SANTA BARBARA CITY COLLEGE

TO:    Board of Trustees
FROM:  Mel Elkins
       Dean, Occupational & Career Education
DATE:  February 5, 1986
RE:    In-Service Training Project of 1984-85 (SB 3938)

During 1984-85 eight instructors in Occupational Education participated in an in-service training grant in a business or industry.

In return for receiving a stipend, the instructional staff were given the opportunity to upgrade their skills in selected industries; furthermore, the faculty agreed to incorporate the new skills learned into their own respective curriculum and/or student learning packets. Emphasis of in-service grants were to deal with computer software/hardware systems common to their area of instruction.

Results of specific in-service training grants are as follows:

Health Occupations

Myrene Smith (Business Site - Cottage Hospital)

- Objectives
  - Use the computer to order laboratory studies for a patient.
  - Retrieve results of laboratory studies from the computer.
  - Design one menu for care of a patient with a particular diagnosis.

- Introduction

Computer use in industry has been expanding rapidly in the past ten years. It is an efficient and timely way to tabulate and store data. Hospitals began using computers in the accounting department to monitor charges, itemize services, and issue bills. Once computer capability and potential was realized, its use was expanded to other patient care services. Hospitals need to retain data regarding patient care services and also need to retrieve the data and supplement it. To facilitate this process, hospitals began using computers to compile and store data about patients.

The local hospital chosen as the training site has computer terminals at each nurses' station. Each unit's census of patients, delineating physician, diagnosis, treatments, prescriptions, and diagnostic studies is stored in the computer. The computer is used to communicate between departments; i.e., request tests, order supplies/equipment, and obtain results of tests and laboratory studies. All personnel are expected to be familiar with the computer, its usage and capability.
Since hospitals are used as a clinical laboratory for students in the Associate Degree Nursing program, it's important to know the extent of computer use in hospitals to adequately prepare the students for the work force (job expectations). They need to know to what extent nursing personnel are expected to use computers in planning, implementing, and documenting nursing care.

- **Purpose of In-Service Training**
  - To ascertain the extent of computer usage in a local hospital as it relates to management of patient care.
  - To provide an opportunity for faculty to have an on-site practicum in computer use.
  - To recommend curriculum changes that will provide students with basic information regarding the use of computers in managing patient care.

- **Findings**

  Nurses are expected to be familiar with computer use in the management of patient care. At present in-service is provided to new employees regarding computers. Nurses will need to know how to communicate with other departments via the computer rather than by phone or written messages. Computer usage saves employee time and facilitates communication and documentation. Because of confidentiality, students will not be permitted direct access to computers but will have to work in tandem with hospital employees who have security clearance and a code # to access the computer.

  As the faculty member involved in the in-service training project, I was permitted unlimited use of the computer in the training center at Cottage Hospital. I reviewed the training manual, practiced on the computer terminal, and conferred with the job-site supervisor. I can now access the computer to retrieve and input data as well as survey data and send a message. I designed a sample care plan for a patient, however, this hospital is not yet putting nursing care plans into the computer. Once I understood the computer and had practiced on the training unit, I observed its use by different department. I observed data entry, data retrieval, communication between departments and the initiation of printed reports.

- **Recommendations**

  Since patient care data related to nursing care is being tabulated and stored in computers, the faculty needs to continue to survey and keep abreast of usage in the local hospitals used as clinical laboratories for students in the Associate Degree Nursing Program.

  Computer hardware should be purchased for the on-campus learning laboratory to provide practicum for students. Since hospital security negates this experience.

  Students should receive a manual that provides instructions in accessing computer information related to patient care (see the attached [on file]).
Drafting/CADD

Margaret Fajima (Business Site - Delco)

- Objectives

- To gain familiarity with the standard procedures and operations of Delco’s data general S140 S230 CALMA CAD system, with particular attention to areas of similarity between CALMA system and SBCC hardware/software.

- To gain familiarity with a 3D wireframe system, using CALMA’s DDM (Design, Drafting, and manufacturing) software, particularly in relation to analysis and design considerations.

- To gain familiarity with CAD/NC interfaces in use in industry, using CALMA’s DDM software, including conversion to IGES format and creation of post-processed machine commands.

- Introduction & Findings

Delco is currently using GE’s CALMA CAD system. This is a large-scale CAD system running on Data General S140 and S230 computers. Two CALMA software packages are in use; one for PC (printed circuit board design) and one for mechanical design -- CALMA’s DMM (Design, Drafting, and Manufacturing) system. I received training on DDM, a 3D wire-frame modeling package. The system consists of two monitors: a monochrome alphanumeric display, and a high resolution, long persistence phosphor color graphics display. It is both command and menu-driven, and accepts input via digitizer and stylus or keyboard. I recommend that all of our CAD 2 students are given the experience of using a digitizer and stylus as well as a digitizer and puck. Expect for certain parts of the program, there is no on-screen menu.

CALMA commands use three-letter abbreviations, called "mnemonics;" e.g., CRC for circle, LBP for line between points, PND for endpoints, etc. CALMA’s syntax is relatively complex in comparison to the micro CAD systems in use at SBCC. The carriage return key on CALMA’s keyboard does not enter commands and is reserved for text editing. CALMA’s enter key is called "command complete" or "C/C." The CAD instructors at SBCC should alert their students to these potential differences when teaching keyboard usage. It is also of interest that CALMA’s equivalent of P-CAD’s VIEW/FIT and AUTOCAD’s ZOOM/EXTENS commands requires a repaint command to update the screen. The lab manual states that redrawing the screen, especially in CALMA’s 2D "drawing" mode, can take time, and the operator may wish to continue editing the drawing, reserving screen redrawing for stages of operation when required for clarity.

- Findings & Summary

At present we are spending approximately two weeks in training our students in basic MS-DOS commands, such as deleting and renaming files, etc. I believe that all CAD operators, including those who will use large scale CAD systems, will benefit from some experience with what an operating system does and how it works with an applications program. An additional benefit is derived from learning commands and syntax. The suggestions listed above pertaining to EDLIN and directory handling should not significantly increase
the amount of time allotted to teaching the operating system, as those students who will use mini or mainframe based systems will not require an extensive knowledge of MS-DOS.

CALMA has similarities to both P-CAD and AUTOCAD, and is, naturally, much more complex and powerful than either. CALMA’s method of handling symbols is markedly similar to P-CAD’s, including origins and nodes. I intent to update our own P-CAD symbol library to make it as similar as possible. CALMA also stores and places "submodels" in much the same way as AUTOCAD handles "blocks." I did not encounter any particular difficulty in learning either symbols or submodels thanks to my previous experience with both programs.

I was surprised to see Delco’s machine shop using a TRS 80 micro computer for their NC programming.

NOTE: The CADD program is trying to integrate their design function with CNC (programmed machining) at SBCC.

At the suggestion of EDS, the machine shop will upgrade to an IBM or compatible (Victor 9000) sometime in the future. I was given a tour of the machine shop by Walt -------, who was most generous with his time and information. The CALMA system produces part geometry in ASCII files, which are then directly used to create post-processed machine commands. The ASCII files are read directly into the TRS-80 program; there is no need for IGES file conversion. A small (B size) Watanabe plotter is used as a preliminary step to trace the path of the cutting tool. Walt stressed the amount of time saved by using the plotter for tracing cutting tool paths and by proving out programs on the machine since small pieces of wasted stock are less expensive than the amount of time spent correcting programs.

Machining

Ed Soule (Business Site - Yamazen Corp.)

- **Objectives**
  - Learn to program a computer numerical control milling machine with a Funuc 3M or 6M control.
  - Learn to program a computer numerical control lathe with a Funuc 3M or 6M control.
  - Learn to operate the Bridgeport E-Z CAMII-EZ term lathe software.

- **Outcome**

  Develop a student training course manual for NC machining.

- **Introduction of Training Manual** (Used in NC machining classes at SBCC)

  This training course has been prepared to give manufacturing and programming personnel an exposure to NC/CNC utilization. The term N/C utilization refers to manufacturing planning, tool planning, part programming, data input, and finally, part machining.
As with most training programs, there is a limit as to what can be taught by the use of books, training aids, and lecture notes. Final training comes when all of the classroom training is put to work and parts are actually being manufactured.

It is intended that this course will give sufficient coverage to all areas of N/C manufacturing so that manufacturing personnel can apply their skills, knowledge and talents to this manufacturing concept. Students will discover that they still have control over the machine; however, the machine will require that they think completely through the manufacturing operation prior to machining with N/C.

Since an N/C machine is a non-thinking and obedient slave, a part not manufactured to blueprint dimensions usually will be the fault of the N/C programmer.

This course will spend a large amount of time in the area of manual part programming. The reasons for this is that a firm understanding of the codes that control the machine is essential in order to fully utilize the NC/CNC concept.

Numerical Control in Manufacturing

Numerical Control is the operation of machine tools by a series of coded instructions which are comprised largely of numbers. However, letters of the alphabet and sometimes symbols are also employed in developing numerical control instruction codes. Numerical control means that a program of machine operating commands, comprised of organized and documented symbolic codes, placed on a suitable medium, such as paper perforated tape, magnetic tape cassettes, floppy disk or directly between a computer and the CNC control, direct some or all of the fundamental operations of a specific machine tool. This storage media is nothing more than a permanent record of the directions that were required to fabricate or machine the material by a specific machine tool.

Numerical control does many of the same operations that were accomplished previously in conventional machine tools. The degree of accuracy and repeatability is substantially intensified. Also, the control system does not think or make an arbitrary decision on how it should respond; it receives all of its direction from the control media itself. Actually, the key word in numerical control is the word control.

With the introduction of numerical control into manufacturing, many complicated shapes can now be machine which would have been near humanly impossible before. The operator of a conventional milling machine would be hard pressed to coordinate two slides to make an accurate taper cut, but electronic controls can and do regulate two, three, and as high as five slides simultaneously and will repeat exactly the same motions when required to do so.

One main prerequisite of N/C is the necessity of formally preparing a manufacturing plan in writing prior to machining. The days when things were done intuitively or instinctively are gone. Manufacturing people must learn to logically organize and precisely state their machining sequences. Programming for N/C machine tools has become a well-organized
and disciplining factor wherever N/C machines are successfully operated.

In moving from the conventional manufacturing into N/C manufacturing, two additional steps are required in order to machine a part. The first is the requirement of an N/C programmer and the second is a data input device.

The numerical control programmer is the pivot person of the entire N/C procedure. he must know machining practices, materials, cutting tools and fixturing. He must know the machines, how they respond and how to set them up. His knowledge is expressed on the control tape itself.

The second additional step in N/C manufacturing is the data input preparation. In some cases of manual programming, a tape preparation unit (resembling a typewriter) is used to copy the necessary information from a manuscript prepared by the N/C programmer. At the time the tape is being punched, a proof sheet is being typed and can be used to verify the accuracy of the control tape. Another method, known as MDI or Manual Data Input, requires that the programmer or operator manually input the program data into the machine’s memory via the keyboard on the control unit.

An alternate method to tape preparation is the use of a computer. With computer processing the N/C manuscript is processed through the computer, with the final output being sent to the CNC control. After obtaining the data input, which in a sense is a very important part of a tooling package, it is necessary to proof the data input just as a drill jig or fixture would be proofed.

- **Numerical Control Parts Programmer**

  The numerical control programmer’s task is to develop a detailed manufacturing plan pertaining to the numerical controlled machine only.

  Part of this plan will be the machine instruction which result in the machine data input.

  In order to develop a comprehensive plan, information must be gathered, evaluated and incorporated. The sources of information will be the blueprint for the material to be worked and the dimensions of the part. The tools, both holding or positioning fixtures, and the cutting tools must become an integral part of the plan. The raw stock size and any preliminary information which is required for forgings and castings will be obtained from the engineering documentation.

**Business Office Education**

**Myrna Harker (Business Site - St. Francis Hospital)**

- **Objectives**
  - Learn how to input information on a computer; and retrieve from a database system.
  - Prepare accounts receivable and payable from a computer system.
• Prepare payrolls from computer store information system.

• Experience & Outcomes

Because of the quickly-changing technology in the area of handling information in the office, I felt it was important for me to learn from those in the field so I could then transfer that learning to the students in the Business Office Education Department at Santa Barbara City College.

Leslee Willingham, the business manager at St. Francis Hospital willingly shared her expertise with me and she also prepared each department at the hospital for my arrival. I was very impressed with the knowledge, understanding, and the skill level in every area of the business department. Although those in the department process a tremendous amount of information, using sophisticated equipment they work efficiently and accurately maintaining a pleasant business-like atmosphere.

Since I was allowed to spent time in the areas of admitting, cashiering, billing, data processing, and transcribing and medical records, I was able to see the progression of paper work from the beginning in admitting of the patient to the discharge and collection of charges.

In the classroom the students will have the opportunity of processing patient information in a similar but simplified manner, using a student packet and the PSF software on the Apple computers. They will experience using computers in every phase of the paper flow. Not only will it give them computer experience, but as a result of this experience, they will understand various ways in which computers can be used to advantage in the business office. I feel this will certainly enhance their learning here at Santa Barbara City College.

In addition to my training at St. Francis Hospital, I attended a two-day workshop for the in-service participants which was helpful in my preparation of materials.

As a result of these experiences, I also prepared a course outline for submission to the Curriculum Committee so our Department will be able to offer a simplified word processing program for our students in addition to the word processing classes presently being offered.

Hotel & Restaurant Management

Tom Smith (Business Site - Santa Barbara Cash Co. & Marriott Corp.)

• Objectives

• To become familiar with hotel reservation/accounting systems. To become familiar with "TRIMS" (total restaurant information management system).

• To gain hands-on experience of both hardware and software of above systems.

• To evaluate application of above systems for use in Hotel Restaurant management Training programs; in specific, HRM Department, SBCC.
Findings & Outcomes

General

- Having never before used a computer in any capacity either in or out of the college environment. I gained a vast knowledge and have been able to incorporate many computer applications to my teaching assignments.

- The confidence gained in computer use has prompted me to purchase a PC for my personal use and college related teaching assignment.

- The goals of the in-service project as originally projected were accomplished. I gained exposure to systems available and was able to evaluate them for our specific classroom and Food Service Management needs.

- The knowledge gained led me to contact all software distributors of food service systems and secure sample disks, related information, and demonstration by the suppliers to evaluate and select a system for the college’s food service management training program (HRM).

Specific

- In gaining the above general knowledge I was able to learn about specific programs that are available to the restaurant industry. These programs to date have been sold as a package to the industry because the user, like myself before the in-service training, has little or no knowledge of basic computer usage. The result of this has led to the basic fact: the software is the important part, not the hardware.

- The software available is very complete and there are over 100 major programs varying in size and depth that can apply to the restaurant industry. In reviewing this program information I can now see the need to perhaps have available different project examples of many levels of these programs for the student entering the industry. These students are sure to come in contact with computer assisted programs for the restaurant industry.

Graphics Communication

John Morrisohn (Business Site - Tidbit Computers)

Objectives

- To identify the basic operating procedures and technologies used in the computer graphic systems through the hands-on operation and use of various computer graphics programs.

- To develop instructional materials related to computer graphic operating procedures, fill routines, typography, airbrushing, borders and fills during the hands-on use of the computer programs.

- To produce in-process evaluation sheets for a modular instructional format that will cover basic units of instruction for the computer graphics course.
Summary & Outcomes

During my in-service training, I participated in the computer concepts class, worked with Bob Scott of Tidbit Computer Graphics, developed in-process evaluation sheets covering the units of instruction for GP 5 - Computer Graphics Application Class and developed operational skills with a variety of graphics programs through hands-on work.

The units of instruction that were developed are: Number Systems/Basic Computer Operations and Commands Advanced Number Systems and CPU, Object Display/Basic Flow Chart, Coordinate Systems, Graphic Commands, Output Devices, Basic History of Computers, Micro/Typographer, Blazing Paddles and Digitizing.

The hands-on operations included computer operating procedures, basic programming on the Apple IIe, use of the Micro/Typographer program to design fonts of type, various graphic programs, such as Blazing Paddles, Dazzle Draw, Print Shop, The Complete Graphics System, etc., which helped me to understand fill routines, air brush, zoom graphics, text mode, shapes mode, color mode, etc. I also gained hands-on experience with the video digitizer through the use of the Digitector Converter (digitizing analog to digital images). With a video camera, we are able to transfer visual pictures (analog) to computer digital images.

In summary, I gained a great deal of insight and practical experience on the various graphics programs used on the Apple IIe microprocessor. With the use of various input devices including the video digitizing unit, I was able to develop a series of in-process evaluation units that will be used in the GP 5 - Computer Graphics Application Class.

Business Office Education

Marie Gressel (Business Site - Applied Magnetics)

Objectives

- To see how to organize and sort data and how to use this data for specific job assignments, such as mailing lists. Need to grasp an overall view of data base management.

- To use spreadsheets and graphs and to learn when and how to use them effectively for certain types of assignments.

- To become familiar with the overall operation of word processing throughout the organization and how its uses are specifically adapted to different departments.

Summary & Outcomes

In order to get some work in the first week in July, I called Peggy Cochrane, Professional Business Services, 222 East Carrillo, and she kindly agreed to help me out. I worked for her the week of July 1 through 5. I received training on the Canon 550/AP89 word processor and corrected copy for Alex Comfort's new book. Since the equipment is quite different (memory
typewriter hooked to disk drives), I found that it took most of the week to really learn the machine.

I reported to Applied Magnetics on Monday. I spent most of the first two days typing on a PC with Displaywrite 3 program. It is similar to Displaywriter. Finally by Wednesday they got organized and since then I have been seeing all phases of the business. Sherrell Tobin has replaced John handley and she has done an excellent job of arranging my schedule. I spent all day Thursday in the editorial department of technical writing with four very qualified people. All four worked with me, teaching me HPWord and HPDraw on the Hewlett Packard mainframe computer.

Since August 1, I have been working on other word processing systems. In fact, I am typing this report on Multimate which I borrowed from business administration. I like the system and would like to teach it; however, we could not use it last year since we did not have enough memory on the IBM pc’s. I have not checked to see if our machines have been upgraded but hope that this is completed before the semester begins.

I have also gone through the educational version of Easywriter but find the textbook incomplete and difficult to follow. Jean and I ordered several software programs.

After encountering so many different systems being used at Applied Magnetics, I think we should be exposing our students to a variety of systems. I worked on Dissplaywriter III; Lotus 1-2-3; PROFS (mainframe system on IBM), ETC (also mainframe); HP Word, HP Graphics, HP Draw (all on Hewlett Packard mainframe), and ADRS (mainframe inventory control program). Since we have only three personal computers, I cannot see how new programs can be added at this time; however, I hope that more personal computers will soon be available.

Electronics

Kent Richards (Business Site - Computer Village & Apple Level 1 Training School)

Objectives

- Become certified as an Apple Level 1 service technician; this includes experience on the Apple II, IIe, and Macintosh, as well as soldering techniques and safety procedures.

- Learn the operating systems and hardware of the IBM microcomputers, including the PC, XT, and AT, and become familiar with problem isolation and error code generation.

- Learn the hardware and software configurations of networking systems, including problem analysis and fault determination.

Summary & Outcome

My four weeks of in-service training entailed two separate areas of focus. The first two weeks being spent in the service department of Computer Village, a retail computer products store which handles IBM and Apple
microcomputer equipment. The second two weeks were spent at the Sunnyvale, California service facilities for Apple Computer enrolled in their Level One Service Training courses.

At Computer Village, under the supervision of Michael Chase, the instructor for the courses Microcomputer Systems (E.T. 20) and Input/Output Devices (E.T. 21), I assisted with and implemented repairs on various pieces of IBM and Apple equipment as well as many types of printers and computer monitors. While there, I became quite familiar with the service procedures and diagnostics for both the Apple and IBM. I also received some experience with an IBM network.

The time spent at the Apple facility not only reinforced my previous experience with the Apple line of microcomputer equipment, it made me very familiar with their service philosophy and also earned me certificates in Apple Level One service and Macintosh Office Service, both documents being necessary for Apple to recognize the school as a Level One Service Facility, when, in the future, we apply for that status.

This combination of training and repair experience, I feel, will be of extreme benefit to the school as we work towards setting up our service facility here on campus. Although further factory service training may be necessary for the IBM equipment, I feel quite capable of handling any repairs of Apple equipment, given adequate startup and budgetary funding.