



ADCIS SIG CBT

NEWSLETTER

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Association for the Development of Computer-based Instructional Systems Special Interest Group in Computer-Based Training

CONTROL DATA'S COMPUTER-BASED EDUCATION SYSTEM TO TRAIN AIR CANADA FLIGHT CREWS

David G. Smith

Control Data Canada, Ltd. is developing a training simulation that provides hands-on simulation training for Air Canada flight crew members via Control Data's computer-based training system - PLATO.

The simulation is being developed by the Professional Services Division of Control Data Canada, Ltd. and will be used by Air Canada pilots who will learn to use on-board computers.

Control Data is able to meet a wide variety of customers' training requirements due to the extensive support given by the company to computer-based education in Canada through an extensive catalogue of programs and its professional education consultants.

The powerful simulation capabilities of the PLATO system, coupled with the flexibility of the PLATO terminals, provide a cost-effective solution to training needs.

In early 1981, Air Canada will take possession of six new Lockheed 1011 Series 500 planes, equipped with advanced avionic instrumentation. One of these instruments, called the Flight Management System, is designed to help pilots optimize the performance of the airplane and to achieve significant fuel savings.

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To realize this important saving, all L1011 pilots must learn to use the Flight Management System; however, the new avionic technology introduces a completely new man-machine interface to which the pilots must be exposed. Previously, flight crew members manipulated switches and interpreted electrical indicators. Now, they have to develop skills in accurately entering data in computers and they have to relate to information displayed by these computers.

Each pilot must develop automatic reflexes and the same confidence in using these computers as with any other avionic equipment. Reports written by various members of the aerospace industry indicate that hands-on exercises with drill and practice are the most efficient training methods.

The reputation of the PLATO system in the aerospace industry has been established by American Airlines and United Airlines who have integrated cockpit simulation and aircraft maintenance training with the direct use of the computer to deliver instructional materials.

Under the direction of a project manager, a team of course designers, course developers, and computer-assisted instruction programmers from Control Data's Professional Services Division are presently developing the training simulation with subject matter experts from Air Canada. The final product will permit flight crew members to interact with a simulated Flight Management System displayed on PLATO terminals. The touch sensitive screen of the PLATO terminals will allow pilots to manipulate the simulated Flight Management System. This simulation will not only react as a real one, it will also provide the student-pilot with pedagogical guidance. ■

The ADCIS SIG CBT Newsletter is published quarterly by the ADCIS Special Interest Group in Computer-Based Training. Its purpose is to encourage the exchange of information on instructional computer applications in business, government, industry, and the military.

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Articles on computer-based training are invited from all members of the training community. Manuscripts should be limited to one or two double-spaced pages and submitted to the editor.

Any opinions, conclusions, or recommendations expressed in this Newsletter are those of the authors alone. They do not necessarily reflect the views of ADCIS, the SIG CBT, the editor, or the authors' employers.

Requests for reprints and/or further information should be directed to the authors. Requests for membership in the ADCIS SIG CBT should be directed to Gordon Hayes, Executive Secretary, Western Washington University, Computer Center, Bellingham, Washington 98225.

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MINUTES OF THE 1981 SIG CBT BUSINESS MEETING

Robert C. Fratini

Out-going SIG CBT Chairperson, Jesse M. Heines, called the Business Meeting to order at 2:30 p.m. on Wednesday, March 4, 1981.

The first order of business was activity committee reports and discussion. Harold Rahmlow, Chairperson of the Workshop Committee, reported on the success of the 1981 SIG CBT Novice Pre-session which focussed on "Getting Started in CBT" and featured presentations by Robert Fratini of Western Electric and Michael Kelly of TWA. Even with a larger room than at the 1980 Conference, the CBT Pre-session was once again a standing-room-only success and very well received by the participants. Clarisse Molad volunteered to assist Harold in organizing the 1982 CBT Pre-session.

Jesse Heines reported for the Standards Committee. There was discussion of the appropriateness of the "AECT Competencies for Instructional Designers," which Jim Hutton had modified for CBT. John Buck and Brad Stewart offered to extend the work of this committee, with John calling for the development of an outline of exactly what types of standards are needed.

Reporting for Natalie Lowe and the Who's Who Committee, Jesse pointed out the accomplishment of the publication of the first Who's Who in the January 1981, SIG CBT Newsletter. An addendum to this effort was distributed to those in attendance at the Business Meeting.

A vote was then called for on a motion to split the Awards/Publication Committee into two separate committees; this motion passed by a unanimous show of hands. Next, Jesse announced the 1981 awards - to John Buck of the FAA for Best Technical Paper, and to Natalie Lowe of Aetna for Best Technical Presentation.

Jesse's report on behalf of the Membership Committee discussed the ADCIS Steering Committee's efforts to develop SIG stationery with a common ADCIS identity for all SIGs to use as a basis for their stationery designs. Since this issue was very much unresolved, Jesse suggested that the issue of new stationery for the SIG CBT be postponed until the broader issues had been resolved within the Steering Committee.

Jesse Heines then presented the SIG CBT budget for the 1981 fiscal year for discussion. Items for a SIG CBT New Member Package and a SIG CBT Publicity Bro-

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MAKING EFFECTIVE USE OF AVAILABLE TRAINING MATERIALS THROUGH CMI: PART II

Michael Szabo

In Part I of this paper, I argued that valuable use could be made of available training materials (ATM) by converting them to a diagnostic and prescriptive Computer-Managed Instruction (CMI) system. Such a system: 1) enhances learning through frequent and fine-grained testing linked prescriptively to the training materials, and 2) eliminates the need for creation of new training materials, a labor-intensive task for which subject matter experts are neither trained nor rewarded.

The three requirements are: 1) reasonable quality available training materials, 2) a CMI delivery system such as the interactive PLATO PLM or the mark-sense Instruction Support System (ISS), and 3) training in the model presented below.

The model is divided into several major steps which are briefly elaborated. A team approach is advocated between the subject matter experts (S), the instructional designer (I), and the programmer (P). The team member chiefly responsible for each step is noted in parentheses.

Step 1. Become familiar with the requirements of the CMI System (I). How many modules, units, and test items are allowed? What types of test items can be implemented?

Step 2. Divide the ATM into logical subunits (S). For textual materials, ten pages seems maximal for adult levels of concentration.

Step 3. Highlight every statement or group of learning points the trainee *must* learn in each subunit. This can be done by highlighting a text with magic marker (S). An optional step is to highlight those learning points which support or elaborate the required learning points with a different color. This step isolates the major learning points from extraneous material in the judgment of (S) and is crucial to the total process.

Step 4. Classify each learning point based on whether it is a(n): 1) assumption, 2) fact, 3) rule, 4) concept, or 5) principle (S with assistance from I). This step is done to permit a congruence check between the learning points in the ATM and the test item pool.

Step 5. Type each learning point at the top of a separate sheet of paper along with the page number or section where it is found in the ATM (secretary). This isolates the topics in a useful format for writing test items, and links the test items to a learning prescription in the form of a page number or section.

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Step 6. Generate a pool (4-8 suggested) of test items for every teaching point highlighted (S). This pool permits generation of unique tests and retests by random selection of items from within the pools. These items should be written on the blank sheets which have a single unique teaching point at the top (Step 5). This removes all distracting text and helps to focus the item writing process.

Step 7. Critique each item based on form, one correct answer, and congruence with both the learning point and its classification in Step 4. (I) Inadequate items are returned with explanation for revision to the subject matter expert. Leaving this step to trainee trials is akin to inviting *disaster*.

Step 8. Input the items, learning prescriptions, and other information into the CMI system (P).

Step 9. Determine the strategy for interaction between the trainee, the ATM, and the CMI item bank (I). For example, selecting items to form a pretest makes little sense if the material is new and unfamiliar; if it is a refresher course, such a pretest may be a desirable strategy. How frequent will testing be? How many attempts will be given? How much material will be tested in a given test? Will trainees be permitted to skip sections if they do well on pretests?

Step 10. Pilot the materials carefully and thoroughly (I) and revise (S) whenever weaknesses are revealed. The probability of an error-free first product is equal to the probability that out of a million monkeys typing randomly, one will type *Hamlet*.

Step 11. Prepare a handbook for student use (I). This should include 1) directions, 2) training outlines, 3) objectives, 4) texts, 5) references, 6) other resources, and 7) ATM lessons. Extremely thorough care must be taken here if the training is to take place off-site with no qualified instructor present.

Step 12. Implement and continue to look for anticipated and unanticipated outcomes with the first dozen or so students.

Summary

A backward glance shows that our subject matter expert hasn't had to write a line of instruction. He/she organized, identified and classified key points, generated an item pool, recycled items, and participated in revision decisions; all was done as part of a team effort.

As to the results, you have a computerized data base which yields a wealth of individual and/or aggregate performance data on your trainees which may be put to a variety of legitimate uses. Now if you could only get that subject matter expert away from the CMI operation and back to work! ■

1981 SIG CBT AWARDS

Jesse M. Heines

For the second year in a row, the SIG CBT has presented awards for the Best Technical Paper and the Best Technical Presentation at SIG CBT sessions of the ADCIS National Conference. The purpose of these awards is to encourage and recognize the highest levels of professional effort in communicating technical information at ADCIS Conferences.

The Best Technical Paper Award is decided by a panel of reviewers who read each paper submitted for presentation at the National Conference. These papers are scored on the qualities of content, organization, relevance, and references to other work. This year, the Best

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Technical Paper Award was awarded to John A. Buck of the Federal Aviation Association for his paper, "Large Distributed Computer-Based Training Systems: Issues and Problems."

The Best Technical Presentation Award is decided by a panel of reviewers who attend each presentation made at SIG CBT sessions of the National Conference. In addition to the factors above, these presentations are scored on the qualities of clarity, style, and use of visuals. For 1981, the Best Technical Presentation Award was awarded to Natalie N. Lowe of Aetna Life and Casualty for her presentation, "A Structured Approach to Course Development in a Team Environment."

John and Natalie will receive plaques recognizing their achievements. These plaques are reproduced in this Newsletter, and will be printed on metal plates and mounted on wood. Copies of John's and Natalie's papers are available in the Conference Proceedings.

On behalf of the SIG CBT, I congratulate John and Natalie and thank them for their contributions to the success of our Conference. ■



ADCIS SIG CBT

The Special Interest Group in
Computer-Based Training
Association for the Development of
Computer-Based Instructional Systems

presents this award to

John Buck

for authoring the
Best Technical Paper
submitted for presentation at a session
of the SIG CBT

1981 ADCIS Conference
Atlanta, Georgia



ADCIS SIG CBT

The Special Interest Group in
Computer-Based Training
Association for the Development of
Computer-Based Instructional Systems

presents this award to

Natalie Lowe

for making the
Best Technical Presentation
at a session of the SIG CBT

1981 ADCIS Conference
Atlanta, Georgia

THE CHAIR'S VIEWPOINT

Robert C. Fratini

In my first column as Chairperson of the SIG CBT, I'd like to express my deep appreciation to all the efforts of the out-going SIG officers, Jesse Heines and Chuck Buchanan. I can honestly say that without their efforts in the SIG's first crucial years, there would be no SIG CBT today.

I would also like to thank and congratulate all those who made the SIG CBT sessions at the 1981 ADCIS Conference the success that they were. Special congratulations go to John Buck for the Best Technical Paper, and to Natalie Lowe for the Best Presentation. I would like to make special note of the "CBL Implementation Processes in Business and Industry" session that was conducted by Chuck Buchanan, John Buck, Dick Davis, and Glenn Head. Their open discussion of a variety of issues confronting those of us who work in CBT was truly a highlight of the Atlanta Conference as a whole, and can serve as a model for similar sessions at future conferences.

Enough gratitude. At this point, I'd like to use my soapbox to briefly discuss some of the ways the world of CBT has changed since 30 of us got together in Dallas in 1978 and signed the original petition calling for the formation of the ADCIS SIG CBT.

For one thing, there's more of us - a LOT more of us. As Jesse so gleefully pointed out in the Business Meeting in Atlanta, we are currently the largest SIG in ADCIS. Not bad for a three-year-old...

But what does that mean? Well, for one thing, having more of us means that the SIG membership will necessarily be going in more directions. We saw evidence of that in Atlanta too, with the formation of the SIG for IIS users and the SIG for Theory and Research.

Initially I was very concerned with the move to form more SIGs, but the more I thought about it, the more I realized that it's inevitable. Looking at training and education as parallel sciences, just look at how many individual disciplines there are in education! Why should training be any different?

Yet there ARE points of commonality - there ARE problems in communications training that are the same as problems in, say, insurance training. There are training solutions that have been implemented on PLATO which could solve another company's problems using IIS.

Some SIGs have been formed around specific computer-based learning delivery systems (the PLATO users and the IIS users), while others deal with characteristics of specific target populations (EI/Sec/JC). I see the mission of the SIG CBT as dealing with the discipline of computer-based training regardless of target populations

or computer systems. We can learn a lot from each other regardless of who we teach or what we use to do it.

That's why I was very encouraged by the telephone conversation I had this morning with Jerry Foley of Standard Oil, who is Co-chairperson of SIG IISPA. We agreed that the field is more than big enough for both SIGs, and that as CBT continues to grow, more and more SIGs will be formed. The key is cooperation, and some of the possibilities that were discussed were joint-SIG-sponsorship of sessions at future conferences, and planning to avoid some of the frustrating conflicts that result from the ever-increasing number of concurrent sessions.

With shortages of food, housing, fuel, and money, it's nice to be in a field with no shortage of challenges. There's plenty of needs which still need to be addressed for everyone who wants to get involved. ■

SIG CBT MINUTES

(continued from page 2)

chore were deleted, since they had been absorbed by actions to be taken by ADCIS as a whole. Items were then inserted to cover the costs of Newsletter Production (which has historically been donated by Digital Equipment Corporation) and a Hospitality Suite at the 1982 ADCIS Conference. The budget passed unanimously as amended.

Lastly, Jesse introduced the new SIG CBT officers: Robert Fratini (out-going Secretary/Treasurer) as Chairperson; Ken Modesitt (not in attendance) as Vice-Chairperson; Sheldon Fees (not in attendance) as Secretary/Treasurer; and Michael Szabo as Newsletter Editor. As Editor of the Newsletter, Mike made a request for those in attendance to consider submitting articles to the Newsletter for publication; then the chairing of the Business Meeting turned over to Robert Fratini.

Bob opened the discussion by congratulating Jesse for the fine job he had done in chairing the SIG CBT during its first three years of life, supervising its growth from the bare minimum of 30 members to its current status as the largest SIG in ADCIS, with 216 members as of the Atlanta Conference. He then called for suggestions of activities which the SIG might undertake during 1981-1982, beginning with a suggestion that a SIG membership listing might be as useful to all members as it had been to him during his tenure as Secretary/Treasurer.

Jesse Heines suggested that this be combined with the Who's Who Committee's efforts. Harold Rahmlow com-

mented that it would be useful if such a listing could be arranged by state, and Jesse replied that such listings come from the ADCIS membership data base arranged by zip code.

Glenn Head then suggested the development of a handbook of guidelines for presenters at SIG CBT technical sessions. Harold Rahmlow commented that The American College was currently preparing just such a

handbook for use by its faculty members, which they would gladly donate to the SIG for its use when complete. Tom Rebstock then urged that more of these presentation skills be included in the evaluation of presenters used in the scoring for the Best Technical Presentation award, and Bob replied that he hoped to revise the evaluation forms currently being used prior to the 1982 ADCIS Conference in Vancouver. ■

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