Interim Evaluation of the Kentucky State Module

Adult Basic Education-Computer Assisted Instruction

a component of the Appalachian

Adult Basic Education Demonstration Center

GEORGE W. EYSTER

EXECUTIVE DIRECTOR

Morehead State University
Morehead, Kentucky

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Prepared by:

JUDE T. COTTER
Evaluation Consultant

Kentucky State Module

Adult Basic Education-Computer Assisted Instruction

Project Director: Dr. Leonard Burkett

Adult basic education leadership must continue to develop and investigate more effective and efficient methods of instruction. Materials and curricula need to be developed and structured to more closely fit adult needs and interests within the most expeditious period of time.

Computer assisted instruction has emerged in the past ten years as a potentially new vital force in education. As one of the new and more promising learning systems, computer assisted instruction methods and teaching techniques need to be field tested to evaluate the system's effectiveness with a functionally illiterate population.

The introduction of sophisticated, automated teaching devices such as CAI in adult basic education classrooms are not yet fully appreciated by the majority of the students, teachers, and adults of the Appalachian Region.

PROBLEMS:

1. The major problem encountered by the CAI program and the Kentucky Module is the down-time by the computer. Dr. Burkett estimated that approximately 80% of the time the computer is down. Sometimes this has gone for a month with only two days of operating time. This has caused many of the students, and some of the teachers involved in this program, to become very discouraged with CAI. There are two basic reasons for the down-time.

    A). At the present time the terminals in Palo Alto, California are changing over from a PDPI to a 360 computer.

B). The difficulty with the phone companies - In order to get to some of the outlining terminals, it is necessary to go through three small phone companies. Bell and General Phone are the largest phone companies in this area, however, there is a proliferation of small companies. These companies do not have the same maintenance quality, they do not have the same equipment, and the transition from the transmitting lines from Morehead to the smaller terminals encounter a great deal of difficulty.

2. Our second problem may be teacher or student attitude. There seems to be a difference in the attitude of ABE students as opposed to vocational groups. The difference seems to be that ABE students are concerned with the three R's but the vocational student, or the student that is directed more in the area of occupation, is more likely to respond to a structured situtation involving a type of learn-by-doing application, while the ABE student seems to respond more to a theortical type of learning situation.

3. The next major problem involved is training personnel. All of the teachers involved in the CAI program teach a full day and then are involved in the CAI program after school on a part-time basis. The people do not have the supporting help of an on-going program in the school where the principal and the superintendent

are actively involved in seeing that a program is carried out

OBJECTIVES:

The ABE-CAI Project is designed to assess the impact of computer assisted instruction on adult basic education students, adult basic education teachers, school administrators and community in a rural setting.

1. The impact of computer assisted instruction on the arithmetic (logic) achievement of adult basic education students as measured by appropriate achievement tests.

Most of the students at this time are using the Stanford test to measure this achievement. The Prestonsburg County Schools uses the regular ABE test, and are recorded by grade level.

2. The impact of computer assisted instruction on achievement in non-arithmetic subjects such as language skills as measured by other sub-tests.

Stanford University said that it would have problem solving and logic by December 1 of 1968, but it has not come in. At the present the only program on CAI are arithmetic drill and practice.

3. The impact of computer assisted instruction upon attitudes toward mathematics as the adult basic education student and ABE teacher.

Dr. Burkett has devised an attitudinal scale that is being administered to the students. The teachers are the ones that administer this and all of the results are not in at this time. This attitudinal scale is not designed specifically to study the attitudes toward man, but more the attitude toward CAI.

4. The impact of computer assisted instruction upon attitudes toward computer assisted instruction of adult basic education student, adult basic education teacher, community, and school administration.

An attempt has been made to give the attitudinal study described in number three to all of the teachers and to all of the students. However, this attitudinal scale is perceived by some teachers as a test and it is rather threatening to them. The results have not all come in, although an endeavor is being made to have information from the students and the teachers. The post test is planned for June 30, 1969. Thus far there is no information on the attitudes of administrators or community people.

SPECIFIC OBJECTIVES:

1. To individualize instruction so that adult students may learn on a continuous progress basis.

The program itself individualizes the instruction, however, it goes without saying that the program must be operating before it can do this. Thus far the down-time for this program has really prevented individual instruction.

2. To provide immediate or short term feed-back on student performance to the students themselves, the teachers, the curriculum writers, and researchers.

The students get a print-out as an immediate feed-back and the teacher gets a separate print-out. The Morehead terminals are activated from California at night and the day's records are printed out for the teacher. As far as feed-back for the curriculum and the researchers, this seems to have a rather ambiguous meaning in that Dr. Burkett, who was not sure that this meant the people who wrote the programs for the Palo Alto program, or if this meant research that was being conducted by Morehead.

3. To introduce a means by which accurate predictions of adult basic education students' success may be based on statistical analysis of past performance.

At this time there is not enough data available to accurately predict the students' performance based on what he did in the past.

4. To introduce a new form of instructional technology to the Appalachian Region.

The very existence of CAI has gone a long way in providing this new form of instructional technology to the region.

5. To provide a setting that may be used through investigations of the many issues involved in the introduction of modern technology including instructional phase of education in rural adult education classes.

The CAI program itself is the setting. The issues "instructional phases" seems to lend itself to three or four different interpretations.

6. To increase the array of curriculum materials provided for the adult.

The CAI program, in general, provides a new dimension of curriculum materials for this area.

7. To demonstrate the validity of need to find economical means by which the program, computer assisted instruction, can be generated in the local area.

The validity of need will really be determined by the outcome of the program, and at this juncture it is too soon to tell if there is a validity of need, particularly, when one considers the economic means to have this type of program.

8. To utilize a systems approach in assigning and assessing students within adult basic education classes to the most suitable array of curriculum packates suitable to them.

At the present time, all of the students involved in the classes that have CAI are assigned to the CAI portion. There is not a systems approach in assigning and assessing the students, it is not necessarily the most suitable array of currculum packates. All of the students are assigned and data concerning which is more suitable, hopefully, will come out of the results of this program.

RATIONALE:

The computer, one of the many technological advances of modern times has revoluntionized information storage and retrieval and in doing so, capacities for education for programmed learning of computer assisted instruction are just being recognized and their application for adult basic education needs thorough investigation.

The Eastern Kentucky area served by the Eastern Kentucky Educational Development Corporation could be termed a U.S. Appalachian poverty pocket and educators must bring new resources and approaches to enlighten the closed minds of the educationally disadvantaged persons.

Computer assisted instruction, a totally specified instructional program, in which a computer is utilized for purposes of response evaluation, task sequences and record keeping has been successful when used with children at Morehead State University. The expertise gained by the CAI staff at Morehead State University can be transferred to the related area of teaching adult basic education levels of mathematics and possible language skills through the use of a new logic program.

The only two people who are using the expertise gained by the CAI staff at Morehead are Dr. Burkett and Sue Stevenson. At this time, however, the experiences that they encountered by conducting the program at Morehead has made possible the introduction of CAI to the outlining areas. The hope and

promise of CAI in these areas, and the goals established by the rationale statement can be better determined at the end of this program.

PROCEDURES:

The adult basic education project and CAI will necessarily be coordinated with the existing administrative structure of computer assisted instruction as it is offered through EKEDC. Standford University maintains the responsibility for the program of computer time and software. The Center Midwestern Regional Educational Laboratory exercises the responsibility for all technical aspects, telephone lines, terminals and the evaluation. Morehead State University provides the facilities of the relay computer service, CAI in-service training of teachers, university administration and coordinator of CAI Program in installations throughout the region.

The overall ABE-CAI has a potential of work in 20 Kentucky counties which will include a total of 31 CAI demonstration centers. Any experimental and demonstration ABE-CAI will ultimately strengthen major objectives of the total CAI Project in eastern Kentucky.

The Appalachian Adult Basic Education Demonstration Center will contract through the EKEDC to Morehead State University for the coordination and development of the ABE-CAI Project.

Perhaps the easiest way to review the procedures is to provide the following information.

1. Stanford University furnishes the hardware and software.

2. EKEDC is responsible for terminal upkeep.

3. Phone lines are supplied by CEMREL. Also CEMREL provides the terminals but EKEDC is responsible for the upkeep of the terminals.

4. CEMREL is not responsible for evaluation of AABECD,but is responsible for evaluation of day programs for elementary children of the program operating by EKEDC.

Additional information on procedures are contained in the intermediate report submitted by the program. At the present time there are four terminal separate operations going. A recommendation at this juncture is that the CAI program should investigate the possibility of having portable terminals. All of the terminals at this time are located in rather permanent situations. This causes a problem because the terminals may be located on one side of a county, and the people who would like to be involved in CAI programs are on the other side of the county.

One sixth of Dr. Burkett's time is supplied by AABECD. Another part of his time is taken by EKEDC, and another part of his time is taken by his permanent duties with Morehead State University. If the CAI program is to continue it would be beyond the pilot program phase. It would be desirable to have a person working full-time in this capacity, as the responsibilities of Dr. Burkett at this time are entirely too taxing for one person.

The ABE-CAI Project will be developed in six major phases, five major program development efforts and a sixth place of evaluation.

Phase I - Breathitt County Adult Basic Education Computer Assisted Instruction Demonstration

A special request has been made to establish computer assisted instruction in mathematics and possibly logic in Breathitt County supplementing and including (1) a welfare Title V ABE on-going program and (2) ABE Neighborhood Youth Corps Project.

Although Breathitt County is not included in Region VII as defined by the CAI Eastern Kentucky Development Corporation service area, the site has been selected to strengthen experimental ABE-CAI Project design, since on-going adult basic education classes have been conducted for a period of three years and will provide the necessary archival data.

Welfare Title V is not in operation at this time. It was phased out in November. The programs that are currently involved in Breathitt County are; the LYC Group, the LBJ Elementary School, the Little Red School Junior High, the Vocational School, and the Breathitt Senior High School. The three-year program has been phased out and will not provide the type of information needed in Phase I.

Phase II - Summer Experimental ABE-CAI Project

The EKEDC and Morehead State University have initiated a limited number of summer CAI programs for children. It is possible that in those centers where terminals are currently operating, ABE classes under the auspices of the Kentucky Department of Education, Division of Adult Education may be reinstated for ABE-CAI experimental purposes. This phase has been deferred depending upon the outcome from the other program phases and funding.

Phase II was deferred and is not operating.

Phase III - Continuation of Breathitt County Projects and Region-wide experimental project in ABE-CAI in mathematics (September 1968 - May 30, 1969)

In September the capacity of the project will have increased to approximately 19 counties and 31 centers including 49 separate terminals for CAI. Cooperating with the Kentucky Department of Education, Division of Adult Eudcation, an effort will be made to: re-involve adult basic education students in adult basic education classes presenting these students with a CAI component in mathematics and, where appropriate and possible, in logic. This phase of the project emphasizes classes for students for whom a continuous achievement record has been maintained. A special effort will be made to initiate new classes in adult basic education, but without the introduction of the idea of CAI to avoid reactive measure in experimental design.

In March of 1969, 20 counties, 29 terminals, and 29 centers were operating. There were a total of four ABE classes operating in March of 1969. A fifth class is scheduled to begin in Martin County and will be operational on March 17, 1969.

A major problem has been encountered in the record keeping and with maintaining a continuous achievement record for the classes. Many of the records are rather "loose." The only place that is keeping fairly accurate records in in Cannonsburg. Mrs. Minnie Gee has maintained fairly accurate records, however, there is a highly transient population, the people involved in the CAI are not research orientated, many of them feel very threatened by the requests that are being made for the pre-post testing, and there are other problems encountered that were mentioned earlier in this report. Possibly two or three of the projects could provide the type of information outlined in Phase III. A possibility, other than having the information that should have been kept, will be to use State Department records for students involved in programs in other parts of the State.

Phase IV - Recruitment of ABE Students as a result of Demonstration activities in CAI.

Community-wide demonstration CAI activity will be developed in the early stages of the project. The main thrust of these demonstration activities will be an introduction of CAI to the community in an effort to recruit additional ABE classes.

At this juncture there has not been a community-wide demonstration of CAI activity. One of the main reasons for this is the down-time that has been encountered. However, Dr. Burkett talked with a group in Prestonburg County and simply word-of-mouth advertising caused a group of thirty people to attend a particular meeting. Meetings have been set-up for the future with parent-teacher groups, community meetings, etc. The feeling is that the program should have some assurance of success before its presented to a group. Dr. Burkett is developing at this time with Dr. Norman Tant, Director of Instructional Media, a thirty minute TV program which will be shown on educational TV channel two locally.

Phase V - Education

The evaluation of all phases of the project will be directed on a continuous basis by the project coordinator located at Morehead State University. The evaluation will be designed as illustrated in the experimental ABE-CAI design. One interim report will be required to describe progress. This report will be complemented with a continuous flow of appropriate information and materials relative to progress.

The evaluation will be related directly to the objectives as previously described. Mean achievement records will be utilized in experimental groups as well as in randomly sampled control groups. Where possible, "archival data" will be used to strengthen experimental achievement comparisons.

At this time it is planned that records received from the State Department of Education, will be used as part of the evaluation for this program. There is a real question about the evaluation procedures because the same tests have not been used to do the pre-post testing. If the CAI group uses one pre-post test, and the students on a state-wide basis used another pre-post test, there is some question to the validity of this approach. Another problem involved in the pre-post testing is the question of what is being tested - the teacher or the CAI program. In some cases the CAI program is not doing the job by itself but is being supplemented by the teacher. There are many questions that need to be asked about this particular phase of the program.

RESEARCH:

The effect of the computer on student achievement, student retention and student attitudes in Phase I will be investigated in this project. The achievement and retention information will be compared with similar data from randomly selected control groups in the area and with archival data from the Kentucky Department of Education. The pre-test post-test instrument for measuring student attitudes toward the computer as a method of instruction is currently being developed. In addition, community attitudes and teacher attitudes toward the computer will be studied through pre-test and post-test interview developed by Cemeral.

There is some confusion about the involvement of research through pre-post test interviews developed by Cemeral. The guidelines for their participation should be clearly delineated. At the present time Lou Smith and Paul Pohland are researchers for Cemeral paid by EKEDC to do area research on CAI, inputs of CAI and the impact of CAI in the elementary school. Meetings should be held with these people to determined their involvement in the research that will be conducted for AABECD portion of this project.

BUDGET:

All of the budgetary procedures for the CAI Kentucky Module are handled through the Morehead State University business office.

RECOMMENDATIONS:

1. Every effort must be made to have the computer operable. Perhaps a joint meeting of all parties involved, i.e., phone companies, CEMERAL, AABEDC, EKEDC, representatives from Palo Alto, and others, could expedite the increase efficiency of the terminals.
2. Every effort should be made to visit the sites where the terminals are located. These visits can serve the dual purposes of 1). Explaining the delays in the use of the CAI program and 2), help the teachers with pre-testing and quality control of data recording for future comparisons.
3. Each unit must have specific data on students. If the teachers have difficulty with testing or record keeping a person from M.U. or AABEDC should be assigned to assist the teacher on a regular basis.

4. There is some evidence that the strictly ABE student has a different attitude than the student involved in occupational or vocational training. The information on the Attitude Scale being developed in Mississippi should be used to measure this difference.
5. The teachers involved in the CAI Program should be involved in an in-service training program at Morehead University. The in-service training, in addition to general orientation, should include the following specifics:
    A). The specific goals of the CAI Program.
    B). The operation of the terminal.
    C). The methods for accurate pre-post testing.
    D). Methods of accurate, specific record keeping.
    E). Use of simple data collection sheets.
6. Cumulative data stored in Palo Alto on the students of the AABEDC students should be made available. These results could be compared with the amount of success encountered by other groups in the U. S. who are using the same programs.
7. Every effort should be made to secure the information, both operational and research, being gathered by Stanford, CEMERAL, and EKEDC. Comparisons may be made between data collected by Lou Smith and Paul Pohland and results of AABEDC students. Random selection of records from the Kentucky State Department of Adult Education may also be used to contrast achievement of the CAI students.

Much information and data is currently available from a variety of sources. At this time it is important to have one person responsible for gathering this data. If the results are not amenable to hard research which would have predictive value, it would still provide an excellent basis for continuing research in this area. After visiting two of the terminal sites and talking with teachers and students, I am convinced that the future use of CAI in the overall program would not only be valuable, but a necessity if AABEDC is to achieve its stated goals of reaching the adult population in Appalachia.