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Coordinating California's Systems
of Higher and Lower Education

James W. Guthrie and Jack H. Schuster

April 1987

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The PACE Forum series presents views and opinions of notable individuals. It is a companion format to the Policy Paper series which reports findings from research.

The authors wish to express their appreciation to Gerald Hayward, Lee R. Kerschner, Trish Stoddart, Jacob Adams, Eric Hartwig, Helen Cagampang, Charles T. Kerchner, Aims McGuinness, Dennis Tierney, and T.K. Olson for their assistance and advice in preparing this paper.

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Executive Summary

California's systems of higher and lower education are inadequately coordinated, to the detriment of both sectors. Mounting evidence attests to the need for forging closer links between the two, for example, the disruptive effects on high schools of uncoordinated changes in university admission requirements, the negative effect on teacher quality resulting from the low status of teacher training at universities, and the irrelevance of most academic education research to classroom and teaching needs.

Inadequate coordination is a result of many factors. In part, the problem can be traced to California's colleges and universities, for on several dimensions they have defaulted on their professional obligation to collaborate with, and to provide leadership for, public education. By working more systematically with leaders in the public schools, higher education's leaders could more effectively serve the needs of California's citizenry at all levels of education. Toward that end, four complex policy areas will be considered in this forum:

1. *Teacher preparation.* Schools of education and teacher training are low-status stepchildren on higher education campuses, and they frequently have been starved of vital resources and permitted to drift aimlessly. To the extent that teacher training is less than it should and can be, education at all levels is compromised. On at least two dimensions added vision and effective leadership on the part of university officials in conjunction with leaders of public schools could assist substantially in expanding the effectiveness of California's teachers: (1) enhancing the status and, ultimately, the effectiveness of schools of education, and (2) raising standards for teacher certification.

2. *Admission policies.* Higher education officials have sometimes taken unilateral actions in such vital areas as college and university admission standards without sufficient regard for their far-reaching effects on California's public schools. Decisions regarding admission and other external forces are strong influences on the operation of secondary schools. They have created pressures on school districts to implement changes in high school courses aimed at meeting new curricular standards. To permit higher education segments to continue to make decisions unilaterally which greatly affect all education may constitute poor public policy.

3. *Education research.* There is a costly disjuncture between education research and practice. California's public schools face a torrential stream of practical problems for which there are few adequate solutions. Yet research on education is too often impractical, and the bridge between the education research mission of the University of California and the California State University is weak or nonexistent. Why? A dysfunctional incentive system induces faculty researchers to address more abstract topics that offer the likelier outcome of faculty promotion, the differential missions between UC and CSU operate to

devalue research in the segment—CSU—that trains two-thirds of the state's teachers, and school practitioners have little say in formulating the education research agenda.

4. *Statewide education coordination.* The time may well have arrived when California can no longer afford to leave its massive education endeavors so loosely coupled; new organizational responses may be necessary. Since Proposition 13 California has moved increasingly toward a state "system" of public education. Schooling has become an even more important instrument for influencing the state's social structure and economy. Consequently, effective planning and coordination, not only among higher education segments but also across higher and lower education, is critically important. Thus almost surely something beyond the status quo is needed, something extending beyond the prevailing approach to voluntary coordination.

The overarching policy questions to be considered in addressing these issues are: Is it likely that coordination between higher and lower education in the state can be significantly improved to the benefit of students at all levels? If so, what are the kinds of policies that ought to be effected to enhance that coordination? The following range of policy options is offered in response.

Policy Option 1: The governing boards of institutions of higher education should convey their sense to their respective institutions that schools of education and teacher preparation programs are critically important to the well-being of the state and that a higher priority ought to be accorded them.

Policy Option 2: The State Board of Education and the California Postsecondary Education Commission should cooperate in establishing a system of "consumer ratings" to provide incentives for improving the effectiveness of teacher preparation programs.

Policy Option 3: Establish a new individual-based approach for credentialing teachers.

Policy Option 4: The Trustees of the California State University and the Regents of the University of California should expand their cooperative efforts in publicizing jointly their expectations about admission requirements.

Policy Option 5: Establish formal consultation among segments in establishing admission requirements.

Policy Option 6: Include the State Board of Education in the process leading to changes in segmental admission requirements.

Policy Option 7: Centralize admission requirement decisions in a nonsegmental body.

Policy Option 8: The Regents of the University of California and the Trustees of the California State University should convey their sense to the administrations and faculties of those segments that university-conducted research on education ought to be linked more closely to public school issues.

Policy Option 9: Authorize and support an expanded role for the California State University in the conduct of applied research in the field of education.

Policy Option 10: Create a new structure for training teachers and coordinating education research.

Policy Option 11: Create a new agency to stimulate relevant university-conducted research and demonstration activities.

Policy Option 12: Create an agency mandated to coordinate higher and lower education.

Policy Option 13: Create an agency with operational authority to coordinate higher and lower education.

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**"It seems to me that the most difficult part of building a bridge
would be the start."**

– Robert Benchley

Coordinating California's Systems of Higher and Lower Education

A wall abruptly bifurcates higher and lower education in California to the serious detriment of both sectors. The wall is built in part from the disruptive effects on high schools of uncoordinated changes in university admission requirements, the negative effect on teacher quality resulting from the low status of teacher training at universities, and the irrelevance of most academic education research to classroom and teaching needs. Mounting evidence over the past quarter century attests to the need for forging closer links between the two. The process of revising the Master Plan for Higher Education affords fresh opportunities to re-examine the sensitive topic of coordination across California's sprawling education enterprise.

Inadequate coordination is a result of many factors. In part, the problem can be traced to California's colleges and universities, for on several significant dimensions they have defaulted on their professional obligation to collaborate with, and to provide leadership for, public education. By working more systematically with leaders in the public schools, higher education's leaders could more effectively serve the needs of California's citizenry at all levels of education. Toward that end, four complex policy areas will be considered in this forum:

- 1. *Teacher preparation.*** Schools of education and teacher training are low-status stepchildren on higher education campuses, and they frequently have been starved of vital resources and permitted to drift aimlessly. To the extent that teacher training is less than it should and can be, education at all levels is compromised.
- 2. *Admission policies.*** Higher education officials have sometimes taken unilateral actions in such vital areas as college and university admission standards without sufficient regard for their far-reaching effects on California's public schools.
- 3. *Education research.*** Research on education is too often impractical, and the bridge between the education research mission of the University of California and the teacher training mission of the California State University is weak or nonexistent.
- 4. *Statewide education coordination.*** The time may well have arrived when California can no longer afford to leave its massive education endeavors so loosely coupled; new organizational responses may be necessary.

In sum, while vision and effective leadership undoubtedly can solve many of these problems, the stark reality is that basic structural reforms may also be necessary.

Schools of Education and Teacher Preparation

California's education system is now entering a crucial period. While the state struggles to build a cohesive society and a competitive economy, education is challenged to accommodate a degree of enrollment growth and student diversity unprecedented in the last quarter century. After two decades of decline, the kindergarten through 12th grade population is growing at a rate of 2.5 percent annually, and California will average an additional 100,000 new students each year for the next decade. This growth will necessitate employment of approximately 85,000 additional teachers in the next five years and 183,000 over the next 10 years. The magnitude of the sharply rising demand for new teachers can be judged by this fact: California currently employs approximately 180,000 teachers. The next decade represents a formidable challenge—and an unusual opportunity—to replenish and revitalize California's teacher work force.

Despite the awesome numbers of new teachers to be hired, the likelihood is great that there will always be an instructor at the front of each California classroom. Problems of teacher *quantity* almost always resolve themselves into problems of teacher *quality*. The major issue will not be whether California's supply of teachers will expand to meet intensified demand. Rather, the concern is for the qualifications and abilities of the individuals who must, and will, be recruited.

What can be said currently of the quality of California's classroom teachers? On the one hand, the state gives the impression of holding high entry-level standards for teaching and for the granting of teacher certificates. California indisputably was a leader in eliminating education as an undergraduate major and in requiring that teachers hold a bachelor's degree in a subject-matter field, possess a fifth year of professional preparation, engage in practice teaching, and successfully pass a standardized test of basic skills. Moreover, the California State University, producer of over two-thirds of California's classroom teachers, has recently raised standards in a number of ways both for admission to, and completion of, its teacher preparation programs. These have all been substantial accomplishments.

In reality, however, California maintains a duplicitous dual system that undermines the quality of education that California's school children receive. About a quarter of all newly employed teachers in the state possess only a so-called "emergency credential." This status signifies that they do not meet statutorily specified qualifications. When the number of teachers instructing outside the subject-matter major in which they were trained is included, the proportion of inadequately qualified teachers rises to approximately 40 percent. Nowhere is this condition more evident than in the hiring of teachers for bilingual classes. Indeed, data from the California Commission on Teacher Credentialing (CTC) show that 21.6 percent of new teachers entering the profession received emergency credentials in 1984-85, almost *four times* the 5.8 percent rate for 1981-82. And, while the state began to require that prospective teachers pass the California Basic Educational Skills

Test (CBEST), effective 1982-83, some critics of the test argue that passage is marginally related, if at all, to classroom performance and that, in any event, its standards are not sufficiently rigorous to assure competency among teachers.

A wide range of additional problems associated with teaching and teacher training in California bear directly on the state's ability to recruit well qualified individuals into the teaching profession. The solution to many of these difficulties rests with the society at large or with general government. Low compensation makes it difficult to attract able persons who have other career options. Average salaries for California's teachers, even while rising markedly in the last three years, have not yet regained the purchasing power they represented in 1970. (Moreover, at this writing, the outlook for improved salaries for 1987-88 is hardly reassuring.)

Nevertheless, there are three dimensions on which added vision and effective leadership on the part of the state's college and university officials, in conjunction with leaders from the public schools, could assist substantially in expanding the effectiveness of California's teachers. Two of these areas, enhancing the status of schools of education and raising standards for teacher certification, are discussed below. A third area, university-conducted research on education, is examined later.

Enhancing the Status, and, Ultimately, the Effectiveness, of Schools of Education

The low status of schools of education and, especially, of teacher training programs undermines the preparation of teachers in subtle but nonetheless harmful ways. Ambivalence regarding the field of education pervades higher education settings, for education schools and teacher training are held in unusually low regard on most college and university campuses. The prestige structure of higher education is arrayed by subject fields with letters and sciences ensconced in the upper echelons and preparation in the semi-professions of social welfare, nursing, and education occupying the bottom-most positions. The academic incentive system and distribution of rewards, as noted below, is oriented heavily toward the scholarly models and research paradigms of the sciences, humanities, and social sciences.

Education clearly does not enjoy the historic prestige or high societal status that enables such professions as medicine, law, engineering, and architecture to pursue practice-related research while disregarding the disdain of pure scholars on their campuses. The unpleasant result is that many education schools sometimes act as institutions ashamed of themselves. Regrettably, the lowest status activity of all is teacher training. Even within many education schools, senior faculty attempt to distance themselves from the training of teachers. They concentrate whenever possible on the pursuit of research patterned after letters and sciences departments. Sad but true, teacher training is often abandoned to the

least senior and lowest status faculty members.

The status deprivation¹ and second-class citizenship of education schools render them higher education's "dirty little secret."² During periods of high enrollment they often have been a vital source of revenue for their home institutions. Nevertheless, they are generally held in debilitatingly low regard on their own campuses, in particular by faculty colleagues. Until such time as our great universities and colleges are judged as highly by the quality of the teachers they prepare as by the number of major scientific discoveries for which they are responsible and the number of prestigious prizes, fellowships, and academy memberships garnered by their letters and sciences faculty, the state will not easily solve its education problems, nor will society benefit from a more productive return on its investment in human capital. Because the problem is systemic, no fully adequate "solution" is likely. Some strategies might, however, whittle away at the problem.

One plausible strategy would seek to capitalize on the influence of governing boards of institutions that train teachers—especially the UC Regents and CSU Trustees, but also the governing boards of independent institutions engaged in teacher training. There is a compelling need for the governing boards to move schools of education and teacher training programs higher up on the ladder of priorities. Governing boards share in the responsibility for the welfare of public schools. It is a crucially important responsibility—indeed, more important than one would surmise from a record of general indifference toward these matters. In a word, it is imperative that governing boards appreciate better—arguably better than they now do—the pivotal role that schools of education and teacher training programs play in California education and the extent to which the future of the state is bound up with the effectiveness of those programs. Thus, sound public policy would seem to require that governing boards assume a greater interest in this sphere of activity and, accordingly, exert even greater efforts on behalf of obtaining adequate resources for schools of education and programs that prepare California's teachers (see Policy Option 1).

Another strategy that might help to overcome the low status and habitual institutional disregard for education schools and teacher training is to formulate a set of indicators which would systematically assess the performance of teacher training institutions and education research centers and to report these results publicly. This approach might rely in part on the development of ratings by "consumers"—that is, for these purposes, school districts—of the quality of teachers and research findings they receive from various schools of education. An effort to establish competition among campuses to have a highly rated teacher training program and research record could help forge much stronger links between college-level schools of education and the school-based teaching-learning processes which they are designed to benefit. Such competition, too, might assist in

¹ A term first applied to education schools by Bernard R. Gifford.

² An assessment coined by Gary Sykes.

overcoming status deprivation, at least among the more effective programs. Various mechanisms can be imagined to coordinate such an effort (see Policy Option 2).

Policy Option 1: The governing boards of institutions of higher education should convey their sense to their respective institutions that schools of education and teacher preparation programs are critically important to the well-being of the state and that a higher priority ought to be accorded them.

The state may conclude that the Regents of the University of California, the Trustees of the California State University, and the governing boards of other institutions engaged in teacher preparation would serve a useful purpose by underscoring to the administrations and faculties of their respective institutions that a pivotal relationship exists between adequately supported education programs and the future of the state's public school system. If governing boards and campuses do not respond adequately, the attainment of this objective might require a strong legislative endorsement—perhaps via a concurrent resolution—urging cognizant governing boards to accord education programs a higher priority.

Policy Option 2: The State Board of Education and the California Postsecondary Education Commission should cooperate in establishing a system of "consumer ratings" to provide incentives for improving the effectiveness of teacher preparation programs.

The state would advocate that the State Board of Education and the California Postsecondary Education Commission cooperate in devising and conducting an annual poll among local school districts regarding their experiences and satisfaction with newly employed teachers graduating from the University of California, the California State University, and independent programs. A similar set of inquiries could be made regarding the research found to be of most use in addressing school district problems. The results of such a poll could then be widely distributed and public awards provided to those institutions receiving high ratings on the teacher training and research dimensions. (Note: this activity might fall within the purview of a coordinating council such as proposed under Policy Options 12 and 13.)

Standards for Teacher Certification

California has a policy of professional teacher licensing or certification which often masks the ineffectiveness both of institutions and individuals. This is a so-called "program approval" approach. The California Commission on Teacher Credentialing issues regulations prescribing a set of courses which if successfully completed by a teacher in training will result in a state certificate. Seldom does the state rely solely on institutional accreditation processes for licensing in important areas such as law, medicine, engineering,

architecture, or accounting. These professions depend much more heavily upon appraisals of *individual* candidates, not simply on institutional approval. Completion of a teacher training course does not by itself ensure that an individual is appropriately prepared. Moreover, critics insist that to persist in permitting schools of education to be accredited by revolving teams of visiting faculty, often drawn from a reciprocally back-scratching network, is tantamount to putting self-serving faculty foxes in charge of the teacher training hen house. (The accreditation process for teacher training is not, in any event, markedly dissimilar from the specialized accreditation process that exists for other professional fields.)

A process of individual appraisal might provide not only a more nearly complete profile of the prospective teacher, and thus assist the state, but also it could offer an evaluation feedback loop for institutions beyond the minimal information which is afforded by reporting the proportions of test-takers who pass the CBEST exam. Teacher training programs which consistently succeed in gaining passage of high proportions of their graduates on a more rigorous examination would earn better reputations. Conversely, repeated rates of low passage might result in diminished student applications and pressures for ineffective institutions to improve. Prospective teachers, if provided with sufficient information regarding an institution's record or reputation, might shift to those programs wherein their likelihood of eventual licensing was higher and shun those with poor records. Establishing such a market mechanism, while surely tending to perpetuate stratification among institutions, might result as well in a self-correcting effect in teacher training programs.

An individual appraisal licensing process, going beyond CBEST and the National Teacher Examination, might also assist in influencing higher education institutions in reforming their undergraduate requirements. The current patchwork leading to a Bachelor's degree at the University of California and California State University does not always constitute a useful foundation from which to build in preparing an effective public school teacher.

Abolishing the current "program approval" approach and moving to individual assessments might not only ensure more careful scrutiny of prospective teachers but also facilitate productive competition among training institutions to prepare teachers to meet new, and hopefully higher, standards. Such an approach might be along the lines advocated recently by the nationally prestigious Task Force on Teaching as a Profession (of the Carnegie Forum on Education and the Economy). More directly relevant, though, for California's purposes is the report issued in November 1985 by the California Commission On The Teaching Profession. Entitled *Who Will Teach Our Children? A Strategy For Improving California's Schools* (and known more familiarly as "the Commons Report," for the commission's chair, Dorman Commons), the report examines the quality of teacher training in California. Among its many thoughtful recommendations, the commission proposed the abolition of the current system of granting teaching credentials on the basis of

completing a required set of courses. Instead, the commission advocates a "thorough testing of individual candidates, as is the practice in other professions." The current basic skills test (CBEST) would give way to this more rigorous approach.

A caveat is in order here. A crucial assumption in any such strategy is that officials empowered to administer the individual appraisal system would inject substantially higher and more relevant standards into the assessment process and thereby elevate teaching as a profession. If the new standards are inadequate in this regard, then no useful purpose will have been served in altering teacher licensing procedures. However, the thrust of both the Commons and the Carnegie reports makes clear that higher standards are central to their respective proposals.

Policy Option 3: Establish a new individual-based approach for credentialing teachers.

The state would advocate statutory enactment and implementation of an "individual appraisal" system for credentialing teachers. Modeled in part after examinations for physicians, lawyers, or accountants, such an approach might (A) substantially adopt the recommendations of the California Commission on the Teaching Profession to revamp the method by which persons become qualified to teach in California's public schools, or (B) rely on the development of a national certification examination for teachers, as advocated by the Carnegie Task Force on Teaching as a Profession. Or, the state might choose to endorse the principle of an individual-based approach for credentialing teachers and leave open which of the two major paths might best suit California's needs.

Higher Education Admission Policies and Secondary Education Practices

California's institutions of higher education—particularly the University of California and the California State University—profoundly influence the shape of secondary school curricula and, thus, albeit to a much lesser degree, the course content of middle and even elementary schools. However, the mechanisms for effective dialogue between those who impose college entrance requirements and those who must adapt to them are deficient.

One may argue that the actions taken in recent years by UC and CSU to change entrance requirements may have the desirable long-term effect of restoring more rigor to secondary school curricula. Time will tell. But these actions, however meritorious they may prove to be, reveal an important vulnerability in California education: neither the University of California nor the California State University is sufficiently sensitive regarding the effects of its actions upon the operation of secondary schools.

External Forces Shaping Secondary School Curricula

A national study published in 1986 (Carol et al., 1986) maintains that school boards are responsible for curricular changes; school board members reported that impetus for change came primarily from local, not state, sources. Other studies have linked local curricular changes with non-school-related phenomena such as California's Proposition 13, which played a significant role in course reductions. Other studies point to legislative initiatives as instruments of high school curricular changes. For example, the California Assessment Program—testing reading, math, and written language—has been found to have been a catalyst for change.

Regardless of the difficulty in establishing a precise cause-and-effect relationship between state-level actions and high school curricular changes, it is clear that external forces play a significant role in determining the typical high school curriculum. For example:

1. Substantial infusions of state dollars over the last three years have enabled districts to restore major portions of the curriculum which were eliminated during the immediate post-Proposition 13 era.
2. Senate Bill 813 (1983) increased California's high school graduation requirements to three years of English, two years of mathematics, two years of science, three years of social studies, and one year of foreign language or fine arts, as well as continuing two years of physical education.
3. The State Board of Education adopted model high school graduation standards which challenged local school districts to require more of their students.
4. The State Department of Education has developed model curricular standards for high school level English/Language Arts, Foreign Language, History/Social Science, Mathematics, Science, and Visual and Performing Arts.
5. The State Department of Education is rewriting its tests (California Assessment Program, CAP) to stress higher order thinking skills and subject matter knowledge.
6. The superintendent of public instruction and the State Board of Education are attempting to upgrade the intellectual quality of textbooks, establishing new criteria intended to encourage textbook publishers to include more problem solving, critical thinking, and higher order thinking skills in texts they submit for state adoption.
7. Assembly Concurrent Resolution 14 (1983) urged the State Board of Education to require each school district governing board to compare its existing graduation

requirements and curriculum standards with the model standards developed by the State Board of Education.

8. Senate Bill 1213 (1986) added a semester of economics to high school graduation requirements already established by SB 813.

9. The Academic Senates of the three segments of public higher education jointly adopted and have widely disseminated their *Statement on Competencies in English and Mathematics Expected of Entering Freshmen*. The statement is intended to assist students in preparing for college, their parents and counselors in advising and course selection, and high school teachers and administrators in planning the curriculum.

10. The University of California has acted to raise its entrance requirements, long viewed as a primary determinant of the high school curriculum. (Because the required course sequence has six components, labeled a-f, pertinent high school courses are commonly referred to as "a-f courses.")

11. The California State University Board of Trustees has recently adopted a comprehensive pattern of college preparatory subjects as an element of CSU's more rigorous admission requirements. These new requirements, which are virtually the same as UC's, will become effective in the fall of 1988 (see Appendix Figure 1).

Recent Changes in Secondary School Curriculum and Enrollments

The activities described above have created pressures on school districts to implement changes in high school courses aimed at meeting state curricular standards. The most recent year for which data are available reveals encouraging growth in academic courses, suggesting that districts are still striving to meet more rigorous standards. For example, *Conditions of Education in California 1986-87* (Guthrie et al., 1986, pp. 109-113), reports significant increases in the numbers of class sections in social studies, music, English, art, foreign language, mathematics, and science in the period 1982-83 to 1985-86 (see Appendix Figures 2 and 3).

Although these increases are heartening, and the trends appear to be moving in the right direction, blacks and Hispanics are still under-represented among enrollees in the rigorous academic courses necessary for admission to the public four-year colleges and universities. For example, the 1983 California Postsecondary Education Commission high school eligibility study found that only 10 percent of blacks and 15 percent of Hispanics were eligible to enter the California State University directly out of high school, compared

to 33 percent of whites and 49 percent of Asians. This is an important area for increased attention.

Favorable growth in classes offered and course enrollments is a positive indicator that schools are moving to meet increased expectations. However, these growth rates reveal little regarding the quality of the courses offered or the effect on dropout rates. It is too early to make definitive judgments about these issues. They do suggest areas for additional research and should be placed high on the research agenda of the University of California and the California State University. These changes also offer a cogent example of the pervasive influence of higher education on the high schools. A PACE analysis on teacher supply and demand in California's public schools reported major shortages in several subject areas including math, English, and science (Cagampang et al., 1986). Requiring additional advanced courses in mathematics and science, however desirable, may exacerbate an already pressing human resource problem.

Finally, Appendix Figure 1 displays the degree of similarity between the State Board of Education's model requirements for graduation, the University of California's admission requirements, and courses required for admission to the California State University. High school principals determine which of the courses offered in their schools are college preparatory in nature and eligible to fulfill the new California State University requirements or the University of California "a-f" requirements. The actual *content* of a given course—in English, mathematics, or whatever—does not become known to the postsecondary institutions; thus, course comparability from one secondary school setting to another is largely unknown.

An Overview of Curriculum Changes

As one examines California high school curriculum changes over the past several years, several patterns emerge:

1. Public school curricula are heavily influenced by a variety of external sources.
2. The admission policies of the four-year institutions of higher education are a major determinant of high school curricular patterns.
3. The cumulative effect of the policies of the four-year institutions, actions of the State Board of Education and the superintendent of public instruction, and legislative and local initiatives have led to the adoption of a more academically rigorous curriculum both in terms of the number of courses that high schools offer and in the number of enrollments in them.

4. After the California State University course requirements are fully phased in (1988), there will be very little difference in the courses required for admission to either of the public four-year segments.

5. These changes took place absent a coherent, overarching statewide set of policies, in some cases with insufficient regard for the impact of these changes on high schools and their capacity to respond.

Establishing Admission Requirements

The matter of admission requirements may be too important to be left in the hands of the higher education segments alone. To continue to permit them to make decisions unilaterally which greatly affect all of education may constitute poor public policy. Higher education admission requirements shape the high school curriculum; indeed, curricular changes have a tremendous impact on the entire public school system and create side effects that materially shape schools. Because the state bears a major responsibility to ensure that transition between secondary and postsecondary institutions flows in an efficient manner, a range of responses should be considered. Whatever strategy might ultimately be selected, it is critical that the interests of students themselves be regarded as paramount.

One response to current methods for setting postsecondary admission policies would be for the state to advocate retention of segmental autonomy in establishing admission requirements, that is, the status quo might be deemed to be essentially adequate. This approach might lead to the state taking no action. Or, as a variant of the hands-off approach, the state might endorse current collaborative efforts and urge continuing cooperation through the publication jointly (by UC and CSU) of their expectations about entrance qualifications (see Policy Option 4).

Even though the prevailing degree of coordination is encouraging, there is no guarantee that cooperative relationships will continue. One strategy would be to formalize the current ad hoc structures and, thereby, to regularize communications across segments (see Policy Option 5). Another would be to involve the State Board of Education more directly in any proposed change in segmental admission requirements (see Policy Option 6). The most extreme response would be to centralize responsibility for setting admission requirements for public postsecondary institutions in an agency that would exist separately from the segments (see Policy Option 7).

Policy Option 4: The Trustees of the California State University and the Regents of the University of California should expand their cooperative efforts in publicizing jointly their expectations about admission requirements.

The state may choose to applaud recent collaborative activities by the California State University and the University of California to publicize their expectations regarding admission requirements and to urge further cooperation between them. This approach would recognize improvements in cooperation between the segments and essentially would split the difference between refraining from action and seeking legislative involvement (Policy Options 6 and 7).

Policy Option 5: Establish formal consultation among segments in establishing admission requirements.

The state could direct that a formal consultation process be required to promote closer coordination among segments prior to modifying admission requirements. A gradation of coordination strategies, each involving formal intersegmental consultation, could be very useful prior to imposing any new admission requirement by the University of California, the California State University, or the California Community Colleges. That process could take a number of forms, from least to most formal:

- A. Requiring notification of other education boards prior to discussing alternatives.
- B. Requiring that proposers of changes (the University of California, the California State University, or the California Community Colleges) make presentations on proposed changes to other pertinent boards.
- C. Requiring joint meetings among board members who represent the respective segments to consider proposed changes.
- D. Mandating formalization of the Round Table on Educational Opportunity (or some other mechanism) and assigning it specific consultation and reporting responsibilities.

This consultative activity might well be facilitated by the California Postsecondary Education Commission, or the process might fall within the purview of a coordinating council such as proposed in Policy Options 12 and 13.

Policy Option 6: Include the State Board of Education in the process leading to changes in segmental admission requirements.

A variation on Policy Option 5, the state could advocate statutory authority to require that the State Board of Education approve significant changes in admission requirements proposed by any of the segments.

Policy Option 7: Centralize admission requirement decisions in a nonsegmental body.

The state might establish a new agency with responsibility for establishing admission requirements for all three public postsecondary segments. This would involve advocating statutory establishment of a new neutral agency, such as the California Postsecondary Education Commission (with expanded responsibilities), to approve any change in admission requirements prior to its implementation. The agency—perhaps called a Postsecondary Admission Council—might include representatives from the three public postsecondary segments plus the State Board of Education and perhaps one or two representatives of the public appointed by the governor.

Research on Education Conducted in the State's Universities

There is a costly disjuncture between education research and practice. California's public schools face a torrential stream of practical problems for which there currently are few adequate solutions. The questions—vital questions—are endless. What are the most effective means for enabling a student to overcome the difficulties of recent immigration, a broken or distressed home, or not knowing English? How should teachers best be trained? How can dropouts be induced to return to school? How can they be kept in school in the first place? Are there more effective means for deploying instructional services and disseminating knowledge? How do new instructional technologies best fit in? And how can progress be made along all these fronts—and many more—in a cost-effective fashion?

Research on topics such as these is seldom undertaken in colleges and universities in a manner which will lead to productive answers and practical solutions. Rather, practice-oriented research has come from federally funded labs and centers. To be sure, there are faculty at the University of California, the California State University, and the independent institutions who are conducting research on many significant educational and school issues. The community colleges, too, undertake many useful studies on access and retention. However, few of the major educational problems are addressed in a sustained manner by a critical mass of researchers with sufficient resources.

There are at least three factors contributing to this unhappy condition. One, a dysfunctional incentive system induces faculty researchers to address more abstract topics that offer the likelier outcome of faculty promotion; much research about education simply does not readily translate into more effective teaching. Two, in California the differentiated missions between the UC and CSU systems operate to devalue research in the segment—CSU—that trains fully two-thirds of the state's teachers. Three, school practitioners have little say in formulating the education research agenda. Consider these three factors in turn.

Disincentives for Practical Research

It is absurd, but commonplace, that an education faculty member who attempts to engage in scholarly activities and systematic research intended directly to enhance the practice of schooling or the preparation of teachers may do so at substantial risk to his or her employment security and academic advancement. The internal dynamics of academic salary rewards and professional promotions suggest strongly that education faculty members act like chameleons, adopting the coloration of those scholarly endeavors currently in vogue on campus. Most likely this means modeling academic activities and adopting the theoretical perspectives of campus colleagues in fields such as history, economics, and the social sciences. It is no great exaggeration to assert that to the extent a professor addresses a practical education problem, he or she is in academic jeopardy. Consequently, research activities in schools of education may have contributed more to our knowledge of social science than to the actual improvement of teaching and learning.

Devalued Research in the Principal Teacher Training System

The University of California is chartered as a research university and possesses a proud tradition in this regard. The university, however, prepares only a small proportion (6%) of the state's public school teachers. The California State University, on the other hand, prepares thousands of the state's teachers (68%) but does not include research among its major missions. The result is ironic. Those primarily responsible for the preparation of teachers generally have neither the time, resources, nor incentives to stay abreast of new developments in their respective professional specialties nor to convey these developments to the practitioners they prepare for California's schools. A California State University education faculty member, despite escalating pressures to publish, may well be responsible for instructing three or four classes a semester; the time available to sustain currency in significant research, accordingly, is severely limited. Conversely, as previously mentioned, University of California incentives for faculty to convey research to practitioners is extremely limited, maybe even nonexistent.

School Practitioners: A Missing Voice

The status dynamics of higher education, as previously described, impede productive interaction between professors and education practitioners. Probably no other professional field is characterized by the degree of estrangement that exists between professional school faculty and practicing professionals. As a consequence, faculty

researchers are frequently ill-informed regarding the most pressing practical problems. Research resources are determined by the idiosyncratic interests of individual faculty members or philanthropic agencies. The opportunity for concentrating a critical mass of resources and talent upon a pressing practical problem is slender. Practicing educators believe themselves isolated from the state's great research universities and, as a consequence, often regard these institutions with disdain.

As a consequence of these varying emphases, there is a destructive disjuncture-- if not a near void--in the translation of education research findings into teacher preparation. The problem devolves to this: the present allocation of postsecondary missions and resources impedes a productive linkage between those who conduct research and those in a position to operationalize research findings. Bold responses may be necessary to correct the existing serious imbalance. This might take the form of more active oversight by the UC Regents and CSU Trustees with the objective of making education research more relevant to public schools (see Policy Option 8). Or the most effective approach might envision an expanded role for CSU in its education research activities (see Policy Option 9). Such an approach might proceed with or without legislative authorization for CSU to offer a doctorate in education. Or, the soundest strategy to achieve better research results might well involve creating a new administrative unit. One approach would focus on coordinating teacher preparation and education research. To more effectively function as a resource to teacher training programs, the new agency might establish "institutes" both in northern and southern California (see Policy Option 10). Another approach would establish an institute to support education research and to help develop research priorities (see Policy Option 11).

Policy Option 8: The Regents of the University of California and the Trustees of the California State University should convey their sense to the administrations and faculties of those segments that university-conducted research on education ought to be linked more closely to public school issues.

The state may choose to recommend that the governing boards express their sense that education research should be focused more directly on the most compelling needs of public schools. This might take the form of a concurrent resolution that expresses such a principle or, more potently, legislation or budget control language that mandates, somehow, that a higher priority be placed on meeting the needs of public schools.

Policy Option 9: Authorize and support an expanded role for the California State University in the conduct of applied research in the field of education.

The state may conclude that the interests of public schools would be better served by drawing CSU education faculty more deeply into applied research. In order for CSU faculty to become more effective in meeting the research-related needs of the public schools, the legislature may need to emphasize the importance of such activity. This, in

turn, may necessitate that funds be appropriated to CSU to facilitate education research activities, in part by reducing the teaching loads of some faculty. This approach *may* involve, but is not dependent on, a reconfiguration of CSU's responsibilities under the existing master plan to include awarding an Ed.D.

Policy Option 10: Create a new structure for training teachers and coordinating education research.

The state may choose to advocate formation of a new service-oriented administrative structure to bridge CSU and UC teacher preparation and education research, in conjunction with the teacher training programs of California's independent colleges and universities. This new organization could be responsible for endeavors such as the following:

1. Developing and assessing model teacher preparation programs to serve as guides for UC and CSU teacher training departments.
2. Making readily available teacher education studies and other related research to the training activities at UC and CSU campuses.
3. Engendering greater cooperation among practicing education professionals, education researchers, and teacher training faculty.
4. Retraining education school faculty who have fallen behind in understanding research findings and other professional developments in their fields of specialization.
5. Developing and administering a sustained agenda for major state-sponsored education research and demonstration projects.

This new organization or institute might usefully maintain a branch, staffed with a small number of resource people, in both northern and southern California. Its governing board could contain ex officio representatives from UC, CSU, and the independent institutions, as well as practicing professionals from public schools, that is, both teachers and administrators.

Policy Option 11: Create a new agency to stimulate relevant university-conducted research and demonstration activities.

The state may conclude that the effectiveness of education in California could be improved by the establishment of an agency designed specifically to support research on education and to help provide direction for such research activities. Call it a California Institute for Education.

Such an institute might be governed by a board drawn from the three public postsecondary segments, the independent colleges and universities, and the public school sector, along with public representatives. It would have a staff with a director serving at the pleasure of the board. Like the Office of Research of the U.S. Department of Education, the proposed agency would solicit proposals, on a competitive basis, from researchers seeking to investigate important education issues (in this case, of course, on issues especially relevant to education in California). The agency might also fund proposals for innovative demonstration projects in the public schools and in teacher preparation programs (similar in some respects to the role played by the Fund for the Improvement of Postsecondary Education, U.S. Department of Education). Researchers might occasionally affiliate with the institute, perhaps while on leave, to conduct particular research projects.

In addition, the institute might have an advisory group comprised of distinguished California educators. The advisory group would provide guidance in setting priorities about promising lines of research. Call it a California Academy of Education, modeled in part after the nongovernmental National Academy of Education.

Establishing Administrative Means Designed to Better Coordinate California Education on a Statewide Basis

Formal education consists not of clearly separable and distinct segments but rather of a remarkably complex and interrelated set of important social institutions. The success of each segment and institution is dependent, to a greater or lesser degree, on the success of other education institutions situated elsewhere on the continuum. The people of California have a deeply vested interest in education at all levels—not education of their pre-schoolers, or high school students, or elementary school students, or "adult learners," or vocational trainees, or baccalaureate students, but in *education writ large*. It is inevitable that these substantially different education missions will be organized and administered differently. A "single system," in an organizational sense, would be as misguided as it would be unprecedented. But the valid distinctions among these differentiated domains does not excuse a debilitating lack of coordination among educators and policy makers throughout the education enterprise.

Essentially, two general approaches to public policy are available to redress this absence of adequate coordination. First, whatever may be said of the imperfections of "the system," more effective coordination might be significantly improved through reliance on existing mechanisms. Second, existing arrangements may be deemed unequal to the task, and a new administrative mechanism may be necessary to effectuate closer coordination between higher and lower education. These two approaches are discussed in turn, and the several specific policy options are outlined.

Reliance on Existing Administrative Arrangements

California has been famous this past quarter century, and properly so, for having created a far-sighted Master Plan for Higher Education—the embodiment of a model for coordination that has been viewed with envy by a great many educators throughout the land, if not the world. A bountiful literature attests to the magnetism of the California model. Times change, and the model, not surprisingly, needs adjusting. In this process of modification, California confronts a new reality—and a fresh opportunity. The reality is the recognition that education, from pre-school through post-doctoral training, is inextricably interwoven; one facet cannot meet the state's just expectations if the other elements are permitted to erode. The opportunity, in turn, arises from that reality: the opportunity to fashion a new mechanism for more effectively and more creatively synchronizing education's many endeavors within the state. Perhaps the time has come for a California Master Plan for *Education*—a plan that would complement and supplement the Master Plan for Higher Education.

No comprehensive study exists which describes the extent to which policies that span education at all levels are coordinated within individual states. The best available information is found in the *State Postsecondary Education Structures Handbook* (1986), published by the Education Commission of the States. The *Handbook* provides an overview of characteristics of state coordinating and governing boards, including the range of their responsibilities, and describes state-level master planning activities in higher education, as well. In all, it is apparent that few statewide mechanisms exist in other states that would appear to address adequately issues of coordination. But several examples do exist, and adaptation to California's particular circumstances is not beyond question.

A range of responses is possible to the need for more careful coordination between higher and lower education in California. At one end of the continuum, the status quo might be deemed adequate in organizational terms. After all, several mechanisms exist for both formal and informal discourse across the boundaries of higher and lower education within the state. Some are voluntary, others are mandated by statute. They include:

- *The Articulation Conference.* A voluntary mechanism, the Conference has an administrative committee with representatives from secondary school personnel, from the various postsecondary segments, and from the Postsecondary Education Commission itself. The Conference convenes annually, and committees, operating in special interest areas, meet throughout the year.
- *The Joint Committee on Vocational Education of the State Board of Vocational*

Education. This committee, with equal representation drawn from the Board of Education and from the Board of Governors of the California Community Colleges, was created to address issues involving vocational education. The committee is generally viewed as not being very effective in effectuating coordination across institutional boundaries.

- ***The Statutory Advisory Committee to the Postsecondary Education Commission.*** Established by the enabling statute which created the Postsecondary Education Commission in 1974 (as successor to the Coordinating Council for Higher Education), its seven members include the chief executive officers (or their designees) for UC, CSU, the California Community Colleges, the superintendent of public instruction (or his designee), and representatives from the Association of Independent California Colleges and Universities and from the Council for Private Postsecondary Educational Institutions. (In fact, the principals virtually never attend.)
- ***The California Commission on the Teaching Profession.*** Formed in 1984 and funded by a generous grant from the William and Flora Hewlett Foundation (Menlo Park, CA), the commission consists of 17 members appointed by its three "sponsors" (the chairs of the State Assembly and Senate Education Committees and the superintendent of public instruction). Its charge was to study the condition of the teaching profession for public schools and to recommend action to improve it. Its report, *Who Will Teach Our Children?* (known also as the Commons Report), was issued in November 1985; as indicated in the discussion earlier, the report includes recommendations to postsecondary institutions. Unlike the three committees described above, the commission is not permanently established; at this writing the CCTP's funding is scheduled to expire on September 30, 1987.
- ***The California Round Table on Educational Opportunity.*** Formed in 1981, the round table focuses on issues that span lower and higher education "with particular concern for issues of access and opportunity." Its membership consists of the UC president, the CSU and California Community College chancellors, the superintendent of public instruction, the director of the Postsecondary Education Commission, and the chairman of the Association of Independent California Colleges and Universities.

Given the number and variety of such mechanisms, the state might be well advised to retain and rely upon this existing array to achieve adequate synchronization across educational boundaries. Accordingly, no significant organizational changes would be warranted *if* the existing arrangements are deemed adequate for coordinating higher and lower education.

Formalizing Statewide Coordination

Since the 1978 enactment of Proposition 13, California has moved increasingly toward a state "system" of public education. Education in California has grown unevenly. Schooling has become an even more important instrument for influencing the state's social structure and economy. Consequently, effective planning and coordination, not only among higher education segments but also across higher and lower education, is critically important. Thus almost surely something beyond the status quo is needed, something extending beyond the prevailing approach of voluntary coordination.

Whereas it once was sufficient to have a *Higher Education Master Plan*, the state arguably now needs an *Education Master Plan*, one that will span higher and lower education. The two mammoth domains of higher and lower education are becoming increasingly interrelated, and current mechanisms for coordination and planning are plainly insufficient. A reexamined and possibly revised higher education master plan assuredly will assist in bridging at least some of the existing gaps in coordination.

Accordingly, consideration should be given by appropriate officials to formation of a California Education Master Plan which would encompass all segments—kindergarten through postsecondary and graduate education—as well as research on education. The eventual scope and characteristics of such an education master plan need not be resolved now; in fact, the formulation of such a plan, if deemed to be desirable public policy for the state, quite obviously would require full-scale involvement of lower education. Ultimately—and arguably before much more time elapses—questions need to be answered regarding the most appropriate roles, especially in terms of coordination, of agencies such as the State Department of Education and the California Postsecondary Education Commission, governing bodies such as the State Board of Education, the University of California Regents, the California State University Trustees, the California Community College Governors, public officials such as the superintendent of public instruction, and informal coordinating bodies such as the California Round Table on Education Opportunity. The number of students and employees involved, the level of resources allocated to these respective endeavors, and the significance of education to the state suggest strongly that better planning and institutional coordination are in order. For now, though, it is important to make a start, to begin to construct a bridge. If the assumptions advanced above about the critical need for more effective coordination are credited, significant measures can—and should—be undertaken now. That is the thrust of Policy Options 12 and 13, described below.

Two general approaches should be considered. One approach would create by statute a new apparatus—call it, arbitrarily, a California Education Coordinating Council (or an Education Policies Council)—which would have the responsibility of developing a strategic vision of the future as well as broad strategies for realizing that vision (see Policy Option 12). A second approach would go a sizable step beyond, adding limited operating

authority to the broad planning mandate of a coordinating council; call this approach a California Education Commission (see Policy Option 13).

There is, of course, an extreme step beyond creating a coordinating mechanism with limited operating authority, namely, the creation of a *single board for all education* in California. Several states, in fact, have enacted variations on the unitary board theme, but there is no evidence to suggest that such approaches are particularly successful. Moreover, proposed changes in California must take into account the history and distinctiveness of the state's governance systems and must respect those arrangements insofar as possible. Indeed, so ill-advised (much less politically feasible) would such an approach be for the nation's largest and (probably) most complex education system that it is not addressed seriously in this forum as a viable option.

The *coordinating council approach* (Policy Option 12) has distinct advantages. Put aside for the moment the connotations that attach to the label "coordinating council"; its use in California in connection with the Coordinating Council for Higher Education, which was by most accounts too much a captive of the postsecondary education segments to be effective, may suggest inherent weakness. Actually, a coordinating council for education, created by statute and given a mandate for strategic planning and coordination, might well accomplish a considerable amount—likely, in fact, more than can be forthcoming from the current voluntary and sporadic arrangements.

The mandate of a coordinating council (or educational policies council) might include *responsibilities* in the following areas:

1. To develop an overall vision for the future of education in California through defining statewide goals and objectives for education, along with broad strategies for realizing that vision.
2. To develop general strategies for planning and closer coordination among various groups and boards having responsibilities for education in the state, while recognizing the importance of maintaining a diverse system which features the distinctive roles and missions of the various education components.
3. To make recommendations about revisions in the Master Plan for Higher Education insofar as proposed changes would affect lower education; these policy areas would include admission requirements, student financial assistance policies, and adjustments to segmental missions, including degree offerings, that would have an impact on lower education.
4. To develop a statewide plan, including specific recommendations, for the promotion of equal educational opportunity throughout education.

5. To develop priorities for research on education. (See, for example, the functions outlined in Policy Option 10; those functions might be subsumed by the coordinating council proposed herein.)

6. To make recommendations about teacher education and teacher certification/licensing. (These might involve, for example, such proposals as suggested in Policy Options 1, 2, and 10.)

7. To develop priorities for demonstration projects or "pilot projects."

Membership on the California Education Coordinating Council (by whatever name) could be comprised in a wide variety of ways. One plausible approach would be to institutionalize membership on the California Round Table on Educational Opportunity. As presently constituted, the round table members include:

- The President of the University of California
- The Chancellor of the California State University
- The Chancellor of the California Community Colleges
- The Superintendent of Public Instruction
- The Director of the California Postsecondary Education Commission
- The Chairman of the Association of Independent California Colleges and Universities

Serious consideration should be given to the need to balance membership on such a council by expanding representation from lower education. A small staff is envisioned, including an executive officer (probably appointed by the council and serving at the council's pleasure).

An agency with limited operational authority (Policy Option 13) would be substantially similar in most important respects to the coordinating council described above. The policy areas falling within the agency's purview presumably would be essentially the same, and the membership of such an agency might well be the same as that envisioned for a coordinating council. The critical difference is that an agency possessing some degree of operating authority is perforce a bolder, more serious response—and, certainly in California, a more controversial response—to the need for more effective educational coordination.

It is not contemplated that such an agency would be charged with any substantial responsibilities now relegated to the governing boards of the three public postsecondary segments or to the California Postsecondary Education Commission. Rather, operating

authority would be conferred in limited areas crucial to the coordination process. These might focus on policies for teacher training and policies to promote access to postsecondary institutions. The agency staff, under the direction of its governing board, might administer focused access programs; these might include, for example, the Mathematics, Engineering, Science Achievement Program (MESA) and the California Student Opportunity Access Programs (Cal-SOAP). The agency might function in some respects as a small foundation for purposes of channeling funds, appropriated for educational research, to the most promising applicants.

Policy Option 12: Create an agency mandated to coordinate higher and lower education.

The state should consider creating a new independent agency, a coordinating council. The crux of the coordinating council's responsibilities would be to develop a long-range vision for education at all levels in California and to recommend strategies for realizing those goals. The council would essentially be a statutory version of the California Round Table on Educational Opportunity, but with a somewhat expanded membership and with cognizance for an array of policy areas that span higher and lower education. These areas would include, but would not be limited to, the promotion of educational opportunity.

Policy Option 13: Create an agency with operational authority to coordinate higher and lower education.

The state should consider creating a new independent agency with some operating authority. Its functions would be similar to a coordinating council, as described above, but the agency would have additional authority to administer a limited number of specialized programs that have particular significance in the areas of access to postsecondary education and the setting of education research priorities.

For Policy Options 12 and 13, the scope of responsibility for the proposed agency, as well as its membership, are discussed in the preceding text.

Conclusion

Coordination among all the elements of California's amazingly diverse and complex education endeavors surely will never be perfected. Even so, there is much room for improvement, and significant programs could result from well-fashioned new policies. The overarching questions to be considered by those engaged in the process of reviewing the Master Plan for Higher Education are these: Is it likely that coordination between higher and lower education in the state can be significantly improved to the benefit of students at all levels? If so, what are the kinds of policies that ought to be effected to enhance that coordination?

This forum has identified a range of strategies, some of them closely interrelated. In effect, the policy options presented herein constitute a menu from which choices can be made, rather than a recipe. The variations on these strategies are virtually limitless. Yet it is hoped that these policy options will provide a useful point of departure to consider the critically important topic of coordination throughout California's vast but loosely-linked system of education.

APPENDIX A

A Note On Recent Enrollment Trends In California Secondary Schools

Comparing 1984 and 1985 data from the California Basic Educational Data System (CBEDS), the number of classes in almost every relevant departmental area (except music) shows continued growth, even after correcting for overall enrollment growth: English (+0.6%), social science (+1.1%), and art (+1.4%) show modest growth; mathematics (+3.4%) and foreign languages (+4.7%) reveal moderate growth; and drama (+13.0%) and science (+13.3%) display significant increases. Only music declined (by 0.4%), after correcting for overall enrollment increases. Significantly, the largest increases occurred in advanced courses (Figure 3).

Of special relevance to the issue of admission to the four-year segments is the number of students enrolled in courses meeting University of California "a-f" requirements. The Research and Information Technology Unit of the State Department of Education (SDE) compared 1984-85 and 1985-86 enrollments in courses certified to meet the University of California "a-f" requirements. (Because the California State University admission requirements are becoming so similar to the admission standards established by the University of California, it is reasonable to assume that one can obtain an accurate picture of the enrollment patterns for *both* segments—or soon will be able to do so—by utilizing change data for UC's "a-f" courses.) SDE reports that enrollment in these courses increased by 12.6 % from 1984-85 to 1985-86. Also of interest is that statewide enrollment in fine arts courses (a California State University requirement but not a University of California requirement) increased by 4.1 percent over the prior year. (Because the new admission requirements for the California State University are not operational until 1988, there is as yet no distinction possible between college preparatory and noncollege preparatory fine arts courses as reported on CBEDS, but the fact that these enrollments are growing may be added evidence that changes in admission policies of the four-year segments influence the high school curriculum almost immediately.)

The State Department of Education also collects enrollment data by ethnic group for selected advanced science and mathematics courses. It reports that for each of these courses (intermediate algebra/ algebra II, other advanced mathematics, chemistry, and physics) there were gains in percentages of students enrolled across all ethnic groups. In other words, students from all ethnic groups enrolled in these advanced science and mathematics courses at a higher rate than in the prior year. Significantly, the growth *rate* for minority student enrollment in these courses was greater than the overall increase.

Figure 1

**Graduation Requirements Established by SB 813
and Recommended by the State Board of Education,
Admission Requirements CSU and UC**

<u>Subject</u>	<u>SB 813</u>	<u>State Board of Education</u>	<u>CSU Required 1988</u>	<u>UC Required 1986</u>
English	3	4	4	4
Mathematics	2	3	3	3
Algebra		(1)		
Geometry		(1)		
Science	2	2	1 ^d	1 ^d
Physical	(1)	(1)		
Life	(1)	(1)		
Social Studies	3	3	1 ^e	1 ^e
World Civ.	(1)	(1)		
U.S. History	(1)	(1)	(1)	(1)
Ethics		(.5)		
American Gov. Economics	(1) ^a	(.5)	(1)	(1)
Foreign Language	1 ^b	2 ^c	2 ^c	2 ^c
Fine Arts	1 ^b	1	1 ^f	
Computer Studies		.5		
Physical Education	2			
Electives			3	4

^aIncluding civics and economics

^bOne year foreign language or fine arts

^cMust be in same language

^dLab required

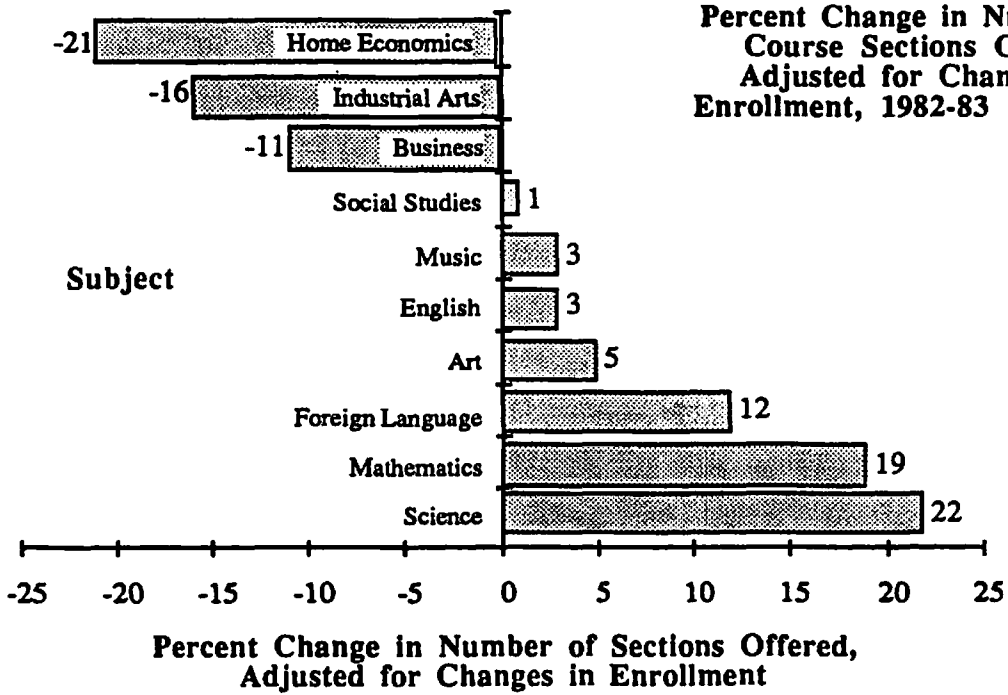
^eU.S. History/Government

^fVisual and performing arts

SOURCE: California Postsecondary Education Commission, and California State Department of Education.

FIGURE 2

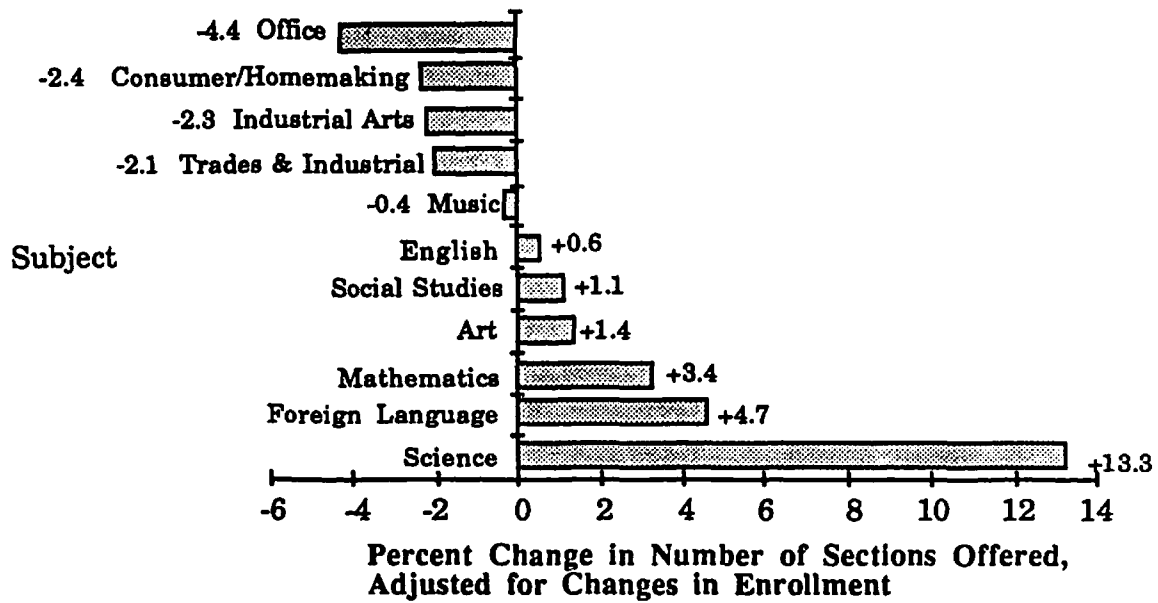
Percent Change in Number of Course Sections Offered, Adjusted for Changes in Enrollment, 1982-83 to 1984-85



SOURCE: Pam Grossman and Michael W. Kirst, et al., *Study of Curricular Change in California Comprehensive High Schools: 1982-83 to 1984-85* (Berkeley, CA: Policy Analysis for California Education, PACE, July 1985).

FIGURE 3

Percent Change in Number of Course Sections Offered,
Adjusted for Changes in Enrollment,
1984-85 to 1985-86



SOURCE: PACE analysis of California Basic Educational Data System (CBEDS) data.

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