields its secrets only as a reward to those who actively explore it? What would happen if every student believed that she or he could be the one to turn over a rock in a rain forest or explore a hot fissure in the sea floor and find a new species? To look into the sky aided by advanced optics and become the first person on Earth to spy a new world orbiting our sun?

As administrators, we struggle with metrics for student success. Some things we can quantify: years to graduation; GPA; GRE or MCAT scores; awards won; jobs of interest secured. Some of us send questionnaires to recent alumni.

I recommend a few different questions for that questionnaire: Were you challenged to think? Were you challenged to invent? Were you challenged to link knowledge across disciplines? Were you challenged to explain your knowledge and your ideas clearly? Were you challenged to question commonly held views? Were you challenged to take charge of
your future, to envision a different future from the one you imagined as an entering student? Such questions could frame a new approach to instruction.

Much of the national focus is now on a renewed federal investment in basic research and in science and math education. A renewed focus on student success at our colleges and universities addresses our own responsibility within the universities for the public interest. It is part of the solution that could help reinvigorate the public's appreciation of higher education as a place to grow, to dream, to be creative, to think—a place of opportunity. Is this to be a year of great ideas? If it is, perhaps that will counter a year of sleepless nights.

Notes:
9. Ibid., p. 31.

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On Assuming a College or University Presidency: Lessons and Advice from the Field

This collection of three essays offers advice about both the big picture and daily details of a college or university presidency. Contributors Margaret Lee, president of Oakton Community College; James F. Jones Jr., president of Trinity College; and Robert M. Berdahl, former chancellor of the University of California, Berkeley, address issues that are common among presidents, as well as several that reflect each writer's unique experiences and perspectives.

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