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ABSTRACT

A 16-month demonstration project is implementing the Time Shared, Interactive, Computer Controlled Information Television (TICCIT) system in two community colleges. Participating are the MITRE Corporation, Brigham Young University (BYU), Educational Testing Service (ETS), Phoenix College of the Maricopa, Arizona County Community College District, and the Alexandria Campus of Northern Virginia Community College. Both of these latter institutions have large, heterogeneous student populations and histories of instructional innovation. The overall implementation plan assigns the responsibility for courseware development in math and English and for formative evaluation to BYU; summative evaluation will be handled by ETS, system maintenance by MITRE, and operational aspects by the community colleges. Local management control systems have been designed for TICCIT and computer-assisted instruction (CAI)-oriented faculty roles have been developed. The empirical evidence to be collected will indicate if such CAI systems are successful; if so, it should lead to a demand for additional courseware and for the development of in-house courseware development capabilities at the local community college level. (PB)

Session 4.12

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IMPLEMENTING MAINLINE CAI

By Wanda Rappaport

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Introduction

Implementing change is rarely a simple or easy process. The literature of social psychology provides abundant evidence that the more significant the change to an individual or group, and the larger the scope of the change, the more careful the planning and coordination required for implementation. TICCIT (Time-Shared, Interactive, Computer-controlled Information Television) is a complex, computer-based instruction project involving a number of widely separated organizations and, for the community colleges using the system, it signifies a fundamental change in the nature of the instructional process. Thus, the importance of careful planning and coordination is supported by research as well as the experiences of the scores of individuals involved in the project at The MITRE Corporation, Brigham Young University, Educational Testing Service and the two community colleges where the system will be demonstrated next fall.

The Demonstration Sites

A number of criteria were used in the selection of Phoenix College of the Maricopa County Community College District in Arizona and the Alexandria

Campus of Northern Virginia Community College as sites for the sixteen-month demonstration of TICCIT. Among the most notable were large, heterogeneous student populations and a history of innovative instruction.

Phoenix College, established in 1920, has been at its present fifty-two acre site in the heart of Phoenix since 1939. The District serves approximately 35,000 students in credit programs, with Phoenix, the largest of five campuses, enrolling 10,000 students in a variety of transfer, professional, occupational and continuing education curriculums. Minority students constitute approximately ten percent of the enrollment. A wide variety of instructional modes and scheduling alternatives are available, including radio and TV courses and from five to eight week minicourses.

Alexandria Campus was the first of the five campuses of Northern Virginia Community College located in the metropolitan Washington, D.C. area. Originally established in 1965 with an enrollment of a few hundred students, in the fall of 1973 the five-campus College became the largest institution of higher education in the state when more than 17,000 students enrolled on its five campuses. Approximately one-third of these students are at Alexandria, the most urban of the five campuses, where approximately 20 percent of the enrollment is minority or international students.

Maximum and flexible space utilization characterize the open space planning at Alexandria. Biology, chemistry and physics classes use a single laboratory area; a business skills center supports instruction and skills practice with a variety of office machines. Office landscaping allows easy access to faculty offices located on the periphery of a central two-story

Learning Resource Center. TICCIT terminals will be located within the Learning Resource Center in a Learning Laboratory which serves students in a variety of functions including language practice, testing, tutorial assistance and reading improvement.

A Plan for Implementation

Within these two community colleges, planning for the implementation of TICCIT has of necessity been coordinated among representatives from all of the organizations involved in the Project. CAI, by its very nature, requires a synthesis of engineering, instructional development and teaching expertise. MITRE initiated the coordinated implementation planning effort in April of 1973 by producing a skeletal Implementation Plan, listing the major types of concerns that would need to be addressed before operations began at the community colleges. Prime responsibility for each of the general areas was assigned to the appropriate agency; for example, facility preparation, curriculum integration and operations to the community colleges; courseware development coordination and formative evaluation to Brigham Young; installation and system maintenance to MITRE and summative evaluation to ETS. Several years of system development work by scores of individuals at MITRE and BYU preceded the implementation planning, but as the design of the system progressed, it became increasingly evident that careful preparation for field testing would be crucial. Project Directors were appointed at both community colleges and each of the agencies began drafting its respective portions of the plan. Initially, the campus Project Directors were part-time positions; however

the increased college involvement in implementation planning in recent months has necessitated virtually full-time commitment at both colleges. Several meetings of an inter-agency implementation committee have been convened since April, 1973 to examine and refine the evolving Implementation Plan. A natural concomitant of this process has been the identification and eventual resolution of a multitude of operational questions that are inevitable in an undertaking with the scope, complexity and innovative character of TICCIT.

It is impossible in a paper of this nature to meaningfully summarize, or even adequately categorize, the myriad details that must be considered and planned for in implementing a mainline CAI system; however, an examination of two areas of impact within the educational institution, and a brief description of how these areas are being dealt with to accommodate TICCIT, should help to at least characterize the nature of implementation.

Impact on College Management

Should students be allowed to register for a TICCIT course at any time during an academic term? Should they be assigned to specific faculty members? Is it wise, in order to achieve greater control during the initial experience with mainline CAI, to maintain the identity of class sections? How many hours of terminal time will the average student need and should they be scheduled or unscheduled? These are just a few of the management-type decisions that must be made concerning the registration and scheduling activities within the educational institution. They have been made provisionally on

the basis of the limited available evidence, keeping in mind the requirement of providing a valid test of the system, while meeting student needs within the existing constraints imposed by an ongoing educational system. Understandably, many decisions will be modified on the basis of future evidence and experience.

When the TICCIT system is first utilized for instruction in the fall of 1974, student registration will take place during the regular college registration; however, when students complete a course, they will be able to register immediately for the next one. TICCIT, thereby, becomes a catalyst for implementing continuous and perhaps on-line registration. Class sections will be assigned to specific faculty members and scheduled in groups for one hour of terminal time per course credit. Additional unscheduled time will be available on a first-come-first-served basis. This is a deliberately conservative approch which allows for maximum control during the first field use of the system. Experience may indicate that initial decisions should be modified and all terminal time should be unscheduled with faculty assigned to a block of time rather than a specific class section.

Impact on College Instruction

Although there will be some off-line work, particularly in TICCIT English courses, the preponderance of student instruction will take place at the terminal. This means significant change in faculty role, the extent of which can only be surmised until the experience of the demonstration provides empirical data. Instructors will, of course, provide subject matter elabora-

tion. They will also advise students on learning strategies, evaluate their progress and, in the future, may participate in developing additional courseware. Significant changes in functions and responsibilities raise questions concerning faculty load and appropriate professional development activities and may thereby bring about a re-examination of teaching guidelines and evaluation criteria.

New roles emerge as existing ones change. Proctors will be employed for assistance in the terminal area and operational personnel must be hired for the computer room. All of these new roles require some measure of training and at both Phoenix and Alexandria, summer training sessions are scheduled for faculty as well as support personnel.

The English and mathematics courses which constitute TICCIT courseware for the community college demonstration were developed at BYU with significant input from Phoenix and Alexandria. Two faculty members from each college joined the author teams for seven months and continue to work closely with these teams in the final stages of courseware development. The modular courseware lends itself to a multitude of different combinations based on the curriculum requirements of the user institution. Yet, a curriculum integration process, involving both assimilation and accommodation, must take place. Topics unique to one user may not have been included in the courseware specifications and a decision must be made whether to present such topics off-line or eliminate them from the curriculum. Ultimately, of course, given an in-house courseware development capability, additional lessons could be written to allow complete tailoring of the courseware to

existing curricular guidelines.

At the end of the sixteen-month demonstration, title to the systems will pass to the community colleges. A successful experience is likely to foster a desire for more courses in a number of other disciplines and the colleges hope eventually to establish an in-house capability for producing courseware. The ultimate magnitude of TICCIT's impact on college instruction can only be hypothesized today. The empirical evidence will be provided by its implementation.

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