UTEP DEPARTMENT OF MATHEMATICAL SCIENCES NEWSLETTER

Spring 1992

MICROCOMPUTER LABS

The PC computer revolution has finally reached the UTEP Math Department, thanks to two consecutive three year Department of Education Minority Science Improvement Program (MSIP) Grants during the period from June 1, 1986 to August 31, 1992. The primary objective of these grants was to use modern educational technology to enhance the quality of mathematical education and significantly reduce attrition rates in key mathematics courses for majors in science and engineering. The basic strategy proposed to achieve these objectives was the development of a Mathematical Sciences Learning Center designed to supplement conventional classroom instruction in order to improve student performance, comprehension, and motivation through active participation using microcomputer assisted testing and diagnosis, targeted individualized tutorials and instructional demonstrations in centralized facilities designed exclusively for mathematics education under qualified staff. Since many students seeking careers in science or engineering at U.T. El Paso begin their college study of mathematics at the precalculus level, and attrition rates in these courses frequently exceeded 70%, initial effort was toward the development and implementation of precalculus labs.

The microcomputer lab for Precalculus I opened at U.T. El Paso in the fall of 1987 with 28 IBM PS/2 Model 30 microcomputer workstations on a Novell network. The lab for Precalculus II opened in the fall of 1988. Prior to installation, the curriculum for these courses was revised and the traditional large lecture format was changed to three hours of lecture and one hour of mandatory lab taught in classes of 25 students. Content and grading standards were made uniform across all sections with all testing carried out in the lab.

The lab facilities are also used by more advanced classes; statistic labs are taught in the organized lab area and some instructors use lab facilities for courses like Calculus, Numerical Analysis, Statistical Computing, Differential Equations and Linear Algebra. Dr. Fred Strauss is now the faculty member directing lab activities and improvement.

Student reaction has been quite favorable, and some faculty members teaching the large lecture classes report improved relations with their students. Since exams are uniform and all exams are given in the lab, the lecture instructor can tell the students that he is there to do all he can to help the student master the material. However, as in some European systems, someone else will test and grade the students. Students no longer blame the instructor for poor performance. The renewal of the MSIP grant for three years beginning in Fall 1989 has given us an opportunity to refine and improve the use of the computer lab.

PUZZLERS

1. On a TV game show, a contestant is allowed to pick one of three keys and told that if he chooses the one key that starts a new car, he wins the car. After he picks key number 1, the host (who knows which key starts the car) tries key number 2 and it doesn't start the car. Then the host asks the contestant whether he wants to keep key number 1 or trade for key number 3. Should he trade?

2. If $A \times B = 6; C \times D = 20; B \times D = 15; B \times C = 12; D \times E = 30$; then $A \times B \times C \times D \times E =$? (All numbers are positive.) Answers on page 3.

FROM THE CHAIRMAN'S DESK

When I joined this department in the Fall of 1988 the first thing that happened was that asbestos was found in Bell Hall. While it was not doing anyone any harm, the only option for the University was to have it removed. Accordingly my first official contact with my new colleagues was to order them out of their offices and into temporary quarters. For most of August and some of September 1988, the first floor of Bell Hall functioned - without air conditioning under monsoon conditions - while the rest of the department was off limits and faculty with offices on the other floors made do in the old print shop. As introductions of new chairs go this had to be one of the least auspicious.

From this beginning everything has been positive. The department has made great progress and the credit for this goes to the same faculty who cooperated so well during those first summer months. To Gene Schuster, who was the driving force behind the first MSIP proposal and who graciously allowed me to join him in writing the renewal proposal goes the major credit for our modern innovative microcomputer lab for precalculus, described on page 1, and for our extensive computer network linking faculty offices, the classroom lab, and through the University's fiber optic net, the rest of the world.

These are exciting times for the department as we attempt to meet the challenge to provide quality mathematical sciences teaching for the 1990s. The UTEP administration has been most receptive to our need to improve teaching by cutting class sizes and has provided more faculty positions to make this possible. Nor is the process over. We have been promised four more tenure track faculty lines, one a year for the next four years, and we will keep any lines vacated for any reason in the interim.

As we grow toward the future the biggest problem is to find the resources to support our efforts to recruit and retain superb teachers who can also maintain their scholarship and research, compete for external grants, and join in our efforts to reform and modernize our curriculum. The State of Texas is unable to fund these activities for us so we are critically dependent on support from our friends to make these things possible. (We are not even allowed to use State funds to buy a meal for a job candidate!) We appreciate all of you who supported us with a contribution during our annual Alumni Campaign for Excellence last year. We hope to reach all of you this time around. If you are able to help us by contributing to one of our funds, we will appreciate you very much. Your contribution can be designated either for our general excellence fund where, among other things, it will support faculty recruiting, additional travel by faculty, student recruitment, and outreach and liaison with El Paso area mathematics teachers; or for the Herman Gladman scholarship fund where, of course, it will be used to provide undergraduate student scholarships.

Whether or not you decide to contribute financially we still hope to hear from you. We need to know what worked for you in your mathematics education as a student, what has been most useful to you in your subsequent career, and what you now wish had been included in or excluded from your mathematics training. At a time when our nation is concerned about the quality of quantitative education for the entire populace, your insights can be most valuable to us as we chart the future of the Department of Mathematical Sciences at the University of Texas at El Paso.

CHANGING PLACES

Several of our colleagues, Joe Fitzpatrick, Rex Fox and Larry Huntley, have retired recently. New arrivals since 1989 include, Amine Khamsi and Peter Moschopoulos who joined us in Fall 1989, Denny Leung and Joan Staniswalis in Fall of 1990, and four new members, Art Duval (MIT), Helmut Knaust (UT Austin), Loki Natarajan (University of California at Berkeley) and Piotr Wojciechowski (Bowling Green State) in Fall of 1991. Also in the fall we lost Teodor Przymusinski to the University of California at Riverside and Denny Leung to the University of Singapore. We wish them both well and thank them for the time they have spent with us and for the contributions they have made.

THE C.H. GLADMAN SCHOLARSHIP FUND

The Fund is named in honor of Professor Emeritus Charles H. Gladman who served on the mathematics faculty from 1948 until his retirement in 1984. He was instrumental in establishing mathematics as a separate discipline on this campus, and served as first chairman of the department of mathematics here.

The C. H. Gladman Scholarship Fund is a trust fund established in 1987. The endowment amount at the time of establishment was obtained mainly from contributions made by members of the mathematics faculty and from the proceeds of the 1985 annual fund drive. The earnings of the principal are used to award scholarships to undergraduate students in mathematics who have demonstrated exceptional mathematical ability.

Since 1988 the fund has provided several modest scholarships at all times. The endowment currently is near $20,000. Currently 90% of the earnings are paid out as scholarships, while the other 10% are added to the principal.

For 1991-1992 there are two students receiving support from the fund. They are junior math majors Veronica Villalva and Yuen Man Alsie Lee.

While the scholarships are few in number and modest in amount, their significance is far greater than these numbers suggest. These are the only scholarships on our campus specifically designated for mathematics study, and they are awarded competitively. The only criteria for an award are mathematical ability and achievement. The endowment documents specifically forbid adding other kinds of criteria in the future.

Award of one of these scholarships is a visible sign of a student's success in mathematics and an expression of recognition by the faculty of the student's talent and promise. Despite the wide spread public talk of the need for mathematically educated people, the Gladman Fund is just about the only monetary encouragement we can offer to students. If the student is not a resident of Texas, the fact that the scholarships are competitive also entitles the recipient to a waiver of the non-resident tuition fees. Thus a small award from the Gladman Fund to a non-resident acquires a considerable financial value. The endowment is still far too small to allow awards to Texas residents of value comparable to the out-of-state tuition. This problem will become less severe as the endowment grows.

Unfortunately, the growth of the endowment is s - l - o - w ! At this time, 10% of earnings added each year makes it reasonable to expect that the endowment will double every 120 years or so. Of course, inflation will more than offset any gains in endowment. If you would like to help, here is the way to go about it:

Any contribution to the UTEP Excellence Fund designated for the C. H. Gladman Scholarship Fund will find its way to the right place. If you want to make sure the contribution keeps working for students over the long term, you can designate it as "addition to endowment of the C. H. Gladman Scholarship Fund".

ANSWERS TO PUZZLERS

1. He should trade for key number 3. There is a probability of 1/3 that key number 1 will start the car, and a probability of 2/3 that either key 2 or key 3 is the right one. Since the host knew which key starts the car, he could always choose one of his two keys that is no good. Thus there is a probability of 2/3 that key number 3 will start the car.

2. The answer is 720. Clearly $(A \times B) \times (B \times C) \times (C \times D) \times (D \times E) = 6 \times 20 \times 15 \times 12 \times 30 = 43,200$, but $B^2 \times C^2 \times D^2 = (B \times C) \times (B \times D) \times C \times D) = 3,600$, so $B \times C \times D = 60$, and $A \times B \times C \times D \times E = 43,200/60 = 720$.

ALUMNI INFORMATION

Have you moved? Have some good news to report? Please fill out the form on the next page and return it to us so we can update our files. Are you interested in getting together with other math alumni and the faculty during the week of homecoming next fall? Suggestions for a coffee, banquet, open house, etc. are welcome. Any ideas?

DEPARTMENT OF MATHEMATICAL SCIENCES
ALUMNI DATA UPDATE

PLEASE FILL IN THE FORM BELOW SO WE CAN UPDATE OUR RECORDS.

Name:_____Maiden Name:_____
Address:_____
City:_____State:_____ZIP:_____
Home Phone:_____Business Phone:_____
Degree(s) and Major:_____Year(s)_____
Employer:_____
Position/Title:_____
Birthdate - Month:_____Day:_____

LET US KNOW WHAT YOU'VE BEEN UP TO (To be included in the Math Department Newsletter).

_____
_____
_____
_____
_____

ENCLOSED IS MY GIFT OF $_____FOR THE 1992 ALUMNI FUND FOR EXCELLENCE.

YES, I want to support the Department of Mathematical Sciences.

Enclosed is my check for:

____Math Department Excellence Fund

____C. H. Gladman Scholarship Fund _____Other._____

____In Memory/Honor of:_____
_____

OR you may use:
_____Mastercard _____Visa _____Discover
Card Number:_____
Expiration Date:_____
Signature:_____

Please return to:

The University of Texas at El Paso
Department of Mathematical Sciences
El Paso, TX 79968-0514