

ADCIS SIG CBT

NEWSLETTER

Vol 1 No 4 April 1979

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

FEDERAL INTERAGENCY CBI

Michael Conley

A number of federal civilian agencies currently have CBI projects under way or are actively planning for future CBI applications. As a result of this current and potential CBI activity, an Interagency CBI Study Group (ICSG) was organized in February of 1978. This group meets once a month and is composed of representatives of agencies which have active interests in CBI.

The ICSG has identified and set priorities for a number of objectives it would like to achieve. Subgroups have been established to work on some of the higher priority objectives. A Procurement Subgroup is compiling a list of alternative CBI system characteristics and other considerations which might be useful when writing requirements for a procurement involving CBI. A Common Resources Subgroup is investigating ways that agencies might share resources in developing and delivering CBI. This sharing could involve communications networks, CBI research and demonstration projects, or the development of courseware to meet training requirements common to many agencies. A

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CBI Staff Development Subgroup is working on ways to provide developmental experiences and information for CBI staff and CBI project managers.

This Staff Development Subgroup held a symposium on November 1, 1978, which focused on "Testing Techniques and Questioning Strategies in CBI". Over fifty invited participants heard four presenters talk on the use of CBI at their agencies with particular emphasis on their use of testing techniques and questioning strategies. Dr. Robert Seidel, Vice President of HumRRO, acted as principal reactant to the presenters. He and the other participants gave the presenters many constructive comments and suggestions. Future symposia will focus on other topics of interest to the ICSG. Possible future topics include: cost-effectiveness analysis of CBI projects; methods of CBI author selection, training, and team organization; and statistical techniques for improving testing quality and efficiency.

The level of interest in CBI as a possible training delivery method appears to be increasing among federal trainers. Staff of the Training Leadership Division of the Office of Personnel Management are currently analyzing what actions might be required to assist in the cost-effective application of CBI to Federal training.

Another development in the Federal

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CMI FOR CUSTOMER TRAINING

Jesse M. Heines

Digital Equipment Corporation has recently announced a new, self-paced, Computer-Managed Instruction (CMI) customer training course on BASIC language programming. This course uses an innovative approach to testing student performance that takes advantage of the use of the computer in an interactive mode. It allows student performance to be evaluated with a minimum number of test items, therefore decreasing the amount of time needed to determine whether a student has mastered a certain amount of material. The CMI system provides Digital's first practical means for controlling the quality of self-paced training in a customer environment.

The testing approach used by the CMI system is known as a Sequential Probability Test Ratio. It takes into consideration both a mastery criterion and a non-mastery criterion. It also takes into consideration the probability with which masters might be classified as non-masters, and the probability with which non-masters might be classified as masters.

After each item is presented to a student via the interactive testing program, the system classifies the student into one of three categories: (1) Students are classified as masters if their scores are above the mastery criterion with a specified level of certainty. (2) Students are classified as non-masters if their scores are below the non-mastery criterion with a specified level of certainty. (3) If a student's score falls between the mastery and non-mastery criterion, or if a classification cannot be made with one of the

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

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minimum levels of certainty, another test item is presented.

The Sequential Probability Test Ratio is represented graphically in the figure at the right. Items are weighted by dividing .25 by the probability of getting the item correct by guessing. The dashed diagonal line in this figure represents the best possible score that a student can achieve. That is, if items with a total weight of 8.5 are presented, the best possible score is 8.5. The point (8.5, 8.5) falls on the dashed diagonal line.

If a student's score falls into the master area, he or she is classified as a master on that test. For example, if items with a total weight of 16 have been presented and the student has achieved a score of 15, testing is terminated and a mastery classification is made.

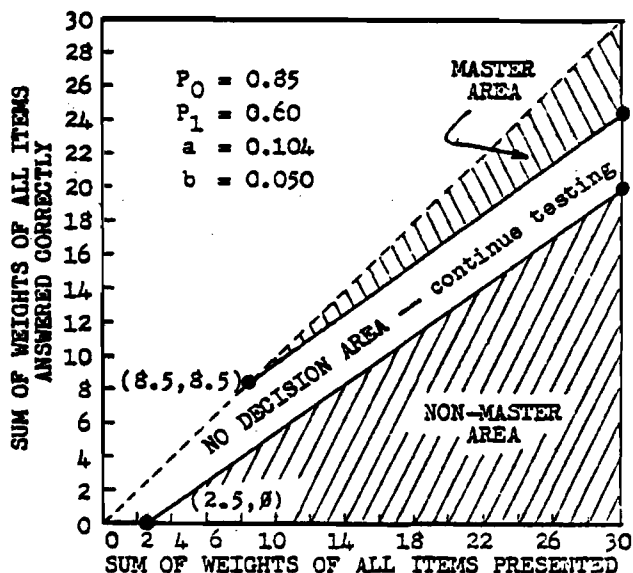
If a student's score falls into the non-master area, that student is classified as a non-master on the test. For example, if six items have been presented and the student has answered only one or two of them correctly, testing is terminated and the student is classified as a non-master.

If the student's score falls in the no decision area, another test item is presented. This continues to a maximum on 30 test items on any one test. After 30 items have been presented, the student is classified in either the master or non-master area, whichever he or she is closest to.

The sizes of the areas in the figure depend upon the mastery and non-mastery criteria and the allowable error probabilities. In this figure, the mastery criterion (P_0) was set at 85% and the non-mastery criterion (P_1) was set at 60%.

Classification errors in which masters would be classified as non-masters (α) were allowed to occur no more frequently than once out of eve-

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THE CHAIR'S VIEWPOINT

Jesse M. Heines

This issue of the SIG CBT Newsletter has been rushed to the printer so that it could be available for distribution at the February conference. This is the fourth issue of the Newsletter and marks the first year of our SIG's existence. The past year has been mainly an organizational one, but it has seen our ranks grow from 10 members to over 40. I am confident that this trend will continue in the coming year.

Our second year should be marked by the beginning of affirmative actions to increase the services that we supply to our membership. In previous issues I have outlined what I think some of these services should be, and I hope to establish committees in our business meeting to bring about their realization. Such committees might include awards for outstanding work in CBT, compilation of a who's who, compilation of a list of ongoing CBT projects, and the development standards for CBT products. If you would like to be a part of these activities but were not able to attend our business meeting, please contact me.

FEDERAL CBI (from page 1)

sector regarding CBI is that the House Committee on Science and Technology published a report in June of 1978 entitled "Computers and the Learning Society". Among the recommendations this report made was one to establish a Presidential Commission to investigate national policies that might be needed in regard to CBI. It is expected that legislation to establish this Commission will be introduced in the 96th Congress now in session.

CMI FOR CUSTOMERS (from page 3)

ry ten tests (.050). Classification errors in which non-masters would be classified as masters were allowed to occur no more often than one time out of every 20 tests.

The advantage of the Sequential Probability Test Ratio is that most decisions can be made with far fewer

than the normal number of test items. The interactive system has the capability to vary the length of the test depending upon the students' responses. For 187 posttests on which mastery classifications were made, the median length was 20 items. The same statistic for 124 posttests on which non-mastery classifications were made was 8 items. When the classifications on these short tests were compared to classifications on tests that were extended to 30 items, it was found that the classifications were the same in 96.8% of the cases.

The sequential probability test ratio allows reliable mastery and non-mastery classifications to be made in a minimum amount of time (an average of 10.6 minutes for 108 tests). This feature improves the quality of Digital's self-paced customer training by encouraging students to use the tests properly (for pretesting as well as posttesting) without making testing time disproportionate to learning time.

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