

SPECIAL EDITION

CAL POLY REPORT

California Polytechnic State University, San Luis Obispo

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Memo to: University Community
From: President Warren J. Baker
Re: A Commitment to Excellence: Teaching and Learning
 (Address to the Cal Poly Community, March 5, 1991)

In September of this year we initiated a strategic planning effort to bring focus to the work that has been going on over the past several years. Although our past planning activities did raise many excellent issues, they were not well coordinated and, more importantly, we had not yet examined carefully many of the assumptions and issues that serve to inform the planning process. This was recognized when we prepared our self study for the WASC accreditation visit and verified by the visiting team. Still, questions arise about why we are undertaking a comprehensive strategic planning effort. Usually this comes from the belief that "If it isn't broken don't fix it." This view suggests that even if we are conducting all our activities and programs well, we cannot improve them. I think we all really believe that we can improve, and I think we also recognize that there are some things we may not be doing so well.

Planning should be a continual process, not only to improve our programs but also to respond appropriately to the changes that are going on around us — changes in population, changes in the workplace, and other changes in society that influence what we should be doing in the university. Part of what we do here is to prepare students for careers, but we can see now that they may change careers several times in a lifetime; therefore, it is impossible for us to know with any degree of certainty for which careers they should be preparing.

Science and technology are advancing rapidly, causing a significant impact on our daily lives, suggesting that every student needs to address these topics more thoroughly and more comprehensively than we may have settled for in the past. If we don't think about the future, examine our role, re-commit to basic principles throughout the university, open our minds to new ideas and new ways of doing things, then we will diminish as a university.

The Individual Student

Our focus for planning must begin with the student and end with the student. I would like to talk about serving the student first as an individual, and later I will say a few words about students collectively, i.e., the student body.

Higher education in this country has accepted a dual responsibility in developing academic programs. Our responsibility is to prepare students for careers, to enter the workplace — a future workplace we know less and less about. We are uncertain about the demands the future workplace will put on our students. We cannot be certain about what economically useful skills we should be creating. Accepting that we have some uncertainty should warn us to be cautious. Creating tools to get in the door of the workplace is a worthy objective, but overdoing it at the expense of other educational objectives can be detrimental to the future well-being of our students.

As educators we have also accepted the responsibility to instill

the ethical values and mental discipline necessary for leadership. Our focus on the individual student should provide the experiences to inspire individual freedom and to contribute to the enlargement and enrichment of inner life. This describes our most important responsibility, to be sure that all our students share richly in liberal and aesthetic education. To paraphrase Plato: Education produces good people, and good people act nobly. I am an engineer, and I believe deeply that liberal and aesthetic education is as important for those in my profession as it is for the philosopher or the historian.

To carry out this dual responsibility, we must first have a conviction about what is worth learning, what is lasting and what is transient. Then we must critically examine what we are doing with the curriculum and why we are doing it. I do not believe it is true that everything we think a student should learn or even wishes to learn should be covered by a course. As we plan, we need to examine our programs to be sure that the objectives are clear and consistent with our dual responsibility. We clearly must make good use of the time the students spend with us, but we must also come to grips with overstructuring the curriculum, partitioning knowledge into smaller and smaller compartments, constraining choice so as to prohibit students from spending some time exploring on their own, and in a

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pragmatic sense we must be concerned about the design of the curriculum and how it might unnecessarily lengthen the time students take to complete a degree.

One measure of quality we should apply to our programs is our educational effectiveness — how well we are helping students learn, how well we instill an appreciation for learning. The cornerstones of quality are good teaching and student involvement. Good teaching is our primary responsibility, and all that we do should support our teaching mission. We have a responsibility to the students we accept into the university. We are here to help them succeed and to graduate. Cal Poly has earned an excellent reputation as a teaching university.

Our educational effectiveness, i.e., our ability to develop the talents of our students, is embedded in the way we involve our students in learning. This involvement takes many forms: the emphasis on "learning by doing," the larger portion of laboratory and activity classes, the capstone experience of cooperative education, the array of co-curricular activities, and, most importantly, the frequent interaction of faculty with students outside the classroom.

I'd like to speak for a minute about our emphasis on "learning by doing," as I have in the past. We must be cautious to avoid the dangers of "learning by doing" in the absence of principles and theory. It can be an effective method of learning if used to demonstrate principles and develop necessary levels of skill. Hands-on learning, another way of describing this process in the curriculum, has in fact received new attention recently as it relates to educational effectiveness and student involvement. It certainly plays a major role in effective teaching in the areas of science and technology. Students immersed in doing science will learn more and will be more likely to pursue additional science study than they will in passive observation methods. The

same can be said of many other areas of study. However, "learning by doing" should not be viewed as a substitute for the rigorous intellectual effort necessary to grasp the theoretical foundations of the material we are teaching in our classes. Therefore, we must continually test the quality of these experiences so they do not become perfunctory or meaningless. "Learning by doing" in the absence of theory and principles adds little to the kind of educational experience our students need to assure their future growth and intellectual development.

In the 1989 Student Needs and Priorities survey, we learned that the intellectual stimulation experienced by our students was rated surprisingly low. Perhaps we should pay some attention to this information, put ourselves in the shoes of the individual student and try to track his or her experience with the curriculum. Are we sure that it is making the intellectual linkages among different courses, or does it appear as disjointed, lacking coherence and a clear sense of purpose?

In summary, I believe we must give our curricula constant close examination to be sure we are fulfilling our basic objectives for all students and focus on improving educational effectiveness with careful attention to appropriate flexibility, student involvement, advising, access to classes, retention and graduation rates. Furthermore, if we really put the best interests of the student first, I believe we should examine the benefits of opening up admission to the university to students who are not yet ready to declare their major. I am not suggesting that we depart significantly from our current practice, but rather that we reserve some appropriate percentage of our new student spaces for highly qualified undeclared students, perhaps by creating an honors program. At the successful completion of the lower-division honors program these students could be guaranteed admission to the major

of their choice. I sense that there may be a growing need to consider this. As we have attracted more and more applicants and admitted students to a large number of majors with greater and greater selectivity, we are beginning to see evidence that some applicants are selecting majors on the basis of their probability of being accepted into Cal Poly. This not only puts students into academic programs for which they may have no interest, but also gives us false information about real demand for specific programs.

The Student Body

While we need to focus on what we do to provide the best possible educational experience for the individual student, we also need to recognize that each student's experience will be influenced by the nature of our student body. I do not have to dwell on the diversity of the population we serve. Everyone knows that this state and this nation are built on the foundations of many different cultures. This is a rich heritage that is playing out to its fullest extent today in the state of California. It is our obligation to assure that cultural diversity is celebrated and fully integrated into the life of this campus, so that all of our students learn from experiences and associations that are reflective of the society they will serve.

In the curriculum we should be sure that all our students develop a greater understanding of cultural and ethnic differences in the United States and the world community. Through the study of texts and ideas, histories and cultures, lives and images different from our own, we can, as Professor Gish aptly stated in his proposal on cultural pluralism, "appreciate different cultural values and understand better how to encourage cherished American commonalities and continuities amidst diversity."

In the student body we should increase our diversity, bringing in more students of African-American, Latino, Indian, Asian and other

origins, including students from other nations, to create a rich opportunity on the campus for our students to learn and grow from diverse associations. To be successful, we will also have to work hard to create that kind of diversity in our faculty and staff as well. As we plan for the future, all our efforts to create a campus made up of students, faculty and staff members from diverse cultural backgrounds must be given a high priority.

Polytechnic vs. University

I would be remiss if I did not focus some attention on our polytechnic mission. I recognize that some are not comfortable with this aspect of our mission, because it is viewed as limiting, particularly for the traditional development of the liberal arts. Part of the difficulty, I believe, comes from the historical point of view that we have emphasis areas and service areas. When I spoke about this issue in 1985, I said that these counter-productive value judgments should be put behind us.

Because we are a polytechnic university, not a polytechnic institute, I believe that a central role for the arts and sciences is consistent with our polytechnic mission. I have already expressed my view that the liberal and aesthetic aspects of our educational responsibilities are fundamental to our mission, and the arts and sciences must influence and inform all curricula in the university. Furthermore, we must emphasize the importance of arts and science majors on the campus to assure a strong core. To meet our responsibilities to the students, it is important that the performing arts, the fine arts, the humanities and the social sciences are strong and vital on the campus, and we should bury once, and for all time, the notion of service areas versus emphasis areas.

But as a polytechnic university, we assume some *additional* responsibilities and commitments. We are committed to excellence in the applied arts and sciences, to the

understanding and development of technology, to a major role in meeting the needs of the state in specific polytechnic areas. This means that we must keep our finger on the pulse of economic and technological development to do the best we can in assessing the needs of the state in fields like engineering, agriculture, architecture and other specific technical areas. We will have to make some assessments of the human resource needs of the state and how we fit into the larger picture of higher education in California in these areas.

It will be equally important for us to take a longer view of the way these areas are changing and, therefore, necessitating change in our programs. It will most probably be necessary to bring new, emerging fields into our program structure, or expand the opportunities for emerging fields of study that are developing on the campus now — areas such as biotechnology, biochemical and manufacturing processes, materials sciences, food safety, building science, and others. Our challenge is, first, to recognize the pace of change occurring in fields heavily influenced by science and technology and adjust our programs so that students have the knowledge and skills to lead that change, and, second, to have the courage to eliminate those courses and programs that are clearly obsolete. To clearly foresee how the future will influence our polytechnic programs will not be easy. It will require our faculty to be on the cutting edge and to interact continually with the technological community outside the university. It will require effective use of outside advisory and visiting committees. And it will require investments in technology on the campus.

Furthermore, because we are a polytechnic university, I believe that students who come here to major in the liberal arts, the social sciences, business, teacher education, etc., should leave with an

understanding of science and technology that goes beyond their current knowledge and beyond what we currently offer. I would hope that our liberal arts and social science majors have the background to understand the scientific and technological aspects of the issues that face our society — issues such as environmental pollution; energy consumption, production and conservation; food production and safety — just as we want the engineers, architects and agriculturalists to understand the human, social and political implications of their work.

The Faculty

Without a supportive environment for the faculty, we will, of course, not accomplish our objectives of being a quality teaching institution with an exciting and challenging intellectual life. We have stated that teaching is our primary function; it always has been and will continue to be. Some institutions today are rediscovering the importance of teaching. I can safely say we never lost sight of it.

But excellent teaching does not just happen. It takes time to prepare classes, and we place high value on interactions between faculty and students. It requires continual improvement and updating of the curriculum. It requires support such as technicians, access to current information, workstations, networking, support staff, instructional equipment, lab supplies and a pleasant physical environment. And we must be sure that we balance all these needs to support instruction as we plan and allocate our resources.

But, most importantly, faculty members also need time to think, to grow intellectually, to stay abreast of their rapidly advancing fields. They need time for research, scholarship and creative activity to improve teaching and enhance the intellectual life on the campus. It is not our mission to be a research university. But it is important, if we are to succeed at our mission, to do research and

engage in scholarship and creative activity. This is now recognized explicitly in the most recent revision of the California Master Plan for Higher Education.

So as we look to the future, we need to recognize that faculty development must be incorporated into our plan as an essential element of our activity and integrated into the elements of our plan that will require resource support. The student is our most important responsibility, and one of our major concerns for our students is that they continue to perform in their profession as change occurs. And the best way for students to learn how to keep up with change is to learn from teachers who *are* keeping up with change.

Graduate Programs

I believe that graduate programs will increase in importance on our campus as some of the fields of study become more complex and we recognize that study beyond the baccalaureate becomes necessary to enter certain careers that heretofore have been open to those with bachelor's degrees. We have already stated as part of our mission that "Selected graduate programs are offered at Cal Poly to enrich and supplement the undergraduate experience and to further the mission of the university." But we also have a unique opportunity to build graduate programs that focus on important bodies of knowledge that exist at the intersections and neighboring boundaries of many disciplines. Such programs have the advantages of faculty from several departments working together, influencing undergraduate programs in several departments and creating significant strength through focusing their teaching and research together.

Some programs having these characteristics have already emerged on the campus, and others are under study. I suggest that these efforts are, and will

continue to be, important to the university. They will serve to contribute to the intellectual life of the campus. They will provide a positive influence on our undergraduate programs. And they will afford our faculty the opportunity to keep up with and participate in change. Some will also have the side effect of attracting additional resources that can be focused on faculty development. Furthermore, generating resources beyond those provided by the state General Fund will become increasingly important as we strive for higher levels of excellence in teaching and learning in complex and overlapping fields.

Growth

The bottom line in the issue of growth is resources to assure quality. We have put a great deal of effort into substantially improving our resources base over the past decade, while increasing our enrollment by approximately 5 percent. This has had the effect of reducing our student-faculty ratio to be more in line with the faculty resources necessary to meet the curriculum needs. This has occurred in a decade in which we have seen little if any improvement in the student-faculty ratio for the CSU and an actual decline in current dollars of the expenditure per FTES in the CSU. At the same time, we have experienced an increase in General Fund dollars per FTES to a point where our support per student is higher than the CSU average. (See figures 1 and 2.) In addition, our private support per student is the largest in the system at \$597 per student — 177 percent higher than the average for the rest of the system — but it still needs to be improved substantially. We have had over \$56 million in capital improvements on the campus since 1983 and currently have approval and partial funding for additional capital improvements of another \$36 million. All of this is for our current budgeted enrollment;

in other words, no growth beyond the current 15,000 FTE academic year enrollment is planned with our current and approved capital outlay projects.

The point I want to make here is that we have reviewed the enrollment growth issues on the campus with respect to the projected CSU growth plan and our own constraints related to compatibility with the community and our educational mission. We have decided to plan a 16 percent increase in enrollment coming early in the next decade.

However, our decision was based on the assumption that we would receive adequate resources to maintain the quality of our programs. If the resources are not going to be available, we clearly must alter our growth plans; and, furthermore, if resources continue to decline as they have over the past decade in the CSU, we must face the possibility of reducing our enrollment to match better the resources that we will receive, lest we sacrifice our hard-earned quality.

This now brings me to our current situation where the proposed 1991-92 CSU budget will require an 8 to 10 percent reduction in our current base to offset mandatory cost increases and continue current reductions. At the same time that this is occurring, the 1991-92 budget contains provisions to increase the CSU enrollment by 5,700 FTES. Thus we face the issue of access and the public policy in California reflected in the Master Plan for Higher Education. If, as we have been told, the reductions we are to experience this year must be viewed as permanent and institutionalized, we cannot really continue stop-gap budget reduction measures used in the past when we anticipated that future restoration would occur.

This now brings me back to the student and the quality of education we offer. I am proposing that, just as we plan for

growth predicated on adequate resources, we must also plan for enrollment *reductions* commensurate with the resources that are available to retain quality, assure that the students we do enroll can get their classes, and provide the services necessary to retain and graduate the students in a reasonable time. If, for example, we can increase graduation rates,

our returning student population will decrease and we will be able to improve the access level for new students. One of our major planning principles related to growth is that we have adequate resources. This principle must be applied consistently and be accounted for when we plan with the prospect of diminishing resources.

We are not alone in this situation, and diminishing support certainly raises issues with respect to the current public policy in California of providing quality education at four-year institutions for the top one-third of California's high school graduates at a low cost to the student.

Figure 1

BUDGET COMPARISONS

Year	Net Support Appropriations	Budgeted FTES	Current \$ Appr/FTES	Constants Appr/FTES
Comparison of 10-Year Period:				
1980-81				
CSU	\$ 961,500,000	230,750	\$ 4,167	\$ 4,167
Cal Poly	\$ 58,368,319	15,470	\$ 3,773	\$ 3,773*
1990-91				
CSU	\$ 1,702,700,000	274,500	\$ 6,203	\$ 3,799
Cal Poly	\$ 107,861,448	16,250	\$ 6,638	\$ 4,065*
Cumulative changes 1980-81 to 1990-91:				
CSU	+ 77.1%	+ 19.0%	+ 48.9%	- 8.8%
Cal Poly	+ 84.8%	+ 5.0%	+ 75.9%	+ 7.7%

* Dollar deflators obtained from chancellor's office data:

38.75% deflator from 1980-81 to 1990-91 and 41.6% from 1980-81 to 1991-92.

Figure 2**Campus/CSU Budgeted Student-Faculty Ratios
California Polytechnic State University, San Luis Obispo****Budgeted**

Academic Year	AY FTE Budgeted	Campus SFR	CSU SFR
1977-78	14200	17.44	17.65
1978-79	14200	17.44	17.62
1979-80	14200	17.75	17.59
1980-81	14200	17.63	17.67
1981-82	14200	17.84	17.75
1982-83	14200	18.02	17.87
1983-84	14200	17.66	17.86
1984-85	14200	17.31	17.90
1985-86	14200	17.29	17.98
1986-87	14200	17.03	18.07
1987-88	14300	17.03	18.06
1988-89	14300	16.90	17.85
1989-90	14300	16.77	17.75
1990-91	15000	16.53	17.69
1991-92	15000	16.59	

Excerpted from report by Dr. Walter Mark, Institutional Studies

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