CALIFORNIA COMMUNITY COLLEGES
AND
SIERRA
COMMUNITY COLLEGE DISTRICT

#91-0028
**FISCAL YEAR** | **ID NUMBER** | **COLLEGE** | **DISTRICT**  
--- | --- | --- | ---  
1991-92 | 91-0028 [See also: 90-0039] | Sierra | Sierra Joint  

**PROJECT TITLE**  
A Student Paced Algebra Program for the 'At Risk' Student  

| FUNDING CATEGORY & AWARD | ELIGIBLE PROGRAM | PROJECT CATEGORY  
--- | --- | ---  
Combination = $88,407 | E --- Improvement of Trad. Instruction Prog | Classroom Research  

| PROJECT PRODUCT | PROJECT TOPIC #1 | PROJECT TOPIC #2 | ACADEMIC SUBJECT  
--- | --- | --- | ---  
Resource Materials | Faculty/Staff Develop |  | Mathematics  

| PROJECT DIRECTOR | PROJECT SUPERVISOR  
--- | ---  
Elaine Whittlesey, Fara Eskandari, and James Sullivan, Instructor | Fred McElroy, Dean Science/Technology Division  

**PROPOSAL DESCRIPTION**  
The goal of this project was to provide a supportive learning environment for ‘at-risk’ students enrolled in Algebra. Open entry / open exit and mastery learning concepts were incorporated in the development of Individualized Learning Programs designed to meet the needs of the target population. Methods were developed to identify ‘at-risk’ students and instructors and instructional aides were provided for six ILP Algebra classes.
Sierra Joint Community College District

A Student-Paced Algebra Program for the “At Risk” Student

The educational program involved in this proposal is the entry level mathematics program. In particular the algebra program.

The algebra classes offered at Sierra College have been the traditional teacher paced, lecture style class. The success rate in these classes (the percentage of students passing with a grade of C or better) is approximately 50%. Thus the number of students who must repeat algebra classes is high and no other method of instruction has been available for the struggling algebra student.

Furthermore there are very few tutoring hours available at Sierra College for the one thousand algebra students each semester. Experience in algebra is important to most academic programs as well as vocational/technical areas. The low success rate indicates that algebra has become a barrier for many students. Failure in algebra stops students from obtaining AA Degrees, transferring to four year schools, and pursuing careers. Failure also causes students to pass on negative attitudes about math to their siblings and to their own children.

THE PROBLEM: ALGEBRA IS A BARRIER TO MATRICULATION OF STUDENTS. WHAT PROGRAM SHOULD SIERRA COLLEGE USE TO PROVIDE a SUPPORTIVE LEARNING ENVIRONMENT FOR "AT RISK" ALGEBRA STUDENTS?

To solve this critical problem the Mathematics Department wishes to experiment with an Individualized Learning Program, (ILP), which will target the population of "at risk" algebra students. The expected outcomes of our project's objectives will allow Sierra College to make an informed decision concerning the type of ILP in which to invest space and financial resources.

Unlike most other "individualized" or student paced math programs, our experiment will offer the student several teaching styles and learning strategies within the same classroom. Mastery Learning techniques will be used and the class will be open entry / open exit to allow for different learning styles.

The proposal's objectives include: research and develop a method to identify "at risk" algebra students and enroll them in the ILP, provide one instructor, two instructional aids (peer tutors
when available) for each of six ILP classes, collect data to use in studying the success rates of ILP and the lecture classes taught the same year and the previous year.

The Impact of the project’s activities, the results of the study, and the evaluation findings will make very clear the benefits of providing a supportive environment for the "at risk’ algebra students. Furthermore the dissemination of the results will provide a model of an ILP can be used by other colleges.

BUDGET: The grant request is for $164,779, of which $98,453 is from local funds and $66,326 is from the Fund for Instructional Improvement.
A Student-Paced Algebra Program for the “At Risk” Student

1. Specific Educational Program Being Addressed

What specific educational program or services is being addressed?

The Sierra College educational program involved in this proposal is the algebra segment of the Entry Level Mathematics Program. This program has been changed by the recent addition of an individualized Learning Program (ILP) approved in the fall of 1990 for implementation in the fall of 1991. It is this, new ILP program that is the focus of this grant proposal.
2. Specific Problems Being Addressed

What specific problem is being addressed in this proposal?

BACKGROUND

All of the algebra classes offered at Sierra College are of the traditional teacher-paced lecture style. The success rate (i.e. "the percentage of students passing with a grade of C or better) is approximately fifty percent. As a result, the number of students who must repeat algebra classes is high and retention of students is difficult.

Furthermore, students enrolled in algebra have little access to tutors. Currently there only 13 weekly hours of tutor time available to the one thousand algebra students each semester. Additional individual tutoring for all disciplines can be obtained through the Learning Opportunity Center, however even considering both resources for individualized help, only a small fraction of the two thousand math students on cur campus can be served.

Experience in algebra is important to most academic programs including those in the vocational/technical areas. As a result, the inability to master algebra has become a barrier for many students. Failure in algebra prevents students from obtaining AA Degrees, transferring to four sear schools, and pursuing career=. Failure also perpetuates increased math anxiety} in future generations as students pass on hopeless and negative attitudes to their siblings and to their own children.

THE PROBLEM:

ALGEBRA IS a BARRIER TO MATRICULATION OF STUDENTS. WHAT PROGRAM SHOULD SIERRA COLLEGE USE TO PROVIDE A SUPPORTIVE LEARNING ENVIRONMENT FOR "AT RISK" ALGEBRA STUDENTS?

To solve this critical problem the Mathematics Department must research and test an Individualized Learning Program (ILP). A sensible and fiscally responsible approach would be to first identify the "at risk" algebra student, then enroll them in special classes. Finally, based on the outcomes of the experiment, Sierra College and the Mathematics Department will have concrete data with which to make informed decisions concerning the commitment of space and financial resources for the students in our Algebra Program.
3. Population To Be Served

Identify the population served in this project.

The population served by this project will be the one thousand algebra students per semester who attend Sierra College. The specific targeted population will be the algebra students who enter the program that have been identified by our study as at risk. Within this group will be math anxious students, underrepresented students as well as many returning students, working students, and single parents.
4. Objectives

Proposal objectives.

BACKGROUND:
Unlike most other "individualized" math programs this project offers the student several teaching styles and learning strategies within the same classroom. Each day, the student will be able to select the learning environment that best accommodates his/her needs. Students will be coached on how to take responsibility for their learning, and progress will be carefully monitored. In order improve achievement, mastery learning techniques will be used. In addition, the class IS open-entry arc open-exit in order to allow for the variety in learning rate-and styles which exist among community college algebra students.

OBJECTIVES:
The proposal objectives are:

1. research then evolve a method to identify "at risk" algebra students; then encourage them to enroll In the ILP classes.

2. locate end acquire, or create mastery learning and testing materials along with supplementary materials for each, of the two algebra courses.

3. provide one instructor two instructional assistants and peer tutors when available for each of the six classes each semester; also arrange for clerical help.

4. design classroom space which will accommodate the variety of learning activities: order- equipment and supplies.

5. develop the administration and management of the Individualized Learning Program.

6. set up the classroom.

7. instruct six classes of ILP each semester of the 91-92 school year: three in elementary algebra and three in intermediate algebra.

8. collect and analyze data. The analysis will include comparisons of success rates between ILP and the algebra classes taught during the 90-91 academic year as well as the regular algebra classes taught in 91-92.

9. complete the evaluation process and formulate recommendations for the project's improvement; prepare the semi-annual report.
10. write the final report and forward to the appropriate administrators, the Faculty Senate, and the Chancellor's office.
5. Workplan Narrative

Work Statement

What follows are the Work Statement Forms for each of the ten objectives of the project. Accompanying these to Chart I. showing the breakdown of each objective's budget into Personnel, Evaluation, Equipment, and Materials. The Legend below is used in the ten forms. Also, (LF) follows some of the entries; LF means local funding.

Legend for Personnel Responsible:

- **P.D.** Project Directors who are Elaine Whittlesy, Fara Eskandari and James Sullivan
- **P.S.** Project Supervisor who is Fred McElroy, Division Dean
- **D.D.O.** District Development Officer who is Kevin Ramirez
- **P.M.** Project Monitor from the Chancellor's Office
6. Expected Outcomes

[NO "OUTCOMES" ACCOMPANIES THIS DOCUMENT.]
7. Evaluation Plan

[NO “EVALUATION” ACCOMPANIES THIS DOCUMENT.]
8. Dissemination Plan

[NO “DISSEMINATION” ACCOMPANIES THIS DOCUMENT.]
9. Budget Narrative

[NO “BUDGET NARRATIVE” ACCOMPANIES THIS DOCUMENT.]