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ABSTRACT

Growing from a 1988 conference on educational technology, the Ocotillo Action/Research Groups of the Maricopa Community Colleges in Tempe (Arizona) have continued to explore ways of enhancing and developing the use of instructional technologies in the community colleges. This report presents the following annual reports of the groups, which summarize their achievements and plans: (1) "Academic Alliances"; (2) "Access"; (3) "Computer Conferencing and Instruction"; (4) "Emerging Technologies 'ETc'"; (5) "Intellectual Rights"; (6) "Library User Group"; (7) "Mechanisms of Technology Implementation and Evaluation"; (8) "Open Entry/Open Exit"; (9) "Support for Technologies"; and (10) "Technology-Based Testing." (SLD)

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O C O T I L L O

improving learning through technology

ED 366 303

IR 016499



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TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)."

Message from the Vice Chancellor

Little did I know in 1987 that the questions I asked our faculty then would generate so much interest, energy, and enthusiasm.

Most of you know that I try to visit our colleges/centers at least once a semester. You also know that I have an agenda specific to each college/center; that is, I want to learn answers to unique questions at each one of our institutions. However, almost every semester I ask the **same** question or set of questions at all our colleges/centers.

In the Fall 1987 semester, I asked our faculty a set of questions that really boiled down to **two** fundamental questions in relation to our investment in computers/telecommunications technology:

1. Who is in charge of the instructional agenda?
2. Who should be?

Our faculty's response was: **We are!** And **Ocotillo** was born.

I am delighted that **Ocotillo** continues to be the vehicle by which large numbers of our faculty and staff get involved in not only answering questions about the use of technology in the teaching/learning process, but — perhaps more importantly — that additional questions are generated every year.

Since its inception **Ocotillo**, in effect, has used TQM-like principles in that it empowers those most involved with the issues to recommend ways of dealing with them, based on data. As we learn more about TQM, I think **Ocotillo** will become more effective and efficient.

We thank all members of our faculty and staff who have participated during the 1992-93 academic year, particularly those who have served as chairs and co-chairs of the different **Ocotillo** committees.

Muchas gracias.

Alfredo G. de los Santos Jr.
Vice Chancellor,
Educational and Student Development

Message from the Ocotillo Faculty Chair

When there are difficult questions to be answered, there is the option of silence. When there are tough decisions to be made, there is the option of deferment. What option an individual or organization eventually takes depends on **attitude**. Shaped by our beginnings and experiences, **attitude** is all we can control in an ever changing world.

Ocotillo was born of an idea and reached maturity in an environment of cooperation and creativity. Charged with exploring instructional technology, it developed an **attitude** in keeping with studying issues and making recommendations.

But recently, no longer satisfied with recommendations, Ocotillo groups are taking action. This new, proactive attitude is visible in this year's report. Groups are willing to confront problems head on and work toward solutions.

The role of electronically-aided instruction will continue to expand in the future. Those institutions that fail to keep pace will do so at their own peril. Ocotillo works to maintain technological development in a lean institutional environment. It has achieved early success in identification of the District's technology agenda, but continued success will depend on moving that agenda forward. Groups must continue to seek answers to the difficult questions by promoting activities that:

- support success without limiting creativity,
- are based on an intelligent regard for our infrastructure, and
- make the best use of our resources.

It has been exciting to participate in the active discussions that have resulted in the excellent project and recommendations published in this report. I want to thank everyone who contributed to the Ocotillo process. As I complete my second year as Faculty Chair, I urge Ocotillo to maintain its proactive attitude. With this attitude we can assure that Ocotillo, like the plant from which it takes its name, continues to flourish in spite of environmental conditions.

Toni Rodriguez
Ocotillo Faculty Chair

Message from the Ocotillo Project Manager

Managing and supporting Ocotillo have been engaging and enervating during 1992-93. Through Toni Rodriguez's leadership with the enthusiasm and commitment of the faculty and staff chairs, Ocotillo continues to grow and expand the discussion for the future of learning with technologies.

This year's activities and accomplishments included:

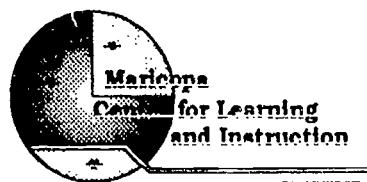
- The Ocotillo Technology Showcase, *Headed for the Future* which involved presenters from across the district and a vendor show at the District Office
- A Governing Board presentation on Ocotillo
- Numerous meetings among committees
- Special events and speakers
- A Governing Board presentation on Intellectual Rights by the Ocotillo committee leading that charge
- A videotape developed for college use on what faculty can do within copyright laws
- Recommendations from the OE/OE committee to the Vice Chancellor of Quality and Employee Development
- Special meetings with ITS administration and the Vice Chancellor for Educational and Student Development on Access Committee issues and concerns

A special note should be acknowledged to Toni Rodriguez who met with each committee during the year. With her encouragement and vision, committees have moved to a higher, proactive plane. She has worked hard to diffuse the elitist or exclusive perception Ocotillo may have had in the past. She has also actualized what Alfredo G. de los Santos Jr., Vice Chancellor for Educational and Student Development had envisioned as "bubbles" into productive, action-oriented outcomes among committees.

**Naomi O. Story,
Ocotillo Project Manager and
Director, Maricopa Center for Learning and Instruction**

Ocotillo is a "grass roots" faculty-driven "think tank" envisioning the future of instruction utilizing, but not becoming limited or driven by, technology. Ocotillo is made possible with the help of the Maricopa Center for Learning and Instruction.

Ocotillo Report '93 is a publication of the Maricopa Center for Learning and Instruction for the faculty, staff, and administrators of the Maricopa County Community College District.



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Academic Alliances

English Cristie Roe, PC
Chair

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High School
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High School

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Chair

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Barbara Herzog, EMCCC
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Joyce Janiga, PVCC
Ann Lindner, SMCC
John Mildrew, SMCC
Nora Ramirez, SMCC

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Dennis Shaw, RSCC
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Sandy Nagy, MUSD
Joaquin Bustoz, ASU
Matt Kawski, ASU
John Quigg, ASU
Christian Ringhofer, ASU

Charge

Academic Alliances establishes linkages with faculty across levels of educational institutions (junior highs, high schools, community colleges and universities) to discuss technology infusion in the teaching and learning process. Other items of concern include the impact of technology on the pedagogy of specific disciplines, and restructuring and redefining the new curriculum in the identified disciplines.

English

Introduction

Academic Alliances are local groups of school and college faculty, from the same discipline or interdisciplinary area of study, who meet regularly and voluntarily to discuss issues of mutual concern. Through ongoing meetings, members engage in self-directed, collegial, and professional experiences that focus on common interests, concerns, and goals. The Maricopa English Teachers Network (METNET) is the Academic Alliance for English in Maricopa County. It began as an organization for English instructors from Phoenix College, the Phoenix Union High School District (PUHSD) and its feeder elementary schools.

Since its inception, METNET has organized workshops and conferences for English teachers at all levels. In addition, METNET has sponsored Student-to-Student Dialogs, which consist of college students visiting high schools to share their experiences in college with high school juniors and seniors, in order to help encourage and prepare them to succeed in college.

In 1992, the Academic Alliances of Maricopa County were invited to join Ocotillo. In order to fulfill the Ocotillo mission, METNET is endeavoring to expand county-wide, and to incorporate a technology focus into upcoming events.

Year In Review

On September 26, 1992, METNET hosted Dr. Sheridan Blau of the University of California at Santa Barbara in an English teachers workshop held at Maryvale High School. Dr. Blau is a contributor to the high school English textbook series published by McDougal Publishing Company, which has been adopted by PUHSD. Approximately 30 educators from

elementary schools, high schools and community colleges across the valley attended Dr. Blau's presentation on the use of literature in writing instruction. Participants also discussed methods of incorporating multicultural themes and awareness into the classroom and curriculum.

At this workshop, a questionnaire was distributed among the participants for the purpose of identifying prospective METNET members. Respondents were asked what software, if any, was being used at their institutions to teach English or ESL, what their interest was in English instructional technology, and whether they would be interested in serving on the METNET Steering Committee. There were eighteen respondents to the survey, of which eleven expressed interest in joining the Steering Committee. To date, five of those have been able to attend Steering Committee meetings, bringing the membership in the committee to half MCCCDC faculty and half PUHSD teachers.

During the early months of 1993, the METNET Steering Committee met twice monthly to organize the Ocotillo-supported technology function. This was "ENTEXPO," the English Technology Exposition, which was held Saturday, May 8, from 1:00-3:30 P.M., in the Phoenix College Library. Karen Schwalm of Glendale Community College gave two 30-minute presentations on the Electronic Forum, and Irwin Wetsel of South Mountain High School gave two 30-minute presentations on Project WriteAway, a software package for the teaching of writing skills to high school students. In addition, several instructors from Phoenix College and Glendale Community College demonstrated and explained computer programs in

use for the teaching of English and ESL at the college level. The following people were scheduled to demonstrate: Gail Caylor, PC, demonstrated Project Jefferson, an ENG 102 program; Nancy Seifer, GCC, demonstrated ENG 109, a computerized grammar review course; and Kathy Schulhoff, PC, demonstrating Project LEE, an ESL program.

Recommendations

1. Expand METNET to include representatives from all colleges, high schools and elementary schools in Maricopa County in a technology-focused dialog.
2. Invite software publishers to demonstrate new programs at future technology showcases.
3. Review software in use by students at ASU.
4. Investigate trends in English teacher education software.

Mathematics

Primary Activity

The primary activity of this group has been the preparation of a National Science Foundation proposal for the "Bridges to Calculus" grant program. In this proposal, the Maricopa County Community College District (MCCCD) plans to completely restructure the community college mathematics curriculum. The curriculum will be restructured in a way that is responsive to the National Council of Teachers of Mathematics Curriculum and Evaluation Standards, and to the nation-wide calculus reform movement.

Supporting Activities

October 1

Meeting with representatives from Arizona State University, Maricopa County Community College District, Glendale Union High School District, Phoenix Union High School District, Mesa Unified School District, Chandler Unified School District, and Uri Treisman, an internationally known mathematics educator. All participants agreed to work together to prepare and submit the proposal.

October 8, October 27, November 23 Writing Meetings

Developed curriculum and staff development teams with representatives from Phoenix College, Paradise Valley Community College, Scottsdale Community College, South Mountain Community College, Estrella Mountain Community College Center, Glendale Community College, and Glendale Union High School District. The grant proposal was written.

November 19

Meeting with representatives from Arizona State University, MCCCD, Glendale Union High School District, Phoenix Union High

School District, Mesa Unified School District, Chandler Unified School District, and Uri Treisman. The grant proposal was presented to all parties, reviewed, and accepted with additional revisions.

Electronic Communication

One suggestion from the groups was to set up an electronic mail network. To steal an idea from the PBS series Square One Television, we decided to call it MathNet. It is currently limited to A1 with the creation of a district-wide mailing list called @ALL_MATHFAC. There are plans to expand the service to the Electronic Forum in the future.

January 8 Convocation Presentation

The finished proposal was presented to the mathematics faculty, and much enthusiasm was generated to proceed.

February 12

Meeting with representatives from Arizona State University, MCCCD, Glendale Union High School District, Mesa Unified School District, and Chandler Unified School District. Presentations at high schools were planned.

March 9

Presentation to the Chandler Unified School District mathematics faculty. Faculty wanted to know where to proceed from here, and what they could do next.

April 2

Presentation to a joint meeting of the Arizona Mathematics Consortium and the Arizona Mathematics Association of Two Year Colleges. Participants expressed desire to get involved.

April 15

Presentation to Mesa Unified School District mathematics faculty.

April 23 Mathematics Dialogue Day

Mathematics faculty agenda to included a presentation of the NCTM Standards, PVCC's implementation of calculus reform curriculum, and use of manipulatives in geometry.

May 24-27 Mathematics Retreat at EMCCC

Agenda includes developing a strategy for staff development, developing a strategy for writing the new curriculum, training on a mathematics word and symbol processor to text creation, training on the Electronic Forum, and other topics as determined.

June 9-16 Task Force Meeting

As a result of the high profile this grant is generating for MCCCD, a representative from the District will serve on the 25 member national task force to write a standards-like document for Curriculum and Pedagogy Reform for Mathematics in the first Two Years of College (CPR-MATYC). This document will directly affect the work of the mathematics faculty in the District.

Result of Primary Activity

If the grant is funded, then the duties of this committee would be incorporated into the activities of the grant. If the grant is not funded, the mathematics faculty would anticipate continuing the curriculum reform process with the support of this committee and others in the District.

Access

Members

Patricia Cardenas-Adame, RSCC
Tim Sylvester, GCC
Co-Chairs

Queta Chavez, DIST
Mike Rooney, DIST
Group Support

Jan Baltzer, DIST
Renee Barstack, GCC
Andy Bernal, CGCC
Frank Gonzalez, MCC
Patricia Honzay, DIST
Joe LeCluyse, PVCC

Catherine Osborn, DIST
Yolanda Penley, CGCC
Shirley Petras, GCC
Mollie Pusateri, GCC
Linda B. Rosenthal, DIST
Dorothy Sisneros, PC

Charge

Access focuses on ways to make learning opportunities available to a broader group of learners through new technology by promoting the use of electronic means to compile, store and disseminate general information, and to deliver academic programs and services. Easy and equitable access to these technological advancements is also of major concern.

I. Introduction and Objectives/Tasks for the Year

Introduction

During 1992-1993, the Ocotillo Access committee decided to examine the recommendations of the previous Access Committee report (1991-1992). These recommendations fell under the primary headings of:

Governing Board Action
Institutional Research
Information Literacy/Training
User Access to Information
User Access to Technology
Communication Within the District

The committee discussed the need to be proactive. The committee felt that they should not just make a series of recommendations, but first explore, examine and evaluate the progress made on the previous years' Access committees' recommendations. The intent was to ensure that some degree of tracking or accountability would be given to this year's recommendations. This direction was discussed with Vice Chancellor

de los Santos and the group was strongly encouraged to pursue it.

Objective

The overriding objective of this year's Access committee was to produce a report that would be a living document. The members of the Access Committee sincerely hope that this report will not be read and put on a shelf, but that it will be a "blueprint and guide" for action. The degree to which this happens will be the true measure of the ultimate success of this committee.

Tasks for the Year

After the initial objective of the committee was agreed upon, the members of the committee each selected several areas of interest. The areas of interest and the "responsible parties" correspond to the specific recommendations from the previous Ocotillo Access Committee Report (1991-1992). Teams of two or three individuals

were created for each interest area.

Next, the committee developed the general research questions to be asked of all responsible parties. Then the teams developed specific research questions relating to their areas of interest. The purpose of these questions was to find out the status of each recommendation. A copy of these questions is included at the end of this report. These questions were forwarded to the responsible parties (Information Technology Services, Individual Colleges, Training Services, Deans of Instruction, and Deans of Occupational Education). Individual meetings, discussions, and a group meeting were conducted to obtain the answers.

The next section of this report contains the results of this exploration and examination. Also, it contains the recommendations of this year's Access committee.

II. Progress and Recommendations

Governing Board Action

1. Develop an overarching, broad policy statement by the Governing Board regarding the infusion of technology into Maricopa's programs and services (reference 1989-90 Access Report).

PROGRESS

None Reported

RECOMMENDATION

Recommended Policy Statement:

"MCCCD values the use of technology for administrative and educational purposes. All Governing Board approved employees are expected to access the available technology to perform their duties. It is the responsibility of the supervisor(s) to ensure that adequate training is provided. It is the responsibility of the employee to use both the technology and the information obtained. MCCCD has the responsibility to provide its students access to technology within its available resources. MCCCD students have the responsibility to access information available for them to meet their educational goals." Responsible party: Ocotillo Access Committee and Vice Chancellor of Educational and Student Development.

2. Develop a Board policy that addresses the issue of database ownership and access.

PROGRESS

None Reported

RECOMMENDATION

Continue to address the issue of database ownership and access, and support current efforts. Responsible party: Ocotillo Access Committee 1993-1994.

3. Address three other issues that may require Governing Board policy statements:

legal rights
the privacy act
security

PROGRESS

None Reported

RECOMMENDATION

The 1993-1994 Ocotillo Access Committee should work with other individual Ocotillo Committees to ensure that these issues move forward. Responsible party: Ocotillo Committees 1993-1994.

Institutional Research

1. Organize institutional data into a research institutional database and develop a variety of user interface tools that will allow faculty and staff to access the information in an easy and consistent manner. Responsible party: Information Technology Services.

PROGRESS

A server has been installed at the District which houses the Statewide Tracking System, the Program Cost Analysis System, and Almanac. A variety of reporting tools such as FOCUS, SPSS and SAS will be made available on the server by June 1, 1993.

RECOMMENDATION

Continue current efforts. Emphasis should be placed on easy access to information. Responsible party: Information Technology Services, District Research Department and Individual Colleges.

Information Literacy/Training

1. Develop a program of "information literacy" to continue the previous "computer literacy" effort. This should be developed and implemented for students, faculty and staff. Responsible party: Training Services.

PROGRESS

Failure to pass the bond had a negative impact on the rate of expansion of information literacy. However, training efforts continue for faculty and staff, and information regarding training is made available via published newsletters and electronic mail. Students continue to be served through credit and non-credit courses at the individual colleges.

RECOMMENDATION

The definition of "information literacy" as noted in the 1989 report entitled, *American Library Association Presidential Committee on Information Literacy*, should be used when addressing "information literacy": "...to be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information." The issue regarding "information literacy" for students should be addressed by review and possibly revision of the one credit computer usage graduation requirement. Information literacy for faculty and staff should be addressed with appropriate and self-paced training. Responsible party: Vice Chancellor of Educational and Student Development and Training Services.

2. Provide ongoing training for the institutional research database and ongoing training in data interpretation. Responsible party: Training Services.

PROGRESS

Training in the interpretation of data and the area of institutional research has not been addressed by Training Services. The Almanac project was to address these areas.

RECOMMENDATION

Training Services may need to expand its focus and revise its mission. Training for higher levels of competency (retrieval, analysis and interpretation) should be made available for faculty and staff. Responsible party: Training Services.

3. Use a multifaceted approach to training which recognizes individual as well as group needs and preferences. We recommend the purchase or development of self-paced tutorial training methods. These need to be updated on an ongoing basis. Responsible party: Training Services.

PROGRESS

The purchasing of tutorials and materials has been addressed. There is a current list of videos and tutorials available via the Training Services Newsletter. Training Services also has available open Friday labs for faculty and staff.

RECOMMENDATION

Duplication of efforts at the campus level (credit, non-credit, faculty and staff development) and at District must be addressed. Courses taught at the campus level are also available via Training Services. Focus of the Training Services Department may need to shift to other areas. Responsible party: Training Services and Information Technology Services Technical Training Team.

4. Include Training Services in the rapid prototype development method. Responsible party: Training Services and Information Technology Services.

PROGRESS

Documentation of prototypes is more of an issue than training. Information Technology Services is responsible for the documentation of software enhancements and updates. Once documentation is available, training can be addressed.

RECOMMENDATION

Information Technology Services should include Training Services in the development of rapid prototypes so that training issues can be addressed in the development stage. Responsible party: Training Services and Information Technology Services.

5. Expand the use of electronic communication tools such as Electronic Forum, INFORM, BITNET, INTERNET, and others to give students, faculty, and staff access to other individuals throughout Maricopa County and the world. Responsible party: Training Services and Information Technology Services.

PROGRESS

Electronic Forum is now being used by more students and faculty. BITNET and INTERNET are widely used and INFORM is being expanded. Access is available, yet expansion on the network has been an issue. It is important to note that expansion of the use of these tools requires money at the campus level. Training Services provides training to faculty and staff in the areas of BITNET and INTERNET.

RECOMMENDATION

Keep alert to new and different product availability. Training in areas of Electronic Forum, and INFORM should be addressed. Responsible party: Training Services, Information Technology Services, Individual Colleges and Faculty and Staff Development.

User Access to Information

1. Establish a centralized clearinghouse where information about existing technologies, applications and user groups can be accessed . Responsible party: Information Systems Support Task Force.

PROGRESS

None. Information Systems Support Task Force no longer exists.

RECOMMENDATION

Development and implementation of clearinghouse is necessary. Responsible party: Library Technical Services and Maricopa Center for Learning and Instruction.

-
2. Expand the number and type of on-line databases available to students, faculty, and staff. Responsible party: Information Technology Services.

PROGRESS

MCCCD can now tie into ASU and Business forums through the Phoenix Metro Image Project. The project was funded by a \$422,225 grant. The project provides electronic access and delivery to a serial indexing service and full-text delivery of article images to participating libraries. In addition, the project helps improve library services for patrons of the Phoenix Metropolitan Area.

RECOMMENDATION

Continue current efforts and continue to pursue research grants. Responsible party: Information Technology Services and District Development Office.

User Access to Technology

1. Create a review system at the college level that ensures a balance between courses requiring access to technology and the availability of technology to students, i.e., lab availabilities vs. lab demand. Responsible party: Deans of Instruction and Deans of Occupational Education.

PROGRESS

Ongoing effort at the college level.

RECOMMENDATION

Consider the impact of providing access to the physical resources of the college. Review the impact of course competencies to availability of technology. Responsible party: Occupational Deans, Deans of Instruction, and Instructional Councils.

-
2. Develop or purchase new administrative computing systems (i.e., SIS, FRS, HRS) that are user-centered and provide easier access to information for students, faculty, and staff. Responsible party: Information Technology Services and Individual colleges.

PROGRESS

Development of new administrative systems may not be available within the next 12-24 months without the budget dollars to support a major project. Information Technology Services will have a future plan available by Spring 1993. Major changes will be seen in the organizational systems/functions of Information Technology Services.

RECOMMENDATION

We encourage moving current systems to newer database technologies. The Spring 1993 plan should be distributed to all current user groups for review and comment. Responsible party: Information Technology Services.

3. Expand and/or upgrade current telephone and voice mail systems to:

- Provide wider use of integrated voice response technology to give students, faculty, staff, and the community touchtone access to information.
- Provide students, faculty, staff, and the community with a mechanism for interacting with administrative and instructional databases (i.e., expanded touchtone registration, flex benefits selection, requests for information, etc.). Responsible party: Information Technology Services and individual colleges.

PROGRESS

The former touchtone telephone system has been replaced by new technology. Several research teams are working on developing the phases and timelines for upgrading integrated voice response.

Expansion of voice response is scheduled to include credit card payment, instructor interaction, and other student services. At this time there are no plans to access other database systems outside Student Information System using voice response technology.

RECOMMENDATION

Continue current efforts and attempt to provide additional services as identified by user groups. Responsible party: Information Technology Services and individual colleges.

-
4. Expand and enhance the Video Conference Network (VCN) and VCN locations at the colleges to give students access to courses and resources from one college location to another that might otherwise not be accessible. Responsible party: Information Technology Services and individual colleges.

PROGRESS

As of Spring 1993, six VCN classes are being offered. The majority of the colleges are using VCN. There are other ways that VCN can be used such as for training. Currently a VCN Coordinating Committee is concentrating on the use of VCN in instructional areas.

RECOMMENDATION

Encourage the use of VCN at all colleges, and add course availability as technology allows. Provide training and protocol for the use of VCN. Investigate use of VCN for training and other purposes. Investigate legal concerns regarding transmittal of videos via VCN. Responsible party: Information Technology Services, District Legal Services and VCN coordinated at various colleges.

-
5. Continue to expand the local area networks at the colleges and the MCCC wide area network for maximum connectivity of individuals to individuals and individuals to sources of information. Responsible party: Information Technology Services and individual colleges.

PROGRESS

MCCC has one of the best networks in the country, yet major rework is needed. Presently there is a team reviewing recommendations that were made in a management report. However, changes in enhancements rely heavily on budget dollars.

RECOMMENDATION

Continue current efforts and work toward integrating various platforms and networks into a seamless web of information access. Responsible party: Information Technology Services and individual colleges.

6. Additional use of technology is needed for the delivery and evaluation of programs and services to diverse populations requiring greater support for academic success (reference 1989-90 Access report). Evaluate current systems as to how they meet needs. Responsible party: Advising Council.

PROGRESS

The Academic Advising Council, the MAPS Chairs Committee, and the Assessment Coordinators have identified their needs and have met with the Vice Chancellor of Information Technologies to communicate those needs.

RECOMMENDATION

Members of the three groups (mentioned in the progress statement) should identify their top priority needs and communicate them to Information Technology Services. Information Technology Services, in turn, should respond by informing the groups whether or not the identified needs are of a high priority in the work of Information Technology Services. Timetables for completion should then be developed and communicated. Responsible party: The Academic Advisory Council, the MAPS Chairs Committee, the Assessment Coordinators, and Information Technology Services.

7. There is a need to provide easier access to information for all employees across colleges in order to assist them in achieving excellence in their job performance (reference 1989-90 Access report). Responsible party: Information Technology Services.

PROGRESS

New information access includes:
Legal Aid
Schedule Cost Modeling

RECOMMENDATION

Develop and implement procedures so that employees with legitimate needs have access to information. This may also have a legal consideration. Investigate the acquisition of new technologies to simplify these tasks. Emphasis should be on providing service to students. Responsible party: Information Technology Services Technical Training Team.

Communication Within the District

1. Compile a district-wide inventory of programs or reports that have been developed at individual colleges. Responsible party: Information Systems Support Task Force.

PROGRESS

Information Systems Support Task Force no longer exists. All FOCUS reports are standardized and available for use via VAX.

RECOMMENDATION

Develop a list and provide information on how to access it. Responsible party: Library Technical Services, Maricopa Center for Learning and Instruction, and Information Technology Services.

2. Develop more specific standards for the selection, acquisition, and utilization of hardware and software (reference 1989-90 Access report). Responsible party: Information Technology Services.

PROGRESS

Approved list of hardware is made available to colleges for distribution to individuals.

RECOMMENDATION

Develop a method for acquiring District-wide licenses for popular software for administrative and instructional use. Responsible party: Purchasing Department, Legal Services, and individual colleges.

III. Summary

As previous years' Access reports (1989-90 and 1991-92) have indicated, there is a need for ongoing evaluation of the entire access process and a need to assess the effectiveness of implementing the recommendations of the Access committee. This year's Access committee ends its report and its year's work with the hope that a process has been started to evaluate and assess progress on the recommendations.

However, a much more important concern for this year's committee is not just that there have been recommendations and that there is a process to evaluate the implementation of these recommendations, but that the results of the committee's work - its recommendations and the evaluations - will be used for more than just input into next year's Access committee. If this report is indeed only a formality, then the members of the committee agree that the exercise they have performed this year is redundant and should be discontinued.

There are too many more important tasks, and our resources are too scarce to merely generate a report that will only be read by next year's committee so that it can generate its report. The 1992-93 Access committee believes that we have reached the point where a decision must be made about this committee's report. As was stated in our objective:

Our report must be a living document. The members of the Access Committee sincerely hope that this report will not be read and put on a shelf, but that it will be a "blueprint and guide" for action. The degree to which this happens will be the true measure of the ultimate success of this committee.

Access Sub-Committee

The following are the questions to be asked of ALL AREAS:

1. How do the priorities identified by the Ocotillo sub-committee on Access match with your department/area priorities?
2. What is your view of the recommendations identified by the Ocotillo sub-committee on Access?
3. How do your strategic goals/plans match or relate to the recommendations identified by the Ocotillo sub-committee on Access?
4. What actions or tasks is your department/area doing which specifically relate to the recommendations identified by the Ocotillo sub-committee on Access?
5. How are the recommendations identified by the Ocotillo sub-committee on Access being advanced within your area/department?
6. What time frame do you have for the accomplishment of these recommendations?
7. If these recommendations are not priorities for your area, can you please tell us, "why not?"
8. What can we, the members of the Ocotillo sub-committee on Access, do to help you address our recommendations? How can we create a partnership with you to address this concern?

Several individuals had specific questions:

To Information Technology Services, I would ask:

- A. Is there an identified person to whom faculty could go with questions on the integration of technology into their courses if there is no one at their college to assist?
- B. Given budget constraints at this time, what can we expect in terms of obtaining more technology resources and keeping up with current advances?
- C. Is there a master plan for networking for the whole District?
 - a. If not, why not?
 - b. If so:
 1. What hardware and software platforms are in the plan?
 2. Are the colleges fully aware of what this plan is, and are their networking plans REQUIRED to be part of this overall strategy?
 3. What is the time frame for implementing the plan?
 4. What are the estimated costs of implementing the plan?
 5. Do the various units have the wherewithal to implement their share of the plan? What are the consequences if they don't?
 6. How high on Information Technology Services's priority list is the implementation of this plan?

Computer Conferencing and Instruction

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Charge

Computer Conferencing and Instruction investigates and discusses options for efficient and effective conferencing that will enhance teaching and learning. The group also encourages and provides opportunities for faculty to discuss ideas and needs for instructional applications of networking to improve the teaching and learning processes, and explores and shares knowledge about current and future instructional possibilities of computer conferencing among faculty.

Introduction

The committee met on a monthly basis, inviting faculty and staff who expressed an interest in the topic as well as those we thought could provide helpful or useful input into the planned discussions and explorations. While our membership was never static, we were gratified that we were able to interact with so many people with such varied needs and plans for computer conferencing.

Activities

1. Our first project was to survey recent literature on computer conferencing to see what was "new" — and we found some interesting specific applications. Most of these were focused on the use of computer conferencing to extend and expand the interactive possibilities of the classroom.
2. We then looked at what people are presently doing with computer conferencing at our colleges. We examined the uses of Electronic Forum (EF), which we believe has become the standard (the only, in most cases) vehicle for local computer conferencing.
3. Our next effort involved the use of BITNET and INTERNET. We explored these networks from these two perspectives:
 - Possibilities for student use. Presently, few faculty are using INTERNET. However, we believe opportunities for other innovative uses exist. For example, some foreign language classes have begun to use the INTERNET to provide students with opportunities to use the language they are studying with native speakers. Also, some classes have provided access to national and global electronic databases. One

class has used the INTERNET to deliver instruction abroad.

- Possibilities for faculty/staff use. Many Maricopa people are regular subscribers to listservs and have become active participants in national discussions. For the most part, these are people whose jobs or teaching responsibilities already provided them the skills, access, and opportunity to use the system.

In order to feel qualified to speak on the possibilities for the expanded electronic system, the committee believed it would be important to study the access and procedures with a "hands-on" approach. The response to the work was predictable. We discovered that it takes a great deal of time and a fair amount of serendipity to learn about — and learn how to use — the INTERNET system. However, we agree that as a means to improve instruction and provide better, more relevant education for our students, we should develop ways for them to access information with full text resources and to communicate on a national and international level. INTERNET has become of primary importance.

Recommendations

Local

After having a discussion of the needs for computer conferencing and after studying the capabilities of the EF system, the committee has concluded that EF 2.0 is the most appropriate platform for MCCCD. Therefore, we support and recommend the use of EF for these purposes:

1. Improvement of instruction. We believe continued District/college faculty development efforts are necessary to recruit more instructors to learn how

to use the system and to consider innovative possibilities for improving instruction in the future.

2. Improvement of faculty/staff communication. EF could serve as a simple, easy-to-use, and always-available vehicle for department, committee, or project discussions. The system meets all the requirements of effective groups; minimal encouragement and training should be necessary.

National and International

After extensive discussion of the future instructional needs of faculty and students, the committee recommends a serious focus of time and resources on outside networks that will take us beyond the colleges. We recommend:

1. Further access for students. We now have limited access to WAIS, World Wide Web, and Gopher through EF. We recommend that students be encouraged to explore these databases for research.
2. We should encourage all interested electronic participants to expand their skills and knowledge by participating in the discussions on these networks. To promote such use beyond those who are initially inclined toward such effort, we propose District or college information sessions and user groups. Without such encouragement, we believe that the majority of faculty will not find the time nor the motivation to become involved.

Considerations

We fully understand that the present system would be hard-pressed to accommodate a sudden increase in the number of students, faculty, and staff accessing and using INTERNET. Therefore, we recommend a focused and cautious approach, led by specific college projects that help faculty develop goals and methods and involve students in course-based activities on the system. Given this kind of thoughtful planning, we believe that many classes could benefit through world-wide participation without exceeding our capabilities.

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 compiled by LynnAnn
 Wojciechowicz and Julie
 Bertch

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Emerging Technologies Committee “ETC”

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Charge

The Emerging Technologies Committee (ETC) examines emerging technologies, hardware and software, and the issues and implications surrounding them. This ensures that quality instruction and learning is vital to such technological investigation and evaluation.

ETc's mission as a new Ocotillo committee for 1992-93 is summarized by Vice Chancellor de los Santos' charge to "examine the emerging technologies, hardware and software, and to identify issues and implications surrounding them in terms of teaching and learning." As a new committee, ETc spent the year defining its goals and planning action for the following year.

ETc held six regular meetings this year and sponsored two district-wide events.

ETc defined four broad arenas of interest regarding "emerging" technology:

1. Software
2. Hardware
3. The Future
4. Educational applications

The committee decided to focus mainly on the technologies concerning computer-based/aided instruction. We planned to visit major computer vendors in order to determine what hardware and software products they would consider to be "cutting edge." Our goals were to:

1. Avoid the general sales pitch (i.e. "dog and pony show").
2. Ask for a non-disclosure agreement so that ETc would receive the "hottest" news, including, but going beyond, the technical "nuts and bolts" measures of computing speed, memory, etc.
3. Seek corporate alliances — the District has much to offer as the "Harvard" of community colleges.
4. Ask to become beta test sites for software/hardware.
5. Request support for our faculty and staff.

Some of the major issues ETc discussed this year:

1. Cross-platform applications.
2. Networks (Wide-Area and Local-Area) — We need more long range planning rather than piece-meal tie-ins.
3. Multimedia — what is it, where is it going, and what are the hardware (computers, video disks, CDROMs) and software requirements?
4. How much user support will be available?
5. How can faculty produce/get custom designed software?
6. What are the best environments/configurations for development teams?
7. What is the support for educators?
8. How will future purchasing decisions be made?

ETc Meetings

The committee decided to have meetings at different colleges when possible. The structure was to have two parts for each meeting: (1) A tour of present uses of technology at the host college; and (2) ETc discussion. This format gave participants an opportunity to share ideas across the colleges, and received a very popular response from all. ETc established a district-wide A1 distribution list ("@OCOETC") for on-line discussions.

List of Meetings

1. 10/20/92, Paradise Valley Community College. Lynn Lalko gave a tour of the interactive videodisc chemistry labs.
2. 11/19/92, Mesa Community College. Matt Wozniak and fellow faculty presented

developments in using the NeXT computer.

3. 12/16/93, Maricopa Center for Learning and Instruction, District.
4. 1/22/93, Maricopa Center for Learning and Instruction, District.
5. 2/26/93, Glendale Community College. Chuck West gave a tour of the High Tech Center.
6. 4/20/93, Paradise Valley Community College. Jerome Baxter and Apple hosted a discussion of Apple's future product trends.

Events

1. "What's NeXT in Instructional Computing?" This event was held on December 3-4, 1992 at the Maricopa Center for Learning and Instruction, District. Matt Wozniak, Ken Costello, and Richard Feltnagle of Mesa Community College presented examples of software they had created and are currently using on the NeXT computer. The audience included faculty and staff from seven MCCCDC colleges as well as representatives from District Information Technology Services (ITS).
2. Dr. Edward Barboni, a national leader in the use of technology in education, visited the MCCCDC from March 31-April 2, 1993. Dr. Barboni gave several presentations, visited two colleges, and participated in panel discussions during his visit. Approximately 88 people were present for the events held at the District Office.

Dr. Barboni toured the technology centers at Mesa Community College and Glendale Community College. He delivered a presentation at District offices entitled:

"Instructional Technology: Planning and Vision" and led a panel discussion on "Planning Issues in Instructional Technology." Both events were videotaped and will be available from MCLI. The powerful video shown by Dr. Barboni called "A Private Universe" has also been ordered for the MCLI library.

Future Plans

Closer contact with vendors is important. Planning for future changes and technological advancements can be expedited by direct vendor contact. It is better to have direct access to information about latest products and developments rather than to find out about changes through the popular press. In addition, it is important for educators to provide information to vendors. Most vendors have special sales divisions devoted to the educational community. This is evidence of our importance to them. Educational institutions should take a more proactive role in influencing the direction of future technologies, rather than simply reacting to it.

Conclusions and Recommendations (Matt Wozniak)

Conclusions

The first year of activities for this committee has made several things apparent:

I believe the poor attendance at each of our meetings (usually less than five participants) is a reflection of the difficulty of getting active faculty to find time to attend meetings during the semester. This poor turnout was very disappointing as there were many "campus leaders in technology" that were not part of the committee's conversation.

leaders to the events the committee sponsored:

1. The software development on the NeXT computer (using object-oriented programming techniques) seminar that ran for two days (6 hours each day) at the District office,
2. The Ed Barboni talk about learning theory and the use of technology and,
3. The Barboni-lead Discussion Panel on which many of the campus leaders in technology were panelists and discussed "Where are we going with software development and the purchase of hardware?"

Although I believe the committee members who attended the meetings at the various colleges and participated in the tours became less parochial, I do not believe these educational experiences were shared with enough faculty to make this author recommend doing it again. Instead, I would prefer our District concentrate on creating more events, BUT choosing times when the faculty can attend.

Recommendations

1. Create Events such as the Dr. Barboni Visit, Panel Discussion, NeXTSTEP programming seminar, but choose times when faculty can attend.
2. Do not pay faculty to be Co-Chairs of these Ocotillo committees; use the money to fund events instead.
3. I recommend that ALL of the full-time faculty be REQUIRED to report to work TWO WEEKS BEFORE classes begin in the fall and remain for TWO WEEKS AFTER the end of the spring semester. I make this recommendation because I believe full time faculty bear the major professional

responsibility for the integrity and the development of curriculum as our District moves inexorably toward the use of more part-time faculty. This addition to our contract MUST be reimbursed at our regular (professional) contract rate. Therefore, since these four weeks reflects an increase of 10% time on task, the faculty yearly payrate should be increased 10% to reflect this increase in time. These four weeks should be designated for MOST of our outside visitors and events. This activity should NOT be VOLUNTARY; curriculum development and preparation of materials for part-time faculty to use must be an ongoing responsibility.

4. EVERY DEPARTMENT MUST SEND AT LEAST ONE FACULTY MEMBER TO A NATIONAL MEETING ONCE EVERY THREE YEARS. TRAVEL to national meetings should NOT be a PRIVILEGE, but a responsibility of each department to stay "current" in order to better serve the interests of our students and District.
5. Finally, there is a tremendous amount of innovation and experimentation going on around the District. The meetings held at the colleges were very enlightening. Efforts at cross connecting the individuals involved in all levels of technological development from across the District should be continued and expanded.

Intellectual Rights

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Charge

Intellectual Rights examines the impact of the federal copyright law on the educational community. Included in the study are rights and responsibilities of faculty and staff in the use and reproduction of printed and video material as well as computer software. Ownership rights of employees who author materials at the workplace is also under discussion. Policy recommendations are expected.

Accomplishments

The Intellectual Rights Committee had three areas to review this year:

- copyright guidelines and incentives,
- multimedia and copyright, and
- faculty ownership of materials they produce.

Last year's committee recommended as top priority that a short video on how to follow copyright guidelines be produced this year. The focus of the video was to be on the positive "how-to" rather than on the negative "do not." Richard Felnagle developed a script that covered the areas of print, video, and software copyright. The committee members identified positive examples of faculty who had received permission to use copyrighted materials or had used Follett Bookstores' service or McGraw-Hill's Primus to create anthologies of copyrighted materials for their classes. MCC's Media Services produced the videotape and Richard served as commentator and narrator.

The committee reviewed the videotape before it was shown to faculty at MCC and at a presentation in April to the Governing Board. The responses from both groups were positive. The videotape achieved the committee's goal of showing a number of different and convenient ways that faculty could obtain permission to use copyrighted materials. Richard Felnagle also developed a brochure listing key addresses and phone numbers of organizations and businesses mentioned in the videotape. The videotape is ready to share with all colleges and will be housed in the MCLI.

The other goal of the committee was to make available information about the copyright law, guidelines, and sample letters for requesting

permission to use copyrighted materials. Through Janice Bradshaw's efforts, a folder containing the copyright information was put on the public access server in the District Legal Office. Directions for accessing the information were sent to everyone in the District and included in the brochure and videotape.

Recommendations for Next Year

The committee recommends that the focus next year be on the following:

1. Draft a policy for the Governing Board that clarifies the issue of faculty ownership of materials they produce.
2. Provide information about multimedia and copyright on the Legal Department's public access server and as a brochure or additional videotape.
3. Work with the colleges to use the copyright videotape and materials with faculty and support staff.

Using Copyrighted Materials:

Supplementary Information

The following information is included in the videotape and brochure:

I. Print

A. Bookstore

Check with your college bookstore about custom publishing. Remember to allow at least 12 weeks for multiple copyright permissions.

B. Primus

Mina Mathies is the Senior Sales Representative for McGraw Hill. Call her at 1-800-824-6478 and ask for the Primus catalogs. Or call Dudley Land at 619-586-0644.

II. Video

A. PBS Video Service

To request a catalog from the PBS Video Service, call 1-800-248-8311; this phone answers 24 hours a day. Or, write to PBS Video Service, 7900 Hickman Road, Des Moines, IA 50322.

B. Discovery Networks

For a free copy of schedules and curriculum materials for The Discovery Channel and The Learning Channel, call 1-800-321-1832. Or, write to Discovery Networks, P.O. Box 7500, Melville, New York 11775-7500.

C. Arts and Entertainment Network

For a copy of schedules and classroom materials for the A&E Classroom broadcasts, call 310-28-3000. Or, write A&E Network, 1800 Century Park East, Suite 450 Los Angeles, CA 90067.

D. Dimension In Education

For information about other cable programming aimed at instructors or to be put on the mailing list for Dimension Cable's Dimension in Education program, call Lori Fields, 866-0072. Or, write to Dimension in Education, Dimension Cable Services, 17602 North Black Canyon Hwy., Phoenix, AZ 85023.

E. Cable In The Classroom Magazine

For subscription information, call 1-800-343-0728. Or, write *Cable in the Classroom Magazine*, 80 Elm Street, Peterborough, NH 03458.

III. Questions?

A. The Copyright Hotline

For general questions about the copyright law and its application, call the Copyright Hotline, a toll-free number maintained by the Association for Information, Media, and Equipment: 1-800-444-4203.

B. District Legal Office

For specific questions about the District's copyright policy, call Janice Bradshaw, the District General Counsel: 731-8875.

How To Log On To Legal's Public Access Server

The Public Access Server is Macintosh-based through the AppleShare Network. This server contains information about what may and what may not be done with protected and proprietary information. It also provides form letters for requesting permission to use copyrighted materials.

To log on to the Public Access Server, open your Macintosh "Chooser" under the "Apple Menu" and select "Dist Legal" from the lower left dialog box. Then select "AppleShare" in the upper left dialog box. "Legal's Server" will appear in the upper right dialog box. Select "Legal's Server" and click "Okay" (lower right).

When the access screen appears, click on "Guest" and then click on "Okay". A new

screen will appear with "Public Access" pre-selected. Immediately to the right of "Public Access" is a square box with an "x" in it. Please click on this box so that the "x" disappears. Then click on "Okay". Close your "Chooser" and double-click on the Public Access icon on the right side of your desktop.

Please read the "Attention! Read First" file before proceeding.

Library User Group

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Charge

The Library User Group discusses what the Core Collection at a college should include, i.e., print and non-print and what and how much should be bought, borrowed, rented, leased, or shared. Processes that ensure faculty make principal decisions and lead such discussions are critical.

Introduction

The Library User Group of Ocotillo:

- opens new avenues of communication among librarians and other teaching faculty to create effective and integrated learning environments;
- encourages collaborative educational experiences that empower students for lifelong learning and enhance their information literacy;
- develops programs, guides, and other information sources that promote fuller understanding of issues of information access among MCCC students, faculty, and staff.

Year in Review

The Ocotillo Library User Group redoubled its commitment to promoting communication and collaboration among students, faculty, and staff across the District. The reordering of components of our mission statement — placing communication first in the list of purposes we hope to serve — demonstrates a change in emphasis for this committee. We recognize that there are a great deal of innovative applications of technology currently in use across the District. Identifying and encouraging innovation in information access has become an integral goal of the Ocotillo Library User Group. A major challenge in promoting information technology within colleges and centers across the District is presented by the disparity of technological resources available to the different colleges and centers. This continues to be a central concern of this committee, and a number of our recommendations are made with this consideration in mind.

Major Accomplishments

- Originally charged with discussing the elements of a core collection of a community college library and looking at ways of maximizing limited budgetary resources, the Ocotillo Library User Group soon discovered that LAREDO has already developed a set of MCCC Resource Sharing Guidelines. Thus, we felt free to change our direction and agenda for the year. Our committee recommendations reflect this change of purpose.
- In November, the committee participated in the beta testing of *American Memory*, a multimedia, hypertext project of the Library of Congress. The aim of *American Memory* is to preserve selected collections and make them more accessible to scholars in remote locations. Jeremy Rowe, head of Media Services at ASU's Hayden Library, demonstrated the project for us. Following this, we provided written and oral feedback to Mr. Rowe. This project is interesting because it suggests ways in which collaboration and resource sharing can occur between MCCC and ASU.
- This committee devoted considerable time and thought to the relationship between computer literacy and information literacy. MCCC has recognized the need for students to be computer literate; evidence of this is the one-hour computer usage requirement for the A.A., A.G.S., and A.A.S. degrees. There is now a sense that the need for a computer literacy requirement is obsolete in that students are coming to MCCC with some background in computer usage. However, the Ocotillo Library User Group found

that students are facing an increasing need for information literacy skills. How best to teach students to access and apply information is one of the questions we wish to address on an ongoing basis.

Committee Recommendations

The Ocotillo Library User Group is making the following recommendations after considering the pressing issues concerning student and faculty informational needs, varying levels of technology available to MCCC colleges and centers, and limited budgetary resources:

- Improving communication among library faculty and other teaching faculty. This committee recommends the development of open houses, improved marketing of information technology, articles in student and/or college bulletins and newsletters, and listservs across the District.
- Enhancing information access skills among faculty. Core access to information and instructional resources is an integral part of the institutional commitment of MCCC. Access to these resources carries with it the notion that some of these resources will be owned by a particular college, others by sister colleges within MCCC, and many others will be owned by other educational organizations locally, regionally, and nationally.

Access to information and instructional resources is based for the most part on our ability to communicate electronically through the MCCC and Arizona State

University online catalogs, and to other colleges and universities for interlibrary loan of books through the OCLC system.

A newer and increasingly popular way of accessing hundreds of electronic resources across the nation and around the world is the INTERNET. We strongly recommend that students, instructors, library information, media and computer professionals, and staff be introduced to the INTERNET through a training program coordinated between the District office and the colleges/centers.

"The Whole INTERNET Guide and Catalog" lists 50 pages of resources including bread-and-butter databases in aeronautics and astronautics, anthropology, astronomy, biology, chemistry, computer science, education, engineering, the environment, geography, geology and geophysics, national, state and local government documents, health, history, the humanities, libraries, literature, mathematics, medicine, music, network information, network news, nutrition, physics, popular culture, reference books, religion, resource directories, science, meteorology and climatology.

We can connect to these informational and instructional resources thanks to the technological infrastructure which MCCCDC has invested in during the past thirteen years. Now is the time to accept this as an institutional priority and imperative of the information age.

- Enhancing information skills among students. At several

meetings, this committee looked at inventories of information access skills for students from other institutions of higher education. It would be advantageous for MCCCDC to develop such an inventory and use it to design and plan adequate training in information technology usage.

- Encouraging collaboration among faculty. This committee wishes to pursue a closer working relationship with the Ocotillo "Support for Technologies" committee and other groups that identify and showcase technological innovations designed or implemented by MCCCDC faculty.

Future Concerns

- Promoting information literacy among students. Librarians across the nation can attest to the fact that students are poorly prepared to cope with the information realities of today's society. We in MCCCDC are fortunate, however, to be able to offer a variety of informational formats that accommodate different learning styles. This resource-based learning offers information resources of the "real world" and demonstrates that learning is active and integrated, not passive and fragmented.

Helping students become more independent and self-directed learners must be a collaborative venture among library faculty and classroom faculty. First, the library can provide information in a variety of formats. Then, both the librarian and the instructor can identify other specialized resources for the student. Also, the librarian can help students to see many sides of an issue and help

students evaluate the suitability of the information they find.

Collaboration can be both formal and informal. The Ocotillo Library User Group can be an effective tool for promoting collaboration if we can find a way of recruiting more classroom faculty to participate. Another way to promote collaboration among librarians and classroom faculty, which is going on in colleges and universities nationwide, is to require a library component with the required freshman English component. We are committed to researching, discussing, and recommending effective methods of encouraging collaboration among faculty.

- Assessing and sharing our current collections. In discussing the feasibility and desirability of sharing collections, we feel it is important to have a clear picture of what we currently have in our collections. To that end, this committee recommends that libraries across the District perform an assessment, such as the Northwest Collections Assessment. To be of real value, the assessment should include non-print resources, including media software and instructional software. Assessment might lead to a discussion of trading resources to enhance current collections.
- Improving the quality of dispatching loaded materials among colleges. This committee applauds the ongoing efforts of LAREDO to develop procedures to expedite the sharing of library resources across the District.
- Expanding the use of lease-

purchase agreements in building collections. The lease-purchase agreement offers two District advantages to MCCCCD libraries. First, it enables libraries to purchase only those materials found useful by faculty and students. Second, lease-purchase agreements result in lower costs of materials that libraries do choose to purchase.

- Preserving and augmenting library collections in an era of difficult budgetary realities. This committee is concerned about ways in which MCCCCD can maintain its competitive informational edge at a time when education budgets are threatened. One suggestion we explored this year was the formation of traveling and/or rotating collections that support specialized or unique curriculum.
 - ◆ Can MCCCCD provide some/all funding for a collection that would be a District-wide resource?
 - ◆ What if the content of a rotating collection is relevant to only a few colleges?
 - ◆ How can we determine what content would be most appropriate for rotating collections?
 - ◆ How can colleges share the cost of purchasing materials for rotating collections?
 - ◆ Who will "own" the materials?
 - ◆ Can libraries loan materials to a rotating collection on a permanent basis?
 - ◆ How can class scheduling be coordinated with the scheduling of the rotating collection?

- ◆ Where will rotating collections be stored when they are not in use?
- ◆ Will rotating collections contain non-print material, such as sculptures?
- ◆ Who would be responsible for developing rotating collections?
- ◆ Could the collection be centrally located with fax or document delivery service?

This committee wishes to continue discussion of the possibilities offered by the concept of rotating collections to maximize limited resources.

- Achieving equity among colleges in access to databases, one of the biggest concerns of this committee, continues to be the great disparity among colleges and centers with regard to the availability of databases to students and faculty. We plan to continue discussion of this problem, and we will actively seek solutions. We believe that all MCCCCD faculty and students should enjoy the best access to information that we can offer.

Mechanisms of Technology Implementation and Evaluation

Members

Alan Jacobs, SCC
Chair

Jamie Cavalier, DIST
Group Support

Other participants in this
Ocotillo Group were:

Maria Harper-Marinick, DIST
Margaret Hogan, CGCC
Patricia Honzay, DIST
Irwin Noyes, SCC
Ann Oehmke, CGCC
Toni Rodriguez, GWCC
Karen Schwalm, GCC

Cynthia Leshin, DIST
Naomi Story, DIST

Charge

Mechanisms of Technology Implementation and Evaluation discusses and defines the mechanisms for infusing or not infusing technology after "it" has been tested or developed into the MCCCD. This group also investigates the requirements necessary for "grass roots" implementation (resources, support, etc.) and the best time for individual colleges to take responsibility for implementation. Process and models for evaluating efficacy of instructional technologies will also be discussed.

Preface

There are two early motivations for this Ocotillo group: To improve the support for technology innovations and to learn how (and when) to expand successful projects into department or college or District-wide implementations.

Our group, *Mechanisms of Technology Implementation and Evaluation*, was given the charge to "discuss and define the mechanisms for infusing, or not infusing, technology after 'it' has been tested or developed into the MCCCDC." Our task, then, is to describe the processes of technology implementation in MCCCDC. But our task does not end with description; inherent in our charge is a decision: to infuse or not to infuse. Part of our name, after all, is *Evaluation*.

Evaluation of innovations seems like a pretty risky concept. Some would argue that too close an evaluation of innovations can have a chilling effect, to the extent that fewer (and tamer) innovations are attempted. Others will counter that we need to learn from each others' mistakes as well as from successes. How would we differentiate successes from failures unless evaluations were performed?

This Ocotillo group contends that we can build on each others' successes and learn from each others' failures. We recognize that evaluations might work well in an atmosphere of trust and support, where it might be disastrous in a hostile environment.

In this report we intend to present a description of technology infusion as it occurs within the District. In this description we hope to present a vocabulary and a schema for talking about technology infusion. (In fact, both the vocabulary and schema apply to many more kinds of infusion than just technology infusion.) And with the vocabulary and the schema, we hope to provide

innovators and managers with a common way to think about particular innovations and what those innovations need in order to succeed.

It is, then, with both fear and trembling, that we present the following report. Not because it may provide leaders with a common language for encouraging the success of innovations, but because that same language will also be used to say "no" to the further infusion of certain innovations. In addition to providing a context for an individual to improve the chances for the success of his/her own innovation, it also provides a context for an individual innovator to say "no" to the further infusion of his/her own idea.

In submitting this report, we want to encourage innovation. We believe that more innovations will be more successful if all the parties concerned have a clearer understanding of the process of infusion: that there may be several stages, that the challenges in each stage are different, and that different outcomes may be reasonably expected from the different stages.

Our goal is to learn to support different innovations well, differently.

Two Cultures

Instructional decisions regarding technology (actually, most instructional decisions) take place at the intersection of two different cultures. One is the culture of community and consensus. The other is that of independent, professional contractor. Most notably evidenced by the large numbers of part-time faculty, but it is also seen in the myriad of small and large instructional judgments that are made by all faculty. The instructor may decide to change the

emphasis in the standard course outline. The instructor may decide to include a technology component in a course, as a way to solve an instructional problem that has occurred, only to choose a different solution the following semester.

Given that individual faculty judgment is a strong aspect of the culture, the schema for technology infusion must not ignore the individual. Given that a college is also a community, the schema must also reflect the striving for a sense of consistency and commonality.

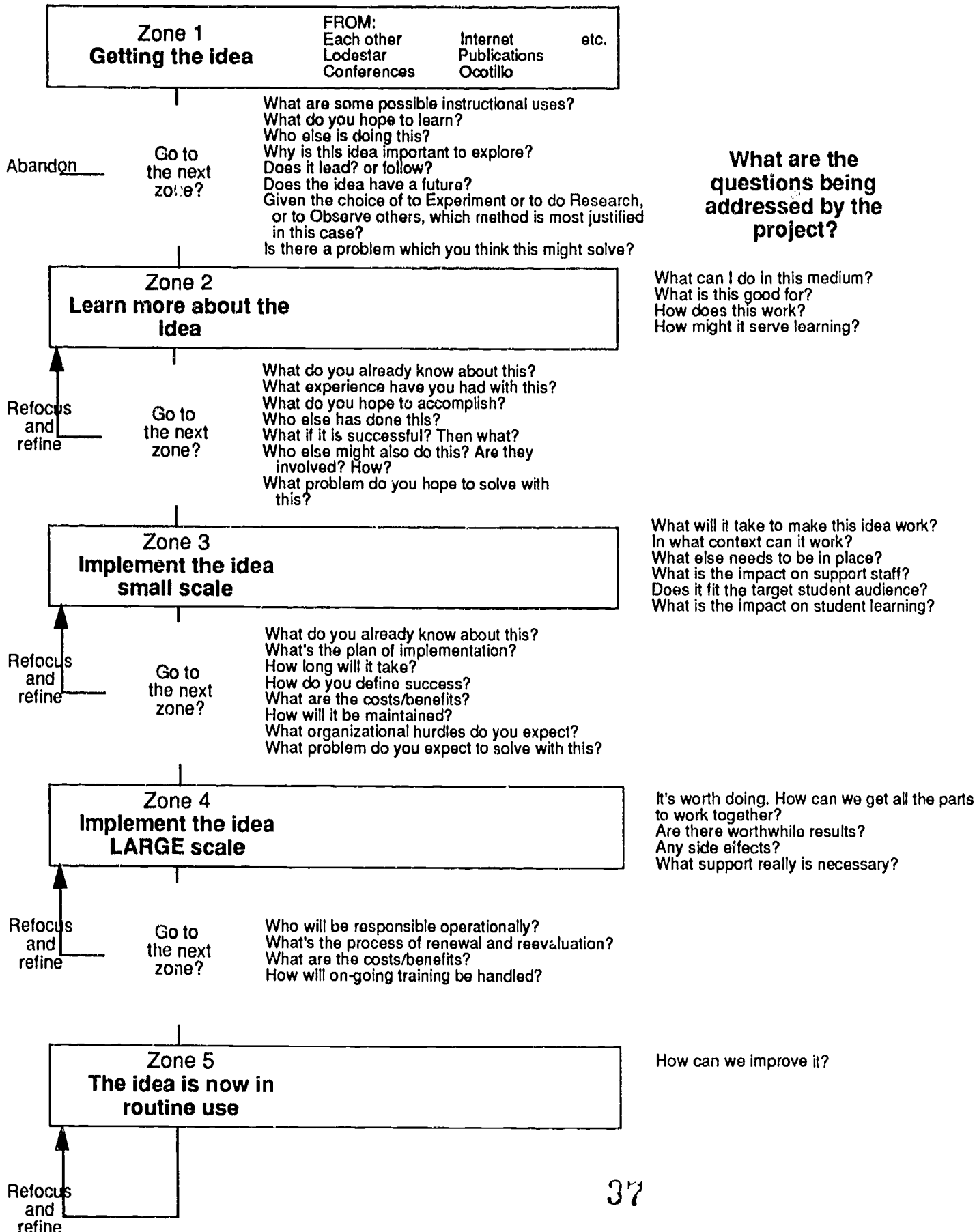
The co-existence of these two cultures implies that we might consider two different schema for describing technology infusion.

From an individual innovator's point of view, one first gets an idea, experiments with it to learn more about it, tries it out on a small scale and, if successful, tries it on a larger scale. During this time the idea may be revised or abandoned if it isn't working. On the other hand, new vistas may appear from initial, tentative uses. In fact, small scale implementations may reveal profound side effects which encourage or discourage further work.

From the organization's point of view — the department or college or District — an innovation generally catches on sporadically over time. Many individuals are first interested in learning about the idea, and later in testing it. Much later the idea may be in routine use at some locations and, at the same time, other individuals are just getting the idea and wanting to experiment.

Since technology is continually changing, we will always be asking the questions: "What technology should we use? Where? When?" Therefore, we really should come to grips with how we make those decisions. We should employ

Figure A. Schema I: From Idea to Reality



Instructions:

1. Identify the zone that best fits your innovation, by checking which set of questions best applies.
2. Questions for Zones below your identified zone are inappropriate, or at best premature.
3. The questions associated with the decision symbol are posed prior to entering the next zone.
4. Questions may be asked and answered by individual innovators, as well as by chairs/deans/managers/funders.

Note: The questions below are intended to be a guide. Explore the questions. You may not be able to answer all the questions; nor are there right and wrong, or expected, answers.

What results do we expect from this?	Who could we look to for support?	Comments
<ul style="list-style-type: none"> •Personal/professional growth •a report on future possibilities •some inspiration for others •to demonstrate a commitment to innovation •some projects will develop to the next zone 	Colleagues/peers Dept/Div chairs Ocotillo	It's okay to re-invent the wheel Benefits accrue to the organization in any case There is "strategic" play There may be no 'problem' to solve if it doesn't work, so what? Take a risk!
<ul style="list-style-type: none"> • An evaluation of the project •To learn the costs and benefits of the idea •That others will learn from this experience •That not all projects will develop further •To learn its organizational impact • What is the impact on other faculty? • What is the impact on subsequent courses? • What is the impact on facilities? • What is the impact on connectivity •To learn what support/training is necessary • How has the idea changed? • Were there unexpected results? • What needs to be in place for this to be a success? • Is it replicable? 	Colleagues/peers Dept/Div chairs Technology support District Ocotillo	We don't want to re-invent the wheel; we do want to improve the wheel. Focus on "strategic" implementations: build for the future The results need to be widely available. It's OK to make mistakes and make changes The project will evolve during this zone. To make some decisions you really do need to try things out.
<ul style="list-style-type: none"> •success •a replicable model •to devote \$ •to fold it into on-going operations •to develop an operational plan 	College President Appropriate Deans Instructional Council Dept/Div chairs Upper level District Administration District: MCLI, ITS Technology leadership Colleagues/peers Ocotillo	We assume the wheel is going to help us in our basic mission. Training is an important factor. CBAM is invoked
<ul style="list-style-type: none"> •results •efforts to fine-tune it 	College President Appropriate Deans Instructional Council Dept/Div chairs District: MCLI, ITS Technology leadership Colleagues/peers Ocotillo	

procedures and methodologies that encourage us to ask appropriate questions, and to avoid inappropriate ones, so that we can support different innovations well.

Schema I: From Idea to Reality

We propose the following schema as a guide in understanding the development of ideas for the application of technology to instruction from the individual's point of view. This schema is intended to be a classification schema. It may be used to develop methodologies and procedures for evaluating technology decisions.

In this schema there are five zones. The first is the zone of *Getting the Idea*. Sometimes this can happen in a reflective state, but it most often occurs in contact with others. In MCCC, Ocotillo has provided one forum for sparking ideas. In any case, an idea hits home, sparks further ideas, and leads the individual to want to learn more.

The second zone is *Learn More about the idea through exploring, reading, research, etc.* In this zone one just wants to learn about a given technology. Perhaps no instructional problem is identified at this point. The goal is just to sit behind the wheel and see where it takes you. In some cases the experiment may be to take a technology developed for one purpose and see if it can be put to other uses. In this zone, a person explores the limits of the technology and gets a feel for its potential uses. If the technology is being used elsewhere, the fastest way to learn may be to combine individual exploration with a close examination of its current use.

Zone three is the *Small Scale Implementation*. After playing with the technology, a potential use may be identified. The small scale implementation is a live test of that potential use. This test may be as

modest as a single assignment in a course, or as extensive as a theme around which a course is organized. However, the small scale implementation rarely involves more than a single instructor in a single course. Small scale implementations tend to be idiosyncratic and contain high levels of personal involvement and time commitment. In this zone, the instructor often measures success by student outcomes, as well as by the ease with which it fits into the rest of the course structure.

Zone four is the *Large Scale Implementation*. Having experienced success in the previous zone, we're ready to involve other instructors in the innovation. This implementation contains an entirely different set of risks than the small implementation did. The other faculty may not be true believers, nor even familiar with the idea at all. Success in zone four depends on resolving issues about appropriate training of those involved, suitable standardizations, and support needs. Success depends on the proper organization of materials, keeping to a common timetable, and establishing procedures so that the idea can be self-sustaining. Success in zone four is more difficult to measure. Student outcomes and faculty perceptions are important, but so is evaluation of the procedures, standards, and budget.

In Zone five the instructor and others are routinely using the idea. It is now self-sustaining and supported by the normal operational budget. Faculty and students are comfortable in the regular use of the idea. In fact, they expect to be using it.

Faculty and other initiators within each zone revise and rethink the idea in the context of current experience. Even in the idea stage, a person is already customizing it to their own purposes. Some projects never develop beyond the small scale implementation, but

are continually revised and improved at that level. (See Figure A, pages 34 and 35.)

Schema II: Adopting the Innovation

Substantial changes happened in zone four of schema I. The challenges for success in that zone had more to do with involving, training, and coordinating the work of others, than directly with the innovation itself. In many respects it moved out of individual decision and control to a more community effort. In fact, preceding the move to zone four, there was probably a group decision to attempt the large scale implementation. For this reason, the focus on the individual is inadequate in zone four; we need a schema which can give us insight into the movement of the idea through a community. Concerns Based Adoption Model (CBAM) is a schema which has been used for precisely this purpose. The purpose is to understand the process by which an innovation moves through an organization, in the context of a large scale implementation. CBAM is a comprehensive and complex system, developed and tested over many years. It provides both a theory and a framework for understanding the dynamics of successful implementation of any innovation in an organization.

Those who are familiar with CBAM can use its concepts and vocabulary to shed light on some of the issues that arise in zones one - three of schema I, but its main focus is: Now that we've decided that innovation X is valuable, what do we need to do to get X into routine use?

An individual may define and redefine a project many times during the early stages as its salient features become clearer and as it meets the reality of student use. These salient features, however, are difficult to change once in zone four, *Large Scale Implementation*. In fact, it is

crucial to success in zone four that all participants have a clear understanding of the "expectations during the initial implementation phases." (*Taking Charge of Change*, Hord, et al, Association for Supervision and Curriculum Development, Alexandria VA, 1987, ISBN: 0-87120-144-5).

CBAM uses the concept of **Innovation Configuration** to clarify and communicate the variety of ways the innovation can be implemented successfully, and it clarifies the critical components of the innovation. During the implementation, the innovation configuration can be used as an evaluation guide. It can be used both to promote the success of the innovation and also to address the question of how well the innovation has been implemented in terms of its own description of success.

CBAM is based on several assumptions about change:

1. Change is a process, not an event.
2. Change is accomplished by individuals.
3. Change is a highly personal experience.
4. Change involves developmental growth.
5. Change is best understood in operational terms.
6. The focus of facilitation should be on individuals, innovations and the context.

The focus on individuals becomes apparent when looking at two different dimensions of CBAM: Stages of Concern and Levels of Use. CBAM identifies seven Stages of Concern:

0: Awareness

I am not concerned about this innovation.

1: Informational

I would like to know more about it.

2: Personal

How will using it affect me?

3: Management

I seem to be spending all my time getting material ready.

4: Consequence

How is my use affecting students?

5: Collaboration

I am concerned about relating what I am doing with what other instructors are doing.

6: Refocusing

I have some ideas about something that would work even better.

These Stages of Concern can be used by the leaders of the innovation, as well as by the participants. They can be used to identify small successes and failures, to plot the progress of the large scale implementation, and to determine intervention strategies to improve the chances of success.

CBAM includes another dimension of describing the process of adoption of the innovation: Levels of Use. There are 7 levels of use:

Level 0: Non-use
Level I: Orientation
Level II: Preparation

Level III: Mechanical Use
Level IVA: Routine
Level IVB: Refinement

Level V: Integration
Level VI: Renewal

According to the CBAM model, people tend to move sequentially through the levels of use from 0 to IVA. At that time most remain in routine use, while others may move "back" or "forward." During the infusion of the innovation, leaders will offer different kinds of information and workshops as people move through different levels of use.

CBAM works as a tool for guiding the infusion of an innovation, once the decision has been made to infuse.

Limitations

1. Schema I looks too linear. This linearity makes the inadvertent judgment that to be further along the scale is better. Reality is much more recursive than this schema indicates.
2. Schema I leaves the distinction between small-scale and large-scale implementation rather ambiguous. Until the schema is tested against more real innovations, this is a limitation. However, it may turn out to be an advantage in terms of flexibility.

Recommendations

1. We recommend that the group which began discussion of change, during summer 1992, be reconvened to discuss and challenge the effectiveness of these schema for the Maricopa reality.
2. We recommend that this Ocotillo Group continue during 1993-94 with three purposes:
 - a. to refine schema I in the context of the Maricopa experience and considering the limitations described above;
 - b. to deal with the question: "How do we make the decision to implement a project large scale?" (And by inference, how to we decide to not implement projects?);
 - c. to develop a plan for instructing innovators, chairs, deans and managers in the use of both schema.

Many thanks to Margaret Hogan and Irwin Noyes for presenting a distillation of the CBAM model to us; to Ann Oehmke for leading us in CBAM's game *Making Change.*; and to Brent Bartel for making arrangements and taking notes.

Open Entry/ Open Exit

Members

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Patti Marsh, PVCC
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Linda Collins, RSCC
Daniel Combellick, SCC
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Lupe Gutierrez, DIST
Suzanne Murry, GCC
Connie Rainey, GWCC
Hala Saadeldin, CGCC
Roger Yohe, EMCCC

Charge

In response to the need for flexibility yet consistent classes which do not follow a traditional timeline, Open Entry/Open Exit proposes definitions for OE/OE classes. Group members also outline a records management system and make recommendations for instructional staffing. The group examines issues and encourages standardization of policy and procedures for OE/OE District-wide.

Introduction

The Open Entry/Open Exit Committee was formed to address issues regarding courses taught in an open entry/open exit (OE/OE) format.

OE/OE courses involve self-paced learning and often make significant use of technological resources. Since OE/OE classes address the learning needs and time schedules of adult learners, they are in high demand and many colleges are looking to expand and/or improve their OE/OE offerings.

Our charge was to continue identifying issues which might impede the development of OE/OE courses and make recommendations regarding the resolution of those issues.

Year in Review

We were fortunate to have had a committee in the previous year that had accomplished significant work on:

- In-Progress ("IP") Grade
- Curriculum Process
- Student Success
- Class Size/Faculty Loading
- Roles/Responsibilities

This year's group focused on:

- Increased Communication
- Course Competencies
- Student Success
- OE/OE Orientation Project
- Computer Lab Fees
- Human Resource Issues (Roles/Responsibilities)
- OE/OE Faculty Evaluations
- OE/OE PEP Grant

Increased Communication

This year's committee strived to increase communication efforts between colleges as well as the District office. The committee had great representation from almost

all colleges and this really fostered camaraderie. One of the goals decided on early in the year was to disseminate information, ask questions, get advice, and generally communicate the committee's goals and efforts on an ongoing basis. This has been accomplished through committee meetings, projects, memos, collaborative efforts in gaining information, and lively discussions.

Some of the topics discussed included: INFORM, lab procedures and policies, security issues, support of District-wide initiatives relating to OE/OE, ethics, staffing, course competencies, student success, interactive OE/OE orientation, faculty evaluation, computer lab fees, records management, and infrastructure. The OE/OE committee has found that from basic issues introduced a couple of years ago, many off-shoots are continuing to sprout throughout Maricopa, and the OE/OE environment continues to grow and develop.

Course Competencies

The OE/OE committee wanted to ensure that all OE/OE courses being offered throughout the District were designated as being available with current course competencies in place. Virginia Cantu compiled a comprehensive list for the committee of classes with, without, or having competencies in draft mode. The committee reviewed the list and forwarded the information to the responsible instructional councils.

Coincidentally, this issue was addressed by Dr. Alfredo de los Santos. He has issued the charge of having ALL course competencies brought up to date. This includes OE/OE courses.

Student Success

The committee looked at factors leading to student success within the OE/OE environment.

Highlights from discussion and projects:

- Interactive orientation project — District-wide model
- Student advisement — the need to be ongoing, emphasis on advisement as critical in an OE/OE environment, students must know characteristics which promote student success, i.e., good reading skills, good time management skills, etc.
- INFORM — student information/grade station; student progress letters
- Course organization, delivery, text materials.

Each of the above is a factor that can directly affect student success within the OE/OE realm. Each college can be directly responsible for implementing and evaluating one or more of the above. What is successful for students on one college might not be successful on another. Colleges have their own unique qualities which enhance Maricopa's educational environment.

OE/OE Orientation Project

The OE/OE subcommittee is involved in developing an interactive OE/OE orientation that can be used at many colleges. Previously, at most colleges, OE/OE orientations consisted of a slide show-type presentation on the computer, a videotape presentation, an in-person presentation, and/or a packet of text-based orientation information.

The orientation program being developed will use HyperCard for the Macintosh environment and

Toolbook for the IBM environment. It will allow the student to interact with the computer; it will individualize information specifically to the student working on the orientation; and it will check for student understanding of concepts and policies. It is being designed in conjunction with the District instructional design staff at MCLI, and structured in a way that will allow each college to insert college-specific information and procedures. Those interested in knowing more about this project may contact Maria Hesse (732-7030).

Computer Lab Fees

Computer-related fees charged throughout the Maricopa District reflect diverse patterns of assessment. This diversity of fee assessment ranges from no fee, a set fee per course regardless of credit, a set fee per number of credits, and a fee based on usage record. The committee is currently drafting a report to Dr. de los Santos apprising him of the wide range of differences among the colleges.

Human Resource Issues

As a continuation of our discussion on roles and responsibilities, two areas of concern in the human resource area have continued to be brought to the attention of the committee:

1. Members report that job descriptions in the District "job bank" do not adequately describe the positions in OE/OE labs. Therefore, lab employees are performing similar job tasks under a variety of working titles and grade levels. This situation raise issues of equity and consistency in staffing.
2. Members report that when they attempt to staff a lab position, they try to choose a job title that is the most

appropriate in terms of title and grade level. They generally find, however, that the applicants have misunderstood what the position involves based on the official description. The interviewing committee must then spend extensive time informing the potential candidates about the "real" position.

A letter was sent to Dr. de los Santos recommending that a task force be established to systematically review and revise employee job descriptions which relate to instructional computing. The letter requested that the revised employee job descriptions reflect the changes that technology and/or the OE/OE instructional delivery method have brought about in the District.

OE/OE Faculty Evaluation

There were discussions on the need for an appropriate OE/OE faculty evaluation tool. The existing evaluation form covers areas that do not apply in the OE/OE environment. For example, the following items on the form do not apply in the OE/OE environment: 1) uses class time well (starts on time, uses full class period) and 2) is skilled at facilitating group participation, interaction, and cohesiveness, etc. The current evaluation form simply falls short of addressing the many objectives of someone facilitating instruction in the OE/OE environment. Concerns were raised that this may be an RFP issue and that processes should apply to residential and adjunct faculty.

OE/OE PEP Grant

Patti Marsh and Sandy Belisle were awarded a PEP Grant for the Development of a Multi-Disciplinary OE/OE Model for PVCC. They have used the Ocotillo OE/OE Committee as a central clearinghouse for the exchange of

information and as a forum to discuss the feasibility of proposed plans of action. The committee has served as an invaluable resource providing a broad spectrum of information and experience in a timely manner. A full report will be prepared and presented to the committee next fall.

Conclusion/Future Goals

During the year we came to some common agreements, updated information about current practices/offerings in the District, shared ideas about teaching and learning and student success, and learned some new things about District operations.

The following are issues that the committee has identified as important and ongoing and which should be revisited periodically:

- Human Resource Issues
- Student Success
- Lab Policies and Procedures
- Computer Lab Fees
- Faculty Evaluation Concerns

Support for Technologies

Members

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Chuck West, GCC
Roger Yohe, EMCCC
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Charge

Support for Technologies focuses on the District's need for preparing people to use technology and provide support for these users. Group strategy, continually updated to match technological advances, includes issues of training, technical advice/assistance on teaching technologies, and provisions for continuing support for instructional and administrative systems and users of technology. Group members analyze the District's uses of technology, including resources required for implementation and support. Key resources are identified as contacts for others interested in exploring various instructional techniques and media.

Introduction

These are exciting times. Recent advances in technology have given us a host of wonderful, new tools for instruction. These tools are technological gifts we should accept graciously; gifts we must learn to use.

This year's report will mention some of the college technology innovators, leaders, and support centers. The report focuses on showcasing their innovation, implementation, delivery method, and "tools" for instruction. This report is not inclusive of all of the pioneers in our District who initially brought the tools of technology into the classroom. However, it does portray the vision, leadership, and support of a few who started this process.

The final meeting for the Support for Technologies committee this year was held over the Video

Conference Network. The discussion was open to all members of the college community to discuss:

- How is the emphasis on technology in our society impacting education?
- What changes to learning and instruction are evident by using technology in the classroom?
- How can technology be used to enhance learning and instruction in the future?

From those attending, the committee heard concerns regarding: technical assistance and support, resource allocation, curriculum design and delivery, student advising, and support issues regarding implementation of technology for students.

Although this year's report does not deal with these issues, the committee felt that these were valid concerns which should be examined by future Support for Technologies committees. In fact, due to the significance of the issues discussed, they may warrant inclusion in the charge for the next Support for Technologies committee.

What follows is a portrait of visionaries expressing an alternate form of delivery for their discipline. Their stories include what technology they had to learn themselves in order to advance their dreams, what college/District resources were employed, and what instructional implications for learning their creativity has brought to education. We thank them for sharing their creativity with us.

Scottsdale Community College

Innovator

Bernie Combs, Psychology Department, SCC

Project Title

"Split-brain Studies: A HyperCard Simulation for Psychology 101"

Report Author

Emma Walters

I. Project Description

This project involves the development of a HyperCard-based set of simulations of the classical Split-brain Studies conducted by Michael Gazzaniga and Roger Sperry on humans during the late 1960s. Students will manipulate both stimulus and response parameters in preparation for the actual "conducting" of any one of a series of experiments. Scanned images, animation, and real voice presentations will render the simulations as life-like as possible.

Students will also be required to hypothesize about the results of their manipulations prior to "conducting" each study. Students will formulate general conclusions about the distribution of brain functions based on their observations in these experiments. Psychology 101 students will "conduct" these experiments in the SCC open computer lab.

II. Product

There are several areas in introductory psychology, like the

split-brain studies, that are quite complex and conceptual. A fifty-minute class period is often not enough time for all students to grasp the conceptual material. Furthermore, students should learn the process of science: how researchers formulate hypotheses, how variables are manipulated to test these hypotheses, and how conclusions, based on observations, are drawn. These factors inspired the development of this project.

HyperCard was the program chosen for several reasons. Other

faculty on the SCC campus (Don Snow, Mike Morgan, Alan Jacobs) have used it to develop highly successful programs. HyperCard is highly interactive and visual, easy to use, and is very effective. HyperCard has been called a "Software Erector Set": all basic components are in HyperCard; just build the product. HyperCard was also the most logical choice because of its availability and its ability to run on the computers available in the open computer lab.

III. Process

This project took approximately two years and like any other project is "never" finished. The first year, 1991-92, involved developing the idea, planning the process, and building the HyperCard program. During the second year, 1992-93, the program was piloted for student use in Psychology 101, evaluated by the students, as a result, improvements and revisions were made.

This project is one of a series of nine or ten exercises in a computer-based psychology lab to be implemented in the Fall of 1993. Two of the exercises are Bernie's HyperCard programs, PREPNR and this project, Split-brain Studies. Seven exercises are from a commercial program which has been evaluated by twenty volunteer students this year. The feedback has been very positive. During the 1993 summer, Bernie will be writing a manual which will integrate the psychology lab into the Psychology 101 curriculum.

IV. Effectiveness

The objectives of the project have been effectively accomplished and the anticipated outcomes attained. Generally, the students who completed the lab experiments achieved better scores in the course than those who did not complete the lab experiments. However, the evaluation data from the students

was mostly based on questions such as the following:

- Did you have any problems with the program? If so, describe.
- Did you find this program helpful in learning the concepts presented in class. How so?
- Rate this program on a scale of 1 to 10 in terms of how much it helped you learn the concepts presented in class.
- Overall, did you find the program fun? Dull? Informative?
- Should this program be a required part of this course?

The students' responses were very positive and the lab will become a required part of the course in the Fall of '93. The students liked the program and wished there was more of it. They liked the opportunity to work in a medium that offers practical experience rather than only lecture. There is not enough time in class to perform experiments. Computers give students the opportunity to experience a scientific approach to the discipline.

V. Training

Before beginning this project, Bernie studied HyperCard on his own since there was no HyperCard training available anywhere in the District. He then developed a simple HyperCard tutorial program called PREPNR which helps students master four behavior modification (operant conditioning) principles.

VI. Outcomes

The use of computers is presently the only way to effectively give large numbers of students "experience" with concepts. The students "loved it" and felt it added a dimension to their learning that they would otherwise not have had. Many of the students said they

would have done the lab even if they had not received extra credit. Many of them voluntarily repeated the lab as review for tests. Bernie has also found that students sometimes do these computer exercises in "pairs," collaborating on the correctness of their responses, which facilitates learning.

Bernie would like to continue to develop software if resources are available and is willing to mentor colleagues who wish to develop other HyperCard programs.

VII. SCC Technology Resources

SCC is in the process of creating an Instructional Technology Development Center. Sharon Blanton, Coordinator of Instructional Technology, was hired July 1, 1992. Since then, SCC has acquired a videodisc player, a thirteen inch preview monitor, a barcode reader, a color flatbed scanner, a CD-ROM drive, and some development software. The videodisc player is available for faculty to check out and use in the classroom.

Faculty interested in incorporating technology into classroom instruction are encouraged to meet with Sharon to discuss their plan. Currently, there is no funding available to hire technical assistance or to purchase additional equipment.

Phoenix College

Innovator
Jim Walters, PC

Project Title
MariMUSE

Report Author
Al Battle

I. Product

History

This project is an outgrowth of a long search for an environment in which to try different pedagogical approaches. In looking at different things available on the Internet, Jim Walters stumbled into MicroMUSE (Microcomputer/Multi-User Simulated Environment) on a computer at the Massachusetts Institute of Technology. After examining the MUSE at MIT and talking to the people responsible for its existence, the decision was made to open up a MariMUSE (Maricopa MUSE) at Phoenix College.

The MariMUSE system is a virtual reality text-based system that allows users to create environments (using text only) that can be shared with other users. One result of MariMUSE exploration has led to the development of a virtual college that allows users to learn from remote locations throughout the United States.

Technical Components

Hardware — The server and client for MariMUSE are running currently on a DEC Station 5000/125. Users are able to connect via personal computer or terminals.

Software — MUSE: server software

Tiny Fugue: MUSE
client software
connects to server

Pine: Unix mail
system interface

Pico: Unix text editor

II. Process

The process began by contacting MIT in order to acquire the rights to the MUSE software. From that point, it was just a matter of contacting a vendor willing to donate hardware (a UNIX box) to the project. Different funding sources were utilized, including the Phoenix College Center for Teaching and Learning, to pay for the services of a programmer who worked at a remote site. The project should be completed within 12 months.

III. Effectiveness

Although many of the objectives have been met, there are still a few challenges. During the initial phase of implementation, success has been measured by the number of students enrolled. However, a tracking system must be incorporated to measure the student success rate.

IV. Training

To develop a successful program on MariMUSE, the system administrator must be proficient in the UNIX language. Users simply must learn the language of MUSE.

One of the unwritten rules governing MUSE is that users must help other users, regardless of MUSE experience, how to navigate through the program. As a result, the learning of MUSE will occur at a much faster rate than it would for an isolated user.

V. Outcomes

MariMUSE has enhanced students' ability to communicate with others and has promoted collaborative learning. Students really enjoy the MariMUSE environment. Many have talked about being somewhat reserved at first, then noticing the development of their communication skills. In many cases, MariMUSE allows for total anonymity. Users can assume fictional characters during the initial stages of training, but eventually establish their true identities. As a result, many friendships and numerous working relationships are developed.

VI. Getting Started

Although the MariMUSE Community College Project has not been fully established, initial steps regarding participation would involve contacting Jim Walters at Phoenix College. He is the system administrator and has the ability to set up accounts on MariMUSE. He is also a resource for users attempting to learn the MUSE language.

Mesa Community College

Innovators

Richard Effland and Ken Costello

Project Title

The Learning Universe in Anthropology

Report Authors

Chas Moore and Patricia Harris

Multimedia instructional formats are used for anthropology courses such as Human Origins and Development of Culture, Buried Cities and Lost Tribes, and Principles of Archaeology.

The MCC anthropology course development project primarily encompasses a series of hypermedia instructional modules. These computer instructional programs have been developed by anthropology faculty in conjunction with Ken Costello, Chas Moore, and others from the MCC Center for Teaching and Learning (CTL) and as a result of sharing of resources developed by Brian Fagan and George Michaels at University of California, Santa Barbara (UCSB).

A series of partnerships were established for the creation of multimedia materials used for MCC anthropology instruction. By merging the strengths of faculty and the technical skills of the CTL's staff, we were able to develop innovative multimedia materials reflective of today's technology.

Significant changes in the teacher-student relationship have occurred

as a result of this project. Classes that once were standard "lecture-text-test" formats were transformed into critical thinking and skill development learning experiences. The instructor and student formed a partnership in this new format. The instructor was the guide or "intellectual body-guard" responsible for leading students to a variety of information. Students were given the responsibility to learn from these sources. Much of this learning takes place outside the classroom in the MCC Library Information Commons, where students can access computers, videotapes, and other library resources.

The classroom becomes the arena for critical thinking. Class discussions and small group collaborative working sessions are used as platforms for critical thinking. Class time is devoted to stimulating ideas and synthesizing information through active participation.

Additional skills that are developed include: communication skills, writing skills, and general research or thinking skills. Journal writing

and project reports are used as the primary ways to evaluate student learning during a semester. Problem solving using HyperCard assignments are critical to the course. These assignments present ways in which students can prepare technical reports.

In a multimedia-based course like the one described here, the student is the primary focal point. The student has the opportunity and responsibility to explore the information both within and outside of the classroom from a variety of sources — computers, videos, readings of several kinds, and from real life experiences.

While the key to using computer technology and multimedia for instruction may rest in taking a broad perspective on making learning more effective, the key to transferring this approach to others is cooperation. Development is a complex and time-consuming process. Collaborative efforts will continue to be important. This spirit of cooperation stands out as the clearest example of how technology will spread.

Glendale Community College

Certainly a fully functioning, fully staffed authoring center helps faculty reach the realms of their imagination. Following is a list of faculty/staff innovators from Glendale Community College. The process one follows for requesting and receiving assistance from Glendale is also described.

Report Author
Susan High, GCC

GCC College Innovators

Mary Ryan (NU faculty) and Larry Fuller (DP Lab Tech) — GCC Innovators of the Year for the development of multimedia testing program.

Karen Schwalm (ENG faculty) — Continued development of Electronic Forum

Besty Cooper (BIO faculty) — Development of multimedia instructional programs

Joy Wingersky and Jan Boerner (ENG faculty) — development of computer-assisted OE/OE English

Jeff Kruse (MAT faculty) and Sam Mataar (ENG faculty) — co-developed circuitry course

Nadine Moore (MAT faculty) — using computers to teach calculus

Chuck West, Marilee Murray, Jill Suydam (CHEM faculty) — Developed flex format chemistry course, augmented with computerized tutorials

Jill Seymour (LIB MED) — Implemented VCN

Karen Hoblitt (PSY faculty) — use of computerized simulations teaching Psychology

Shirley Petras (CIS) — development of AS/400 courses

Janet Wandrey and Sandra Wells — Development of workshop "Instructional Design of Software" for Toolkit

John Winters (PHY faculty) — Wrote Quick-N-Easy word processing program and implemented computerized modules into Physics

Karen Conzelman and Betsy Cooper (BIO faculty) — produced laser disks for use in instruction

Mirta Hamilton (ART faculty) — developed Computer Graphics certificate and teaches animation

Tim Sylvester (BUS faculty) — developed Multimedia class using Toolkit

Kurt Chambers (Fitness Center) — Will develop a laser disk to teach use of fitness center equipment

Getting Started at GCC

Anyone wanting to integrate technology into instruction (or request resources) is asked to contact Compufix and get a Technology Request (Teq Req) started. Compufix will ask a few preliminary questions and begin completing the paperwork (the "customer" does not fill out any forms; that's all done by the Compufix staffers). A project manager is assigned based on the nature of the request and resources required. The project manager is responsible for (1) making sure the request keeps moving, (2) notifying any/all departments impacted by the request (i.e. software library, instructional support team, network resources, hardware requirements, etc.), (3) maintaining contact with the requester as needed to ensure that the request gets completed, and (4) if necessary, setting up student accounts and/or access. A log of all requests is kept at the Compufix Desk, and the status of "open" requests is reviewed each Tuesday morning at the HTC managers meeting.

Estrella Mountain Community College Center

Report Author
Roger Yohe, EMCCC

Our newest rising star in technology is in the West Valley — Estrella Mountain Community College Center (EMCCC). The following is a list of technology tools as well as a narrative of how teaching with technology is being pioneered at EMCCC.

Faculty at Estrella Mountain Community College Center support the use of information technologies in the teaching and learning process. Early in the planning stages for this new college, infrastructure issues (physical and human) were addressed to support technology.

Hardware Support

Each full-time faculty member at EMCCC receives a Macintosh II class computer (the current model being a Mac IIci) with an RGB monitor and extended keyboard. Current plans call for four Mac II computers to support adjunct faculty needs in Montezuma Hall offices.

Multimedia Development Center

The purpose of the Multimedia Development Center is to provide faculty with training and development support. Demonstration computers are available for faculty to preview applications. The latest professional and trade publications are also available in the Multimedia Development Center.

Course Maps

Lead Faculty in a discipline create a course map in the form of a matrix describing the microcomputer software used in each course. The course map is used as a guide in making software acquisition decisions.

Information Packets

All faculty have the opportunity to use Information Packets that are developed with the assistance from Learning Enhancement, Library Information Services, and Academic Computing staffs. The purposes of the Information Packets are to identify the specific sources of information (either software, print, audio, video) used in each course and to determine how the information relates to the content of the course. In addition, the team creating the Information Packets discusses such issues as support needed and method of delivery.

Faculty Workshops

Every workshop (with the exception of one) presented to adjunct faculty since 1990 has highlighted the use of technology in the teaching and learning process. Future workshops will focus on the development and enhancement of individual Information Packets. Training for each faculty will be conducted according to the needs identified in the reviewing of Information Packets.

College Personnel Supporting Faculty

The following personnel support faculty with technology matters:

- Director of Literacy Services (Faculty)
- Learning Enhancement Learning Lab Technician (PSA)
- Director of Library Information Services (Faculty)
- Library Assistants (PSA)
- Director of Academic Computing (faculty)
- Information Commons Manager (MAT)

- Information Commons Learning Lab Technician (PSA)

Each employee listed above belongs to a team dedicated to supporting faculty and students with the use of the resources in Estrella Hall. The Estrella Hall support team meets on a weekly basis to address operational issues.

Faculty Training

Various types of training are available for faculty depending upon the skill level of each faculty member. Adjunct faculty meet with lead faculty in their respective disciplines to discuss training needs. Every faculty member will eventually go through the Information Packet development and enhancement process that will identify specific training needs.

Responsibility for training rests with each employee of EMCCC. A collaborative environment exists which promotes interaction among faculty across disciplines to enhance the use of existing technology. Resources from the District Support Services Center, such as Training Services and Instructional Computing Grants, are used to advance the use of technology among faculty.

Innovator
Rod Freeman

Project
English 102

Research Component for two sections (approx. 70 students)

I was inspired to integrate computer communication and HyperCard programs — both those in place and those I developed and assisted in developing — through

need and opportunity, capitalizing on the cooperative atmosphere here at EMCCC. This atmosphere suggested an extension of research paradigms encouraged through the success stories of other faculty members at Estrella, Maricopa Community College District, and national colleagues. I selected computer-enhanced instruction for several reasons: the resources available to students (electronic archives), the availability of electronic communication accounts to all of my students, and the importance students place on computer literacy.

The focus of the major portion of research in my English 102 class deals with international issues and multicultural issues. This focus necessitates student access to national and international resources — resources available in a timely fashion only through electronic communication. The components of this project depend upon my students having open access to electronic resources in addition to traditional materials:

1. **Electronic Forum (EF):** A local communication environment allows students to dialogue outside the classroom. EF enhances classroom research feedback, collaborative learning, and communication outside of classroom parameters.
2. **INTERNET:** An international network environment allows students to listen to and participate in multicultural dialogue over the central issues of humanity. Students are invited to contact groups or individuals to gather information and to explore issues.
3. **Electronic Resources of "Print Material":** Students navigate the combined resources of the MCCC library system, ASU library system, and electronic

data caches at remote servers to identify and collect information for their research.

4. **Software Packages:** Students able to use the range of software available at EMCCC in an interdisciplinary environment will produce more individualized and higher quality research papers. For example, a student researching cultural changes in the Brazilian rain forests will have a broader base of research at their command by having access to biological/botanical, statistical, sociological, etc. software.
5. A "metaphor" to standardize and organize these resources is to minimize time spent "switching between software commands" and allowing a logical sequence — fostering a process approach to research.
6. **Support:** Facilities and out-of-class assistance and support must be available for students utilizing the unfamiliar resources. Guidance will be necessary on the part of a knowledgeable staff helping students and on technicians operating in a technical software/hardware maintenance program.

The process which underlies this project began with my affiliation with MCCC and with Estrella. It is through dialogue luncheons, across-the-curriculum meetings, interdepartmental cooperation, and opportunities for in-service training that the components became apparent. I developed a flow chart of ideal resources for the learner/researcher in ENG 102 to access as an initial step. I began to implement the electronic aspect of search/retrieval in 1988 using a dedicated IBM writing center (the machines were not networked and did not have hard drives).

I continued design of the "Research Mentor" in the Summer of 1992 with funding from the District's MCLI. Working in a think-tank atmosphere with Dr. Cynthia Leshin and Alan Levine, both with the MCLI, this package was developed — scrutinized from an instructional design, programming, and content point of view. The product is now being developed and implemented in the course of my on going classes.

I conduct my class orientations on Macintosh fundamentals, MS Word, Electronic Forum, and INTERNET resources. Through EF and student collaboration, students work together to learn and implement the programs/resources available. I was able to utilize our Information Commons — using at most 16 computers with students in teams, on five class meetings during the semester (7 hours of class time). All other electronic activity in ENG 102 is on an outside-of-class basis. Alternatives to the original concept of the project occur daily as the resources change. The design is intentionally one of adaptation and open-ended structure for a technological environment — one which will change direction, structure and content by definition. What has contributed to the success of the project is the building in of student success, by starting out with an adaptive plan. If the systems are down and the resources unavailable, the learner and instructor must be adaptive and take another path. New ideas, teamwork, utilization of feedback, and the ability to say "well, that didn't work. Let's try..." is essential to success of this project.

Regarding specific background and training, I have learned how to use these resources and materials largely on my own time. I have added to my knowledge of these resources in the course of attending dialogue days, developing of my current instructional delivery

assignments, and listening to other instructor's stories of successes and challenges. The obstacles I have encountered are dealt with through placing phone calls or sending electronic messages to the Estrella team, colleagues throughout the District, or contacts developed throughout the world (via conference or INTERNET).

Summary and Conclusions

Getting from here to the future may require that educators help each other learn to use high-tech tools like some of those discussed in this report. The challenge that faces us is the number of faculty teaching and the many new technologies available. However, there are "teacher experts" and "support experts" in the passages above who have particular expertise, who have formed collegial support teams, and who can be contacted and regarded as vital linkage for their peers. Since one person cannot know everything and help everyone, teacher experts and support experts are necessary.

Through our committee's work this year, we have found the following: All people seem to want to know about using technology in the classroom. The committee hopes that this report will draw attention to this request, and possibly help the uninformed see how technology could apply to their teaching disciplines.

The Technology database on the MCLI Server helps to create linkages between people. This database was the outcome of last year's committee efforts. Though the database is in no way complete with all that is taking place in bringing technology into the hands of our students, it will give more information on who is using technology in the classroom.

Getting from here to the future may require this kind of grass-roots movement. In a sense, we now have an obligation to help others not only become technologically literate, but proficient.

Technology- Based Testing

Members

John Schroeder, CGCC
Chair

Chito Hernandez, MCC
1st Semester Co-Chair

Cindy Leshin, DIST
Group Support

John Payne, MCC
Holly Antosz, PC
David Nachman, PC

David Platt, MCC
Hal Swanson, PC
Diana Tomanek, ASU

Charge

Technology-Based Testing identifies the models and their elements for a technology-based testing system, including an investigation of assessment ideals, what testing models are currently available, and the issues and implications of developing such a system.

Introduction

This committee was given the following charges:

- What should a tech-based testing system include?
- What is available now?
- What is it going to take to develop one (or should we)?
- What are the implications for teaching and learning?
- What are the related issues?

As a new committee, we tried to tackle all of the charges, making more headway on some than on others. The committee concentrated on features that technology-based testing systems should include, and on what was currently in use. Other charges were touched on, but not studied in depth.

Discussion disclosed that there were two different schools of thought driving the interest in technology-based testing:

- 1) *Computer-administered* testing is needed to better prepare students for the computerized tests that are used (or will be in the near future) by state or federal licensing authorities. Nursing, dental, legal, aviation, and emergency medical technician (EMT) are some of the areas of perceived need.
- 2) *Computer-generated* tests are needed for areas dealing with hundreds of students in multiple sections needing standardized minimum performance level outcomes. MAT077 classes are an example, but other courses might have the same potential application.

What should a tech-based testing system include?

General Features

Support text, graphics, sound, and possibly video; a support organization to provide upgrades; support various question types (not just multiple choice); support Scantron for hard copy tests; keep records of responses for reliability/validity purposes; and support time inputs for timed tests, utilization records, etc. The test engine should not be discipline specific, but usable by all interested disciplines.

Installation

The system must be networkable with strong security features, compatible with existing machines, and available for multiple platforms (Mac, IBM, and Unix).

Student Use/Flexibility

The system should be easy for students to use, both for remedial work or review as well as taking the test directly on the computer. It should be used to maintain records of student responses to help them select areas needing further review.

Instructor Use

It should be simple for instructors to add questions, change explanations, update, etc. It should create tests by criterion-based random selection or by selecting specific questions. Questions should be coded indicating subject, question type, difficulty, etc.

Other

This system *must* support explanations during review — why an answer is correct or incorrect. It should randomly sort the choices in multiple-choice or matching type questions. It must support use of color and graphics. It should allow for “pointers” from a response to a related question, and allow the instructor to select single chance or multiple chances on an item. Finally, it would be nice to see support for voice or touch screen

input for physically-challenged students.

What is available now?

There are several applications currently in use within the District:

- Nursing at Glendale Community College (GCC) uses a Windows-based program for testing their students. It is written with ToolBook and does not yet support review. While still early in its use, it is perhaps the most mature application developed within the District.
- Nursing at Phoenix College (PC) is using “RN Challenge” as a review vehicle. It is a 1989 copyright, character-based program that is very interesting but running on slow machines. This application does not appear to have any options for additional or updated questions.
- The Legal department at PC has some similar applications for their students.
- Some areas are using NovaNet, especially in student support/learning resources. This involves ongoing connect costs and outdated tests in some areas.
- Aviation Maintenance Technology at Chandler Gilbert Community College (CGCC) has text files of 2100 questions for faculty use only.
- Some individual faculty have experimented with LXR as a test database engine for written tests, but we did not locate any widespread use or sharing of question databases.

There are some applications in use around the world, but most are not

widely known or do not meet the features list desired. Some that we have run across include:

- University of Texas chemistry department is reported to be using a purpose built testing application that creates similar level but different exams.
- University of Western Ontario French department is using a purpose built testing application that is text only, multiple-choice only, for initial course placement.
- An individual in White Rock, BC reports a system written in SuperCard that supports real time simulation, etc. in use at his school.
- The National Center for Software Technology in Bombay, India has an ASCII only system running on UNIX that they use for a large number of multiple choice tests.
- LXR is a Mac-based test database engine. When upgraded, it will support Scantron, graphics, multiple fonts, etc. Its strength is in developing paper tests. While it can be used for students to test on the computer, the screen design is very busy and potentially confusing for students. The upgraded program is approximately \$900 for an individual copy.

What is it going to take to develop one (or should we)?

Currently, there is nothing commercially available that does everything (or even most) of what we feel is needed. If the District is going to get involved in funding or development, it would seem that cross-platform issue is critical. There are database development

tools available that are cross-platform, and it appears that a fast database would be the logical choice. FoxPro2.5 is currently available for DOS and Windows, with Mac due in October and Unix reportedly to follow next year. It provides the tools and speed if someone is willing to tackle the project. While Glendale's nursing software is well along in the development cycle, it is developed in ToolBook which makes it relatively difficult to move to other platforms.

What are the implications for teaching and learning?

Concerns about computer phobia do not seem to be a major hurdle, provided the software uses a consistent interface. The ability to return to a question/mark a question for review is seen by some to reduce student concerns. Clearly, anything that makes test item analysis easier has the potential to lead to better teaching and learning.

Review capabilities with explanations on a large selection of test items will allow the students to cover the material in depth before they are evaluated. This will enable the students to solidify their understanding of the material and will lead to broader understanding.

Related Issues

The technology for essay questions is lacking. The technology for multiple choice and matching is simple. Short answers can be handled with more effort from the programmer and the question writer. In general, however, available technology is not an issue.

A larger issue is access to hardware. At most of our colleges, the available hardware is in use, and we don't have the extra capacity to handle a large influx of computer-based tests. Keeping the

test databases current will demand time from the instructors, offsetting the time that might be saved in developing and grading paper tests.

Finally, the "information commons"/"computer center" may not be able to provide the secure and appropriate testing environment needed. Some colleges already have a testing center that could accommodate computer-based testing. It would seem that a move to testing centers would accompany widespread use of computer-based testing.

At this time, there does not appear to be any widespread use in educational facilities. However, business and government have used it for years. Several schools and individuals on BITNET are asking for information, but are not flooded with responses. This could be an opportunity for MCCC to leverage our investment in technology, and show that technology based-testing is just as valid for schools as it is for industry.

