

"YOU'LL SEE THE MICRO TRY TO OUTMUSCLE THE MAXI, BUT THE WINNER EITHER WAY MAY BE THE CORPORATE LIBRARY."

THE FUTURE OF COMPUTER-ASSISTED INSTRUCTION

BY FRANZ E.
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The future looks exciting for computer-assisted instruction (CAI). In addition to the refinements and increased flexibility of new high-level languages, the decreasing cost of teleprocessing and plasma tubes with their sophisticated graphics capability makes CAI a hot prospect for trainers and other directors. And now, in the last few months, microprocessors have surged to the forefront of CAI technology.

Experts believe the microprocessor is a sure bet to reduce the hardware and courseware costs of CAI. And that would be a nice dream-come-true; for as far back as 1968, Kopstein and Seidel predicted that in 10 years CAI would cost half of what traditional methods of instruction would cost. Unfortunately, the authoring time for sophisticated CAI courseware designs, and subsequent debugging problems, often run to as much as 300 hours of developmental time per one hour of courseware. In fact, the ratio of 600 developmental hours to one courseware hour is not uncommon.

The microprocessor, however, may dramatically reduce the ratio of development time to courseware time as silicon chips for various pedagogical functions enter the marketplace. What's more, the cost of micro hardware is already only a fraction of the cost of maxi-



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systems.

For example, an entire micro CAI system, including the processor itself with 16K of random-access memory, 4K of read-only memory, a keyboard, a power unit, a tape recorder for off-line storage, and a visual display, costs little more than a medium-priced 16mm film projector and much less than a typical videotape playback unit. Remarkably, the cost of a microsystem is spiraling down as rapidly as calculators did a few years ago.

In the Chicago market, the cost of a 2716 PROM (programmable read-only memory) silicon chip slid from \$80 in early March, 1978, to

\$42 in mid-April. And by late April, the cost had further eroded to \$32. At this writing, there is still no indication of price stabilization.

Tremendous Cost Reduction

The tremendous cost reduction of hardware means simple CAI systems can now be purchased by educational users who were priced out of the ballgame before. The concept of implanting distributed intelligence in every training center within an organization is now a very real possibility.

If ancillary debugging problems continue to decrease as expected, the overall investment in man-hours to get a course up and running will put CAI well within the reach of small and medium-sized educational users.

But how will all this micro muscle-flexing affect the giant mainframe or maxi CAI processors? Need there be a micro-maxi dogfight? Industrial trainers and educators might avert a needless battle by applying the maxi processors to problem-solving in the realm of the corporate library.

Think about it for a moment. The corporate library's function, for example, will have great impact on the long-term success of many service organizations. The corporate library of the future will have at least three major roles: mass hard-copy storage, information tracking, and CRT feedback with on-line print capability.

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Future mass hard-copy storage will probably resemble our present library system. The storage facility will consist of a manual system, backed by a maxiprocessor that stores and provides access to texts, periodicals and audio-visual materials. All books, manuals, bulletins and training materials will most likely be included in this system.

This system will present several challenges to the corporate librarian. The first challenge will be to design a facility which accurately tracks hard copy as it moves freely throughout an organization. The second challenge will be the repair and replacement of hard-text materials, and the third challenge will be the updating or prudent elimination of obsolete materials. Corporate librarians could use the maxiprocessor to meet all three challenges.

Tracking "Hard Copy"

While many organizations currently have "hard-copy storage" capabilities, most have *not* begun to address the challenge of tracking hard copy as it moves from department to department and person to person. A maxi could help librarians chart those movements. A maxi could also help librarians properly identify and catalogue their library materials. And a maxi, linked to a high-speed laser printer, could help in the replacement of hard-text materials. Finally, the maxiprocessor could help corporate librarians update outdated hard text, and destroy that which becomes obsolete.

Let the microprocessor flex its new technological muscles. For the corporate librarian, the maxi's ability to troubleshoot will help in the super challenge of classifying and accessing the growing bibliography of information which comes into existence each day.

Perhaps the most visible use of the maxi in the realm of the future corporate library will involve the CRT feedback device. In terms of the maxi's overall impact on the library system, the CRT visual may prove to be the least significant — but it will undoubtedly be romanticized because of its link to the more exotic aspects of computer

technology.

The maxi CRT team will consist of multiple remote CRT's linked to the central CPU to provide timely data regarding specific, frequently used corporate information. For example, general bulletins, various rating data, human resource information, product innovations, pricing information, etc., could be immediately accessed through the CRT feedback device.

A CRT, linked to a maxi, could also provide a valuable service by supplying automated bibliographies of any length on any subject. (Several organizations have already laid the groundwork of such CRT feedback, but the function will have to be refined, tuned, and expanded as the technology advances to accommodate organizational needs.)

Training Applications

The maxi CRT hookup offers some intriguing educational and training applications as well. For instance, lesson plans on literally hundreds of educational topics could be stored, updated as required, and accessed by employees in every training center throughout the organization.

So the advance of microprocessors to the forefront of CAI technology need not sound a battle call to the giant main-frame units. Instead, savvy trainers and educators should allow both micros and maxis to carry forth the CAI flag. While micros whittle down the hardware and courseware costs of CAI, maxis can attack the information explosion and thus allow the corporate library to expand its existing role in the education and development of our human resources.

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