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ABSTRACT

A Media Specialist Institute was held to train teachers who would be using the mathematics programs devised by the Commonwealth Computer-Assisted Instruction (CAI) Consortium. Teachers from Lincoln High School in Philadelphia and Schenley High School in Pittsburgh were given college credit for attending the three-week program. The first week provided the participants with experience in developing a short instructional sequence and in writing a computer program to implement it. In the second and third weeks the teachers taught mathematics classes, observed their peers' teaching, and developed appropriate off-line activities, giving special attention to the individualization of instruction. Evaluation indicated that teachers profited from the opportunity to learn how to individualize CAI and from the exposure to the wide range of commercially available supplementary instructional materials. (PB)

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THE PENNSYLVANIA STATE UNIVERSITY

CAI Laboratory

E. P. D. A. 1969 MEDIA SPECIALIST INSTITUTE

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Final Report

The Commonwealth CAI Consortium is made up of four organizations: the school districts of Pittsburgh and Philadelphia, the Pennsylvania Department of Education, and The Pennsylvania State University. The three-year mission of the Consortium is to develop and evaluate two individualized mathematics courses for ninth grade pupils in urban schools. The individualized courses are designed around the use of a modern instructional computer by teachers and pupils.

A utilization pattern has been planned so that the CAI mathematics effort can be implemented in the city high schools with a minimum of disruption and dislocation. Ordinary sized classrooms are used and each high school's system of forty to fifty minute periods is being respected. The regular teachers assigned to the general mathematics and first year algebra courses will be responsible for the project classes after a period of training in the new computer-based instructional technology. The role of the teacher in each classroom will be that of diagnostician and classroom manager. The mathematics curriculum for each course is divided into two carefully articulated components, "on-line" (at the computer-connected station) and "off-line" (at the computer-connected station) and "off-line" (at individual work areas). The typical middle-ability pupil will spend about one-half of his mathematics program in each mode. The lower ability pupil will spend more time on-line gaining skills in the basic fundamentals of the curriculum while the higher ability pupils will develop the necessary skills in less time at the computer terminal and will spend more class time off-line developing projects to study concepts in more depth.

Participants

The problem that suggested the Media Specialist Institute was the need for training the teachers who would be assigned to the CAI classroom to operate effectively in the new educational environment.

The participants in the institute were selected from the mathematics staff of Lincoln High School, Philadelphia, Pa., and Schenley High School, Pittsburgh, Pa. The institute was scheduled for the last three weeks in August to permit the desired participants to complete summer teaching jobs or summer course work. Conducting the institute at this time enabled the quota for the institute to be filled,

No problems were encountered in recruiting or selecting the participants. This was attributed to offering college credit for the institute and conducting the institute at a time suitable to the participants.

Schedule

The first week provided the participants with experience in developing a short instructional program and in writing the computer program to implement the instructional program at the computer terminal. During this week, the participants were given a teaching assignment for the next two weeks in either algebra or general mathematics. Part of their time was spent in going through the CAI mathematics course that they would be responsible for in the following weeks.

During the second and third weeks of the institute, eighth grade students were assigned to a mathematics class as indicated in the daily schedule. Each participant was scheduled to conduct one class during the two weeks. The other participants were able to observe the CAI class from an adjoining room through a one-way glass. Emphasis was placed on individualizing instruction, with references to the observed activities in the CAI classroom during the clinical sessions.

Since part of the responsibility of the CAI classroom teacher was to provide off-line activities for the students appropriate to their performance on-line, the participants were directed to develop a variety of off-line activities.

Table 1

Daily Schedule

1st Week	
9:00 - 10:00 a. m.	Instruction in writing CAI programs
10:15 - 12:00 noon	Write and test CAI programs
and	or
1:00 - 3:00 p. m.	Preview on-line CAI mathematics courses in algebra and general mathematics
2nd and 3rd Weeks	
9:00 - 10:15 a. m.	CAI classroom clinical experience with general mathematics students
10:30 - 11:45 a. m.	CAI classroom clinical experience with algebra students
1:00 - 2:00 p. m.	Seminar - Individualizing Instruction
2:00 - 3:00 p. m.	Develop off-line materials

Staff Reaction

We were surprised to find that most of the participants had had little experience with making assignments to fit the needs of individual students. The participants were, for the most part, unaware of commercial materials available for supplementing instruction. They had little knowledge of manipulative mathematics material, filmstrips relevant to mathematics, or supplementary printed material. We found that the participants required a considerable amount of guidance in conducting a classroom situation designed to provide a self-study environment. The participants were enthusiastic about the concept of CAI in general and for the Consortium CAI mathematics courses in particular.

Developing a CAI program appeared to be the most challenging aspect of the institute for most participants. When the participants were in charge of a CAI classroom, they were operating in a foreign environment that seemed to frustrate a number of them.

Student Evaluation

Following are some of the comments made by participants at the close of the institute.

> Attempting to write a program made me realize how much a teacher talks; now I know why students turn us off. Forty-five minutes of words can be too much. Attempting to cut down the words showed me it can be done, with a little effort.
>
> The strongpoint of the course was that it gave a number of teachers an opportunity to observe the CAI program firsthand . . .
>
> . . . I consider this institute a success and that I am well satisfied with what I got from it. I understand the nature of CAI now, the principles of instruction that make it possible, now a CAI classroom should be run, what the implications are for non-CAI situations and what the limitations of current systems are. All in all, that's a lot for just three weeks.
>
> Having students in during the second and third weeks was very useful. We could gain more by watching the children.
>
> We should have had more "off-line" material demonstrated by experts. No one knew how to use some of the materials.
>
> This institute has proved that young kids love to work and learn at the terminal . . .
>
> . . . By following students individually, we were able to observe the program as it led the student thru the various topics. In this way we, the teachers, were able to observe the weaknesses and strengths of the programmed material. This was perhaps the most important aspect of the entire three weeks.
>
> . . . I feel that I have learned something valuable, and if I should be put into a position of having to teach a CAI class, I feel I could handle it based on the experience gained in the institute.

Recommendations

If we were to conduct a similar institute again, more time should be allowed for acquainting the participants with the content of the on-line program. In addition, the participants would be given more opportunities to assign activities appropriate to the individual points of progress in the course.

Our experience with this institute indicates that the population of teachers represented by our sample are not aware of techniques used or materials available for individualizing instruction. Our recommendation to E. P. D. A. would be to support institutes that would provide techniques for individualizing instruction in the conventional high school mathematics classroom.