THE B.C. TEL CAL PROJECT: UPDATE 1980

Marv Westrom and Paz Buttedahl

In April 1979, research was initiated at the British Columbia Telephone Company to investigate the feasibility of using CAL in their internal training system. Results of the initial investigation were reported at the Third Canadian Symposium on Instructional Technology (Vancouver, February 1980) and will appear in the proceedings of that conference.

In summary, B.C. Tel has about 13,000 employees and services more than 1-1/2 million telephones in an area covering 295,00 square miles. Few areas of business activity have "felt" the technological revolution more than the telephone companies, as they must react and implement the recent advances in both computers and communications. The company has a public commitment to train current personnel to cope with this technology, and this has placed a severe demand on their training systems. Rising costs have made it necessary to re-evaluate training methods in an attempt to maintain the highest training quality at an acceptable cost.

As a result of preliminary investigations, B.C. Tel decided to form a "CAL group" and to pilot test one of their courses on the TICCIT CAL system. The course chosen was one on symbolic and electronic logic; it is currently heavily subscribed and takes thirteen days to complete. Preliminary analysis led B.C. Tel to believe that using CAL could cut this course to ten days duration with a first year savings of $182,000, and savings of $300,000 per year in subsequent years.

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Status Report

As of July 1, 1980, the B.C. Tel CAL group consists of:

Robert Ascroft (M.A. in Educational Technology, B.A. in Fine Arts, Teaching Certificate in Art Education).

Richard Boutwell (Ph.D. in Educational Psychology, B.A. in Social Studies Education).

Paz Buttedahl (Ph.D. in Adult Education, M.Sc. in Instructional Design, Research & Evaluation, B.Sc. in Educational Communications).

Marv Westrom (Ph.D. in Secondary Education—Curriculum).

Janet Winner (Ph.D. in Instructional Design and Development, M.Sc. in Higher Education Administration, B.A. in Religion/History).

The initial decision to pilot test the "Self-Paced Digital Logic" course has been retained. Approximately 200 B.C. Tel employees take this course each year. The initial pilot trial will consist of converting module 6 (of this 7-module course) to operate on the TICCIT system. Much of the actual coding will be done by Hazeltine Corporation. The CAL group will be responsible for redesigning the module and preparing it for coding on TICCIT. The development will include one "validation trial" in which four B.C. Tel employees travel to Virginia to take the course on Hazeltine's demonstration TICCIT system. Modifications and improvements to the course will be made based on this validation trial. A pilot trial will be done with 20 employees on a TICCIT system installed at the B.C. Tel Training Centre in Vancouver. If the pilot trial is successful, the remaining six modules of the course will be converted and implemented on TICCIT for a more elaborate trial.

The current schedule is as follows:

Jul 1980	Start date, team assembled.
Aug	Comprehensive analysis of subject matter to be developed.
Dec	Validation of course material (4 students).
Jan 1981	Revision of course material.
Feb	Pilot module administered to 20 students.
Mar	Evaluation of results, Report of findings, Major decision on continuance.
Apr	Begin design of remaining course materials.
Mar 1982	Pilot of entire course.
May 1982	Evaluation of project results, Report of findings.

There is no doubt that the future of CAL at B.C. Tel depends heavily upon this project. B.C. Tel belongs to the GTE system, and this project is partly funded by the parent organization. If the project is successful, it is likely that CAL would begin to be used extensively by many other telephone organizations on the west coast. The B.C. Tel CAL group is determined to see that CAL gets a fair evaluation in light of today's training needs and current technology.   ∎

THE EDUCATIONAL TECHNOLOGY CENTER

Alfred Bork, Stephen Franklin, and Barry Kurtz

This paper reports on the formation of the Educational Technology Center at the University of California, Irvine. The primary focus of the Center is the use of the computer as a learning aid. The Educational Technology

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Center started on January 1, 1980, with University funds providing staff support. The Center continues the activities in computer-based learning conducted by the Physics Computer Development Project during the last 11 years.

Need

The Educational Technology Center was formed because we believe strongly that the next decade will be a critical period in American education. Such centers are needed to guide us toward a future where the computer will play an extremely important role in education. It is important to develop a number of continuing groups that are not fully dependent on grant funds but have an existence beyond support for particular projects.

For some years we have pursued within the University of California the possibility of one such Center. Its staff will provide guidance to others working in this area. The Center will work on a wide range of research and development activities leading to more effective use of the computer and associated technologies in learning environments.

Current Activities

The Educational Technology Center intends to engage in many activities concerning more effective and more efficient use of information technology in learning, emphasizing learning materials on the personal computer. Some of the activities will be pure research, while others will have a strong applied and developmental component. We shall work closely with individuals and groups elsewhere, as in the past, so that the Center has a nationwide effect which extends beyond its immediate activities, materials, and publicity.

The Center will publish a newsletter reviewing the activities and results of its projects. Although no set schedule is planned, we expect this newsletter to be published three times a year. Anyone interested in receiving the newsletter should write to the Center.

The following list gives the active projects at the Irvine Center. Further information about any activity is available on request.

A Testing and Tutoring Environment for Large Science Courses. Authoring for personal computers, testing environments, physics—waves, statistics, National Science Foundation—Comprehensive Assistance to Undergraduate Science Education (CAUSE).

Scientific Literacy in the Public Library. Public libraries, shopping centers, science museums, public understanding of science, personal computers, Fund for the Improvement of Post-Secondary Education (FIPSE).

Mathematics Competency Tests for Beginning Science Courses. University of California/California State University and Colleges.

Translation of Timesharing Materials to Personal Computers. University of California/California, State University and Colleges.

Biology Materials—Ecology. University of California, Irvine, Committee on Instructional Development.

Development of Reasoning Skills in Early Adolescence. Junior high students, transition to formal reasoning, personal computers, National Science Foundation—Developments in Science Education (DISE).

Production System

In addition to specific products, such as those just mentioned, the Center has developed a production system for generating computer-based learning material. The emphasis is on both efficiency and effectiveness and on techniques that will allow natural extensions to large-scale production of such models. The production system is based on a systems analysis of the problem and on our many years of experience in producing a wide range of learning material. Literature is available describing the system and the supporting software.

Issues for the Future

Currently we can distinguish a number of very important issues that will shape the future of computer-based learning; these issues indicate directions the Educational Technology Center will pursue. No order of priority is intended in this list.

Full-scale course development. At present, with a few notable exceptions, computer-based learning materials are supplementary to course structures. Very few full courses make heavy use of computers to aid learning. We need experience in developing such complete courses and in integrating computer and other learning aids. We need additional experience in computer-aided delivery of such courses.

Expanded acquaintance. Very few teachers, and even fewer members of the general public, have seen any effective computer-based learning material. Often the examples seen have been weak examples; so the learners have formed inaccurate opinions of the value of such material. We need more acquaintance with quality computer-based learning programs which display a full range of possible applications. Computer literacy with a learning emphasis should be expanded.

Research in learning. We presently have conflicting theories about learning. We need to know more about how students learn so that we can develop better learning aids.

Production techniques. Older strategies for developing materials often were not suited for the large-scale development needed in the years ahead. The types of systems approach followed at Irvine and elsewhere need further exploration and refinement as the scale of activities increases. We should aim for the best possible materials at the least developmenal cost.

Expanding technologies. Computer and associated technologies are evolving rapidly. We must learn quickly to use an expanding range of capability, developing materials that are not immediately outmoded.

The computer as a new interactive medium. In understanding a new learning medium, we must learn how it differs from older media. For example, reading from computer displays has many differences from reading print medium, but the empirical details on how these differences effect learning are not known.

Dissemination. New media also demand new modes of dissemination.

New course and institutional structures. As computers are more widely used, they will have major effects on course and institutional structures.

The Educational Technology Center intends to pursue these and other issues. ∎

SIG CBT ELECTIONS

Jesse M. Heines

ADCIS has a new Executive Secretary (see *The Chair's Viewpoint*). With this additional professional help in the National Office, ADCIS would like to change its elec-

tion procedure by conducting mail ballots rather than live elections at conferences. When I was requested to approve deadline dates for nominations and the like, I pointed out that mail balloting is contrary to both the ADCIS and SIG CBT bylaws.

It seems that mail ballots have been used for ADCIS elections in the past, but that no one ever noticed the bylaws conflict before. I personally think that mail ballots are superior to live elections because they allow more members to participate. The other side of the coin is that mail ballots allow even non-active members to vote. My feeling is that members are members, active or not, if they pay their dues they're entitled to vote.

So I recommend that we go to mail ballots. If there are strong objections to this from any of our members, I request that you so inform me *immediately*. I have informed the Executive Secretary that we will comply with his request to hold a mail ballot (pending objections from our membership) and plan to change our bylaws at our next meeting.

With this rather large and complex preamble out of the way, I now invite nominations for the following SIG CBT offices: Chairperson, Vice-Chairperson, Secretary/Treasurer, and Newsletter Editor. The first three offices are two-year terms, while the fourth is a one-year term. Nota bene: You can nominate yourself. Volunteers are more than welcomed.

All nominations are to be mailed by December 15, 1980 to: Mr. Gordon Hayes, ADCIS Executive Secretary, Western Washington University, Computer Center, Bellingham, WA 98225. ∎

THE CHAIR'S VIEWPOINT

Jesse M. Heines

I would like to begin by welcoming Dr. Michael Szabo to the slate of ADCIS SIG CBT officers as Newsletter Editor. Mike is Director of the Instructional Support Center at the Pennsylvania State University in University Park. This Center serves 40 courses with a diagnostic and prescriptive testing function, running at a remote site with an IBM/370. Mike responded enthusiastically to my appeal for a new Editor in the last issue of this Newsletter, so I see that at least someone is reading my column!

This issue marks Mike's maiden voyage as Editor. I am very pleased to be working with Mike, as he has been very responsive to my requests for review of articles. We have even gone so far as to try to speed up the process by having Mike dial up our VAX system here in Bedford, Massachusetts to review articles on-line and to enter his

contributions directly. Who says that computer manufacturers don't know how to use the computers they build?!? Mike and I hope that the Newsletter continues to bring you useful information in a timely manner, and we encourage you to share your project reports and other findings with the SIG CBT memberships through this vehicle.

I have two pieces of information to relate which involve improvement of the services that ADCIS provides to you, the membership. First is the hiring of Gordon Hayes as ADCIS Executive Secretary. Gordon has extensive administrative experience in a variety of fields and has already begun to bug those of us on the Steering Committee with suggestions on how to clean up our acts.

I know that Gordon is extremely willing and anxious to provide the membership with an effective interface to the Organization, and I encourage you to contact him if you are having trouble finding out who in ADCIS might be able to help you with a specific computer-based instruction application. Gordon can be reached at the ADCIS National Office, Western Washington University, Bellingham, WA 98225, telephone 206-676-2860.

The second piece of information is the establishment of the Northeast Regional Chapter of ADCIS for those of you in New England and neighboring states. This new chapter is headed by Clarisse Molad of Jamesbury Corporation, a truly effervescent personality. There have been two meetings of the Northeast Chapter so far, but several more are already in the planning stage.

I encourage you to contact Clarisse if you are in the Northeast and join this new group. It is an excellent way to maintain your professional ADCIS associations between annual conferences. Clarisse can be reached at Jamesbury Corporation, 640 Lincoln Street, Worcester, MA 01605, telephone 617-852-0200.

I would now like to turn your attention for a few minutes to the recent flurry of activity that has surrounded proponents of videodisc applications to computer-based training. I have recently attended several conferences on videodisc applications, and they (or the individual speakers) seem to fall into three categories.

The first category is the "omigosh" group. 54000 frames! Still frame! Slow motion! Two-channel audio! Random addressibility! These people are enamoured with the hardware and its great "potential." Here, once again, is the educational panacea promised by programmed instruction, audiovisual instruction, and computer-assisted instruction.

What these people overlook is that the videodisc is simply fancy educational television, and many of the problems of that medium still need to be addressed. Even the "intelligent videodisc" (computer driven), with its branching and other capabilities to augment individualized instruction still presents many educational problems in the definition of how that medium should be used.

The second category is the "cummon" group. Here it is, folks, step right up. Sure it currently takes a while to have your video material pressed onto disc, but that problem will go away as soon as the porno houses start turning out videodisc movies by the dozen and you can get your discs pressed at your local bar and grill. Just get one and turn your students loose. But turn them loose on what?

What these people overlook is the expense of creating courseware for videodisc. If you think you have to get a lot of people together to author computer-based training materials, just wait until you start to author videodisc-based training materials. It's no less involved than making your own television show, and I invite you to count the number of people involved as the credits role when you watch your favorite television programs. Without a doubt, the finest project management in this world goes on in Hollywood, where they put together a multimillion dollar production involving hundreds or thousands of people in a matter of months.

The third category is the "realist" group. At the very head of this group I put Dr. Harvey Long of DiscoVision Associates, a man who has been involved with computer-based instruction since the days of the IBM 1500 and Coursewriter I. Harvey gave an excellent keynote speech at ADCIS several years back entitled "Drill and Practice is Where It's At," and gave another excellent talk at a recent conference of the Society for Applied Learning Technology entitled "Some Reflections on Videodisc Applications." The theme of both of these talks was that we have learned a lot more about the no-no's than the yes-yes's, or, in other words, the KISS principle is alive and well in computer-based instructional development.

Harvey told us that 40% of IBM's internal CBT is strictly CMI, and that this has proven far more cost effective than many CAI applications. He drew a continuum of CBT programs from unsophisticated to sophisticated and said that most people assume that sophistication is directly proportional to learner productivity. After admitting that he, too, once shared this view, Harvey stated that he no longer holds it.

Harvey stated that he has seen many instructional technologies come and go, but none of them have made truly significant impacts on the majority of training and education that takes place in our society. Even though he is a strong proponent of the potential of the videodisc to greatly enhance the instructional process, Harvey intends to take a much more conservative approach to rec-

ommending its applications than he has with similar new technologies in the past.

I personally have very mixed feelings about the application of videodisc technology to CBT. For some types of training, where motion and video are essential, the videodisc can truly revolutionize industrial training by letting us blend the best qualities of computer-based and audiovisual training. For simpler types, however, I feel that the medium is greatly oversold. I do not believe that the videodisc is manna from Magnavox. Nor do I believe that it is the panacea from Panasonic, the savior from Sony, or Philips' gift from the firmament. It is a new training tool, to be used intelligently and with discretion when the message fits the medium.

Do you feel differently? Write to us! We would be happy to publish dissenting opinions. ∎

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(Address Correction Requested)