CALIFORNIA COMMUNITY COLLEGES
AND
PERALTA
COMMUNITY COLLEGE DISTRICT

#90-0023
### Achievement in Science, Engineering, and Technology (ASET)

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<td>Grant = $58,000</td>
<td>C --- Special Learning Needs Ed/Dis</td>
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<tr>
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<tr>
<td>Resource Materials</td>
<td>Recruitment</td>
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<tr>
<th>PROJECT DIRECTOR</th>
<th>PROJECT SUPERVISOR</th>
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<tr>
<td>Blas Guerrero, Project Coordinator</td>
<td>Eugene Long, Ass’t Dean Math/Science</td>
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**PROPOSAL DESCRIPTION**

This program, ASET, will recruit forty-five 10th graders at three Laney College feeder schools, Fremont High School, Oakland Technical High School, and Berkeley High School, and provide the following:

1. **Academic Enrichment:** college-level geometry and critical thinking/study skills courses.
2. **Tutoring and Study Group Workshops:** to foster success in high school and college work.
3. **Counseling:** to guide participants in both high school and college programs and bolster self esteem.
4. **Exposure to Universities and Colleges:** through presentations and College visits.
5. **Role Models:** through guest lecture workshops and ASET staff.
6. **Parental Involvement:** through workshops on high school graduation requirements, college entrance requirements, and financial aid.
7. **Acceptance into UC Berkeley’s:** MESA and Upward Bound programs: both programs have agreed to admit ASET student once they complete the ASET program.
Achievement in Science, Engineering and Technology

Laney College proposes to operate a program of early intervention, targeting minority high school students that are educationally disadvantaged and at risk to drop out. The mission of Laney College is to meet the needs of its surrounding community. Presently, minority students at our feeder schools are dropping out at an alarming rate of over 50%, and in some school as high as 70%. Thus, secondary schools in Oakland and Berkeley are in a present state of crisis. Through an early intervention program, Laney College will focus on intervening and assisting students at the beginning of their secondary education. The program will prepare these students to enter college capable of doing collegiate level work instead of remedial work. Thus, the emphasis of ASET will be intervention as opposed to remediation.

The ASET program is specifically designed to enable these students to enter Science, Engineering and Technology (SET) tracks at local college and universities. Presently very few minority students are pursuing careers in SET fields. A national shortage of scientist, engineers, and mathematicians is predicted by NASA for the year 2010 unless minorities pursue careers in SET fields. It is imperative that programs are designed and implemented that encourage minority youth to pursue SET careers. Since, most minority students are enrolled in community college, it is crucial that community colleges take the forefront in addressing this problem.

This program, ASET (Achievement in Science, Engineering, and Technology), will recruit forty-five 10th graders at three Laney College feeder schools, Fremont High School, Oakland Technical High School, and Berkeley High School, and provide the following:

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Achievement in Science, Engineering and Technology

1. Specific Educational Program Being Addressed

INTRODUCTION

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6. Parental Involvement: through workshops on high school graduation requirements, college entrance requirements, and financial aid.
7. Acceptance into UC Berkeley's: MESA and Upward Bound programs: both programs have agreed to admit ASET students once they complete the ASET program.
2. Specific Problems Being Addressed

PROBLEM --- FOCUS

The Laney College, Achievement in Science, Engineering and Program, will focus on an early intervention Technology (ASET) strategy of academic enrichment for 45 tenth grade minority students other basic skills to qualify for who currently lack mathematics and university admission upon high school graduation. By intervening at the beginning of the tenth grade, when students have just entered high school, this demonstration project will not only reverse the drop out trend - our feeder schools -- but put these over 50% for some minorities in students on a college bound SET track. This will be achieved by a comprehensive program including special classes in Mathematics (algebra and geometry), and workshops on how to study, values clarification and The targeted teenagers will come from educational and career planning. Oakland and Berkeley Schools and have these characteristics:

1. Have completed the ninth grade below grade level in math and science.

2. Be a member of a minority usually underrepresented in science, engineering and technology careers: African-American, Mexican/Chicano, Latino, Native American and/or female.

3. Have a strong desire to go to college; an interest in science, engineering, technology fields; and the capacity for hard work to attain this goal.

All students recruited for the program will be "second tier" students enrolled in tenth grade algebra, and consequently not enrolled in college track courses ("second tier" students are one year behind college-prep curriculum.) Participants in the program will complete algebra and geometry by the end of their sophomore year. Upon entering their junior year of high school students will be "on track" to complete the University of California/California State University admissions requirements. Thus, the students will complete both algebra and geometry in their sophomore year, and no longer be below grade level in regards to their mathematics course completion.

University of California, Berkeley's MESA (Mathematics, Engineering and Science Achievement), and Upward Bound programs also sees the need for this early intervention strategy. Since the target students are not "on track" at the beginning of their sophomore year they are not eligible to participate in MESA or Upward Bound. With the assistance of ASET, MESA and Upward Bound intend to reach out to these students who would otherwise not be eligible. UC Berkeley's MESA will offer a $425 stipend to all students who compete the ASET program (successfully complete high school algebra and college geometry in 10th grade). The stipend will pay for the enrollment fees in UC Berkeley's "Pre-College Summer Academy" (in summer 1993).
The Summer Academy prepares students for success in college while providing them the opportunity to experience life at UC Berkeley. The courses, taught in small classes, are chosen to reflect the needs of students and the unique resources of UC Berkeley. Each student in the Academy takes accelerated math, English and a career elective course.

The challenging academic experience provides students a repertoire of skills which allows them to pursue college majors requiring mathematics as a foundation. Success in the Academy depends upon bringing together strongly motivated high school students with dedicated instructors in courses that go beyond the traditional high school courses. Individual tutoring, pre-college advising and career awareness are provided to all participants. A series of career workshops featuring representatives from industry and academia are also offered. A recreational program that stresses teamwork complements the rigorous academic and career activities.

All the cost of the Summer Academy will be paid by UC Berkeley's MESA program. Upon completing the Summer Academy ASET students will be guaranteed admission to MESA. They will become MESA participants throughout their 11th and 12th grades. As Mesa students they will be part of a comprehensive academic program that will assist them in entering college in SET related fields. Upon high school graduation MESA has agreed to provide ASET information/data on all ASET students.

Upward Bound (UB) also provides an intensive "Summer Residential Program" to ASET students that meet Upward Bound's admissions criteria. ASET students that choose to participate in UB will spend six weeks in the "Summer Residential Program" where they will receive academic preparation in mathematics, science, and English. These ASET students will also become Upward Bound participants throughout their 11th and 12th grades. As UB students they will be part of a comprehensive academic and counseling program that will assist them in entering higher education. Upon graduation from high school UB will provide ASET information/data on all ASET students.

It is the premise of this project that by placing these students in a college environment and giving them a second chance at achievement, we will build their self esteem and provide motivation for them to complete the necessary sequence of college preparatory courses and continue on to careers in SET.
3. Population To Be Served

POPULATION

The program will recruit forty-five tenth grade students who are enrolled in math courses below the minimum acceptable level for University of California/California State University admissions requirements. The students targeted will be African-American, Mexican/Chicano, Latino, Native American and/or women. These students will be "second tier" and "high risk" as they will be enrolled in elementary algebra at their respective high schools in Fall 1993. The three participating high schools have a high enrollment of the target students.
4. Objectives

PROGRAM COMPONENTS/OBJECTIVES

Success in the Achievement in Science, Engineering and Technology (ASET) Program depends on having a well defined program that provides clearly articulated services and has the cooperation and participation of schools, parents, and students.

The primary objectives of the 1989-1990 Laney College ASET Program are as follows:

A. RECRUITMENT
   Recruitment of instructional aid and student tutors will begin during the month of July and will be complete by the end of August.

   PRIMARY GOAL:
   TO RECRUIT AND HIRE STUDENT TUTORS THAT ARE ENROLLED IN MATHEMATICS, SCIENCE AND ENGINEERING PROGRAMS AT UNIVERSITY OF CALIFORNIA, BERKELEY, AND AT LANEY COLLEGE. PRIORITY RECRUITMENT OF AFRICAN-AMERICAN, MEXICANO/CHICANO, LATINO, AND AMERICAN-INDIAN TUTOR WILL BE EMPHASIZED.

   Recruitment of student participants in the program will begin the first week of September 1990 and will terminate by the final week of September 1990.

   PRIMARY GOAL:
   TO ENROLL THE OPTIMUM NUMBER OF TARGETED STUDENTS WHO WILL BENEFIT FROM THE ASET PRE-COLLEGE PROGRAMS OFFERED BY THE LANEY COLLEGE ASET PROGRAM.

   OBJECTIVE A-1:
   To enroll a minimum of 45 students at 3 high schools in Oakland and Berkeley unified school districts by October 15, 1990.
   ACTIVITIES:
   a) Review the students currently enrolled at each school;
   b) Review the participation of individual schools in ASET activities.

   OBJECTIVE A-2:
   To enroll African-American, Mexican/Chicano, Latino, Native American and/or women.
   ACTIVITIES:
   a) Review enrollment qualifications with high schools counselors;
   b) Work with high school counselors and school officials to determine which applicants meet the required ethnic qualifications.
OBJECTIVE A-3:
To enroll new students who will benefit from the ASET program.

ACTIVITIES:

a) Hold an information meeting for school site administration/faculty during the months of August and September at each school, to inform the administration/faculty about the program and request student referrals;
b) Send letters to parents of targeted students;
c) Send letters to students informing them of their selection as potential applicants;
d) Present an information meeting after school for targeted students that includes a presentation by a professional in a math-based field;
e) Ask targeted students to complete program application and math interest survey forms at the information meeting;
f) Review applications and arrange for student interviews with those students
   1) who are off the college preparatory track but capable of being advanced to college preparatory courses,
   2) who exhibit a strong interest in the program and in exploring careers in math and science:
g) Interview students to determine interest level and willingness to commit time to the program.

B. ORIENTATION

Students and parents must both participate if the program is to benefit all involved. At the beginning of the 1990 academic year students and parents will be required to attend an orientation regarding the ASET program and careers in math based fields. Those students and parents who officially enroll in the program must sign a contract of understanding and commitment. The contract is intended to ensure that both parents and students understand their commitment to the program.

PRIMARY GOAL:
TO KEEP STUDENTS AND PARENTS INFORMED AND ACTIVELY INVOLVED DURING EACH PHASE OF THE ASET PROGRAM.

OBJECTIVE B-1:
To keep parents consistently informed of and involved in all phases of the pre-college programs.

ACTIVITIES:

a) Require parents of students accepted into the program to attend a preliminary orientation of the program, which will include presentations by the ASET Coordinator and staff.
b) Require parents to sign parent/student contract at the orientation meeting that will include a parent commitment to attend one parent meeting each semester, see that their child attends after school
academic and enrichment activities on a regular basis, and stay abreast of their child's progress through written correspondence and personal contact with the ASET Coordinator;
c) Distribute activities calendar at the first orientation and on a regular basis thereafter;
d) Maintain an accurate computerized database system.

OBJECTIVE B-2:
To hold school site orientations at each school that will inform students of program requirements and kindle their enthusiasm for participation.
ACTIVITIES:
 a) Arrange school site orientations to take place as soon as students have been selected;
b) Include at least one career speaker who is able to relate academic work to professional success.

OBJECTIVE B-3.
To make students and parents aware that the ASET program will work closely with the UC Berkeley Mathematics, Engineering and Science Achievement (MESA) and Upward Bound Programs.
ACTIVITIES:
 a) Arrange for a panel presentation at the fall parent/student meeting that includes presentations by MESA and MEP (Minority Engineering Program, at UCB) students and the MESA and MEP directors, to discuss the importance of the high school curriculum and SET careers. Presenters will also discuss the importance of their respective support groups and how they have benefited from participating in the program.

C. ACADEMIC SUPPORT
Academic support will be provided for ASET students in the area of math, science and English. Students will have the opportunity to attend after school tutorials during the week and Saturday College.

PRIMARY GOAL:
TO ENSURE THAT EACH ASET STUDENT MAINTAINS A GRADE OF "C" OR BETTER IN EACH ACADEMIC COURSE, AND ENROLLS IN THOSE COURSES NECESSARY TO PREPARE HIM OR HER FOR ENROLLMENT IN A MATH-BASED MAJOR AT A FOUR-YEAR COLLEGE OR UNIVERSITY.

OBJECTIVE C-1:
To enroll students in geometry at Laney College during the 1990-1991 academic calendar of their sophomore year.
ACTIVITIES:
a) ASET students will be enrolled in a Laney College Geometry course on Saturdays from October through May.
b) Upon completion of the courses Laney College transcripts will be delivered to the perspective schools insuring that ASET students receive high school credit for the course.

OBJECTIVE C-2:
To offer supervised study groups that will teach students the art of learning from each other.

ACTIVITIES:

a) Recruit and train college students to act as study group leaders;

b) Students will be required to attend study group/workshops Monday-Thursday at their respective high school. The Workshops will be held after school from 3:30 to 4:30. ASET staff will facilitate the workshops and monitor attendance. Students will be required to attend three of four workshops per week. The workshops will offer assistance in all high school courses, but will concentrate on algebra and geometry.

c) An Instructional facilitator will help develop critical thinking skills by spending part of Saturday College on math and science problem solving activities.

d) Provide formats for competition that study groups may use as the basis for enhancing their daily studies.

OBJECTIVE C-3:
To provide training in study habits, problem solving and test taking skills.

ACTIVITIES:

a) Offer a Saturday workshops to all parents and students that will include time management, notetaking and outlining, active reading, test taking and problem solving skills;

b) Train tutors in the above activities so they may be integrated into tutorials and Saturday College.

D. ENRICHMENT

PRIMARY GOAL:
TO OFFER ENRICHMENT ACTIVITIES THAT WILL ENCOURAGE STUDENTS TO PURSUE CAREERS IN MATH AND SCIENCE, AND STIMULATE THEM TO LEARN MORE THAN JUST WHAT IS OFFERED IN SCHOOL.

OBJECTIVE D-1:
To offer workshops to students that will provide them with enrichment activities in math and science that they can continue and expand upon in school and at home.

ACTIVITIES:

a) Arrange chemistry, physics, mathematics and problem solving workshops for ASET students as part of Saturday College;
b) Arrange field trips for students to local industry and local four-year institutions.

E. MATH. SCIENCE AND ENGLISH COURSE PLACEMENT

It is essential that students have the opportunity to understand the importance of planning and selecting the proper sequence of college prep courses. The coordinator will review and make recommendations to students and parents regarding course selection and placement. This will be done through both ASET student meetings and parent meetings in the Spring.

PRIMARY GOAL:

TO ENSURE THAT ALL STUDENTS ENROLLED IN ASET TAKE COLLEGE PREPARATORY COURSES IN MATHEMATICS, SCIENCE AND ENGLISH EACH YEAR.

OBJECTIVE E-1:

To review student academic course selection to make certain that all students enrolled in the program are taking appropriate level courses.

ACTIVITIES:

a) Review student course selection with Coordinator;

b) Bring any weakness to the attention of the students, and his/her parents.

OBJECTIVE E-2:

To make certain that all enrolled in the program are taking necessary requirements in their academic courses to meet all college admissions requirements of the University of California and the California State University systems.

ACTIVITIES:

a) Hold workshops for parents and students with college recruitment personnel and high school counselors to inform parents and students of college admissions requirements;

b) Review academic course selections in the Spring 1991 with coordinator to ensure students select proper courses for the Fall 1991. Make recommendations to students and parents as require.

F. RECOGNITION

A recognition program to acknowledge participating students and advisors who perform well, will be established.

PRIMARY GOAL:

TO AWARD ACADEMIC EXCELLENCE AND ENCOURAGE ACTIVE PARTICIPATION IN PROGRAM ACTIVITIES.

OBJECTIVE F-1:

To offer non-cash incentive awards for participation in program activities.
ACTIVITIES:

a) Winners of academic competitions will be awarded T-shirts, calculators, pen sets and gift certificates at parent meetings;

b) The ASET staff will work with community businesses and local industry to encourage business involvement in both donating and presenting awards;

c) Annual awards for students who maintain above a 3.3 GPA will consist of field trips to local parks, theaters and museums.

The goals and activities outlined above for the ASET Program reflect the model we seek to continue to refine for the ASET Program at Laney College

INTERVENTION DESIGN

All participants selected will have these characteristics:

1. Be a member of a "minority" defined as African-American, Mexican/Chicano, Native American and/or female.
2. Have completed the ninth grade and been admitted to the 10th grade with California Assessment Program (CAP) scores in Mathematics and/or Reading below the 50th percentile. (The statewide CAP tests are given to all ninth graders)
3. Be below grade level in math, (i.e. not on track to complete high school geometry by the end of 10th grade).
4. Be from a family which qualifies for welfare assistance of any kind.

Additionally, these less easily measurable attributes will be considered:
   -- Interest in SET careers.
   -- Capacity for hard work and discipline.
   -- Motivation to succeed in spite of previous obstacles.
   -- Parental support.

The pool from which participants will be selected comprise three area high schools with contrasting socio-economic profiles:

Fremont High School is located in east Oakland, while Oakland Technical High School is located in north Oakland both are comprehensive high schools in low income, high drug use and high crime areas. Berkeley High School is primarily academic. Located in a university city of considerable affluence and culture in which white students comprise the majority.
COMPARISON OF ETHNIC BACKGROUND:

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<tr>
<th></th>
<th>Fremont</th>
<th>Berkeley</th>
<th>Oakland Tech</th>
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<tbody>
<tr>
<td>American Indian</td>
<td>1%</td>
<td>3%</td>
<td>*</td>
</tr>
<tr>
<td>Asian</td>
<td>7%</td>
<td>9%</td>
<td>15%</td>
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<tr>
<td>African-American</td>
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<td>18%</td>
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<tr>
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<td>4%</td>
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</tr>
<tr>
<td>Mexi/Chic/Lati</td>
<td>37%</td>
<td>4%</td>
<td>3%</td>
</tr>
<tr>
<td>Filipino</td>
<td>3%</td>
<td>1%</td>
<td>2%</td>
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The dropout rates and academic success rates of the three schools when the above ethnic data is factored in will provide interesting comparison data, especially when applied to the sample represented by the ASET participants. Students with identified SET interest will be compared to a cohort control group which will have similar characteristics, but made up of students not accepted into the program (i.e., a group of minority students would be randomly selected and matched as to all characteristics except participation in the ASET program). As in the above outlined comparative study, groups would be measured on such factors as completion of math and science courses, grades and test scores in math and science, relevant SAT scores, college entrance.

Such comparative data should contribute to understanding why minority students are so underrepresented in SET Careers. It may also validate the early intervention approach suggested by this project.

PERSONNEL


Project Coordinator: (50% time). Blas G. Guerrero. University of California, Berkeley; M.A., Education. University of California, San Diego; BA. Coordinator of the Achievement in Science, Engineering and Technology Program (ASET); Laney College; 1989-1990. Program Specialist, Extended Opportunity Program and Services; Laney College; 1987-1988. Coordinator/Instructor of the Minority Institution Science Improvement Project, Professional Development Program, Laney College, 1984-1987. DUTIES: To recruit students and staff, and to handle the day to day administration of the program. Will be the liaison with University of California, Berkeley, Oakland Unified School District, and Berkeley Unified School District. Will be responsible for all program components.
5. Workplan Narrative

[SEE “OBJECTIVES” SECTION OF THIS DOCUMENT.]
6. Expected Outcomes

EXPECTED OUTCOMES

The Laney ASET program will serve 45 minority students who have a high risk of dropping out and guide them into SET college tracks. The program will strive for an 80% completion rate (i.e., 36 of the 45 accepted participants admitted will complete the course satisfactorily). After completing the ASET program students will have completed both algebra and geometry in one year, and be back "on track." They will now be able to enroll in a college-prep curriculum at their respective high schools. Thus, in one year ASET students will be transformed from "second tier" students to "college bound" students. This transformation can have a tremendous impact on the students determination and motivation to pursue higher education.

The UC Berkeley MESA and Upward Bound programs will accept those who complete the Laney ASET program and provide the additional academic support necessary to them to enter and succeed in a four year university SET major. Additionally, the ASET experience will provide participants with the self confidence, motivation, and emotional support to succeed in a SET career.

The ASET program can be replicated at any California Community College. If, the ASET model proves to be successful information will be disseminated to other interested colleges. The ASET proposal and final project report and summary and other pertinent data will be made available to those colleges. The ASET project coordinator will be a resource person for colleges that would propose to initiate similar projects. The outcomes of the project will be documented and submitted to educational journals for publication. The project coordinator will also actively seek to present the program; its goals, objective, and outcomes at educational conferences.

The ASET program by providing a new and creative approach to collaboration between higher education and secondary schools seeks to serve a sector of the population that would otherwise be ignored; "second tier" students. The emphasis and need of remediation in the community college curriculum is becoming overbearing. The ASET program will addresses this problem. By intervening early in the educational career of students, they will be prepared to enter college at a collegiate level and thus no remediation work will be required. This outcome will not only improve the student's chances of academic success, but will also decrease the burden of providing so much remediation curriculum at each community college.
7. Evaluation Plan

EVALUATION

Various indicators will be used to monitor the progress of the students and the progress of the program. To evaluate the academic progress of students four evaluations will be used:

1. Student Self-evaluation
2. Math/science teachers evaluations
3. Tutor evaluations
4. Program coordinator evaluation

The above evaluations will be conducted at the beginning of each semester, at the midpoint and at the end of each semester. Students’ progress will be accessed and appropriate counseling or tutoring will be advised.

There will also be several concrete indicators that will determine if the program is going as planned. The indicators are as follows:

INITIAL SUCCESS INDICATORS

1. Fall semester (1990); high school algebra grades. (C or better)
2. Fall/Spring semester (1990/1991); Geometry enrollment at Laney College

SECONDARY SUCCESS INDICATORS

1. Spring semester (1991); high school algebra grade (C or better)
2. Fall/Spring semester (1990/1991); college geometry grade (C or better)

FINAL SUCCESS INDICATORS

1. Summer semester (1991); enrollment in UC Berkeley's "Pre-College Summer Academy" or Upward Bound's "Summer Residential" Programs.
2. Fall semester (1991); acceptance into UC Berkeley's MESA or Upward Bound programs.
3. Fall semester (1993); admission in a university/college in a SET major.
4. Spring semester (199?); graduation from a university/college in a SET major.
8. Dissemination Plan

[NO “DISSEMINATION” ACCOMPANIES THIS DOCUMENT.]
90-0023

9. Budget Narrative

[NO “BUDGET NARRATIVE” ACCOMPANIES THIS DOCUMENT.]