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The use of Computer Assisted Drafting (CAD) by a wide-variety of organizations, public and private, is increasing rapidly. Not only large organizations such as the Lawrence Livermore National Laboratory and Sandia National Laboratory in the Tri-Valley area, but small design and architectural firms along with engineering and construction companies are using CAD as well. On the public side, cities and counties are using CAD in their Public Works and Planning departments.

Las Positas College has long had an effective engineering design and drafting technology program which incorporates CAD within its curriculum. Currently, one company, AutoDesk, has a functional monopoly on CAD software, boasting over 80 percent of the market share in engineering design companies. Its new Release 12 is by far the most widely used software for engineering/drafting applications. This software is powerful, very expensive, and has made earlier versions essentially obsolete. The college, with Release 11, is one release behind at the present time.

Little CAD contract education has been done to date due to a lack of access to hardware and software. The district has its first CAD contract scheduled for March, 1993. It will be held on the Las Positas College campus in Livermore and involve the Lawrence Livermore National Laboratory.

This application is for a combination grant and loan. It is designed to Upgrade Las Positas College’s drafting program in the area of Computer Assisted Drafting (CAD)

Provide a second site for the purpose of effective, economic development classes in CAD, and

Make the CAD program more accessible to disabled students by providing a voice-activated computer station.

The grant portion of this application will be used to Better assess the CAD needs of the surrounding community,

Assess the entry-level skills needed by our students,
Train all full-time and part-time instructors in the new hardware and software,

Bring to the community college student the same high level of training on the same equipment that is being given to professionals involved in business and industry, and provide a model for training disabled students that can be replicated elsewhere.

The loan portion of this application will provide all necessary hardware and software. The loan will be repaid through funds generated by the district's contract education program. Because of its serious training needs in the area of CAD, Lawrence Livermore National Laboratory, has agreed to be a consortium partner in this application.
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[No information provided in this document for this section.]
Under Section A--Eligible Programs and Services this application focuses on Program Development. Within this area Part C is checked and defined as "Integration of Traditional Educational Programs with Economic Development Activities."

During this time of economic uncertainty, the Chabot-Las Positas Community College District and each of its colleges have been seeking ways to more effectively use their personnel and facilities and to generate new revenue that is not dependent upon state apportionment. Two years ago Las Positas College developed a new outreach center of six classrooms (two with computer facilities) in the middle of the vast Hacienda Business Park, home to many local and national businesses. At about the same time, the district placed new emphasis on contract education by creating the Center for Business and Education Partnerships and locating it adjacent to the LPC classrooms at Hacienda.

Since then, many contract education programs, especially computer related ones, have been offered at this site. This application proposes to more thoroughly integrate traditional on-campus vocational programs with the in-service programs provided through contract education by using the same hardware and software for both populations. This moves the college a long way from the days when companies would donate their obsolete equipment to educational institutions (for purposes of tax relief) and students believed they were achieving entry-level skills on state-of-the-art equipment.

Because of the district's need to use all of its state-apportionment over the next few years, it has elected to repay the loan portion of this application from its vigorous contract education program rather than from normal apportionment revenues.

Under the Board of Governors 1992-93 Basic Agenda Focus this application specifically addresses Economic Development and Vocational Education. It also seeks to increase the number of successful under-represented students in vocational education programs, specifically disabled students, by creating a voice-activated computer work station which can serve as a model throughout the state.

The educational program the grant/loan is directed towards is the Engineering Design and Drafting Technology program, a certificate or Associate in Arts degree sequence of study. The
The primary role of the individual courses is one of specific job preparedness. The core of the program is based on a combination of manual and computer-aided drafting classes. This core is complemented by related classes in mathematics, industrial technology, structural concepts, engineering technology, (materials, and graphical kinematics), and orientation to career opportunities in drafting, producing a technologically-sound and well-rounded student, but also one who is specialized in electro-mechanical applications, the major need of this Tri-Valley geographical business community.

One of the secondary roles of the program is to foster mutual understanding between students, encouraging their awareness of cultural diversity. Many of the design projects are class projects, resembling to real industrial problem solving, stimulating a team effort and recognizing individual creativity. The instructors and students alike sustain strong cooperative relationships with the community, business, government, and industry, all sectors which employ LPC graduates and continuing students. There is an active effort to place drafting graduates in jobs following and during training.

Last spring’s Statewide Student Follow-Up Survey (SSFS) reveals our students sense of responsibility and high level of motivation. Forty-four percent of the students in the drafting curriculum are over the age of 36. Almost half of the drafting students are returning older students. Sixty-eight percent of the students enrolled in drafting classes are preparing for new careers or a job change/advancement in their careers. Almost 25 per cent of the students are women, many of whom are re entry students, searching for new careers and the flexible options that non-traditional occupations present.

Most Las Positas students work while attending school. In Drafting Technology 44 percent are working full time and 23 percent work part time. These figures communicate the fact that drafting students believe that education is the key to job procurement and skill enhancement, specifically computer training to create the graphics and geometry that was traditionally done manually. The emphasis of the program has shifted in the last eight years from serving a majority of students with degree ambitions to catering to the part-time student whose primary motivation is to hone job skills as expeditiously, conveniently and economically as possible. It is this evolving and increasing population of older students with special needs which this grant targets.
All vocational programs face several continuing challenges in meeting the needs of their students and the business community. Chief among these challenges are the currency of expensive equipment and facilities, and the currency of the instructors' knowledge of industry's needs for training and entry-level skills. This application seeks through the loan portion to purchase the latest equipment and software, and place a portion of it in the center of a large business park for purposes of economic development through contract education.

The grant portion will provide reassigned time for the college's drafting instructor to meet with and survey local businesses for their needs. Workshops will then train all drafting instructors in the new equipment and in industry needs. This will address the need that companies have for new employees who are CAD "ready" at the time of employment.

The second demand is for CAD training for current employees who perhaps have been doing traditional drafting work and need to upgrade their skills. A variation on this situation is the need by business for upgrade training from version 11 of AutoCad to the new version 12.

There are few resources to which this working population of adults can turn to update their skills and insure against obsolescence. Most of their employers do not have a stable in-house training department that can address these needs to the depth and with the frequency needed. Many regard the local community college as the best source for quality, inexpensive education.

The problem is that Las Positas, like so many community colleges, faces severe fiscal restraints that prevents acquisition of the new version 12 upgrades for AutoCad. Our ability to respond to requests for contract CAD training are seriously limited by lack of access to designated CAD hardware and software.

Las Positas College is committed to increasing access to occupational programs for physically limited individuals, especially occupational fields where employment opportunities, current and mid-range, are bright and well paid. In the CAD program, the lack of a work station adapted for use by dexterity-reduced students hinders the ability of the college to respond to this need. On the contract education side, companies are increasingly interested
in upgrading the skills and training of currently employed individuals who are physically limited. Here again, the lack of appropriately adapted hardware makes our ability to respond difficult.
Three distinct populations will be served by this grant and loan. All will be impacted over both the short and long term.

First are the students (fully described above) who are enrolled in the college’s drafting program which operates in the day and evening, serving approximately 300 students during an academic year. That number will certainly diminish if the program’s equipment becomes outdated.

The second population is drawn from those currently employed in business and industry who need to upgrade their skills for their current position or who need to upgrade their skills to move to a different position. Often these employees are at risk. Either they improve their skills or lose their jobs.

The final population to be served is the physically disabled student. Drafting and computer classes provide training and job entry to many students who are wheelchair bound. In the two most recent years at Las Positas, more of these students have had limited use of their hands and arms either through spinal injury or cerebral palsy. While their numbers are not great, their needs certainly are. We propose a single, voice-activated work station at this time which will serve these students. With successful outreach activities, additional work stations may be needed over the long term.
This application seeks to realize six of the Board of Governors initiatives:
Maintain and improve the quality of instruction to promote excellence in the classroom, in both teaching and learning.

Make vocational education programs more relevant and work with industry and the private sector to prepare students for employment.

Update the vocational curriculum by incorporating modern industrial techniques.

Tie vocational courses to both intermediate and long-term labor market requirements.

Increase the number of contract-education programs for training and retraining currently employed workers. Implement faculty and staff development programs to improve the skills of college personnel.

Specific objectives of this grant and loan application are as follows:
1. Within 30 days of formal receipt of the loan, the purchase order for the 12 upgrade copies of AutoCad, Release 12 will be issued with delivery requested within 21 days following receipt of the purchase order.

2. Within 30 days following loan confirmation, the purchase order for all materials needed for six new CAD training stations at the Las Positas College education center in Hacienda Business Park will be issued with delivery requested within 21 days of purchase order receipt.

3. Within 30 days following loan confirmation, the voice adaptation software along with any other required equipment will be ordered, requesting delivery within 21 days.

4. Within the same 30-day period in 1-3 above, leaflets describing the college drafting program will be modified to reflect the software upgrade, and marketing material will be prepared and distributed announcing the availability of customized CAD training in the Tri-Valley area. All materials
will advise prospective students, companies and public organizations that adaptive, voice activated CAD training is now available.

5. No later than 30 days after the receipt of the new software and hardware, it will be installed and ready for student use.

6. By December 1, 1993, all full and part-time instructors in the Tri-Valley will be invited, and at least 80 percent will have attended, two workshops designed to familiarize them with the new equipment. Representatives from Lawrence Livermore National Laboratory will participate in the workshops' design and presentation.

7. By June 1, 1994, at least 20 Tri-Valley businesses, both large and small, will be contacted by an instructor given reassigned time for that purpose. Appropriate company officials will be interview concerning job entry skill levels required for drafting students. Representatives from Lawrence Livermore National Laboratory will participate in constructing interview questions and in tabulating and analyzing results.

8. By June 1, 1994, at least 20 Tri-Valley businesses will be contacted concerning their job-training needs in CAD. All companies contacted in numbers 7 and 8 will be informed about the college's programs, facilities, and equipment.

9. By June 1, 1994, the college's drafting program will have shown an increase in students of 10%, and an increase in disabled students of 10%.

10. By June 1, 1994, a report will be prepared detailing the results of the use of the voice-activated drafting station. This report will be suitable for distribution to other drafting programs throughout the state and for presentation at an appropriate vocational conference.

11. By June 30, 1994, the end of the fiscal year, the contract education program will have generated a minimum of $18,500 in gross revenue from customized CAD training. Additionally, $11,100 in gross revenue will result from customized adaptive CAD training.
12. Within one month after the close of the fiscal year, June 30, 1994, an amount equaling one-third of the loan will be placed in a district account created for the purpose of repaying the loan.
The workplan which is attached to this narrative clearly shows the activities, responsible parties and timelines attached to each of the application’s 12 objectives. With respect to the budget, all of the loan amount is attached to objectives 1 to 3. College matching funds will be used to accomplish objectives 4, 5, and 10, while grant monies will be dedicated to objectives 6 through 8. No actual funds will be used for objectives 9, 11, and 12. These will result from earlier activities.

All grant and loan activities will be supervised by three college personnel: Project director John Rath, Center for Business and Education Partnerships director Robert Wood, and Drafting Instructor Carolyn Baranouskas.

The receipt of the grant and loan funds will begin the process of upgrading the college's drafting software from AutoCad Release 11 to Release 12 and the addition of six stations to the existing 12 which will be used for both contract and regular instruction. The drafting program will be relocated to room 5 the PC laboratory at the college’s facilities in Hacienda Business Park. All of the purchase and installation will be accomplished (barring fiscal delays at the state level) in time for the autumn 1993 academic quarter.

During the 1993-94 academic year, both Mr. Wood and Mrs. Baranouskas will be marketing the facility and its programs through revised publications and through visits to individual Tri-Valley businesses. This activity should result in a 10 percent or greater gain in drafting students in the regular program and in increased contract education billings of at least $29,600 in the first year of operation. In addition, Mrs. Baranouskas will take the lead in providing workshops for the college's additional drafting instructors.
We do not anticipate any difficulty in meeting the project’s 12 objectives. They are straightforward and easily attainable once funds are available. Computers and software can be purchased and installed, workshops can be held, and businesses can be contacted. No one can guarantee additional students or contract education funds, of course, but there are sufficient local businesses and job opportunities in the field to give us confidence. Lawrence Livermore Laboratory is determined to "outsource" its CAD training (see attached letter), which is considerable. It does, however, demand Release 12. The same demand is evident in our drafting program. In a recent class, three students dropped when they discovered that we were teaching Release 11, not Release 12.

We expect this project to have a significant, positive impact on our college and district. The drafting program should attract more students, and the contract education program should generate more non-apportionment revenues and contribute to the economic climate of the valley. It is imperative that the college be able to provide CAD training using the most recent software release. We are located in an area where employers are accustomed, “cutting edge” technology.

There is high potential for continued support of the project objectives after the expiration of the grant. With equipment, training and marketing in place, only two items remain to institutionalize the grant/loan for future years: anticipated additional disabled students, and anticipated future releases from AutoCad. New work stations for disabled students will be funded through VATEA (drafting is an eligible program) and DSPS funds, and the new AutoCad releases will be funded through contract education.

We do not claim that our grant would have system-wide application, but in at least one area we feel that other community colleges could benefit from the experience we gain through this grant. What we learn about teaching CAD drafting to disabled students could be easily transferable to other institutions. We will write up this part of the grant activities for distribution to other colleges and put the material in a format suitable for a conference presentation. The written report will be distributed to vocational deans, drafting instructors, and HSPS directors throughout the state.
Project evaluation standards are clearly spelled out in the objectives (above) and on the Annual Workplan and Performance Indicators form. They were designed to be easily and objectively verifiable. All results can be documented by July 31, 1994, one month from the final date allowed for grant activities.

Formative Measures:
The project director has the primary responsibility for seeing that project activities occur on time and that all objectives are met. It will be his responsibility to identify any problems that may arise and to bring the district's resources to bear on solving them. The project director is responsible for filing quarterly reports with the State Chancellor's Office detailing how objectives are being accomplished and how funds are being used.

The project director will maintain close contact with contract education and drafting technology personnel to identify effective processes and outcomes. He will also maintain close contact with the DSPS director to ascertain any problems that might arise with the new voice-activated equipment. At least twice during the year he will arrange meetings that bring the drafting instructor and the Dean of Instruction together to assess the project's progress.

The drafting technology, contract education, and DSPS personnel will funnel observations and recommendations concerning the progress of the project to the project director so that midcourse corrections can be made as needed.

Summative Measures:
At the end of each quarter, drafting students will be surveyed for their reactions to the new program. Both student satisfaction and success will be measured, with retention rates and levels of achievement being used as appropriate.

The vocational advisory committee will be used as a resource to evaluate program results, and instructors in the program will be surveyed for their reactions.
At the end of the funding year, a report detailing the success of the project will be prepared for distribution. At a minimum it will contain a description of the year’s activities, statistics concerning enrollments, job placements, and contract education revenues, problems encountered in administering the project, and projections into the future. One section will be devoted to the results of the new voice-activated drafting station. This section will also be printed separately for statewide distribution.

The full report, after being reviewed by drafting technology, contract education, and disabled students personnel will be presented to the Drafting Technology Advisory Committee, The College President's Cabinet, the Academic Senate, and the district Governing Board. This report will be presented to each group by its first meeting of the 1994-95 academic year.

The report on the voice-activated drafting station will be distributed statewide to the State Chancellor’s Office, and to the drafting faculty, vocational deans, and HSPS directors of the other 106 community colleges. This report will be mailed by September 1, 1994, and will include a return envelope and a brief form requesting comments from the recipients. These return forms will be summarized and used as one method for evaluating the project and the dissemination plan.

Finally, a conference presentation will be prepared on the voice-activated station for disabled students. Various state-wide conferences will be contacted in the ensuing academic year to see if a presentation is desired.
All equipment and new Release 12 software mentioned in this application is intended to be in the form of a loan. Grant funds are requested for the following activities: upgrade of existing Release 11 software, workshop support, reassigned time for a drafting instructor to contact local businesses, and compensation for the drafting instructor to prepare required grant reports for dissemination.

Specific budget amounts are listed on the appropriate budget forms. Where reassigned time is budgeted, the hourly instructor replacement rate, not a full-time instructor’s contract rate is used. Funds budgeted for preparing required grant reports are at the normal instructor summer project rate which is less than a summer instructor teaching rate.

Financial participation by the college in the grant side of this application totals 85 percent.