ITEM 3 ■ DRAFT

California Postsecondary Education Commission

June 2006

# The Road Ahead: Enhancing the Evaluation of University Academic Preparation Programs

*This report presents an analysis of the University's evaluation of its Academic Preparation and Educational Partnership Programs. Three recommendations are made for strengthening the evaluation processes in the future.*

*The Commission concludes that the information reported offers reasonable evidence of program effectiveness, and therefore recommends that funding for these programs be restored in the 2006-07 State budget.*

*The Commission also recommends that funding in subsequent years be contingent on the University working with the Commission to strengthen the evaluation process, as discussed in this report.*

## Contents

Background ..... 1
Data and Research Issues Regarding the Accountability Framework ..... 2
Policy, Program, and Evaluative Recommendations ..... 3
Commission Summary of Findings by Program Area ..... 3
Commission Analysis of the University's Findings . 4
Conclusion and Recommendation for Funding..... 6

*The Commission advises the Governor and Legislature on higher education policy and fiscal issues. Its primary focus is to ensure that the state's educational resources are used effectively to provide Californians with postsecondary education opportunities. More information about the Commission is available at www.cpec.ca.gov.*

Draft Commission Report

## Background

An important on-going educational concern of public officials across the nation is the extent to which public investments in academic preparation programs are having desired effects on student academic achievement and college preparedness. In other words, is the social and economic return on investment substantial enough to warrant continued funding of such programs? To address this question, the *2005-06 California Budget Act* contained language requesting the University of California to provide a comprehensive report on student academic preparation and educational partnership programs. The language read:

> *It is the intent of the Legislature that the university report on the use of state and university funds provided for these programs, including detailed information on the outcomes and effectiveness of academic preparation programs consistent with the accountability framework developed by the University in April 2005. The report should be submitted to the fiscal committee of each house of the legislature by no later than April 1, 2006.*

Pursuant to the above legislative language, the University formed an Accountability Planning and Oversight Committee charged with the responsibility of developing a new accountability framework. As shown in Appendix A, the Oversight Committee included legislative staff and representatives of various state agencies.

The overall mission of the University's Student Academic Preparation and Educational Partnership (SAPEP) programs, as outlined in the 2005 Accountability Framework, is to:

> *Work in partnership with K-12, the business sector, community organizations and other institutions of higher education to raise student achievement levels generally and to close achievement gaps between groups of students throughout the K-20 pipeline so that a higher proportion of California's young people, including those who are first generation, socioeconomically disadvantaged and English language learners, are prepared for postsecondary education, pursue graduate and professional school opportunities, and/or achieve success in the workplace.*

The framework is intended to guide the delivery and evaluation of the University's programs and establishes three-year and five-year performance goals.

The University currently administers 16 key academic preparation and partnership programs through four alliance themes: (1) K-12 Student Academic Preparation, (2) Community College Programs, (3) K-20 Partnership Programs, and (4) Graduate and Professional School Programs. The University reports that despite continued budget uncertainties, its sponsored programs are able to reach more than 116,000 participants, including K-12 students, community college students, university undergraduate students, parents of K-12 students, and teachers, counselors, and school administrators. This figure excludes graduate and professional students and users of ASSIST, the on-line community college articulation system.

The stakes associated with the 2005 Accountability Framework are high because funding for preparation programs has sharply declined, with combined State and University funds dropping from nearly $85 million in the year 2000-01 to $29 million in the 2004-05 year. The decline in funding is due partly to the effects of the 2002 economic recession and partly to the uncertainty regarding program effectiveness. Appendix B shows funding expended for academic preparation programs from 1997-98 through 2005-06. Appendix C shows the number of individuals served and the average cost per student. At the moment, the Governor's 2006-07 revised budget does not contain any funding for university preparation programs. It is evident that any future funding rests on a favorable review of the University's report by the Administration and the Legislature.

## Data and Research Issues Regarding the Accountability Framework

The 2005-06 budget language permits the university to use a range of data and evaluative protocols to assess program benefit and success. Accordingly, the UC report contains various types of data intended to inform program effectiveness. Essentially, these data can be organized under four broad research protocols: (1) data describing the outcome characteristics of program participants (descriptive protocol); (2) participant outcome data that is compared with non-participant data (non-experimental protocol); (3) participant outcome data that is matched with meaningful comparison groups while controlling for other relevant socioeconomic and school performance factors (quasi-experimental protocol); and (4) student personal testimonies (qualitative/focus-group protocol).

Although quasi-experimental protocols normally result in far greater insights into cause-effect relationships, the other three data protocols also yield useful information describing general outcome characteristics of program participants, while not explicitly asserting a cause-effect relationship. In other words, descriptive protocols can describe important outcome differences between program participants and non-participants, but they cannot address how much of the difference can be attributed to a particular academic preparation program and how much of the difference is a result of other factors.

The California Postsecondary Education Commission has issued a number of evaluative reports over the past 25 years to assist the Governor and the Legislature in interpreting the results of academic prepara-

tion studies so that informed funding decisions could be made. This report contains an examination of the findings and research studies included or referenced in the University's 2006 academic preparation program report. Significant attention was placed on design methodology and the validity of conclusions reached by the University regarding program effectiveness. Findings reached by the Commission were derived in part by comparing the performance goals outlined in the framework with the performance outcomes reported by the University.

Because the framework is considered a work-in-progress, the Commission, in the next section, offers a set of programmatic and evaluative suggestions that would strengthen and improve future evaluations. More specifically, the Commission believes that the road ahead should be marked by (1) greater emphasis placed on quasi-experimental research designs, (2) the development of a comprehensive longitudinal database that tracks program participants from secondary school to workforce careers, and (3) an effort to define more precisely key evaluative terms, such as *return-on-investment* and *cost-effectiveness*.

## Policy, Program, and Evaluative Recommendations

1. For academic preparation programs that have scholastic selection criteria, it is recommended that the University strengthen its evaluation process by using quasi-experimental design methods to measure program effectiveness. At a minimum, this would mean that the outcomes of program participants be matched with the outcomes of a comparable control group, based in part on program selection criteria and relevant socioeconomic factors. Statistical methods, such as logistic regression and multivariate analysis of variance (ANOVA), should be used to separate out program effects from other external effect sources. Programs that have scholastic selection criteria include the *Early Academic Outreach Program (EAOP), Mathematics, Engineering, Science Achievement (MESA), MESA Community College Transfer Program, School/University Partnership Program, and the Graduate and Professional School Academic Preparation Programs.*

2. Because costs associated with quasi-experimental designs are often quite high, it is recommended that the University work with the Commission to reduce costs by developing a comprehensive longitudinal database capable of tracking student outcomes over time prior to, during, and after program participation. Once developed, the marginal cost of evaluating individual programs would likely be reduced significantly.

3. The Accountability Framework for UC academic preparation programs currently contains evaluation concepts such as *cost-effectiveness and return on investment*, whose meanings are not well understood. Therefore, it is recommended that the University work with the Commission in defining such concepts more precisely so that public officials have a clear understanding of the measures contained in subsequent evaluation reports and studies.

## Commission Summary of Findings by Program Area

### K-12 Student Academic Preparation Programs

Based on a comparison of performance goals with outcome data provided by the University, it appears that all programs in this category are on target for meeting three-year and five-year performance goals. As noted previously, the Commission recommends that programs with scholastic selection criteria, such as EAOP and MESA, be evaluated using quasi-experimental designs in order to validate program effectiveness.

### UC Community College Programs

A successful community college transfer function continues to be a higher education policy objective of the State. The University intends to establish transfer goals once 2005-06 transfer data, which will serve as a baseline, have been analyzed completely. Significant numbers of MESA and Puente program participants continue to transfer to baccalaureate institutions. During 2004-05, 100 percent of the 554 MESA transfer students declared majors in math and science-based fields, consistent with the program's primary performance objective. However, it is unclear how the University intends to measure improvements in transfer readiness.

### K-20 Partnership Programs

Many social factors impact student success, including school environment, quality and content of instruction, family support, and neighborhood safety. Given this realization, K-20 alliances were established with the aim of "establishing ties between campuses, schools, and local community and business organizations to promote consensus and joint action to raise student achievement levels and to address the barriers to educational equity."

Data reported by the University indicate that the ArtsBridge Program, the Presuss Charter School, and the programs comprising K-20 Regional Intersegmental Alliances as a whole are meeting or exceeding performance targets. Outcomes data were not reported separately for each individual intersegmental alliance program, so it is not possible to comment on their individual effectiveness. The University intends to establish performance goals related to college readiness and college-going for its partnerships with selected schools and faith-based organizations once 2004-05 baseline data has been analyzed.

### K-20 Graduate and Professional School Programs

The University's graduate and professional programs seek to identify highly qualified prospective graduate students from economically and educationally disadvantaged backgrounds and prepare them for careers as researchers, academics, specialists, and leaders. Performance data reported indicate that about 78% of undergraduate students that participate in UC graduate and professional school preparatory programs eventually enroll in graduate or professional programs.

## Commission Analysis of the University's Findings

### Analysis of K-12 Student Academic Preparation Programs

Programs included in this category consist of: (1) the Early Academic Preparation Program (EAOP); (2) the Mathematics and Science Achievement Program (MESA); (3) the Puente Project High School Program; (4) Student Initiated Programs; (5) UC College Prep Online; and (6) UC Links. The data provided by the University indicates that all of these programs are on target for achieving 2010 target goals for college readiness and college going rates. The data also indicate that the performance rates of program participants are generally higher than overall statewide rates. For example, it is estimated that 73.7% of EAOP students and 54.2% of sampled MESA students completed the university's A-G college preparatory curriculum, compared with a statewide rate of 33.7%.

Many of the programs in this category have scholastic selection criteria, which means that it is invalid to infer program effectiveness by comparing the success of these program participations to statewide rates. What is needed are comparable or matched control groups. One study (Quigley 2003), which was cited in the report as offering clear evidence of the effectiveness of EAOP, used appropriate comparison groups, while controlling for other potential effects. The conclusion reached by the program researcher is that EAOP students are more than twice as likely as non-EAOP students to complete the A-G requirements.

The Commission reviewed the Quigley study and found several concerns. First, the researcher asserted that the effect of EAOP could be best understood by examining an odds ratio interaction effect of student ability (high ability vs. low ability) by school type (EAOP Schools vs. Non-EAOP Schools). Although the design was valid, the researcher did not report the college preparatory rates for appropriate comparison groups, so it is not clear how high ability students attending EAOP schools compare to high ability students attending similar schools that do not offer EAOP (see Display 1). In the absence of such comparisons, it is difficult to draw a definitive conclusion from this study regarding the effectiveness of EAOP. Second, a major finding not pointed out the reports conclusion was that students who completed 9th grade English with at least a B grade were more than 12 times more likely to complete the A-G curriculum than those students who did not do so. This later effect is substantially larger than the calculated EAOP effect and should have been discussed in the report. Although the conclusion of the Quigley study is incomplete, it was a well-designed study that used appropriate quasi-experimental methods, and therefore, could serve as model for assessing program effectiveness when comparable control groups are required.

**Display 1 Illustration of Data not Included in the a Study by Quigley (2003) Regarding the Effectiveness of the University's EAOP Program**

| | High Ability Students | Low Ability Students |
|---|---|---|
| Students Attending EAOP Schools | .40 | ? |
| Students Attending Schools Not Offering EAOP | ? | ? |

Note: Cell data indicate the proportion of students that completed UC's A-G requirements. *High-ability* refers to students with a scholastic record required for EAOP participation.

## Analysis of UC Community College Programs

Programs in this category consist of: (1) UC community college transfer programs, (2) the MESA Community College Program, (3) the Puente Community College Program, and (4) the UC Community College Articulation Program called ASSIST. The University's accountability framework will be updated to include numerical transfer goals to enhance the transfer function once a baseline has been established using 2005-06 transfer data. No agreements have been reached to date on the type of data and information needed to reliably measure improvements in transfer readiness across majors.

Performance goals related to ASSIST include *increase in use of the system* and *continued improvement in usability*. The University reports that over 700,000 people used ASSIST in the 2004-05 academic year, up from 600,000 visitors in 2003-04. ASSIST users viewed over 6.7 million course articulation reports, up from 5.2 million in 2003-04. Virtually all of the majors at all UC campuses are now articulated with every community college in the state. Approximately 75% of the responses to a recent survey were considered by the University to be very positive. The negative responses were related to a desire for information beyond of the scope of ASSIST, such as articulation with independent and out-of-state colleges and universities.

Evaluation data indicate that the University's MESA and Puente Community College Program are experiencing a high degree of success in improving the participation of underrepresented students in four-year institutions. Puente community college transfers to four-year institutions grew by 78% between 1999 and 2004, from 295 to 526 students. This program provides an academically rigorous two-year English sequence, combined with intensive counseling and UC mentors. During 2004-05, 554 MESA

students transferred to baccalaureate institutions, with 100 percent of these students declaring majors in math or science fields. What is not known, however, is the proportion of MESA students for a given community college cohort that were transfer ready within a two or three-year period as a result of MESA participation. Such a statistic, when compared with a control group comprising prospective math and science majors with a demographic and scholastic makeup similar to that of MESA students, would provide a more revealing indication of program impact and effectiveness.

### Analysis of K-20 Partnership Programs

Programs in this category consist of: (1) the ArtsBridge Literacy/Language Program, (2) Community Partnerships, (3) the Presuss Charter School at UC San Diego, and (4) K-20 Regional Intersegmental Alliances. Performance goals are related to literacy/language skills, successful completion of the UC visual/performing arts requirement, college readiness and enrollment rates, service learning for teachers, and leveraging State funding investments with private and corporate endowments. Data provided by the University indicate that the ArtsBridge Program, the Presuss Charter School, and the K-20 Regional Intersegmental Alliances as a whole are meeting or exceeding performance targets.

For example, it is reported that 64% of ArtsBridge participants improved at least 20% on pre/post vocabulary assessment and that 45% of participants scored 70% or higher on the post project vocabulary assessment. As another example, the Presuss Charter School, which serves low-income students, received the second highest API score (848) in its district. No performance data was recorded for UC's community partnerships with schools and community and faith-based organizations. The university intends to use 2005-06 data as baseline information and then develop appropriate numerical goals pertaining to college going and college readiness.

One concern of the Commission is that the University did not explicitly report outcomes for each individual K-20 Regional Intersegmental Alliance. The system elected instead to highlight selected successful sights, such as the Santa Ana Partnership with UC Irvine, the UC Berkeley Partnership, and the UC Santa Cruz Alliance.

### Analysis of Graduate and Professional School Programs

Performance data reveal that about 78% of participants enroll in graduate school within three to ten years after participating in a graduate academic preparation program. The Commission believes that an additional measure of program impact could be obtained if the University disaggregated the data by gender and ethnicity and reported enrollment data for medical program participants separately.

## Conclusion and Recommendation for Funding

The Commission concludes that the information reported by the University offers "reasonable" evidence of program effectiveness, and therefore, recommends that funding for these programs be restored in the 2006-07 State Budget. The Commission further recommends that in order for these programs to continue to receive funding that a more comprehensive quantitative evaluation take place for each program to access the value added by that program. If the Administration concludes otherwise, the Commission recommends that such findings and the rationale be made known to the University and to the general public.

The Commission also recommends that funding in subsequent years be contingent on the University working with the Commission to strengthen the evaluation process, as discussed in this report.

# Appendix A

**Student Academic Preparation and Educational Partnerships Accountability Planning and Oversight Committee**

*Committee Chairperson: Harold Levine, UC Davis School of Education*

| | |
|---|---|
| Marvin Alkin | *UCLA School of Education* |
| Danny Alvarez | *Senate Budget and Fiscal Review Committee* |
| Michael Brown | *UC Santa Barbara/Board of Admissions and Relations with Schools (BOARS)* |
| Kathleen Chavira | *Senate Education Committee* |
| Catherine Cooper | *UC Santa Cruz/UC Office of the President* |
| Winston Doby | *UC Office of the President* |
| Neal Finkelstein | *WestEd* |
| Ron Fox | *California Department of Education* |
| Patricia Gandara | *UC Davis School of Education* |
| Marlene Garcia | *Senate Office of Research* |
| Elizabeth Halimah | *UC Berkeley* |
| Bruce Hamlett | *Assembly Higher Education Committee* |
| Celia Mata | *Assembly Budget Committee* |
| Hugh Mehan | *UC San Diego* |
| Debora Obley | *UC Office of the President* |
| Jeannie Oropeza | *Department of Finance* |
| Lynn Podesto | *Department of Finance* |
| Oscar Porter | *UC Office of the President* |
| Patrick Shields | *SRI International* |
| Anthony Simbol | *Legislative Analyst's Office* |
| Jack Sutton | *UCLA* |
| Sara Swan | *Department of Finance* |

# Appendix B

**University of California**
**Student Academic Preparation and Educational Partnerships**
**1997-98, 2000-01, 2004-05, and 2005-06 Budgets**
**($000s)**

| | 1997-98 State & UC Funds | 2000-01 State & UC Funds | 2004-05 State & UC Funds | 2005-06 State & UC Funds |
|---|---|---|---|---|
| **Direct Instructional Programs** | | | | |
| Preuss Charter School | $ - | $ 1,000 | $ 1,000 | $ 1,000 |
| UC College Preparation (online courses) | - | 8,400 | 3,106 | 3,106 |
| **Statewide Infrastructure Programs** | | | | |
| ASSIST | 360 | 360 | 429 | 429 |
| Community College Articulation | - | - | 600 | 600 |
| **Direct Student Services Programs** | | | | |
| Community College Transfer Programs | 1,718 | 5,295 | 1,279 | 1,279 |
| EAOP | 4,794 | 16,094 | 8,914 | 8,914 |
| Graduate and Professional School Programs | 1,893 | 8,575 | 2,661 | 2,661 |
| MESA K-12 Programs | 4,169 | 9,355 | 4,861 | 4,861 |
| MESA Community College Programs | 22 | 1,309 | 327 | 327 |
| Puente High School | - | 1,800 | 1,051 | 1,051 |
| Puente Community College Programs | 162 | 757 | 450 | 450 |
| Student-Initiated Programs | - | - | 440 | 440 |
| UC Links | - | 1,656 | 694 | 694 |
| Community Partnerships | - | 1,096 | 312 | 312 |
| ArtsBridge | - | 1,500 | 112 | 112 |
| **Longer-Term Strategies Originally Funded by the University** | | | | |
| K-20 Regional Intersegmental Alliances (formerly School-University Partnerships) | - | 15,591 | 1,395 | 1,395 |
| **Other Programs** | | | | |
| Evaluation * | - | 1,386 | 820 | 1,180 |
| UC ACCORD * | - | 809 | 360 | - |
| Other Programs | 203 | 1,291 | 512 | 512 |
| Programs that have been eliminated or consolidated into others, including Test Preparation, Dual Admissions, Gateways, Informational Outreach and Recruitment, Central Valley Programs | 4,750 | 8,908 | - | - |
| **Total** | **$ 18,071** | **$ 85,182** | **$ 29,323** | **$ 29,323** |
| **General Funds** | [$ 16,996] | [$ 82,243] | [$ 17,323] | [$ 17,323] |
| **University Funds** | [$ 1,075] | [$ 2,939] | [$ 12,000] | [$ 12,000] |

*For 2005-06, funding previously budgeted for UC ACCORD is being used for evaluation.

# Appendix C

**Estimated Cost Per Studemt**
**UC SAPEP programs compared to selected**
**Federally funded academic preparation programs**

| Program | 2005-06 State and UC Funds | Average Number of Students Served 2003-04 to 2004-05 | Average Cost Per Student |
|---|---|---|---|
| **K-12 Student Academic Preparation** | | | |
| EAOP | $ 8,914,000 | 43,743 | $ 204 |
| MESA K-12 Programs | 4,861,000 | 16,620 | 292 |
| UC College Preparation (online courses) | 3,106,000 | 4,164 | 746 |
| Puente High School | 1,051,000 | 3,876 | 271 |
| Student-Initiated Programs | 440,000 | 8,966 | 49 |
| UC Links | 694,000 | 3,960 | 175 |
| Comparable federal programs: | | | |
| *Upward Bound Classic* | | | *4,721* |
| *Talent Search* | | | *377* |
| **Community College Programs** | | | |
| ASSIST | 429,000 | 630,000 | 1 |
| Community College Transfer Programs | 1,279,000 | 18,488 | 69 |
| MESA Community College Programs | 327,000 | 3,559 | 92 |
| Puente Community College Programs | 450,000 | 9,719 | 46 |
| **K-20 Educational Partnerships*** | | | |
| ArtsBridge | 112,000 | 7,021 | 16 |
| Community Partnerships | 312,000 | 5,860 | 53 |
| K-20 Regional Intersegmental Alliances | 1,395,000 | 151,911 | 9 |
| Preuss Charter School | 1,000,000 | 766 | 1,305 |
| Comparable federal programs: | | | |
| *GEAR UP* | | | *207* |
| **Graduate and Professional School Programs** | 2,661,000 | 558 | 4,773 |
| Comparable federal programs: | | | |
| *McNair Postbaccalaureate Achievement Program* | | | *10,185* |

* includes all students at schools served
Source of federal program costs per student: US Department of Education website