Policy Analysis for California Education

PACE Report

*Higher Education Outreach Programs:
A Synthesis of Evaluations*

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Policy Analysis for California Education
(PACE)

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EXECUTIVE SUMMARY

This report by Policy Analysis for California Education (PACE) was commissioned by the University of California to inform deliberations of the Outreach Task Force on strategies to enhance University participation by students who are disadvantaged or from groups that have been historically underrepresented. The report reviews evaluations of current outreach programs, identifies effective practices, and makes recommendations for the improvement of programs and of the methods used to evaluate programs.

The report presents an analysis of what has been learned about outreach programs in order to inform deliberations relative to the following questions:

1. What do we know about the effectiveness of current efforts to increase the numbers of underrepresented and disadvantaged students who are well-prepared for higher education? Are there certain practices of program components that rate most effective in college preparation programs?

2. How might the evaluations of outreach programs be improved?

3. What essential principles should be considered in designing college preparation programs for disadvantaged students?

4. What are the implications of these findings for policy decisions on strategies of future outreach efforts?

Chapter II of the report presents information on the flow of students in the K-17 education "pipeline." This information provides parameters on the problem of improving college preparation of disadvantaged students. The data shows that as students reach high school, the performance gap between Black and Latino students and their white and Asian counterparts continues to widen, and their chances for admission to four-year institutions continue to diminish.

Also in Chapter II is a discussion of the "barriers" to University participation of disadvantaged students. The following are frequently cited barriers: lack of information about higher education opportunities; insufficient counseling and advisement; tracking of students in courses that do not prepare them for college; admissions test requirements; course-taking patterns; under-prepared teachers; low aspirations/expectations/ motivation; and the costs of higher education.

Chapter III provides a broad review of programs, focusing on the evaluation findings pertaining to program effectiveness and efficiency. The review is organized by clusters of programs with brief summaries of evaluation findings for examples of various types of programs -- University of California systemwide programs as well as other programs in California and nationally.

Four clusters of programs are included: 1) programs which are primarily student-centered; 2) programs which combine student-centered approaches with enhanced student financial aid; 3) programs which combine student-centered and school-centered strategies; and 4) programs which are school-centered.

In Chapter IV we discuss effective practices and suggest essential principles for designing student-centered and school-centered programs. The following essential principles about student-centered strategies are discussed:

1. Student-centered programs provide a "bridge" to higher education for minority students.

2. Strategically timed interventions can make a difference.

3. Comprehensive student-centered interventions seem more effective than single-component strategies.

4. Student-centered interventions are more effective when sustained over time.

5. Outreach programs are more effective when they are well-integrated with K-12 schools, instead of operating at the margins.

6. Some components of student-centered programs seem effective and especially feasible for higher education institutions to provide. These include the following:

a) early information about preparing for college;

b) family involvement;

c) academic counseling;

d) tutoring and mentoring;

e) study skills and specific academic skills;

f) transitions programs and summer residential programs; and,

g) college admissions and placement test preparation

The following essential principles are discussed about school-centered strategies:

1. School-centered programs can provide staff development that helps teachers support students' success in college-preparatory courses;

2. School-centered programs can improve the quality of curriculum and teaching in core academic subjects;

3. School-centered strategies can help enhance the academic culture of K-12 schools;

4. Professional development programs can help improve the quality of teaching in low-performing schools.

In Chapter V is a review of current program evaluation strategies with suggestions to improve future evaluations. Five essential principles about evaluation of outreach programs are discussed. These are:

1. A student information system is needed for program evaluation.

2. Program goals and intended outcomes must be defined. It is suggested that a useful distinction can be made between short-term, intermediate-term and long-term outcomes.

3. Program interventions must be clearly described and implemented.

4. Evaluations must be carefully designed to attribute results to interventions.

5. Evaluations should connect outcomes and cost.

Chapter V also recommends a research agenda for evaluating program effectiveness that includes a multi-level, multi-method approach.

In Chapter VI we discuss implications for the University's outreach policies. Strategies to enhance diversity at the University are discussed in terms of short-term, intermediate-term and long-term strategies. Four short-term strategies are suggested. These are: 1) increasing the eligibility pool by focusing on students who are "almost" eligible for admissions and encouraging these students to take admissions tests; 2) focusing recruitment efforts on underrepresented students who already meet eligibility requirements; 3) increasing community college transfer; and 4) better feedback to high schools about postsecondary performance of their students.

Intermediate-term strategies would focus on enhancing the effectiveness of current student-centered programs -especially EAOP and MESA, which are the University's largest programs, but also some of the other promising comprehensive programs' such as AVID and High School Puente. It is recommended that the University institute professional development activities focusing on the effective implementation of key components of student-centered programs.

Long-term strategies should focus on school-centered programs including professional development efforts and assistance to low-performing schools in an improvement strategy.

The state of California needs to mount a massive effort to build the capacity ofthe K-16 education system to provide an "opportunity to learn" to all students. The University needs to define its systemwide role within that plan, and each of the University's campuses needs to play a part. The University must develop a framework for program coordination and service delivery as well as a framework for program evaluation so that there will be a coherent approach to increasing the number of underrepresented, disadvantaged students who attend and are successful at the University.

I. Introduction

This report by Policy Analysis for California Education (PACE) was commissioned by the University of California to inform deliberations of the Outreach Task Force on strategies to enhance University participation by students who are disadvantaged or from groups that have been historically underrepresented. The report reviews evaluations of current outreach programs, identifies effective practices, and makes recommendations for the improvement of programs and of the methods used to evaluate programs.

Background
In July 1995 the Regents of the University of California adopted a new admissions policy abolishing consideration of race or ethnicity as a factor in admissions. This policy reversed a long-standing affirmative action policy which included a students ethnicity as one factor in determining University competitiveness and selection.

In February 1996 the University convened the Outreach Task Force to assist in developing strategies to maintain and enhance the participation of students who are disadvantaged in light of the new admissions policy. In convening the Task Force, the University described three major aspects of their charge: 1) to review ways of increasing the means by which the University can enhance the eligibility rates of young people across the State, especially those from groups that have been underrepresented at the University; 2) to identify strategies to improve eligibility and participation of underrepresented students in the University; and, 3) to specify the principles or goals that the University should adopt to improve its outreach efforts.

The University of California has a long-standing commitment to the diverse population of this state. As part of this commitment, the University also has a long history of involvement in pre-collegiate education, one form of which is "outreach"an array of programs and other activities designed to help prepare students so that they become competitive for, admitted to, and successful in the University.

Previous studies by the Office of the President have determined that low eligibility is the fundamental barrier to broader participation of disadvantaged students at the University. A critical part of the work of the Task Force is to conduct a broad review of outreach programs and practices, at the University and elsewhere. Outreach is the major way in which the University can make its campuses accessible to all qualified students.

As the Task Force got under way, its various working committees began to review an enormous amount of information pertaining to current outreach activities of the University. The Task Force received copies of various documents, including The Schools and UC, a directory of more than 800 current programs that involve collaboration between the University and K-12 schools.

At Task Force meetings, presentations were made on some of the universities largest outreach programs and on programs sponsored by individual campuses. These presentations described programs with impressive results. However, the information was difficult to interpret. The sheer number of programs was bewildering, and little of the evaluation data were presented in written reports. Many questions were raised about the rigor of the studies and the validity of the results. Lacking more detailed information, how might the Task Force members determine which programs are more effective than others? Is there a need for so many programs? Are the programs efficiently managed and coordinated? Would the students participating in these programs have qualified for the University without the program?

Purpose of this Report
In order to receive assistance in addressing these and other questions about outreach programs, the Task Force commissioned a study to review the evaluations of existing programs, both at the University and elsewhere. The Task Force specifically wanted assistance in establishing criteria for efficient and effective programs and program elements and in determining the extent to which current systemwide UC programs meet criteria for efficiency and effectiveness. In addition, the Task Force asked the evaluators to make recommendations for improving programs and for better evaluating present and future programs.

In commissioning this report to review current evaluations, the Task Force also sought information that might inform deliberations on several policy issues regarding outreach program strategy: 1) the extent to which outreach programs should pursue directions that are tactical or strategic programs that provide special assistance to individual students versus programs that aim to enhance the overall capacity of K-12 schools; 2) the level of academic preparation that the programs aim for whether programs are aimed at helping students meet minimum eligibility criteria or at becoming competitive for admissions to the more selective campuses; and 3) the extent to which programs should be administered centrally or regionally.

Scope and Procedures of the Review
The review of program evaluations included interviews and analyses of written documents. Interviews were conducted with Outreach Task Force members, University administrative staff, outreach program directors and staff, and other individuals with a special perspective on the effectiveness of outreach programs. Written documents reviewed included a variety of program reports and evaluations, meta-evaluations such as the two California Postsecondary Education Commission Reports on the Effectiveness of Intersegmental Student Preparation Programs, research and policy studies, and dissertations.

It is important to emphasize that this report is a synthesis of existing evaluations. Given the time and resources available for this study, we did not, and could not, independently evaluate the programs. Thus the scope of the review and analysis of findings is limited to the documentation that currently exists.

A Critical Role for the University
The evidence reviewed suggests that outreach programs are beneficial to students. However, we note at the outset that there is currently very little information that can really help policymakers make decisions about which programs are most effective and where scarce resources should be invested.
Few program evaluations have been conducted rigorously. No evaluations have systematically investigated the differential effects of one program component versus another. Very little information is available to determine how many students might have attended college without the programs. Very few evaluations follow students to document how they fare once they attend higher education institutions.

It is clear to us that the University must take responsibility for building a framework for coordinating and evaluating outreach efforts so that the programs can fit into an overall strategy. However, it is noteworthy that this lack of attention to evaluation of outreach programs is by no means unique to programs of the University of California. We found this same situation in our review of programs in other states. It is unreasonable to expect the individual programs to independently improve the quality of service delivery and evaluation. The program staff have neither the resources nor the perspective to bear primary responsibility for improving program accountability. The responsibility for

coordination and accountability must be assumed by an entity, such as the University, which has a stake in the success of the overall K-16 education system.

Organization of the Report
Subsequent chapters of this report present an analysis of what has been learned about outreach programs in order to inform deliberations relative to the following questions:

1. What do we know about the effectiveness of current efforts to increase the numbers of underrepresented and disadvantaged students who are well-prepared for higher education? Are there certain practices or program components that are most effective in college preparation programs?
2. How might the evaluations of outreach programs be improved?
3. What essential principles should be considered in designing college preparation programs for disadvantaged students?
4. What are the implications of these findings for policy decisions on strategies of future outreach efforts?

Chapter II of the report presents information on the flow of students in the K-16 education pipeline. This information provides parameters on the problem of improving college preparation of disadvantaged students. Also in Chapter II is a discussion of the barriers to University participation of disadvantaged students.

Chapter III provides brief summaries of evaluation findings for examples of various types of programs University of California systemwide programs as well as other programs in California and nationally.

In Chapter IV we discuss effective practices and suggest essential principles for designing student centered and school centered programs.

In Chapter V is a review of current program evaluation strategies with suggestions to improve future evaluations. A more expanded discussion of program evaluation designs is included in an appendix to the report.
Finally, in Chapter VI we discuss implications for the Universities outreach policies.

II. Barriers to Access

As we examined the literature regarding outreach programs, we found a high degree of agreement across programs, both within California and across the country on the key barriers to higher education for large numbers of historically underrepresented groups.1 In this section we briefly identify some frequently cited barriers.

Information Low-income, minority, and rural parents generally have less access to information regarding higher educational opportunities for their children. This problem is pervasive, particularly among families who are not native speakers of English, the most rapidly growing portion of California's adult population. Parents lack information about the courses children need to take to qualify for college, the necessary level of performance required in these courses, admissions policies, application procedures, and the availability of student financial aid.

Counseling and Advisement Counseling positions in California elementary and secondary schools have suffered disproportionate reductions during the recent extended period of severe budgetary constraints. There is little likelihood that substantial numbers will be replaced, thus assuring that the inadequacy of all kinds of

public school counseling personal, career, and academic will continue. Additionally, there is strong evidence that, especially in low-performing schools, many counselors do not place a high priority on college preparation and do not advise students to take challenging courses.

Tracking An important counseling-related barrier noted throughout the outreach literature is the still prevalent tracking and ability grouping practices that often place Black and Latino students into course-taking patterns which do not permit them later to gain entrance into four-year colleges and universities. Tracking and ability grouping contribute to inequality in opportunity. Students placed in slow tracks seldom catch up to their counterparts, and are often doomed to remediation throughout their schooling.

Test Requirements Many more historically underrepresented students would be eligible for four-year colleges and universities were it not for the requirement that students take the Scholastic Achievement Test (SAT) or American College Test (ACT). These tests, while reasonably accurate predictors of college performance, prove to be barriers on two dimensions. First, disproportionate numbers of historically underrepresented students don't take them. Secondly, those that do take them tend to score significantly below their white and Asian counterparts. Many critics argue that the tests are culturally biased and provide unfair barriers to poor, Black, and Latino students.

Course-Taking Patterns For the most part, low-income, Black and Latino students are not enrolled in a curriculum that is sufficiently demanding as preparation for four-year colleges and universities. Disproportionately large numbers of Black and Latino students are enrolled in courses within the less-demanding general education or vocational education curriculum. Students in these general and vocational education tracks rarely have access to the high-level mathematics, science, and English courses essential to college success. This is particularly true in science and mathematics, where the course-taking patterns of these students often preclude a serious opportunity to attend a four-year institution. Of particular importance as a barrier is algebra, the gateway to the college preparatory mathematics curriculum. Again, for the more selective institutions, like the University of California, Berkeley or UCLA, the situation is even worse. Most students who are admitted to the University of California at Berkeley have taken Five years of mathematics with one or more Advanced Placement or Honors courses an unlikely occurrence in areas with high numbers of low-income, Latino, and Black youngsters.

The problem tends to worsen for youngsters attending school in heavily minority, low-income communities. Even the most talented and motivated students may not qualify for competitive universities, if the schools they attend do not offer a comprehensive, rigorous curriculum, taught by competent and knowledgeable teachers.

Under-prepared teachers Unfortunately, teachers in schools with large proportions of historically underrepresented students are often the least-prepared. They are frequently teaching outside their major fields, and are more likely to have emergency credentials. If teachers are poorly prepared both academically and pedagogically, it is unlikely that their students will fare well in the highly competitive world of college admissions.

Aspirations/expectations/motivation Understandably, children from neighborhoods with high percentages of low-income and historically underrepresented populations often have fewer successful role models to emulate, and frequently lack the encouragement to set high aspirations. Their immediate neighborhoods contain few adults who have successfully negotiated the difficult path to college. Additionally, teachers, counselors,

and administrators in many low-performing schools take little action to increase eligibility rates among their students.

Cultural and family pressures to work or marry early often foreclose access for a large number of these young people. Their own peer groups may not be supportive of hard-working, ambitious students with college or university aspirations. Additionally, few of these youngsters have the experience of being on a campus, engaging in collegiate activities, and meeting college students who have made it.Ó

Cost of Higher Education In low-income communities, recent increases in tuition have had a disproportionally dampening impact on college aspirations for low-income students. Soaring costs of higher education discourage youngsters and families from seeing higher education as a realistic option.

In sum, students from groups with documented low eligibility and college-going rates get inadequate support from their homes, their communities, their schools, and from colleges and universities. We assert that each of these barriers is important, that cumulatively they may be overwhelming, and that all need to be addressed. Since there are multiple barriers to admission, strategies which address only one barrier will be insufficient. It does parents little good to understand the admission practices and policies if their child has not taken the appropriate courses. The impact of the barriers to higher education is exacerbated for highly selective institutions like the University of California. Each barrier looms larger as the competition for seats increases.

Pathways to Higher Education: the Narrowing Pipeline

The magnitude of the access problem becomes clearer when we trace a students progress through the 12 years of schooling it takes to graduate from high school. Students who have engaged in pre-school activities do better in primary grades than their counterparts. Unfortunately, access to preschool programs is correlated with family income, and low-income, minority students participate in these programs at much lower rates than their cohorts. Subsidized care, designed to serve the lowest-income students, serves only a small percentage of children eligible for these services. As a consequence, from the very beginning, students from these groups start the trek to college at a substantial disadvantage.

At the next step of progress through the school system, the primary grades, a disproportionately small number of students from low-income and minority homes are able to perform at grade level. Test scores from the last administration of the statewide testing programs present dramatic evidence that these groups of students, by the end of grade three, already trail their white and Asian cohorts. Students poorly prepared by the end of grade three have limited prospects of success later up the pipeline. The picture is similar for later checkpoints in grades six and eight.

As these students reach high school, the performance gap between Black and Latino students and their white and Asian counterparts continues to widen and their chances for admission to four-year institutions continues to narrow. First, a larger percentage of these students fail to finish high school. According to the California Department of Education, using a four-year derived rate method, Blacks are almost three times and Latinos over two times as likely to drop out as whites. Asians are slightly less likely than whites to drop out during their four years of high school.2 Among Latino and Black students who do stay in school, few take the rigorous courses necessary to enter the university and among this group, fewer get high enough grades, take the required SAT

or ACT examinations, or score high enough on the examinations to be eligible for admission to the University, let alone admission to one of its more selective campuses.

Saul Geiser, from the Office of the President of the University, in an earlier presentation to this Task Force, succinctly summarized the scope of the problem. He pointed out that for every 100 Blacks and every 100 Latinos enrolled in the 10th grade, 17 Blacks and 12 Latinos complete the a-f requirements, but only 5 Blacks and 4 Latinos become eligible for the University, and only 1 from each group will actually enroll in one of the campuses of the University of California.5 Given that California Department of Finance projects that by 2005, over 50 percent of the K-12 population will be Latino, the current eligibility rates for these students become increasingly unacceptable.

In sum then, in spite of the many excellent efforts underway, and in spite of the hard-won progress that has been made in the last decade, the scope of the problem far exceeds the capacity of the current solutions.

In the next section we examine the kinds of strategies that have been pursued by higher education institutions as they have implemented their outreach policies and practices.

III. Outreach and College-Preparation Programs

The next two chapters present a synthesis of what has been learned about outreach programs and other efforts to increase the numbers of disadvantaged and underrepresented students who are well-prepared for higher education. In this chapter we provide a broad review of programs, focusing on the evaluation findings pertaining to program effectiveness and efficiency. The review is organized by clusters of programs with brief synopses of programs that are exemplars of each cluster. In Chapter IV we draw upon the evidence in these program evaluations in order to make judgments about effective programs and practices.

An Overview of UC Outreach Programs
The first outreach programs were instituted by the University more than a quarter of a century ago. These early outreach programs grew out of recruitment efforts organized by campus admissions offices. By targeting small numbers of students in nearby high schools with information and motivational activities, admissions staff significantly increased the University attendance of students from groups with low eligibility and college-going rates.

In 1975 the University conducted a study of educational opportunities for underrepresented students and concluded that the primary barrier to access and retention for these students was insufficient academic preparation. In other words, too few of these students were taking the University-required courses or doing well enough in these course to qualify for admission. Following this study the State Legislature for the first time appropriated funds for affirmative action programs leading to the first system-wide outreach programs. These resources helped initiate programs such as the Early Academic Outreach Program (EAOP) and helped expand other programs such as Mathematics, Engineering, and Science Achievement (MESA).

Over the years, the University's efforts to improve the college preparation of underrepresented students have proliferated. There has been an enormous increase not only in the numbers of such programs but in their composition and structure as well. Programs have expanded in scope to include many more components in particular, components designed to enhance the academic preparation of K-12 students.

Recognizing the critical importance of early intervention, outreach programs have extended services to students and parents in junior high and even in some instances, in elementary school.

There are system-wide programs and campus-based programs. There are programs that are operated on the student services side of the University and other programs organized by academic faculty. The nature of collaboration of the University with K-12 schools and with other higher education institutions is also highly varied. Some programs are operated solely by the University while others involve strong collaboration and resource-sharing among institutions. What is missing is an overall University of California framework within which these programs effectively could operate.

Concomitant with the tremendous increase in the ethnic diversity of California and with a deepening understanding of the barriers to equitable participation in higher education by underrepresented students, some programs have been expanded or specifically designed to assist K-12 schools in overall improvement efforts. There are compelling arguments for increasing efforts to prepare educationally disadvantaged students for college with school-wide programs and "systemic" initiatives. Low-income and minority students are concentrated in K-12 schools which have historically done a poor job of preparing students by virtually any measure.

If outreach programs might be compared to a life raft on a sinking ship, the argument is that the University can only accomplish its goal of enrolling and graduating increased numbers well-prepared disadvantaged students if it does not focus exclusively on offering life rafts but also helps to save the ship. Hence a variety of programs which do not provide direct student services are now part of the discussion of strategies for increasing the eligibility and competitiveness of underrepresented students. Prominent among such programs are the California Subject Matter Projects (CSMPs) and various teacher training and induction programs such as Beginning Teacher Support and Assessment (BTSA).

The net result of the evolution of a multiplicity of approaches is that there are now a myriad of programs which might be thought of as contributing in some way to the overall diversity goal. In 1995, The UC Office of the President published The Schools and UC, a directory of more than 800 programs related to the University's involvement in K-12 education. A substantial portion of these programs might be considered in a review of the universities overall efforts to increase the pool of college-prepared students.

Services Provided by Outreach Programs

Higher education outreach programs began with recruitment activities and information and assistance in college admissions. Programs then expanded to include motivational activities (e.g. campus visits) designed to support students in setting and pursuing ambitious goals that include college attendance.

In addition to information and motivational activities, all of the student-centered programs included in this review also have components that provide academic enrichment or support. It became apparent early on that a great many students were being lost in the education pipeline either because they were not taking the courses required for university admissions or because they were not doing well enough academically in those courses. Outreach programs began to add services addressing this barrier academic advisement, earlier information to students and parents about the a-f sequence of courses, and academic enrichment and support activities such as

tutoring, specific skills instruction, and intensive Saturday and summer academies on college campuses.

Listed below are the major services of the programs we reviewed, organized by categories. The list is not exhaustive, and the classification scheme is imperfect since some services could be placed in more than one category.

I. Direct services to students and families:

Information and assistance in college admissions
·Information on college requirements and opportunities
·Financial aid information
·Assistance in completing applications for college and financial aid
·Scholarships
·Information about college admissions and placement tests

Motivational activities
·Community members as mentors
·Motivational speakers
·Academic awards and recognition's
·Campus visits
·Visits to business and industry
·Advocacy for students

Academic enrichment and support
·tutoring individual or small group
·College students as tutors and mentors
·In-class instruction
·Study groups
·Instruction in study skills, note-taking, time management
·Instruction in writing and inquiry
·Instruction in problem-solving and other higher order skills
·Saturday academies
· College admissions and placement test preparation
·Skills assessment
·Academic competitions and fairs

Counseling and advisement
·Academic advisement
·College advisement
·Career information and counseling
·Career internships

Parent and family involvement
·Parent and family nights
·Weekend family programs
·Parent contracts
·Family counseling

Transition programs
·Transition programs Junior high or middle school to high school
·Summer bridge programs high school to college
·Intensive summer residential programs on college campuses
·High school students taking some college classes

·Self-contained high schools on college campuses
·College classes taught on high school campuses

II. School-Centered Services:
·Staff development and technical assistance related to California Curriculum Frameworks
·Intensive institutes for individual faculty or school teams
·Staff development and support to school teams of teachers, counselors and administrators
·Curriculum development

·Grants for faculty-to-faculty collaboration in improving curriculum and instruction
Demonstration schools

Procedures Followed in This Review
Our review of the published research literature and of programs nationally suggests that there are remarkably few evaluation studies of outreach or college preparation programs that meet established standards of effective evaluation. Researchers and higher education scholars throughout the country lament the paucity of good evaluation studies of these programs. Most of the data that exist are of a descriptive nature, and the data systems are not in place that would allow long-term tracking of students. Nearly all studies which report student outcomes are limited to short-term outcomes (e.g., college eligibility) and do not include long-term outcomes (e.g., college graduation). The programs themselves tended to be developed independently and without either the designs or the resources for systematic evaluation. Thus, while most programs are able to show positive overall results, many questions are left unanswered. Would the students have succeeded without the program? What is it about the program that contributes to its apparent success? Are different types of interventions more effective with different types of students?

A subsequent chapter of this report provides a critique of the evaluation methods used in current programs and makes recommendations for future evaluations that would yield more evidence of program effects more useful for policy makers.

Not withstanding the limited evaluation data, there is much that has been learned about outreach programs that can inform deliberations about future efforts. A few programs have conducted quite extensive and sophisticated evaluations of program implementation, student outcomes, or both. The experience and views of individuals who are knowledgeable about the programs is also of great value in evaluating the programs. Thus, while we may not be able to draw conclusions with the level of confidence that we would like, we can certainly build on what we know now in planning future strategies.

Procedures followed in this review of the effectiveness of outreach programs included interviews and analyses of program documents and evaluation reports. Interviews were conducted with Outreach Task Force members, University administrative staff, outreach program directors and staff, researchers, and other individuals with a special perspective on the effectiveness of outreach programs. Written documents reviewed included a variety of program reports and evaluations, meta-evaluations, research and policy studies, and dissertations. (See Bibliography.)

Summaries of Program Evaluations
This section provides brief summaries of program evaluations.

The review begins with two reports by the California Postsecondary Education Commission (CPEC) which summarize the evaluations of nine intersegmental college preparation programs. Following the CPEC reports we briefly present evaluation findings from a sample of programs that exemplify the range of programs along a continuum from student-centered programs to school-centered programs or systemic initiatives.

The CPEC Reports on the Effectiveness of College Preparation Programs
The California Postsecondary Education Commission (CPEC) has published two noteworthy evaluation reports on the effectiveness of collaborative programs to prepare students for college. A three-year study of nine programs was completed in 1992, and a follow-up study of eight of these programs and one additional program was completed in 1996. In both reports CPEC concluded that the programs, individually and collectively, were highly effective and efficient. The reports document high levels of eligibility and attendance at California's public universities for students served by these programs when compared to other underrepresented students or to graduating seniors generally.

The CPEC reports are based on information provided by the programs. With some noteworthy exceptions, the data on student outcomes are mostly descriptive statistics without appropriate comparisons, and are limited to short-term outcomes. Thus, while the findings are strongly suggestive of positive outcomes for students, they unfortunately are not conclusive and provide little insight into what makes the programs effective.

We know from the most recent CPEC report that only 8.6 percent of underrepresented students statewide participated in the nine programs included in the report. In addition, CPEC reports that only 7.5 percent of California elementary and secondary schools were involved in these programs. The report makes a strong recommendation for additional resources to expand both the numbers of schools participating in these programs and the numbers of students served.

While there can be no argument that there is an acute need to increase efforts to prepare underrepresented students for college, the CPEC reports provide little basis for making decisions about how to go about expanding the efforts. These student-centered programs do not all provide the same services, and surely they do not all work equally well. Unfortunately, we simply do not have the evaluative data that would enable us to systematically compare results across programs or across program components.

The CPEC reports provide some information on sources of funds for the programs. From this information CPEC estimates program costs per student. They estimate an overall cost per student of $140.21 for 1994-95. It is helpful to have some cost information about the programs. While it would be extremely useful if per student costs could be compared across programs, CPEC states and we agree that such comparisons would not be appropriate. The programs differ on so many dimensions that meaningful cost comparisons cannot be made across programs. We conclude further that current evaluation data for the programs included in the CPEC reports, as well as for most other programs do not enable us to make meaningful cost-effectiveness evaluations.

Clusters of Programs
This section will characterize the range of college preparation programs and discuss those which are the focus of this review. For ease of comparison we have organized this section into clusters, or groupings, of programs. We have not included all of the programs we have reviewed such a list would be extensive but would provide little

additional information. We have selected those programs which are most prominent, or which have evaluation data, or which represent features we think are noteworthy. In conducting the review, we examined UC programs, programs administered by other education segments within California, and programs in other states.

The distinctions between the clusters is admittedly blurred, none of the programs represent pure models. The four clusters are:

   1. Programs which are primarily student-centered. These programs represent efforts to provide services directly to students. They commonly feature activities which promote academic enrichment and support, parental involvement, counseling, advisement, information on college admissions, and motivation.

   2. Programs which combine student-centered approaches with enhanced student financial aid. These programs provide the link between student-centered activities and financial assistance.

   3. Programs which combine student-centered and school-centered strategies. These programs combine direct student services with staff development and other activities to improve the overall quality of curriculum and instruction in the school.

Programs which are school-centered. These programs school or subject-matter focused are designed to improve the quality of schooling for all students, not just those students targeted for service. School-centered programs are not usually classified as outreach activities, but they nevertheless can have a strong impact on the ability of schools to improve college-going chances for their students, by improving the quality of instruction and curriculum.

I. Student- centered Programs

Early Academic Outreach Program (EAOP)
The first of the systemwide outreach programs, EAOP began in 1976 and continues to be one of the major UC programs to increase the eligibility and participation rates of underrepresented and disadvantaged students. EAOP serves students in grades 7-12 and provides individual and group activities for students, parents, and schools. The program is operated on all eight UC campuses and currently serves 131 school districts. EAOP began as a junior high school program aimed at encouraging students to take the courses required for University admission. Over time, as the need became apparent, the program expanded to include more components including academic skills development, motivational activities, and parent involvement activities.

EAOP tracks course completion patterns, grade point averages, and UC eligibility status for senior participants. The University reports that in 1995 there were 7,777 EAOP seniors whose eligibility status was known. Of these, 47 percent were eligible for the University. Despite the strong association between program participation and UC eligibility, the current evaluations of EAOP do not provide detailed information about the students served or the specific program activities that might be contributing to high eligibility rates. EAOP does not track students as they pursue their University careers, nor does it attempt to evaluate the effect of the separate components of the program. We do note from the data that there is wide variation among UC campuses in the numbers of EAOP students served. Program staff suggest that there is a need for much

greater consistency in data collection and reporting as well as in program implementation.

   1. It is clear from the program statistics that large numbers of underrepresented students who enter the University have participated in EAOP. The extent to which EAOP serves a recruitment purpose by encouraging students who are already well on their way to becoming UC eligible, and the extent to which it sparks the initial interest and supports the further university-readiness of students who otherwise would not be eligible for UC are not clear.

Mathematics, Engineering and Science Achievement (MESA)
MESA has a long-standing reputation for successfully increasing access to the University for underrepresented students. MESA is a partnership between the University, business and industry, other higher education institutions, and K-12 education to serve disadvantaged and underrepresented students in math-based fields. Services to K-12 students are provided through 20 MESA school-centers. The program has been replicated in numerous other states.

The University reports that 12,000 students in 295 elementary, middle and high schools are currently being served. The most recent CPEC report presents data showing impressive proportions of MESA high school students successfully completing advanced mathematics or physics courses. Data are also presented on grade point averages and college admissions tests for MESA students.

The descriptive results for MESA are striking, but neither conclusive nor definitive. We have no way of knowing how many MESA students might have taken advanced mathematics and science classes without the intervention. We also have no current information about any longer-term benefits to MESA students. The MESA staff told us that they are currently developing a much more sophisticated student tracking system which eventually will allow longitudinal studies of program outcomes instead of only head counts.

The College Readiness Program
The College Readiness Program (CRP) is a middle school program jointly managed by the California State University and the California Department of Education. The idea for CRP was based on the fact that in order to become college-ready, students must take college-level mathematics and English courses beginning in the ninth grade. Successfully completing algebra by the end of the ninth grade is especially critical.

CRP identifies students who are average achievers, and who are in the critical phase of leaving elementary school and entering the middle grades. The essence of the program is to provide a well-timed intervention so that these average-achieving young people from groups with low college-going rates will set high aspirations and get on track in a college-preparatory curriculum by the time they enter high school.

CRP students and their parents receive a range of services. Students are tutored in mathematics and English by CSU students specifically trained for this program. CRP students also receive instruction in thinking and problem-solving skills, campus visits, and other motivational activities. Parents receive information about college opportunities and financial aid.

Evaluation studies of CRP over several years have compared CRP students with students of similar backgrounds. Comparison group students are comprised of students

on the waiting list for program participation. The student outcome indicator has been the recommended course placement of students when they enter the ninth grade.e., whether they are recommended for College Track or non-college track courses. CRP has demonstrated success in increasing the numbers of students who are recommended to take College track courses, with results being more significant in mathematics than in English.

Reviews of CRP programs have revealed uneven degrees of program implementation in the 21 participating middle schools. One study demonstrated a relationship between degree of implementation and student results. Currently under way is an expansion of CRP to additional middle schools blending the components of CRP with an adaptation of the Advancement Via Individual Determination (AVID) program model to middle schools. This new phase of CRP will combine the tactically powerful interventions of CRP with the more comprehensive program and professional development provided by AVID.

College Preparation Intervention Program, Maryland
Maryland's College Preparation Intervention Program was a three year pilot program, which had as its goal increasing college enrollment and completion rates among the states disadvantaged youth. Five pilots were established in five regions of the state, serving about 3,450 students from 1989, 1992-93. Each program was required to include local school systems, higher education institutions, parents, business and industry, non-profit organizations, and community groups. Local planning to respond to regional needs was a hallmark of these programs.

The Maryland Institute for Higher Education Policy, contracted to conduct the evaluations, noted that several obstacles limited their ability to draw conclusions about program effectiveness. The program had been discontinued by the time the evaluation began. There had been changes in evaluators, changes in assessment tools, and inconsistent or insufficient data. Since the program ended before participating students graduated from high school, its effectiveness in improving college enrollment was indeterminable. In the two counties with data for participants and non-participants, program participants were more likely to be enrolled in college preparation courses and to have higher aspirations than were non-participants.

II. Student - Centered Plus Financial Aid Programs

California Student Opportunity and Access Program (Cal-SOAP)
Cal-SOAP is coordinated by the Student Aid Commission. Competitive grants are awarded to consortia of high schools, postsecondary institutions, and community agencies. The various program centers provide services spanning the range of college-preparatory activities including assistance with financial aid, tutoring, skill development, campus visits, parent involvement, and test preparation.

No recent overall program evaluation has been conducted for Cal-SOAP. However, the CPEC report presents information showing college-going rates for 4,502 Cal-SOAP students who graduated from high school in 1994. College-going rates for Cal-SOAP students were substantially higher than for high school graduates overall in the counties operating Cal-SOAP programs.

National Early Intervention Scholarship Program, Federal Government
The unique characteristic of these programs is the dual focus on both the financial assistance and the student support part of the problem. These programs are principally state-administered programs in which students may choose from several segments. In

1992, the Congress authorized a new program, the National Early Intervention Scholarship Program, to provide matching funds to states for programs which:

   * Guarantee qualified high school graduates financial assistance to enroll in higher education

   * Ensure that at-risk elementary, middle, and secondary school students receive counseling, mentoring, academic support, outreach and support services.

   * Inform students and parents about advantages of postsecondary education and procedures for obtaining financial assistance.

Components include tutoring, career mentoring, assistance in obtaining summer employment, academic counseling, skills assessment, family counseling, parental involvement, and pre-freshman summer programs.

The program was authorized by Congress for $200 million but was only funded at $1.9 million for fiscal year 1994. Because of the current budget situation,Ó the 1995 appropriation was rescinded and no funds were requested for 1996.

State programs embracing the same concepts, that is, programs that combined both financial incentives and academic support components, also were begun in the 90's, and fared better. Because these programs in Rhode Island, Indiana, Hawaii, Oklahoma, Virginia, and North Carolina all require students to begin participation in early grades (Rhode Island starts its youngsters in grade three, evaluations regarding college enrollment are not yet available. In order to be eligible for financial assistance, most of the states require students to meet behavior standards, maintain an above-average grade point average and take a prescribed college preparatory curriculum.

Liberty Partnership Program, New York
In 1989, the State of New York began operating the Liberty Partnership Program designed to improve high school completion rates and to encourage at-risk students to enroll in postsecondary education and/or obtain employment. The State Education Department provides grants to colleges and universities or consortia for regional programs that coordinate activities of various local organizations. In 1993-94 there were 49 projects involving 400 elementary (grade five and higher), middle, and secondary schools, 300 community based organizations, 50 local government agencies, and numerous local businesses. The program served over 11,000 students in 1993-94. The program focuses on at-risk students and their parents both during school and in the summer. Program activities include academic, career, financial, and personal counseling, skills assessment, tutoring, mentioning, health screening, enrichment, cultural and recreational activities, and program referrals.

In 1993-94, 92 percent of the twelfth grade participants graduated and 68 percent of these students planned to attend a postsecondary institution during the following year. Unfortunately, the high graduation numbers for twelfth graders were not matched by their younger cohorts. Promotion rates were 59 percent for ninth graders, 61 percent for tenth graders, and 69 percent for eleventh graders.

III. Combination Student-centered and School-centered Programs

High School Puente
The Puente Project was instituted in 1981 to increase the numbers of Mexican American/Latino students transferring from community colleges to four-year colleges and universities. The University reports that 56 percent of the community college students who complete Puente transfer to four-year colleges and universities within three years. This transfer rate compares very favorably with a transfer rate of less than seven percent for non-Puente students.

In 1993 Puente began a high school version of the program that currently operates in 18 California high schools. High School Puente provides intensive writing instruction, a focus on Latino literature, academic counseling, community mentors, and parent workshops. There is an extensive teacher professional development component to Puente.

A three-year evaluation of High School Puente is being conducted, including intensive case studies in three high schools. One focus of the evaluation has been on the extent of program implementation. Results of this portion of the evaluation have shown a generally high level of implementation in the case- study high schools. Relative strengths and weaknesses of program components are also being identified. The instructional components of the program have received very high ratings so far, while the mentoring component has been identified as the most difficult component to implement. The study has also identified a need for additional efforts to assist parents in translating their high aspirations for their children into specific support.

The evaluation includes extensive data collection on student outcomes for a cohort of students who were ninth graders in 1994-95. Data on Puente students will be examined in relation to a comparison group of students in the same schools. It is too early to assess the impact of High School Puente on student performance.

Alliance for Collaborative Change in Education in School Systems (ACCESS)
ACCESS is a UC Berkeley Lawrence Hall of Science initiative designed to assist Bay Area schools in making various improvements focusing on instructional and counseling programs. The program provides both school-based assistance and direct student services including instruction, tutoring, academic counseling, and admissions test preparation. During 1994 ACCESS operated in 25 junior high or middle schools and four high schools.

ACCESS has been evaluated by an examination of changes in participating schools, numbers and percentages of students completing college-preparatory mathematics courses, taking the SAT and scoring above 500 in mathematics. Results show substantial increases on all criteria.

The professional development components of ACCESS have been evaluated through faculty and staff surveys and interviews. This portion of the evaluation shows positive effects in the areas of building collaboration and strengthening professional community.

The California Academic Partnership Program (CAPP)
CAPP is a curriculum-improvement program coordinated by the California State University. The program provides grants to school districts that promote partnerships between K-12 faculty and college and university faculty. The program also supports direct instruction to students, tutoring, advisement, campus visits, and parent involvement. Services vary by project site.

A major goal of CAPP is to increase the number of underrepresented students enrolling and succeeding in college preparatory courses. However, data on student outcomes were not included in the 1996 CPEC report, nor in the 1993-94 independent evaluation report on CAPP. Earlier qualitative evaluations of CAPP have focused on factors that enhance effective school-college partnerships.

Advancement via Individual Determination (AVID)
Advancement via Individual Determination (AVID) is a comprehensive program which combines many components of student-centered outreach programs with systemic curriculum improvement and professional development. In other words, AVID integrates student-centered and school-centered strategies. Begun in San Diego by a high school English teacher, AVID has grown throughout California and in other states and countries. It currently operates in 265 California high schools and middle schools.

AVID demonstrates that a crucial factor in improving the college preparation of underrepresented students is to get them enrolled in rigorous college-preparatory classes and then support them to be successful in those classes and in planning for college. Students who are identified for AVID are perceived to have high potential despite average grades. The AVID class operates as an elective in the student's daily schedule. AVID provides intensive student support study skills, college student mentor-tutors, test preparation, college information, family involvement, and motivational activities.

When compared with the evaluations of most other college-preparation programs, the evaluations of AVID have been quite extensive. Longitudinal studies of cohorts of high school AVID students have shown strong relationships between participation in AVID and four-year college enrollment and persistence. These outcomes have been demonstrated for Black and Latino students and for students of low socioeconomic status regardless of ethnicity. Studies have shown relationships between the number of years students spend in AVID and various performance indicators including college attendance. The college-going rate for students completing AVID is more than twice that of local and state rates for similar groups of students. Overall 98 percent of AVID graduates in the San Diego region go on to college, with about half attending four-year colleges. Studies have also examined persistence rates and college grades of AVID graduates with positive results.

Hugh Mehan, a faculty member at UC San Diego, and others have analyzed the outcomes for AVID students in relation to program components in an attempt to explain what makes AVID effective. There appear to be multiple factors that contribute to AVID's success. Some are relatively specific, such as study skills and teaching the college-entry process. Other factors are attributable to the intensive nature of the program class period every day over several years with a group of AVID students and a teacher-advocate and college student tutors.

It may well be that it is the synergistic effect of all the elements in the comprehensive program sustained over time that accounts for the positive outcomes for AVID students. Mehan et al. state that "AVID coordinators are engaged in an explicit socialization process in their classrooms that parallels the implicit socialization process that occurs in well-to-do families." (p. 10). Mehan et al. state further that "AVID coordinators explicitly teach aspects of the implicit culture of the classroom and the hidden curriculum of the school. Furthermore, they mediate the relationship between families, high schools, and colleges by serving as advocates and sponsors of AVID students." (Ibid.)

The AVID program is also noteworthy for its attention to maintaining integrity of the program in its replication and dissemination. The literature on innovative programs is replete with examples of highly effective programs that deteriorate in the process of being adapted in other settings to the point of being recognizable in name only. An infrastructure of professional development support for AVID dissemination has been developed through regional centers in California. These regional centers provide support to schools implementing AVID. The AVID Center in San Diego has also instituted a certification process for reviewing local AVID programs. The combination of certification and ongoing staff development for school teams operating AVID help to ensure faithful program implementation.

IV. School-Centered Programs

The California Subject Matter Projects (CSMPs)
The CSMPs provide professional development to K-12 teachers throughout California. An evaluation study by Inverness Research Associates reports that in 1993-94, over 67,000 teachers participated in the institutes and other events sponsored by the CSMPs. During this same year the CSMPs offered more than five hours of professional development, on average, for every teacher in California. These professional development activities were provided at 93 sites by the eight discipline-based projects that comprise the overall program.

Extensive evaluation studies have examined the quantity, quality, and cost-effectiveness of professional development provided by the CSMPs. Findings support the conclusion that participation in the CSMPs enhances teachers discipline-specific pedagogical skills. One study showed evidence of improvements in classroom teaching attributable to participation in the CSMPs.

Beginning Teacher Support and Assessment (BTSA)
BTSA is a support and professional development program for beginning teachers. BTSA serves 1000 beginning teachers each year. The program provides mentoring, group support and problem-solving, and standards to assist beginning teachers in classroom practices. Evaluation studies have shown dramatic reductions in the attrition rates of teachers in BTSA.

IV. Effective Practices in Outreach Programs

It seems clear that the outreach programs can make a difference in the lives of young people and in the quality of curriculum and teaching in K-12 schools. Overall, the programs reviewed for this report have increased the numbers of underrepresented, disadvantaged students going on to higher education. The professional development activities of various programs have also helped teachers and schools do a better job of educating all students. In this section we examine the services provided by these programs in an attempt to understand more about what makes them successful and what might make them even more successful. We also describe certain practices or program components that seem especially promising.

The analysis looks first at student-centered services and then at school-centered services. As we have seen, some programs provide both major types of services, and there is no absolute distinction between types. In fact there are instances where student-centered services can have school-wide effects by creating a more academic school culture, for example.

The whole array of programs which we have reviewed under the heading of outreach programs defies precise classification. The term outreach suggests services originating on college or university campuses and reaching out into K-12 schools. This characterization of outreach is appropriate for some, but by no means all, of the programs we reviewed. At least one of the programs AVID might be more appropriately called up-reach since it originated within K-12 and later evolved into a collaborative program with higher education.

It is also the case that the term "outreach programs" has usually been reserved for those services which are student-centered, as opposed to the broader range of higher education activities that touch K-12 schools, such as teacher-training and professional development programs. Some programs, such as the California Subject Matter Projects, do not have student-centered components but have been included in this review because of the extensive rethinking currently under way regarding how the University can best focus resources on helping larger numbers of underrepresented, disadvantaged students become prepared for and successful in higher education.

Limited Current Evaluation Data
We note at the outset that current evaluation data do not enable us to conduct a definitive analysis. Few program evaluations have been conducted with rigorous designs and data collection. No evaluations of the student-centered programs have systematically investigated the differential effects of one program component versus another. Although this analysis is based, wherever possible, on strong evidence from program evaluations and related research, it also draws on the cumulative weight of suggestive evidence and informed opinion. We understand that the University is reviewing outreach services in light of new admissions policies and that our charge is to synthesize the best available evidence. Not withstanding the limitations of current data, we believe that the data can help to inform deliberations about future strategies.

The data provide persuasive evidence that the student-centered programs have influenced many students to go to college who otherwise would not have gone. However, it would be erroneous to conclude that the programs reporting the highest college-going rates for their participants are the best programs. The programs use different criteria to select or recruit students, provide different services, and have different delivery models. For some of the programs, data management systems are not in place to ensure reliable statistics on student participants and college-going rates. Furthermore, the University's outreach programs serve a recruitment as well as an academic- development function, and include some students who are already well on their way to qualifying for a competitive university.

School-centered strategies and programs are even more challenging to evaluate than student-centered programs. The interventions are complex and often occur outside the K-12 classroom or school e.g., at professional development institutes. It is much more difficult to establish a causal link between school-change strategies and the longer-term goal of preparing greater numbers of disadvantaged students for college. Yet it has been documented that these interventions can lead to improvements in curriculum and teaching. Although there is currently no direct evidence of causal relationships between these interventions and improved college-going rates, the school-centered strategies are part of the current discussion about outreach because of strong presumptive evidence that such assistance to K-12 schools can contribute significantly to longer-term goals.

It would be misleading to conclude that because the need is so great all programs should be expanded indiscriminately. While there can be no argument that we need to prepare many more low-income and minority students for higher education, it is not self-evident that expanding all current programs is the best strategy for accomplishing this goal. Although the data are ambiguous and inconclusive, we believe that some essential principles can be derived from this information about effective practices.

Essential Principles about Student-centered Strategies

1. Student-centered programs provide a bridge to higher education for minority students.
Many activities of student-centered programs which seem to be effective and to be valued highly by students and program staff have to do with the academic and social support functions of the programs. Some social science research and a few program evaluations have explored the benefits of such support activities for minority students. For example, Catherine Cooper et al. (1995) have conducted research on Black and Latino students participating in EAOP and MESA. These researchers report that the outreach programs provide bridges connecting students' different worlds of family, community, and university life. Research by numerous others, including Patricia McDonough, Lisa Kala, and Uri Treisman, further documents the importance of academic and social support for minority students both in pre-collegiate preparation programs and in ongoing support for students attending the University. Several individuals interviewed for this report stated that the University can be an alien place for minority student and that academic success is not attained through individual achievement alone but requires relational support as well.

Evaluation studies of AVID and High School Puente also point to the importance of the program group as a factor in student success. As noted earlier, Hugh Mehan attributes some of the success of AVID to the "socialization process" in AVID classrooms. Mehan emphasizes the role of the AVID coordinators both as explicit teachers of the "hidden curriculum" (i.e., the culture of success) but also as mediators between students' multiple worlds and as student advocates and sponsors. Patricia Gandara et al. also describe beneficial effects of group and cultural identification for Latino students in High School Puente.

We have stressed the group support features of the student-centered programs in this analysis because of the program implications of potential policy changes in ethnic-based selectivity. Certainly a program such as Puente which is focused on Latinos would have a dramatically different character if it became more heterogeneous. Other student-centered programs already serve students of all ethnicities but derive some of their group cohesion through identification of members as part of a family or as "underrepresented" or minority.

2. Strategically timed interventions can make a difference.
The performance gap between advantaged and disadvantaged students begins early and widens quickly. The University's Black and Latino eligibility studies document critical periods in the K-12 progression when large numbers of these students are lost from the educational pipeline.

There is evidence from large-scale evaluations of early intervention programs e.g., Success for all and the Accelerated Schools Program that interventions in elementary school can be successful in helping disadvantaged students keep up with their age-

mates. Higher education institutions can play an important role in such early interventions, particularly in professional development for teachers and staff.

The role for student-centered programs becomes clearer as students enter another critical period in the middle school years. MESA, EAOP, and the College Readiness Program are examples of programs that provide strategically-timed interventions focusing on this critical period. These and other programs help minority students develop the academic skills and confidence to prepare for college-preparatory classes in high school.

Another example of a strategically timed intervention is admissions and placement test preparation beginning in early high school. There are compelling reasons to remove the veil of secrecy around the tests that are used to admit and place students in higher education. If students have the opportunity to take the tests early and often, and if parents and K-12 teachers are informed about student results, the later high school years can be better used to help many more students become well-prepared for college. The 1992 CPEC report included a three-year evaluation of the College Admissions Test Preparation Programs which demonstrated positive effects of test preparation activities for underrepresented students.

3. Comprehensive student-centered interventions seem more effective than single-component strategies.
Most of the student-centered programs included in this review describe a comprehensive set of services to students. The programs have either evolved over time to become comprehensive or have been designed with a belief that multi-faceted interventions are needed to help disadvantaged students overcome the many barriers to full participation in our K-16 system.

The arguments for a comprehensive approach are persuasive. However, since there are no evaluations documenting the effects of single-component interventions on college-going rates, there is no direct evidence to prove that comprehensive programs are needed. What we do have are several evaluations showing a relationship between the extent of program implementation and student outcomes. For example, early evaluations of High School Puente suggest such a relationship. Some compelling evidence in support of comprehensive programs comes also from the evaluations of the California Partnership Academies. This program was not included in the set of student-centered programs described in an earlier section because it is not a college preparation program per se. The Partnerships Academies are a school-within-a-school intervention for high school students at risk of failure or dropping out of school. These programs have been extensively evaluated over many years. Findings clearly demonstrate a strong relationship between the extent of implementation of all components of the program and student results, including persistence in school and academic performance.

Our review of all the evidence leads us to the conclusion that a comprehensive set of student-centered interventions is needed to prepare more disadvantaged students for higher education. These interventions might be provided in a self-contained program, such as High School Puente, or in a collaborative service model in which the University might play a role in providing some of the services. The key is to ensure that individual students receive well-coordinated assistance in overcoming the barriers to postsecondary education.

4. Student-centered interventions are more effective when sustained over time.

Program staff and researchers expressed the view that effective college preparation of underrepresented students requires support services that are sustained over a period of years, extending into students collegiate years. Programs such as the Professional Development Program (PDP) and the Minority Engineering Program (MEP) were designed to offer sustained support. The research of Cooper et al. with MESA and EAOP students also points to the importance of sustained interventions. In an evaluation of AVID, Meehan found a positive relationship between length of time in AVID and student outcomes.

5. Outreach programs are more effective when they are well-integrated with K-12 schools, instead of operating at the margins.
As outreach programs have added components focusing on academic enrichment and support, many programs have also become much more collaborative with K-12. The quality or strength of intersegmental collaboration in all of these programs appears to be a factor in their success. Programs which operate only at the margins of a K-12 school may effect some change in individual students but are unlikely to contribute to overall increases in college preparedness of students at that school. On the other hand, student-centered programs can have positive effects, school-wide, if the K-12 leadership and faculty have a sense of ownership.

The evaluation of ACCESS, a program with both student-centered and school-centered strategies, demonstrates how dramatic improvements in student performance can occur when a program really becomes involved in the life of a school.

One study of the College Readiness Program found that the programs which obtained the best student outcomes were those that were most integrated into the overall instructional program of the host middle schools. Those CRP programs which had the greatest proportion of CRP students recommended for college-preparatory classes in the ninth grade were distinguishable from the least effective CRP programs on the following characteristics: 1) school leadership and commitment to the program; 2) strong and consistent involvement from the school staff; 3) supplementing of the schools instructional program by the project; and, 4) parental involvement in the educational lives of their children.

6. Some components of student-centered programs seem effective and especially feasible for higher education institutions to provide.
We have noted previously that there has been no systematic evaluation of the components of student-centered programs. Since there are persuasive arguments supporting comprehensive approaches to preparing disadvantaged students for college, we do not recommend that the University select single activities or program components as the basis for future outreach programs. Nevertheless, in the context of a comprehensive overall approach in which there would be a well-coordinated division of responsibility among the higher education segments and K-12, there are certain student-centered services that appear to be effective and especially feasible for higher education institutions to provide. These include the following:

a) Early information about preparing for college. It is crucial that students and their parents receive early information about what it takes to be prepared for college, including course requirements, the role of admissions tests, and financial aid opportunities. The information about college requirements and the admissions process provided by outreach programs often fills a gap for students and parents who otherwise might be unaware of college requirements and financial aid opportunities until it is too late.

The middle grade years are an especially critical time to ensure that students and parents understand the importance of beginning college-preparatory classes by the ninth grade. A current project of the Intersegmental Coordinating Committee (ICC) of the Education Round Table seems especially well-designed to address this need. A comprehensive set of multi-media materials have been developed to inform students and parents about college opportunities and requirements. This project goes beyond informational leaflets and makes the message come alive in a video, a handbook, and a packet for middle schools containing how-to materials such as suggestions on how to organize college awareness days.

b) Family involvement. In addition to early information about college opportunities, there are other key aspects of family involvement that can be effectively addressed in outreach programs. We note that the 1996 CPEC report includes a recommendation to increase activities that enhance family involvement in students educational progress.

We were especially impressed by the activities in some programs to encourage parents to support their child in completing the college-preparatory sequence. In AVID, for example, parents of ninth grade students sign a "contract" promising to keep their student in AVID and in the college track program throughout high school.

Many outreach programs provide evening and weekend events for parents to recognize academic achievement and to become familiar with a campus environment. Such activities supplement the student-support activities of outreach programs by bringing academic pursuits and university life closer to the personal experience of parents who may not have attended college themselves.

The evaluation of the High School Puente Project suggests that there is a need for sustained efforts to give parents the skills needed to support their children in preparing for college. Patricia Gandara (personal communication) states that .in spite of high attendance at parent workshops, parents appear to have internalized very few of the lessons presented and remain uncertain of how to help their children achieve their academic goals. Gandara further states that the evaluators are recommending that Puente shift its parent- involvement strategy away from workshops and in the direction of involving parents in conversations with each other and with others from the communities who have experienced successful educational outcomes for their children.

c) Academic counseling. It is crucial for students to begin a college-preparatory sequence by the ninth grade and to complete that sequence. All of the student-centered programs report that they currently provide some form of academic counseling. To be most effective, such counseling should be part of an ongoing relationship between the student and a knowledgeable and caring adult. In other words, academic counseling consists of much more than informing and encouraging students to take college-preparatory courses at one point in time. A good academic counselor should also monitor the student's performance, provide support and assistance when needed, and have periodic meetings with the student to discuss progress and postsecondary opportunities.

One very unfortunate trend in California public schools has been the enormous reduction in the number of school counselors. Due to budget reductions in K-12 over the past 10-15 years, many counselors have been sent back to the classroom. It is not unusual now for high school counselors to have caseloads of 500 or more students. Notwithstanding some recent increases in funding for K-12, it is unlikely that this trend will reverse dramatically.

Since there is such an acute need for academic counseling to help more disadvantaged students prepare for college, this may be an area where higher education institutions can make a key contribution. Campus staff could help organize and provide academic and college counseling services for secondary schools within their regions. All of the student-centered programs already provide such service to some extent. For example, Cal-SOAP consortia supplement the counseling function in local schools. As another example, K-12 students in the vicinity of UC Santa Cruz can communicate with EAOP staff through the Internet. However, our impression is that there is currently no overall design for coordinating such services across programs within a geographic or campus service region.

There is also a potential role for business in helping to support counseling services. The College Horizons Program coordinated by the Sacramento County Office of Education is an example of a non-profit organization providing college counseling on a regional basis.

d) Tutoring and mentoring. The findings of several of the program evaluations, as well as a substantial body of other research, indicate that tutoring is a highly effective strategy to help students succeed in rigorous college-preparatory courses. Many students can be successful in these courses if they can take additional time outside of the regular class period and have personal assistance. Since the college-preparatory sequence builds on prior knowledge and skills, especially in mathematics, the key is to prevent students from falling so far behind that they require remedial classes.

Tutoring also appears to be a relatively cost-effective intervention. Tutoring can work one-on-one or in study group situations. All of the programs included in this review provide some type of tutoring, and some have made tutoring a central part of the intervention. For example, EAOP, MESA, and High School Puente have all organized regular tutoring services for program participants. The College Readiness Program was designed with tutoring as the primary intervention to help Black and Latino students in the middle grades build an academic foundation to get ready for college-preparatory mathematics and English by the ninth grade.

College students are an especially good resource as tutors and also serve as role-models for K-12 students. An additional potential benefit is the recruitment of college students into the teaching profession. While many outreach programs already use college students as tutors in K-12 schools, there is currently no statewide system for recruiting, training, and placing college student tutors in K-12 schools and for training K-12 teachers to make effective use of tutors. A current project of the ICC and San Diego County Office of Education is developing a prototype and pilot test of such a system.

Community members and other adults can also be effective mentors. Through MESA mentors in the business community help build bridges for students to the world of work. However, we noted in our review of the evaluations that many programs struggle with organizing and implementing mentoring components. In the Puente Project, Gandara reports, The mentoring component is the most problematic, the most difficult to pull off, but in many ways holds the greatest potential for making a unique contribution to both students and schools.

As for college student tutors, there may be a need for a systemwide or even statewide design for recruiting, training, placing and making effective use of community members as mentors to K-12 students.

e) Study skills and specific academic skills. Many student-centered programs provide in-class instruction or special seminars on study skills and other specific academic skills that can help disadvantaged students succeed in rigorous college-preparatory courses. For example, MESA has a teacher at each site who serves as program coordinator and provides instruction to MESA students in study skills and test-taking.

AVID provides intensive instruction in note-taking, study skills, test-taking, and writing skills. This instruction is provided through the elective AVID class, and the instructional materials are standardized and packaged by the AVID Center.

f) Transition programs and summer residential programs. Transition programs help build bridges from one level of schooling to the next. Significant transitions occur for students moving from junior high to high school, from high school to college or university, and from two-year to four-year colleges. Transition programs provide academic classes, skill-building instruction, study groups, social support, and survival skills in a new and sometimes alien environment. Programs linking specific high schools with college and university campuses help increase the numbers of graduates from those high schools enrolling at the host campus.

Several of the programs reviewed in this study provide transition programs or other summer residential experiences. At UC Berkeley, for example, EAOP and MESA collaborate to provide a summer residential program for high school students. Middle College has self-contained high schools on two community college campuses. This program is designed for at-risk high school students with college potential.

Within the category of transition programs we would also include opportunities for individual students to take more college classes while still in high school. Some programs, such as Project Advance at Syracuse University, have organized opportunities for high school students to take college classes on their high school campuses.

g) College admissions and placement test preparation. College admissions and placement tests play a critical role in determining a students eligibility and competitiveness for the University and for many other higher education institutions. Test preparation activities can be quite effective, and several student-centered programs (e.g. MESA, Cal-SOAP) already provide test preparation activities for their participants.

Since test preparation services seems so on point in helping disadvantaged students to overcome one of the barriers to University access, these services could be offered on a much broader scale. Test preparation activities can be specifically designed for students who are academically under-prepared. A project reviewed in the 1992 CPEC report (The College Admissions Test Preparation Programs) showed substantial increases in underrepresented students test performance and overall college preparedness as a result of specially designed test preparation services.

Essential Principles about School-centered Strategies
The 1996 CPEC report estimated that 8.6 percent of underrepresented students statewide participated in the nine programs reviewed in that report. CPEC also estimated that only 7.5 percent of California elementary and secondary schools were involved in these nine programs. Regardless of how effective these programs might be or how much they might be expanded, they are only a part of the solution to increasing the numbers of college-prepared students.

Some of the programs included in this review combine student-centered and school-improvement strategies focused on specific schools. In addition, the University has a broader role in preparing teachers for K-12, providing ongoing professional development and, through admissions requirements and collaborative work on standards, helping to put in place a rigorous, college-preparatory curriculum.

In our review of the professional development and school-centered strategies in various programs we identified four essential principles of effective practices in school-centered strategies:

1. School-centered programs can provide staff development that helps teachers support students success in college-preparatory courses.
Getting more disadvantaged students to take the college-preparatory sequence is part of the solution. However, too many students drop out of these classes or perform poorly. Many more students could be successful if their teachers were adequately prepared to provide support. What seems effective is a combination of high expectations, motivational support, and some specific skills that teachers can impart to students e.g. study skills, time management, test-taking strategies.

Many of the student-centered programs provide this type of professional development to K-12 teachers. Benefits thus accrue not only to students participating in the program but to other students as well. High School Puente has made this a major thrust. AVID provides extensive staff development for school teams that include teachers of core academic classes and counselors, as well as the teacher of the AVID elective class. The strategies that support AVID students are reinforced by teachers in all curriculum areas. Other programs such as ACCESS have also provided staff development that helps teachers support less-prepared students in a college-preparatory curriculum.

2. School-centered programs can improve the quality of curriculum and teaching in core academic subjects.
A strong core academic curriculum and effective teaching are at the heart of effective schools. The California Subject Matter Projects exemplify the high-quality professional development that is needed to assist K-12 schools in improving curriculum and teaching in all levels of K-12 education, including college-preparatory courses in high school. Evaluation studies have demonstrated that the Subject Matter Projects are making a significant contribution to the professional development and pedagogical practice of K-12 teachers.

3. School-centered strategies can help enhance the academic culture of K-12 schools.
One factor that seems to distinguish high-performing schools from low-performing schools is the existence of an academic school culture. The features of an academic school culture include the morale of faculty, staff and students, and the image of the school in the community. An academic culture is expressed in schools in recognizable ways such as respect for instructional time, homework policies, the proportion of students enrolled in college-preparatory courses, and acknowledgment of academic success along with athletic success of the school.

ACCESS is one example of a program that has helped develop an academic culture in low-performing schools. The evaluation of this program shows impressive improvements in schools which initially had virtually none of the features of an academic school culture.

4. Professional development programs can help improve the quality of teaching in low-performing schools.
Some programs such as ACCESS and others focus on improving the quality of teaching and learning in specific low-performing schools. Other broad-scale professional development programs have been designed to assist teachers who work in the schools most likely to be low-performing. As noted earlier, the Beginning Teacher Support and Assistance Program (BTSA) is a successful example of such a program. New teachers are most often assigned to urban schools that are low-performing. BTSA has helped to reduce the attrition of new teachers and thereby enhances the quality of teaching in many schools serving students from low-income families.

V. Evaluating Outreach Programs

This chapter addresses the evaluation of outreach programs. We begin with a review of evaluation procedures and designs currently used to evaluate outreach programs. Next, we suggest some essential principles to follow in evaluating student-centered and school-centered programs. Finally we present a multi-level research agenda for addressing key questions about the effectiveness of programs.

A Review of Evaluations of Outreach Programs
We have noted that current evaluation data are of limited value in making policy decisions about future outreach strategies. In this section we present an analysis of current evaluations to illustrate some of the difficulties as well as some promising practices that illustrate how the difficulties might be overcome. To assess existing evaluation practices for outreach programs, we reviewed evaluations of an array of programs in California and in other states. While these programs use a wide array of approaches to evaluate outreach activities, a number of common features emerge.

One feature these studies share is that long-term outcomes are rarely measured. For the most part, the indicators in these studies are short and intermediate outcomes drop-out rates, course-taking patterns, test scores rather than rates of college attendance and graduation. Many programs target students in the middle grades, some even earlier. It may be four to six years before a student enters college and another four to six years before she completes college. Most programs do not have the resources to track students for this extended period of time.

Following students over an extended period is possible: an evaluation of AVID, for example, followed a group of students for four years to examine their rates of college attendance (Mehan, et al, 1994). Significant evaluation resources are needed to conduct these types of evaluations systematically. Developing indicators for college completion and career attainment is something that none of the programs reviewed had attempted to do.

Most of the evaluations reviewed were not explicit about how the various program components and performance indicators fit together. One evaluation of the College Readiness Program examined the recommendations made by teachers for 9th grade college preparation course enrollment, comparing students in the program with a comparable group of students who did not participate. The study found that the students in the program were more likely to be recommended for placement in college preparatory courses, with better results in math than in English. Why or how did these changes come about? Why were results better in math? These questions were not asked. While any answers to these types of questions are not likely to be definitive, hypothetical answers rooted in a theory of what may have prompted the changes are

possible to attain. Programs, however, are often under pressure to show "results" (frequently, numbers of students or schools participating). Process outcomes, even unexplained ones, may be a great priority than an examination of the underlying theory. Incentives, therefore, need to be developed to encourage programs to examine their practices more reflectively in their evaluations.

Another common feature of evaluations of outreach programs is that virtually none attempt to make systematic comparisons among program components. One reason for this may be a basic constraint of having only a single program to evaluate. Comparison in a single program is possible, but not easy. It would require comparing students given different combinations of program "treatments," within the same broad outreach intervention. One reason this is not done may be cost; more pervasive may be the attachment programs feel to their mix of services and approaches. Getting programs to compare school-centered and student-centered interventions, or middle school and high school focused programs may be difficult. Comments from local program staff in the evaluations, however, do suggest that such comparisons are desirable.

In none of the evaluations examined were random assignments to treatment and comparison groups implemented. As is the case with many social policy interventions, random assignment may not be feasible for outreach program evaluation. The majority of evaluations used some type of constructed comparison group design. These designs were carefully and rigorously implemented, but suffer, to varying degrees, from the basic limitation of constructed groups: the influence of unobserved variables.

One evaluation that illustrates some of the difficulties in constructing comparison groups is Florida's evaluation of its College Reach Out Program (CROP). CROP is a statewide program that attempts to increase the number of "economically and academically disadvantaged youth" completing post-secondary education (PSEC, 1994, pp.2). CROP tries to meet this objective by strengthening the motivation and academic preparation of participating students. The program is run by local consortia of schools and secondary institutions awarded contracts through a competitive grant process. In 1993 there were 25 local projects serving 4,799 students in middle and high school grades (PSEC, 1993, 1994).

CROP has been evaluated in each of the last two years. A "random sample" of students from grades 6-12 in Florida's public schools was taken with CROP participants compared to the rest of the sample on a number of short and long-term indicators. Examples of these indicators used were promotion to higher grades, better college-prep course-taking patterns and rates of college attendance. The CROP students performed better on nearly all of the indicators compared to the group not participating in the program.

As a research design the CROP evaluation is rigorous, its findings persuasive. However, as with most evaluations, some difficulties remain. An important point to note is that "random sampling" is not the same thing as random assignment. For random assignment conditions to be met, individuals who are candidates for a program must be randomly placed in either treatment or control groups, groups that can be then compared without bias. The random sample used in the CROP evaluation samples a number of students from the larger universe of Florida's secondary school attendees, and then compares outreach program participants and non-participants. This design is a modified version of the constructed group studies discussed earlier. Whatever its persuasive properties, the study is not free of the potential bias involved in all constructed group studies.

Does this bias matter for the formulation of outreach program policy? The counterfactual that CROP and most outreach program evaluations operate under is something akin to: what would have happened to the students if they did not participate in the program? The question is usually answered by comparing patterns of college preparation activity and college attendance among two groups of students: outreach program participants and non-participants. In most of the studies reviewed, comparison groups were constructed based on socio-economic criteria. Additionally, the selection criteria for many California programs is that program participants already have the "ability and preparation" to do college work (CRP, 1994). Comparing these students with others from similar economic or racial background, in cases where student participation is voluntary, may lead to constructed groups of students that are not necessarily comparable. Outreach program participants may come in with significantly greater preparation and motivation for college.

In the CROP program, the group of program participants is not matched with a comparable demographic group. CROP students, on average, are poorer, have lower levels of family education, weaker grades and test scores before entering the program. A larger percentage of the students are African-American or Latino than in the comparison group. CROP students are selected for the program by the local consortia. Among the criteria for admission are: first generation college student, a GPA of 2.5 or below for the previous school year, no college preparation courses on transcript, and strict income criteria and poverty-level guidelines (PSEC, 1994).

Taken as a whole, the features of the students in the CROP program allow for the counterfactual to be reasonably evaluated. That these students score better after program participation than a comparable group of students, who, absent CROP, are predicted to do better on the indicators, is persuasive evidence of CROP's impact. In this case, any potential biases are at least partially overcome by a careful evaluation design.

Essential Principles in Evaluating Outreach and College Preparation Programs

In this section we take a step back from the specific program evaluations to review the lessons and experiences from over 30 years of evaluation research and the implications for the evaluation of higher education outreach programs. Our purpose is to identify the important considerations and essential principles in evaluating outreach programs and other programs to improve college preparation of disadvantaged students. These principles may be applied both to student-centered and to school-centered program evaluations. Evaluation of school-centered and systemic programs is much more complex, however, especially in attempts to ascribe changes in student performance to the interventions provided by the program.

1. A student information system is needed for program evaluation.
An essential principle in all program evaluation is that good evaluation requires valid and reliable data. In evaluating outreach programs accurate information is needed on the numbers of students participating in programs and the benefits that accrue to these students from the services provided. These programs have both immediate and longer term goals (e.g., eligibility for the University). Students may participate in more than one program, either concurrently or sequentially. While evaluation of the individual programs could be improved through more uniform and rigorous data-collection procedures, we believe that a longitudinal student information system is needed to evaluate the separate and collective effectiveness of student-centered programs.

2. Program goals and intended outcomes must be defined.

Evaluators ask questions about specific sets of desired social ends. Before answering, or even asking, these questions, we must determine the ends we wish to achieve. This may seem an obvious point, but in most policy domains the answer is far from clear. Such is the case with higher education outreach programs. Though most observers would agree that the ultimate goal of outreach programs is for students to attend and complete college, an evaluation strategy that focuses exclusively on the outcome of college completion would be extremely limited. The reason for this is that college completion sits near the end of a long chain of actions students must undertake beginning long before they are even able to apply to college. Students need to stay in school, take strong academic courses, do well in these courses and in placement tests, apply to college, and get a degree. Outreach interventions target students throughout this chain, often focusing on different links of the chain. A useful distinction, therefore, can be made between three types of outcomes in higher education outreach programs:

a) Short-term outcomes include improved performance in elementary school, increases in school persistence, increased college entrance test taking, and increased a-f course taking in school.

b) Intermediate-term outcomes are the consequences of this first set of student actions: higher grade point averages, better a-f course performance, improved scores in entrance examinations, improved eligibility rates for higher education, improved rates of college attendance and reduced remediation needs. An additional intermediate-term outcome might be successful collaboration among elementary, junior high, secondary schools and higher education institutions.

c) Long-term outcomes lie at the final end of the chain: higher education performance and graduation, career attainment, life-long earnings, and graduate school performance. Also, improved secondary schools for all students might be a long term outcome for some types of outreach programs.

One could add additional outcomes to this list but would be hard pressed to remove any of these "desired ends" from the list of outcomes. Desirable outcomes can be converted into performance indicators, descriptions of what can be observed that will signal achievement of activities, objectives and goals" (Smith, 1989 pp. 6), which can provide a comprehensive list of desirable ends for outreach programs. They differ from the broad statements of mission, goals, and outcomes these programs often have in three ways. First, they are measurable. Second, the indicators follow directly from program activities, offering a way to assess whether programs have successfully and/or faithfully implemented their proposed tasks. Third, performance indicators can be arrayed in a hierarchy from short-term to long-term objectives, allowing evaluators to see how each part of the chain contributes to the ultimate program or policy goals.

A number of lessons can be applied to the evaluation of outreach programs. First, programs can and should develop clear and measurable performance indicators. Additionally, programs should be clear about the part of the chain their program activities focus upon. While most programs will claim the ultimate goal of student success in college, some programs conduct activities closer to this long-term goal than others. With this in mind, programs might focus their evaluations on those indicators that they can reasonably be expected to address and measure. The linkages among performance indicators and the overall effectiveness of programs can best be assessed where those indicators are most easily found, at the university or system level.

3. Program interventions must be clearly described and implemented.
All programs and policies have more or less explicitly defined programmatic components or elements that are believed to bring about the types of "results" we discuss in the previous section. Again, determining what these variables are for outreach programs is more complex than it seems at first glance. Outreach programs involve a wide array of components, ranging from academic support and counseling, to curricular reform, to teacher development.

The condition of existing evaluation research on outreach programs offers little guidance in determining which of the multiple components are more or less useful. Evaluation researchers suggest organizing and categorizing program components into ways that allow for systematic inquiry (Patton, 1986). One categorization of program activities might distinguish those efforts that are student-centered (counseling, academic support, test preparation, motivation activities) from those that have a school-based focus (curricular and assessment reform, professional development of teachers, K-12 and higher education collaboration). Another potential classification might be between program components that emphasize cognitive change in students and those that focus on effective factors that contribute to student college going. Other key dimensions of outreach programs that might be studied include program time and intensity, targeted grade levels, and others.

In short, the array of program elements in outreach programs needs to be geared toward building up cumulative insights from evaluation research. A working categorization of program dimension could be developed so that all actors in outreach programs at the system, campus, and school levels are aware of it and coordinate around it. This does not mean that programs will all emphasize the same program dimensions. Rather, the goal is to have a standard template that allows for the insights and results from local programs to be described and potentially compared.

4. Evaluations must be carefully designed to attribute results to interventions.
Perhaps no issue is more hotly contested in social research than the issue of causation. Evaluators spend an extensive amount of energy trying to attribute results to social programs. The main difficulty comes from the very artificiality of evaluation research. In designing an evaluation, evaluators abstract certain features of programs and people from the real world. In attributing causality, we must deal with these external influences on people or programs. To claim a program or a set of program components were successful, we must ask what other factors may have contributed to the observed result.

In outreach programs, when we observe a participant going on to college, can we say this was caused by the program she participated in, or by other student attributes such as motivation or previous academic preparation? Even if students change during the course of the program, how do we know that the change was brought about by the outreach activities? Perhaps the student has just gone through a period of personal development.7

Even if one is confident of the estimates of causal effect obtained after controlling for extraneous variables, this may not tell us why and how these effects come about. What is it about the interaction or sequencing of program components that causes a desired result to occur? Analysts who have taken this second path to address the causality issue try to answer questions like these by developing more explicit theories of designed policies and programs. In evaluation research, a program theory is a means-end hierarchy, a cause and effect linkage of program activities with outcomes" (Smith, 1989

pp.5). It is an idealized model that shows how program features interact to influence performance indicators, and produce desired outcomes.

A program theory contains three basic elements. The first can be called the problem definition (Rochefort and Cobb, 1994). All policies and programs presume a certain definition of the problem that guides the intervention. In outreach programs, for instance, one can conceptualize the problem as one of student characteristics (motivation, ability, academic preparation), school characteristics (poor curriculum, poor counseling and support for students), higher education admissions policy (eligibility standards, coordination of K-12 and higher education) or some combination of these and others. Different problem definitions will inhere different programs with different emphases. A first step in clarifying the program theory is to make explicit this problem definition both within and across programs in a given policy domain.

Problem definition leads to a set of program components. In the second element of a theory, these components are linked together to create a program logic (Smith, pp. 53). The program logic maps how the components fit together to produce program objectives or goals. The simplest way to represent program logic is with a set of if-then statements that link the components together. In outreach programs, if students participate in the program then they will stay in school and get better grades. If this occurs, then they will take harder courses, improve their test scores and so on. How far one goes in completing the chain depends on program goals which themselves follow from the definition of the problem.

The third element of a program theory links program logic to program activities through the use of performance indicators. For each component of the program, indicators are developed to show whether the program has successfully met all of its objectives.

Below each if statement is a performance indicator that measures whether that step has been successfully achieved. To determine whether students stay in school, drop out rates will be compared. If these are reduced, in the next step in the chain, better grades can be examined. When long term indicators such as college attendance are not successfully achieved, program theory allows the evaluator to reconstruct a sequence of events and determine where in the chain the program may have fallen short. This type of evaluation can be done for individual programs or whole systems of programs using the same tools. In some cases, the weak link may be a program component that was not implemented. In other instances, all components may be implemented but a flaw can be detected in the program logic or problem definition. In both cases, program theory is used by evaluators to answer the difficult questions of why and how a set of program outcomes occurs.8

In summary, the choice is not between control strategies and program theory both are necessary components of developing causal inferences in evaluation research. Even with the most rigorous controls, an evaluation that cannot tell us why or how outreach programs are successful is of little use to policy makers or practitioners. Similarly, the most elegant program theory will be of little use if we cannot be sure the links in the chain occurred and were caused by the program intervention. Though different schools of evaluation research emphasize one approach or the other, our conclusion is that both controls and program theory are necessary components of the systematic evaluation of outreach programs.

More information on procedures used in comparison group evaluation designs is presented in Appendix A.

5. Evaluations should connect outcomes and cost.

By studying the costs as well as evaluating the effectiveness of a number of interventions aimed at a common goal, policymakers gain an understanding of the relative worth of each intervention. This coupling of standard evaluation procedures with cost analysis enables a decision maker to choose the program or set of programs that provides the best educational results for any given state appropriation.9 For example, data in California suggest that the state has purchased, on average, only an extra four minutes for the school day from the hundreds of millions of dollars it has spent on longer school day incentives. While state funds led some districts to restore the sixth period of high school, more often there was little impact on the course-taking patterns of high school students. On the other hand, California mentor programs led to substantial changes in school procedures at relatively low costs. These general figures of cost and program impact may suggest that California legislators might better redirect funds from longer school day incentives to the mentor teacher or other more cost-effective programs.

Although this illustration demonstrates the power of combining cost analysis and evaluation, such a cursory approach is not precise enough to enable a policymaker to choose among a number of similar cost-effective alternatives. What is needed is a more systematic approach to combining the evaluation of the programs impact with an assessment of its costs. One such approach is cost-effectiveness analysis (CE). CE evaluates a series of alternative programs, all of which seek a common outcome, by comparing the ratios between each programs costs to each programs effectiveness.10

One limitation of cost-effectiveness analysis is that it can be used only to compare programs with similar or identical goals. When a comparison of programs with disparate goals is needed, a second type of analysis, cost-benefit (CB) should be employed. CB analysis evaluates a series of alternative programs by comparing the ratios between the programs costs to the monetary value of the programs benefits. This approach presupposes that a programs results can be quantified in monetary terms. CB analysis, for example, could compare two short term vocational education programs by looking at the jobs (and salaries) of the participants after completion of each program. A problem with this approach is the difficulty of determining monetary gains (such as how much money students will earn). Since determining the monetary benefits of these outreach programs would be extraordinarily difficult, this section does not look at CB analysis in depth.

Any analysis of a programs costs begins with two assumptions: 1) the cost of any program is the value of all the resources that the program uses, and 2) costs refer to the least expensive set of alternatives that will satisfy a given need.

Given these two assumptions, the question arises: Why can't the costs of a program be determined simply by looking at the budget expenditures for each education program or state reform? While such a straightforward approach would facilitate the analysis, there are four reasons why a budget fails to predict a programs true costs accurately. First, budgets often do not include all resources used in a program. For example, a budget does not account for contributed resources or other unpaid inputs such as a free building or volunteer classroom aides. Second, budgets generally do not include costs of resources such as buildings or heavy equipment that are used in a state reform but have been paid for in past years. Third, budgets may lump funding of a number of different state interventions together, making it difficult to distill the separate costs of each program. Finally, budgets represent plans for how resources should be distributed and often do not reflect the actual allocation of funds once a program gets underway.

What is needed is an approach to studying costs that identifies the startup, medium, and long-term cost, as well as the hidden costs of the programs. Unfortunately, little analytic work exists on the true costs of different outreach efforts.

To conduct a cost evaluation the best place to begin is by following the money trail. Evaluators need to know where and how outreach interventions have allocated resources. In High School Puente, for example, how much was spent on program coordination, staff development, or community coordination? The next step would be to explore cost-effectiveness, assuming that most outreach interventions have the same objectives, e.g. admission and persistence in a four-year university. Henry Levin states the case for cost-effectiveness this way:

[Cost-effectiveness] integrates the results of [program] costs in such a way that one can select the best educational results for any given level of educational results for least cost. It is important to emphasize that both the cost and effectiveness aspects are important and must be integrated. Just as evaluators often consider only the effects of a particular alternative or intervention, administrators sometimes consider only cost. In both cases, the evaluation will be incomplete.

Although cost-effectiveness can provide important policy information, it is limited to comparisons among programs with similar objectives. A possible example would be the use of loans, scholarships, or higher-base salaries as a magnet to attract better-quality beginning teachers.

A Research Agenda for Evaluating Program Effectiveness
There is no one study, or type of research approach, that should be emphasized. A multi-level, multi-method approach is most suitable for asking the diversity of questions stakeholders currently have about outreach programs. Four types of approaches deserve careful consideration.

1) Individual studies of students Individual studies follow one or a small group of students through a program or set of programs over a period of time. Methods used in these studies are qualitative, involving "thick description" of students lives and their interaction with programs and program staff. These studies can answer questions such as:

-how do individuals respond to outreach programs?
-what long-term effects do programs have on students?

Similar studies with a larger group can compare how different students respond differently to the same program or series of interventions. Most evaluation research, by varying programs or components, assumes that students lives do not change and that all students are roughly the same. Careful micro-level studies avoid this trap, holding programs constant while varying the personalities and life situations of students to see how different students respond to outreach efforts.

2) Longitudinal, time-series studies of students These studies follow a large cohort of students over an extended period time. They examine how a constellation of attitudes and behaviors of students change over time and are influenced by program efforts. Michael Knapp (1994) notes that following student behavior over time may be the best control strategy for seeing the real effects of program efforts. The general form these studies take is to start with baseline set of measures prior to program participation, describe the program intervention, and then conduct systematic follow-up to show the

pattern of student change after program participation (Knapp, 25). The main advantage of such a design for outreach programs is in following students through the chain of events that lead to college success. Tracking students through college attendance completion and career choices can develop the long-term indicators that most local programs cannot track.

3) Comparative studies of programs and program components As noted earlier, outreach programs vary on a number of programmatic dimensions. Local programs have expressed the desire to compare these features but such comparisons are best conducted at the systemic level. Comparative studies of programs can ask such questions as:

-what is the relative impact of student and school-centered outreach activities?
-should programs focus on early grades, middle schools, or upper-grade high schools?

Comparative studies rarely compare whole programs; rather they vary key programmatic dimensions and mixes of services. In addition to program features, cost variables can also form the basis of a comparative study. This research can be done confidentially if local programs fear they will be pitted against one another in the evaluation.

Comparative research is usually done under non-experimental conditions. However, when designed carefully, such studies can uncover the range of conditions that lead to different program outcomes.11

4) Backward mapping These types of studies start with measures of successful programs and ask what about these programs are successful and what can other efforts learn from them. Successful programs are usually identified through reputational measures though more systematic indicators can be used to identify such efforts. The goal of backward mapping studies is to identify "exemplary practice" and explain the conditions and factors that produce it (Knapp, 1994). Backward-mapping studies can also be done on program failures, to examining why a program did not work, take hold, or get implemented.

5) Other possible studies Many local evaluations have professional development for teachers as an important outcome. These programs theorize that well trained and enthusiastic teachers can make significant differences in student lives and outreach program success. Longitudinal studies (see 2 above) can track change in teachers through professional development and possibly link these changes to changes in student attitude or performance. Similarly, some program managers argue that school reform is an important outcome of outreach efforts. Time-series studies that track school change and its effect on students may be appropriate for these types of programs.

Many outreach programs involve collaboration among K-12 schools and institutions of higher education. An often unstated assumption of these programs is that better collaboration will lead to better student outcomes. Studies of the collaborative process may provide insight to how outreach efforts can work better. A model for these types of studies are the evaluations of human and social service collaboration that have been conducted in recent years (Kagan et al, 1990, Gomby & Larson, 1992).12

VI. Implications for the University

The purpose of this chapter is to examine what the literature review and evaluations of current programs tell us about the appropriate role of the University in outreach and other college preparation programs. New admissions policies will almost certainly have an initial effect of reducing the numbers of students admitted from groups with historically low eligibility rates especially on the more competitive campuses. The role of outreach and other efforts to improve the college-readiness of disadvantaged students will become more important than ever before. It is clear that stepped-up activities on multiple levels are needed to meet the challenge. In this chapter we draw upon the findings of evaluation studies to suggest outreach strategies for the short-, intermediate-, and long-term. We also discuss the need for a comprehensive K-16 plan for improving college preparation.

Outreach Strategies to Enhance Diversity
There are two ways that the University can increase access and success in higher education for historically underrepresented students without compromising standards. First, it can garner a larger share of the existing pool of qualified students. Second, it can increase the size of the pool. The problem is of sufficient magnitude that both approaches must be utilized. In the longer term, increasing the size of the pool is the clear strategy of choice, but especially in the shorter term, strategic recruitment has an important role to play.

Short-Term Strategies
This section provides examples of activities the University can undertake immediately to increase diversity. We want to emphasize that while these activities are an essential piece of the diversity puzzle, they are not as powerful nor as critical as the intermediate- and longer-term solutions.

1. Increasing the Eligibility Pool
The 1990 CPEC eligibility study13 provides us with the latest available data we have about the eligibility pool for the University. For our purposes there are really two pools. The first is comprised of students fully eligible to attend the University of California they meet all the course-pattern, grade, and test requirements. In 1990 those students represented 12.3 percent of the California high school graduate cohort. There is another pool of 6.5 percent, made up of students who are virtually eligible to attend the University. One portion of this pool is made up of students who have taken all the required courses and whose grades are sufficiently high that they only need to take the SAT to be eligible.14 The second group of students in this almost eligible pool are students with good grades who are missing one or more of the tests and for whom the prospects of eligibility are quite high, even with relatively low test scores. For this group of students, the barrier is the test. It also happens that this group is disproportionately Latino. For every four Latino students who are fully eligible, there are three who are almost eligible. A short-term strategy targeting almost eligible students in areas of the state with high numbers of historically underrepresented youth to ensure that the appropriate tests were taken could materially increase University eligibility rates for these students. Students should be encouraged to take the tests early and often perhaps as early as the tenth grade and to receive detailed feedback so that they can make up any deficiencies by the twelfth grade.

2. Focusing Recruitment Efforts
A second, recruitment-based activity, should also enhance diversity in the University. In two of the University's premier outreach programs MESA and EAOP, large numbers of historically underrepresented students are reported to be University-eligible. However,

not all of these students opt to enroll in the University. In fact of the 7,777 seniors whose eligibility status can be determined, slightly less than half 3,653 were eligible for the University of California. However, only 1,446 students actually enrolled in the University, for a capture rate of about 40 percent. A concerted effort to zero in on a University-wide strategy to increase the take from this pool of already University- eligible students should bear immediate fruit. Again, these students are already University-eligible; the University would merely be getting more of them to enroll.

3. Increasing Community College Transfer
Currently, about 30% of University of California undergraduates are transfer students, most from California's 107 community colleges. The Master Plan conceived of an even larger role for community colleges in providing lower division instruction for students who would then transfer to the University of California. Although our review has focused on K-12 eligibility and K-12 partnerships, we would be remiss if we didn't note that many of the issues surrounding diversity need to consider the community colleges as part of the strategy. Community colleges offer two generalized kinds of transfer opportunities for California youth. First, they represent a low cost option for students who are eligible to attend the University but for a variety of issues (often related to costs) do not choose to attend. These UC-eligible students, upon transfer to the University, have successful completion rates which have historically approximated completion rates for upper-division students who began their collegiate careers t the University. The other group of students are those who are not UC-eligible upon completion of high school and need their community college years to gain the skills necessary to compete in a University environment. For many high school students, the gap between their early high school course-taking patterns and their scholastic performance with University expectations is so great that even intense high school intervention cannot effectively close the gap. For these students, community colleges provide an important opportunity. The Puente project, which focus on improving transfer opportunities for Latino community college students, is an example of a community college-focused program which can improve diversity. While some university campuses have very strong working relationships with local community colleges and work hard to recruit potential students, others do not. Along with enhanced efforts to support programs aimed at community colleges, a strategic effort to increase the take rate from the existing community college pool of eligible students could be effective in the shorter term.

4. Better feedback to high schools about postsecondary performance of their students.
The University sends powerful messages to K-12 schools through its admissions policies, high school course requirements, and placement tests. Just as students and families can benefit from early information about preparing for higher education, so can the schools improve their success in preparing students for the University if they receive clear signals about requirements and feedback on their results.

The University currently tracks performance of entering freshman through their first year at the University and, in the past, prepared reports summarizing the performance of students from each high school. We were told that the University no longer sends these performance reports to the schools because of the expense involved and because it appeared that the high schools made little use of the results. We suggest that the University reconsider this decision as new admissions policies are implemented.

In reprising national trends in K-16 partnerships, Haycock (1996) describes a process of intersegmental faculty-to-faculty discussions of the performance of students from specific high schools on admissions and placement tests and on their performance at the University. Such discussions can be organized on a regional basis. By involving

University and K-12 faculty in these discussions, the process might generate more interest and improvements than are achieved with printed information only.

Intermediate-Term Strategies

A second level of the strategy to increase the University participation of disadvantaged, underrepresented students emphasizes activities that would improve results in the intermediate term perhaps over a two-to-five-year period. A major focus should be on enhancing the effectiveness of current student-centered programs especially EAOP and MESA, which are the Universities largest programs, but also some of the other promising comprehensive programs, such as AVID and High School Puente. These latter programs deserve consideration for expanded participation by the University and are also good examples of the type of professional development that can lead to higher quality implementation of other outreach programs.

MESA and EAOP describe a comprehensive set of student-centered services, but we understand that, particularly for EAOP, there is wide variation among campuses in the extent of implementation of program components and in the extent of follow-up with individual students. The University should institute professional development activities focusing on effective implementation of key components of student-centered programs.

As we noted in Chapter IV, our review of the components of student-centered programs suggests that some of these activities are especially important to include in strategically-timed, comprehensive interventions. We would emphasize the following four activities as the scaffolding for student-centered programs: 1) early information to students and families about preparing for the University; 2) academic counseling to ensure that students enroll in the required (i.e., a-f) high school courses; 3) tutoring and mentoring to ensure that students are successful in college preparatory courses; and 4) admissions and placement test preparation activities. If the University moves toward a performance-based admissions policy, it will be essential to provide extensive information about the tests to students, parents and faculty.

Long-Term Strategies

Our best synthesis of the available evidence is that what works best in preparing more students for college is whatever helps students overcome the barriers. While this conclusion seems tautological, it is inescapable. The student services components of many of the programs included in this review clearly help many students overcome the barriers. However, student-centered activities cannot compensate for poor curriculum and poor teaching. In the longer term, the University can only meet its goals of serving the diverse population of this State if it joins with its higher education and K-12 partners in improving the effectiveness of K-12 schools.

A strong case can be made for the University to invest resources in collaborating with K-12 in efforts to make fundamental improvements in low-performing schools. All of the research on effective schools, as well as the evaluations of the systemic initiatives and school-centered programs, tells us that a part of the solution has to focus on assistance to low-performing schools in a long-term improvement strategy.

We know from broad-scale professional development programs (e.g., The Subject Matter Projects) that such efforts can make a difference in the quality of teaching. We also know from small-scale school improvement efforts such as ACCESS that it is possible to raise the overall quality of curriculum and teaching in low-performing schools and that doing so can help increase the numbers of college-prepared graduates.

What is needed varies with the quality of the school and the extent to which an individual student is on track to college academically and motivationally. Several current programs such as ACCESS, AVID, High School Puente, and CAPP are examples of current programs which combine student-centered and school change-based strategies. The experiences and successes of these programs can help point the way toward expanded efforts to assist low-performing schools.

One of the intriguing suggestions in the most recent CPEC evaluation report is that we must make schools more like the student-centered programs. In other words, we need to find a way to get schools to institutionalize the practices that seem most effective in the student-centered programs. While this is a daunting task, there are lessons to be learned from high schools which may already be on the way to this goal.

Some high schools are much more successful than others in graduating students who are well-prepared for university-level work. Several years ago, the California Department of Education convened a three-day symposium to examine factors in high schools associated with successful college preparation of underrepresented students. Invited to the symposium were representatives of 21 California high schools that were relatively successful, when compared to high schools with similar student populations, in sending Black and Latino students to California's four-year public universities. Symposium participants were asked to give their best professional judgment as to the reasons for the relatively high college-going rates of their graduates. The proceedings were synthesized and formulated as recommendations to other high schools for improving the college preparation of underrepresented students.

The important lesson from this symposium is that the practitioners viewed college preparation as an integrated set of activities, sustained over time, within a school culture that supports academic success. The existence of an academic school culture and the commitment of school leaders and faculty to preparing underrepresented students for college were of overarching importance.

There was clear endorsement of the components that comprise outreach programs academic preparation, college information, student support services, etc.but it was not the components as separate activities that seemed to make the difference, but the manner in which these activities interacted in a school-wide effort. These practitioners strongly advised institutions of higher education to work collaboratively with K-12 schools to improve college preparation and to avoid fragmented efforts which operate at the margins of the school. This leads us into our next section in which we lay out the essential elements of a comprehensive framework.

Need for a Comprehensive K-16 Framework
The state of California needs to mount a massive effort to build the capacity of the K-16 education system to provide an opportunity to learn to all students. The University needs to define its system-wide role within that plan, and each of the universities campuses needs to play a part.

The University has several roles in an overall K-16 plan. First, the University must be an active, contributing partner with the other segments of higher education and K-12, committed to the notion of equal opportunity to high quality education. Secondly, the University has a role as the most selective institution of higher education, committed to the notion of quality and diversity among its students. Third, the University has a role as a system of distinguished campuses, each with its own unique set of circumstances and

characteristics to which it needs to respond. Each of these roles is vital to the University none can be neglected or overlooked. Each role suggests a different set of objectives.

1. The University as Partner - California is best served educationally by an education system in which every part is working well from pre-school programs through graduate and professional schools. The University has maintained and will continue to play a central role in contributing to the overall health of the states entire education system. This role was most recently exemplified in the California Education Round tables initiatives to improve educational opportunities for all of California's citizens. The need is so great that only a comprehensive K-16 effort which enhances the overall quality of schooling in the state can address it.

2. The University as a Selective Public Higher Education Institution - The Regents and the universities Outreach Task Force have made it clear that the University remains committed to quality and student diversity. Both goals are important and should be pursued. The first goal points to a recruiting or selecting approach where the University aggressively recruits students who may be already on the road to becoming eligible for a university education, even without a special intervention. The purpose of these efforts is to ensure that these students select a University of California campus. A second approach is to aggressively support programs which take the next tier of university-preparedness and focus energies on groups of students showing high potential for University work, but who may need some selective intervention to propel them from non-college attending status to University-ready students.

3. The University as System - The third role for the University comes in its capacity as the center piece of a collection of distinguished campuses, each with its own outreach priorities, determined largely by its current and emerging admission standards and by unique features of its region. For these individual campuses, it makes sense to provide them the flexibility to design outreach programs which best suit their needs. Just as for the system as a whole, individual campus approaches call for a combination of strategies, the appropriate balance of which is best determined locally. Whatever the local configuration, it must fit within a framework established by the system, working closely with the campuses. The elements of such a framework are described in the next section.

A Framework for Program Coordination and Service Delivery
The current outreach efforts of the University are inadequately coordinated, unsatisfactorily documented, and poorly evaluated. What is currently lacking is a framework for coordinating and delivering all of the outreach programs and related services. Establishing such a framework will not be easy, but is essential.

The Office of the President must play a leadership role in building this framework, working closely with the campuses. First, the Office of the President needs to be explicit about the ultimate long-term outcomes it seeks. Is it to focus on university admissions, or university completion? Are there other long-term major objectives? Secondly, the Office of the President, working closely with outreach administrators, needs to convert the long-term goals into shorter-term outcomes which are then converted into performance indicators which are both measurable and program-linked.

For purposes of this discussion we have focused on the goal of increasing the numbers of disadvantaged, underrepresented students who not only enter the University but who persist to an undergraduate degree. Thus the level of preparation of students must be high enough not only to get them to meet eligibility criteria, but to enable them to be successful. Setting the goal as college graduation makes the challenge for outreach

even more difficult. It also means that the University must track students during their undergraduate education and monitor their success.

Centralized vs. Decentralized Program Administration
As in any multiversity, appropriate systemwide and campus roles are at issue. there is a need to clarify appropriate roles for the Office of the President and the campuses in programs administration. For wide-reaching programs, decisions regarding administrative authority are crucial, both systemwide and for the campuses.

Our best judgment is that the systemwide office should primarily be responsible for establishing the accountability benchmarks and process and identifying key components of successful programs. The responsibility for determining the best approaches within that framework in order to achieve the prescribed outcomes lies with local program administrators. Once goals are clarified, performance indicators determined, and comparable data collected, local program administrators are best situated to ascertain the most appropriate strategies to apply. It is the systemwide office, however, that is responsible for the next step, which is to hold campus programs accountable for the results. As we have discussed, existing evaluations have little helpful information about which programs deserve to see their budgets increase or decline. Given the growing level of student need and the shrinking level of resources, it would be irresponsible to not build both positive and negative performance incentives into these progress.

Eligibility and Competitiveness
An issue which is directly related to the appropriate role of the university in all this is the issue of eligibility versus competitiveness. It has proven difficult to expand the eligibility pool of underrepresented minority and low- income pupils. The problem is exacerbated for selective institutions, where the competition for seats is much greater the bar for admission is significantly higher. Put differently, the gap between the levels of performance for most low-income and underrepresented minority students is much greater.

Unfortunately, the outreach evaluations we reviewed shed little light on this issue. What the evidence does suggest, however, is that for selective institutions, the strategies for addressing the admissions pool problem are likely to be much different than for less-selective institutions. Whatever programs the selective institutions adopt, whatever components they emphasize, will have to be done with greater intensity, over a longer duration, and with more resources per pupil.

A Framework for Program Evaluation
The essential underpinning of evaluation of the universities outreach programs is a University-wide longitudinal student information system. We suggest that the University consider developing a pre-collegiate information system for its outreach programs so that longitudinal data will be available to track students participating in outreach programs while they are still in K-12 and continuing after they matriculate at the University.

We understand that the MESA staff are currently working on the design of a student information system which could become a prototype for a more comprehensive system. A student information system, in our view, is the most immediate action that should be taken to strengthen evaluation and could go a long way toward removing the uncertainties surrounding current data which rely on Ahead counts with unknown reliability.

The presidents Office must be specific about what it expects as benchmarks against which to measure progress. A uniform way of reporting descriptions of program components, performance indicators and most importantly, the program goals underlying the particular approach is also required. As we outlined in Chapter V, what occurs in most of existing UC outreach evaluations is a failure to describe adequately the program and its components and to link program activities with performance indicators. This makes it virtually impossible to distinguish outcomes between programs and, within programs, to ascertain which components are more or less effective in reaching the intended goals. It makes it impossible to do any cost- effectiveness analysis. Absent a uniform way of presenting basic information, comparative analyses are fruitless.

In most instances, staff of specific programs although they believe in what they are doing and are dedicated to delivering services lack the resources, the incentives, and the perspective to assume primary responsibility for evaluating their programs.

The Office of the President should support campus efforts to systematically evaluate their programs. At the system level, evaluation and research efforts should focus on filling in the gaps and conducting research that local programs are unlikely, or unable to undertake. It is the responsibility of the presidents Office to provide additional technical assistance and professional development opportunities to assist program directors in these efforts.15

Another essential element in the framework is a systematic research agenda which sets aside sufficient funds to address specific research questions. Given the program diversity and complexity, research efforts will require a multi-level, multi-stage approach. We outline in Chapter V, five types of research approaches which need to be supported by the University. It is important to have a multiple approach strategy within which to build a portfolio of data, specifically designed to inform policy makers about options and to determine the most strategic ways to invest scarce resources.

The research agenda is further complicated by the very nature of these programs in most cases they involve K-12 schools as partners. The University must be sensitive to the schools accountability needs as well and work closely and cooperatively with them in building a powerful research agenda.

Conclusion
The Outreach Task Force will help chart the course for maintaining and enhancing diversity at the University of California in light of new admissions policies. As a highly selective institution, the University must employ multiple strategies. First, it must enhance recruitment to increase the number of eligible and competitive underrepresented students who choose to attend the University. Second, it must aggressively pursue efforts to help prepare larger numbers of students who are reasonably close to meeting admissions standards. Third, it must devote resources to a strengthening of the K-12 education pipeline. Pursuing this third strategy requires that the University become a full partner with its higher-education and K-12 colleagues.

Appendix A
Comparison Group Evaluation Designs

Evaluation research has taken two, not indistinct, paths in addressing the complexities inherent in the research situation. First, and most commonly known, evaluators use methods to further 'control' the research situation. Control strategies begin with what researchers call the counterfactual (Hollister and Hill, 1995 pp. 128). A counterfactual is a question that asks what would have happened in the absence of the program initiative. A possible counterfactual for outreach programs might ask "what would have happened to students if they didn't participate in the outreach program?"16. Once the counterfactual is established, the evaluator attempts to control the research setting to answer the question. Controls are required to isolate the influence of program components and remove other variables thought to influence the results.

Evaluators use two main types of controls. In random assignment, "individuals or units that are potential candidates for the intervention are randomly assigned to be in the treatment group, which is subject to the intervention, or the control group, which is not subject to any special intervention." (Hollister and Hill, 134). The advantage of random assignment is that with even a moderate number of participants, the chances, statistically, are great the groups will have similar characteristics. In researcher terms, this means that the evaluation does not suffer from selection bias. When comparisons are made between the control and treatment groups, researchers and audiences can conclude that the difference is due to the program and not other variables.

Any enthusiasm for random assignment must be weighed against the difficulty in designing research according to this standard. On one hand, there are always ethical issues in determining who gets the treatment and who is made a control. A further problem is that many outreach programs are voluntary with students selecting themselves into programs. Random assignment in these cases is difficult unless there is greater demand for programs than supply. In this case a "waiting list" approach can be used with participants in the treatment group and those waiting providing the control. Alternatively, students can be randomly assigned to different programs with different programmatic emphases. In this case, the two programs can be compared with a reasonable assumption that the observed outcomes can be attributed to the respective programs.17

More commonly used for controls are what Hill & Hollister call constructed comparison groups (135). Constructed comparisons attempt to replicate the conditions of random assignment by carefully matching a treatment and a control group to isolate the impact of the program. Three types of constructed comparison groups are used. The first before or after designees where the treatment group is compared to itself prior to program participation. A second type of constructed group compares program participants and non-participants. These groups are selected to be as similar as possible to each other, with the exception that one group has received the treatment and the other has not. In school-based projects, the control group can be selected from the same school or different schools within a district/state. In the latter case, school and/or district and state characteristics are also controlled for. A third type of constructed group can be created by using survey data. As above, the characteristics of the control group are carefully matched to the treatment group to avoid bias (Hill & Hollister, 135-138).

The three types of constructed comparison groups each suffer from some difficulties and biases. The general consensus in the evaluation literature is to let the research

situation dictate which of the three may be better suited to a particular evaluation. Before-and-after designs, by necessity, assume that any observed change in individuals is a result of the program or intervention. This may not be a tenable assumption in all cases.

Comparisons between participants and non-participants or groups constructed from surveys and databases are only as good as the match made between the two groups. Even if the groups are well matched, it is difficult to control for unobserved variables. Within outreach programs, one such unobserved variable is student motivation. Are participants more motivated to attend college than non-participants? Might this affect how they score on the various performance indicators?18 The general principle is that without random assignment, the selection in and out of comparison groups may bias the study. In most cases, this bias will overestimate the effects of program relative to non-program factors.

Appendix B
Illustrative Evaluation Questions

How many disadvantaged, underrepresented students graduated from the University of California in year x?

How many of these students:
· enrolled first as freshmen in UC?
· transferred from community colleges?
· participated in outreach programs and if so, which programs?

For those students who participated in University outreach programs, how many became eligible to attend the University?

How many become eligible for more selective University campuses?

What are initial achievement levels of students entering these outreach programs?
What is the value-added of these programs in the shorter term in:
· increasing a-f course taking patterns and success rates
· grade point average
· test performance
· increasing study skills

Of those students who participated in outreach programs
· what is the relationship of the background characteristics (SES, parent education, etc.) of these students and their persistence rates and graduation from the University?
· what is the relationship between program participation and program results, such as
· duration in the program?
· degree of program implementation?
· differential impacts of different treatments?
· which program components are most closely related to program outcomes?

In school-centered programs, both school-wide and for disadvantaged, underreprestented students:
· what are the school wide indicators of improved college preparation, such as:
* a-f completion
* AP satisfactory completion rates

* grade point average
* test performance
* drop-outs
* more rigorous curriculum
* indicators of the results of professional development strategies

In school centered programs with earlier intervention strategies, both overall and for disadvantaged, underrepresented students:
· student performance indicators
· degrees of parent participation
· drop-out rates

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1 Of particular help was a matrix generated at a UC Systemwide Outreach Retreat entitled Problem Statements and Strategies on Eligibility Rates,   July 1996.
2 The comparative four-year rates in 1994-95 were: Blacks-27.8 percent, Latinos-23.7 percent, whites-10.8 percent and Asians-8.7 percent.
3 More than 1 in 2 of Asian students complete a-f requirements versus about 1 of 3 white, 1 in 5 Latinos and a little over 1 in 4 Blacks. Similar patterns exist for advanced science and math enrollments. White students are more than five times as likely to have taken advanced placement courses as Blacks and almost twice as likely as Latino students.
4 Almost 1 in 3 Asian students take the SAT or ACT, versus slightly over 1 in 5 whites, an abysmal 1 in 14 Blacks, and an even worse 1 in 17 Latinos.
5 Saul Geiser, presentation to Outreach Task Force, February 1, 1996.

6 It is important to note that these categorizations describe programmatic activities at the local level, not whole programs. Most local outreach programs will include some combination of program elements, however these elements are organized. A useful categorization scheme will allow researchers to classify programs based on their particular programmatic emphases.
7 To simplify the discussion, we focus on the effects of programs on individuals. However, the logic of evaluation design also pertains to programs, organizations, collaborative arrangements, communities and any other level where a social intervention is implemented.

For a good discussion of the problem of causality in evaluation research see Kirst (1986). Kirst argues that an evaluator or policy maker's view of causality follows from

her definition of the problem and is ultimately a value judgment. Kirst's suggestion is to combine program theory with "bottom up" studies that examine the implementation of programs at the local level. Only by combining top-down and bottom-up research strategies can a realistic model of causality be developed.

9 This cost-analysis section is an adaptation of Henry Levin's Cost Effectiveness: A Primer (Sage Publications: Beverly Hills, 1983).

10 This approach can be explained best through an illustration. In a hypothetical study, three vocabulary enhancement programs are offered to separate classes of 11th graders with the intent of improving the students SAT scores. Program A gives the students two vocabulary textbooks to study at a cost of $30 per student. Program B uses the same textbooks but also employs a teacher to review the words once a week for five weeks at a cost of $100 per student. Program C uses computers to teach the students vocabulary words. The cost of the computer time, the computer programs, and teacher supervision totals $200 per student. Table 3 depicts the costs of each program along with the average gain on SAT scores of students enrolled in the program.

Table 3
Hypothetical Cost-Effectiveness Results for Vocabulary Enhancement Program

Program	Cost Per Pupil	Improvement Points	CE Ratio
A	$ 30	5	$6 per point
B	$100	33	$3 per point
C	$200	40	$5 per point

The third column displays the cost-effectiveness ratio or the cost per student for a one-point improvement. The hypothetical results show that Program A costs the most for every point of improvement, while Program B is the most cost-effective. Significantly, the most effective program when costs per student are ignored (Program C) is ranked second when costs per point are taken into account. Hence, a greater state or local investment in Program B is the preferred policy.

11Comparative research can be done with random assignment if different program types or program components are identified and students are randomly placed in each. In such a case, one program becomes the "treatment" and the other the "control" group. The benefits of such an approach must be weighed against the difficulties of doing random assignment research noted earlier.

12 A number of common types of evaluation research may be less helpful in answering the questions California has about its outreach programs. A theme throughout this study is than random assignment is difficult for outreach programs and the benefits these studies provide may be outweighed by the difficulties in conducting this type of research. Random assignment has its place in outreach program evaluation but the costs and benefits of such research should be carefully considered before being undertaken. Constructed groups, such as used in Florida's CROP program, or a different research design may be able to better answer the questions asked in a given study. A common quantitative methodology for determining what works in a policy domain is what statisticians call meta-analysis. Traditional meta-analysis takes a large number of studies of a particular intervention and attempts to aggregate these individual findings into a collective result. One difficulty in using meta-analysis with outreach programs is he paucity of evaluation research on these programs available. Unlike some social policy arenas, higher education outreach programs, to this day, are under-researched and under-evaluated. Such a situation makes meta-analysis very difficult. A

second problem comes from the assumptions of meta-analytic technique. This research approach assumes that all studies have commonly defined program components, ask the same research question with the same research procedures and possess a set of common performance indicators or dependent variables (Knapp, 1994). Such an assumption is far from tenable given the evaluations collected and analyzed in this report.

13 1990 is the latest available eligibility study undertaken by CPEC. Currently, an update is underway. Obviously, the newest data should be examined to ascertain whether these conditions still exist and whether such a strategy would still be viable.
14 All students are required to take the SAT or ACT. However, for students with sufficiently high grade point averages, the score they receive is irrelevant. Hence taking the test would make them fully eligible.
15 In Appendix B, we provide a set of questions to assist in designing evaluations tied to the short-term, intermediate term and long-term strategies.

16 Crafting effective counterfactuals is not a simple as we have laid out here and poorly constructed questions can bias results.
17 We have greatly simplified the difficulties involved in random assignment in this section. Waiting lists, for instance, may be biased if the treatment group is selected from early applicants. These students or their parents may be more motivated than late applicants, opening up a source of potential bias. This is only one example of the many difficulties in conducting evaluation research with random assignment. For a introductory discussion of these issues, see Babbie (1992).

18 A waiting list approach, with interested student matched with each other and put into comparison groups may address this motivation bias. As pointed out above, waiting lists potentially have their own bias attached to them.