



OAKLAND
COMMUNITY
COLLEGE

Auburn Hills Campus
2900 Featherstone Road, Auburn Hills, MI 48326-2845

(810) 340-6500 Fax: (810) 340-6507

JOINT MEETING OF THE
COMPUTER HARDWARE ENGINEERING TECHNOLOGY
and
ELECTRONICS TECHNOLOGY ADVISORY COMMITTEES

April 17, 1997

Present: Kenneth Bardwell, Bardwell Industries
Daniel C. Bednarski, Road Commission of Oakland County
John P. Brooks, Network Integration for Computerized Environments (N.I.C.E. Inc.)
Dr. Carlos Olivarez, Dean, Academic and Student Services, OCC
Richard T. Collins, Oakland Technical Center - Northeast Campus
Doreen E. Damp, Design/Electro Linc Corporation
Patrick Dean, Paraprofessional, OCC
Gerald L. Dennis, Bardwell Industries
Barry Jocque, Computer City
Verna M. Love, Counselor, OCC
William Maholick, Consultant
Tim McIver, Bardwell Industries
Dr. Robert Powell, Faculty, OCC
Debi Robertson, General Motors Proving Grounds
Willard Rush, Faculty, OCC
Ruth Springer, Secretary, OCC
John C. Zimmer, Electro Linc Corporation

Preliminary Matters

Dr. Carlos Olivarez welcomed the group and invited the members to introduce themselves. The minutes of the Electronics Technology Advisory Committee meeting held on October 3, 1996 were reviewed and approved as written. The minutes of the follow-up meeting of OCC members of the advisory committee held on December 2, 1996, were reviewed, and a progress report was given on each committee recommendation, as follows:

Progress Report on Electronics Technology Advisory Committee Recommendations

- 1. That OCC obtain the necessary equipment for at least one or two soldering stations capable of removing or installing surface mount technology in order to give students hands-on training in the soldering of fine pitch parts, suggested equipment to include magnifiers, scopes, and lamps.**

Mr. Patrick Dean reported that OCC is currently exploring how to go about improving soldering capabilities in the Electronics Lab. Companies will be coming in during the next few weeks to present information regarding surface mount equipment. The College has allocated \$18,000, with which we will attempt to obtain a minimal amount of surface mount equipment, including microscopes for the placement of parts. Mr. Dean reported that this recommendation will be implemented by the Fall term.

Dr. Robert Powell commented that he has done some investigation since the last advisory committee meeting. He has called other community colleges around the state and found that none are teaching surface mount technology nor acquiring equipment to do so, because students are being sent to school by their companies to learn this after they are hired. Other schools expose students to this technology through video tapes and/or discussion. Dr. Powell has a problem with OCC moving in this direction without visible support from industry. He is against spending OCC budget money on this when funds are needed elsewhere.

Mr. Willard Rush agreed, stating that four-year schools, such as Wayne State University, Lawrence Technological University, and Ferris State University, are not teaching this.

Mr. William Maholick reminded the group that Mr. Kim Le, of Jabil Circuit Inc., and Ms. Doreen Damp, of Design/Electro Linc Corporation, expressed themselves at the last meeting as being in favor of doing this because their companies manufacture motherboards. At Jabil, anyone who wants to move up the ladder in their company must start at the bottom, so workers are needed who know surface mount technology.

Ms. Debi Robertson asked whether there might be a more economical way to provide students with the exposure they need to this technology, possibly through simulations, video, or CD-ROM, so they understand the principles and concepts involved. She expressed doubt about whether the experience the students would gain through hands-on exposure would be worth the expenditure involved.

Mr. Maholick pointed out that the equipment would be changing soon, which could be a problem in purchasing equipment.

Dr. Powell expressed a concern that Jabil seemed to be behind the desire to see OCC become involved in surface mount technology. He believes that, unless we have some assurance from Jabil

and possibly other companies that they will support us in some definite way, OCC could be viewed as subsidizing Jabil if we move in this direction.

Dr. Olivarez will meet with Dr. Powell next week in regard to this matter.

2. **That OCC staff visit the lab at Jabil Circuit or at Electro Linc to see what equipment they have and model OCC's lab set-up after theirs.**
3. **That OCC staff members visit classes at Jabil Circuit to see what films and instructional materials they are using and how they are training their people in surface mount soldering.**

Mr. Dean reported that he has visited Electro Linc and Jabil, reviewed their hand soldering/de-soldering stations, talked with employees at length in the area of rework and repair of circuit boards, reviewed Jabil's training methods, and discussed training techniques with people at Electro Linc. Based on these visits and discussions, he has come up with a list of seven soldering stations and seven de-soldering stations. He is working on tips for them. He has not chosen a microscope or dual eyed microscope. He has chosen an air system for these products. He saw a lot of good equipment and good techniques that OCC could share.

Mr. John Zimmer gave a brief description of the training program at Electro Linc. Ms. Damp explained that she asked Mr. Zimmer to attend the advisory committee meeting because of his knowledge of surface mount technology.

Mr. Richard T. Collins reported that he will probably be ordering surface mount equipment for his lab at Oakland Technical Center, Northeast Campus. He works closely with Jabil, and a number of his students are hired every year by Jabil. Most of those students will eventually take college classes. Jabil has asked Mr. Collins to have a couple units in his lab for exposure purposes, and they have worked with him on this. Mr. Collins is currently waiting for finances to be able to get the equipment. Jabil will provide boards for his students to work on and perhaps help with the purchase of some equipment.

Mr. John Brooks expressed his concern about OCC spending a large amount of money on something that is a narrow corner of the industry. He suggested that the lab should have soldering stations where students can get hands-on experience in basic soldering techniques. However, surface mount training is a specialized type of training which they may not use, depending on where they work in the future.

Mr. Dean reported that he has spoken with the people at Jabil and Electro Linc about vendors with instructional materials. He did not sit in on a class, but would like to go to Jabil for a week in May to do that.

Mr. Collins reported that he spent several days in Jabil's course and found it to be a valuable experience. They have good videos and instructional materials. They take boards that have been rejected and use them for practice. They could, hopefully, be a source for OCC.

4. That OCC obtain the necessary equipment to teach 28XX Series Flash PROM's.

Mr. Dean reported that JDR has a programmer that will do EPROM's and Flash PROM's larger than what we currently have. We hope to purchase this equipment within the next few months.

5. That CIS 105 be added to the Electronics Technology curriculum and/or that instruction in the use of appropriate computer software applications be included in the Electronics classes.

- 5a. CIS 105 will be added to the Electronics Technology curriculum as a recommended elective. Dr. Powell will make this change through OCC's curriculum process.

Mr. Maholick expressed himself as being in favor of adding this course to the program.

Dr. Powell reported that he and Mr. Rush have met about this issue. Dr. Powell surveyed a class last Fall and will do another survey during this Winter term. The Fall survey showed that over 60 percent of the students that come to us are computer literate. In addition, Electronics classes are currently being taught in such a way that students get computer usage experience in the classroom, so Dr. Powell sees no need to add CIS 105 to the program. He has surveyed several classes of OCC and General Motors students and did not find computer anxiety to be a problem. Even students with little computer background did well in the classes.

Mr. Maholick reported that in the classes he has taught recently, there were gaps in the students' experience and knowledge. In one class, there were five students who had no computer knowledge at all. Mr. Maholick reported that it took about five hours to teach them what they needed to know to use the computer.

Ms. Robertson expressed the belief that adult learners would prefer to learn to use the computer as they need it to do the work in their required classes, using a tutorial or manual, rather than being required to add another class to their program.

- 5b. Ruth Springer will request from OCC's Information & Telecommunications Systems Department a printout of all Electronics and Computer Hardware students from the last five years who have taken ENG 211, Technical Writing. The group may then consider surveying those students regarding the effectiveness of that class as a part of their curriculum.

Ms. Springer reported that she received the requested printout and passed it on to Dr. Powell. He reported that he has not yet had time to do a survey.

Mr. Barry Jocque mentioned that he has just taken the ENG 211 class. He took it reluctantly because he has always been strong in English and didn't think he had much to learn. However, he found that he learned a great deal from the class. It is a very thorough, useful class that would be helpful to anyone going into a professional position. It covers such things as writing business letters, communicating research results, writing resumes, and persuading people through writing. Mr. Jocque found it to be an excellent course. He believes it would be a travesty to delete it from the curriculum.

Ms. Verna Love commented that students who have taken ENG 152, Composition II, often argue that they should not be required to also take ENG 211, Technical Writing. Mr. Jocque's comments are good evidence that such students do need to take the course.

Ms. Robertson reported that, in all of General Motors' bachelors and masters degree programs, a course in technical writing is required. All their students agree that it is one of the most valuable and useful courses they take.

Ms. Love suggested that it might be a good idea to put a footnote in the catalog stating that no substitutions will be allowed for ENG 211.

The group agreed that there is no need to do the suggested survey regarding the effectiveness of ENG 211.

6. That the College explore the possibility of including a co-op internship as part of the Electronics Technology curriculum.

Dr. Powell reported that he and Mr. Rush met with Ms. Sally Kalson, Coordinator of Cooperative Education. They agreed that ECT 170, Microprocessor Co-op Internship, and ECT 270, Advanced Microprocessor Co-op Internship, are broad enough to be used by anyone wanting to do a co-op internship. Dr. Powell will take the necessary steps to add these two courses to the Electronics Technology curriculum as recommended electives.

Mr. Tim McIver asked for further information regarding the co-op program, and then volunteered for possible co-op sites at Bardwell Industries. Dr. Olivarez responded that Ms. Kalson would contact Bardwell about this possibility.

- 7. That lab equipment be updated as much as possible, so students are able to gain hands-on experience with equipment similar to what they will find on the job in industry.**

Dr. Powell reported that this recommendation is being addressed through capital equipment requests.

- 8. That CAD facilities be made available for the teaching of DRT 114, Electronics Drafting.**
- 9. That DRT 114 be taught using one of the newer software packages, preferably one which does simulation.**

It was reported that Mr. Tom Sawasky, OCC Drafting faculty, has found a part-time teacher for DRT 114. This person is retired from General Motors, where she did a lot of their circuit board design. The course is intended to be computer assisted, using PADS software. Mr. Tahir Khan, OCC Computer Aided Design and Drafting faculty, is looking into other software packages which might be used.

Ms. Damp reported that Electro Linc has a new personal computer driven software, which Mr. Khan reviewed when he visited their company. If this was used for the course, there would be no need to use CAD work stations, since students would be able to use it on personal computers. Ms. Damp indicated that the PADS software is good, but there are other software packages which are more currently in use in the industry. At Electro Linc, they use Mentor Graphics and Zuken Redac (Visula).

Mr. Jocque reported that when he took DRT 114 during Spring 1996, there were lots of problems with the PADS software. There were no manuals or documentation. The instructor did his best, but the software was very difficult to use.

Ms. Damp reported that Mr. Khan understood the need to get a more updated software package for the students to use. The College should have the possibility of getting software at a reasonable price through an educational discount.

10. That decisions about instructors and software for DRT 114 be made by faculty in the electronics area.

10b. The group recommended that, when a new full-time faculty is hired for the Drafting area, that person's required job qualifications include a background in Electronic Drafting.

Dr. Olivarez reported that the College will not be able to hire a new full-time Drafting instructor. OCC is currently making drastic cuts in staffing at all campuses. This is expected to be the case for the next three to five years, so that the percentage of the budget being spent on personnel can be reduced to 80 percent. Dr. Olivarez explained that the millage which was approved was designated for such things as maintenance, rebuilding, and new programs, not for personnel. He does not know when OCC will be able to begin hiring again.

Review of Computer Hardware Engineering Technology Advisory Committee Minutes

The minutes of the Computer Hardware Engineering Technology Advisory Committee meeting held on November 4, 1996, were reviewed and approved as written. The minutes of the follow-up meeting of OCC members of the advisory committee held on February 12, 1997, were reviewed, and a progress report was given on each committee recommendation, as follows:

Progress Report on Computer Hardware Engineering Technology Advisory Committee Recommendations

1. That the College consider setting up an intranet which could be accessed by Computer Hardware students to obtain information and do assigned exercises from home if they wished.

Dr. Powell reported that the Electronics/Computer Hardware Department was considering setting up an intranet for the use of its students.

2. That students receive instruction in both Novell and Windows NT.

3. That Dr. Powell and Mr. Rush be trained as certified network administrators for both Novell and Windows NT.

Dr. Powell reported that, as a part of the instruction in ECT 215, Computer Repair I, and ECT 216, Computer Repair II, Mr. Rush has training in place with labs for Novell Version 3 and Version 4 and is presently writing labs for training on Windows NT. Mr. Rush will be handling the continuation of

Novell training, while Dr. Powell concentrates on Windows NT. Dr. Powell is currently attending classes on Windows NT.

Ms. Robertson offered to put Dr. Powell in touch with a corporate EDS person who could provide assistance with the internal network. Mr. Brooks reported that General Motors is implementing a Windows NT server at every dealership and finding it very easy to use.

- 4. That the \$18,000 allocated for the purchase of lab equipment be used to obtain two high power Pentium Pro servers, along with as many Pentium 200's with SCSI interfaces as possible.**

Mr. Dean reported that two Pentium Pro 200 servers have been purchased and are in place. A request has been made for 20 Pentium 200's which will, hopefully, be purchased before July. NT server software has been purchased, and Microsoft has been helpful with the licensing agreement. The SCSI interfaces have also been purchased.

- 5. That the College consider adding CD-ROMs to the existing computers in the lab.**

At Dr. Powell's request, sound cards have been purchased instead of CD-ROMs. Ten sound blaster cards have been purchased for the 486 machines.

- 6. That a two- to three-year business plan be developed for the Computer Hardware Engineering Technology Program to include program goals and projected yearly equipment needs. This plan would be presented to College administration and budget council to seek their support for capital equipment requests.**

Copies of a three-year plan, compiled by Dr. Powell and Mr. Rush, were distributed to the group. A brief overview of the plan was given.

Dr. Powell explained that he is developing software which can be used at home by students who own an IBM computer. This software allows students to learn the basic information on their own, so students can have quality time with the instructor, rather than spending a large portion of the class time on lecture. Tests are taken on a computer on campus. Students may come and work on the computers in the classroom whenever Dr. Powell is on campus, regardless of what course is officially scheduled to meet at that time. This meets the students' needs for flexibility, since they can come to campus when they have the time, but still finish the course in 15 weeks. Next semester Dr. Powell plans to have a web page, so students will be able to contact him through the internet.

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Mr. Brooks commented that he has observed students working through this software. This is an example of implementing technology in a positive way, so that students can work at their own pace and receive individual training that is not normally possible with just one instructor. Time spent with the instructor may be used to reinforce a concept or to move on to more knowledge. He believes the knowledge that could be covered in 15 weeks could almost be doubled by using this method.

- 7. That the Computer Hardware Engineering Technology Advisory Committee continue to meet separately from the Electronics Technology Advisory Committee.**

The group agreed that both advisory committees would meet together again during the Fall term.

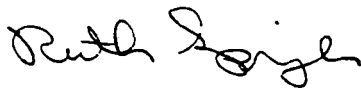
Electronics Technology Advisory Committee New Recommendations

None

Computer Hardware Engineering Technology Advisory Committee New Recommendations

- 8. That the Computer Hardware Engineering Technology Advisory Committee and the Electronics Technology Advisory Committee meet together in Fall 1997.**

Respectfully submitted,



Ruth Springer
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