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        The changes expected to take place in the
professional education of English teachers are discussed. Within the
next decade, computer-assisted instructional English teacher
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eliciting textual response to literature, (2) grammar, usage, and
spelling, (3) composition skills to career-oriented youths. CAI
programs for teachers of English are now being developed at The
Pennsylvania State University in (1) bilingual education and (2)
teaching literacy skills to career-oriented youths. The
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(Author/CK)

ABSTRACT

As society, schools, and English programs change, so will the professional education of English teachers change. Within the next decade, computer-assisted instructional English teacher education programs will be available in the following areas: (1) eliciting textual response to literature, (2) grammar, usage, and spelling, (3) composition, (4) bidialectal and bilingual education, and (5) teaching literacy skills to career-oriented youths. CAI programs for teachers of English are now being developed at The Pennsylvania State University in (1) bilingual education and (2) teaching literacy skills to career-oriented youths. The characteristics of these CAI programs, the delivery system, the program development, and student reactions are presented.

Computer Assisted Instruction in English Teacher Education

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In the future, the teacher of English will be transformed from a
teacher of the English language and its literature to a teacher of the
uses of language to control   our multiple environments.

The schools and English programs are changing as rapidly as our
society. The purpose of teaching composition in schools and colleges
is rapidly changing from the art of precise and clear written expression
to the uses of semantics and rhetoric to understand and to control others.
Although we tell our students that the literature of the classicists,
the Romantics, and the Victorians concerns itself with "Universal"
problems related to man of all ages, our students look back with
empty stares and tired nods. They know that in a society where man's
choices, his questions of freedom and dignity, are controlled by his
financial gains and what he can purchase with these gains. They know
that a man can be a stone cutter or a philosopher at a famous university
and still be a worthy human being. Our students know that a society
which provides easily accessible birth control means for women, medical
assistance and free child-delivery service, and even more couples willing
to adopt children than there are children available for adoption, ninteenth
and twentieth-century literary concerns for middle-class marriage, child

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rearing, and promiscuity are unreal topics in a highly controlled twenty-first century.

What then will the teacher of English be doing in school classrooms, if they are still in existence in 1984, twelve years from now. A better question might be, what will a teacher of English not be doing in the classroom. One thing that a teacher of English will not do is to elicite response to a literary work when these responses have empirical data which can be extracted from the text; a computer program will be available for these kinds of activities. A teacher of English will not be teaching grammar, usage, and spelling or even composition itself, a computer program will be available for this type of instruction. A teacher of English will not be teaching the standard English language without due concern for neighboring languages and dialects, a computer bilingual/bidialectal program will be available. A teacher of English will not teach literacy to illiterate and functionally illiterate students, a computer progra.: will be available for this teaching function.

What will a teacher of English be doing in an English classroom, if by then, these are still called English classrooms. That answer must lie in the imagination of future teachers of English and their educators.

CAI (Computer Assisted Instruction) programs for students in the areas which I have just mentioned are not yet available, but they will be within the next ten or twelve years. CAI delivery systems for students are extremely expensive to mount and the programs take a considerable

amount of knowledge and many years to develop. Rather than take the tack of traditional textbook writers who develop student materials first and the teachers' manual as an afterthought, at the CAI laboratory at Penn State University we have decided to take the opposite approach to the development of CAI curriculum materials. First, where possible, we develop the teacher education program and from this program we develop the student programs. The reasons for this revised development program are:

(1) Delivery systems for teachers, although expensive, are not unfeasible and can be extremely flexible, especially when we consider the numbers of student contacts a teacher has during his career.

(2) The teacher program must be complete and detailed, more so than the student program. The conversion of a teacher education program to a student program involves a process of editorial deletions and simplifications rather than the process of additions and complications. Our basic assumption in developing a CAI teacher education program is that the teacher must know more about the content and the instructional rationale than does the student.

The two areas in which we are developing programs for English teacher education are: (1) Bilingual education in elementary and secondary school programs, (2) Teaching of literacy (reading and writing) skills to career-

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oriented youths and young adults. Student materials are being devised simultaneously in the print media so that teachers who go through the programs can walk right into a classroom at the completion of a unit of instruction, 50-90 minutes, and attempt teaching the student material for that unit.

CAI Characteristics and Delivery System

The other day, a colleague of mine asked me what I would do when CAI was replaced by some other mechanical means of instruction. He was basing his remarks on past experience. In the past two decades, many devices and machines have promised to provide improved instruction in the schools. These can be listed as motion pictures, television, language laboratories, programmed textbooks, and teaching machines. None of these devices provided the quantum jumps in instruction promised.

Computer-assisted instruction possesses three fundamental characteristics which seem to suggest significant gains over other mechanical devices. First, the computer has the ability to pre-store a program, to evaluate a student's response, and to provide information regarding the correctness of the response. In a typical classroom of 30 students, only the very bright, aggressive students will be able to respond to and receive feedback from the teacher as many as five times each period. The poorer and more reticent student may receive feedback two or three times each week during the school year. Results to date show that students who receive instruction from computers respond from once every four seconds to once every thirty

seconds, or 40 to 600 times during a 40-minute session at a computer terminal.

A second characteristic of CAI is active response of students. Only the best students in a class can respond actively and critically to a textbook. The slower students are generally not equipped for this kind of learning.

A third characteristic of computer-assisted instruction is the course author's ability to individualize instruction not only at the level of achievement but in reference to the specific interests and abilities of the student taking the course. The computer can keep a record of the student's performance and progress through a course and alter that course based upon the individual students' progress with the materials.

The computer system used at the CAI Laboratory of Penn State University is the IBM 1500, designed specifically for instructional purposes. The computer language used is Coursewriter II. The CAI system consists of a small television (cathode-ray tube) for the student display device of the typewriter keyboard, a light-pen for feeding responses to the program, a random-access audio, playback-record capacity, and a random-access image projector, all under program control.

Many misconceptions of computer-assisted instruction prevail and it might be well at this point to clarify these attitudes and judgments.

> (1) Computer-assisted instruction is synonomous with
>
> programmed instruction.
>
>> Computer-assisted instruction can operate
>> with unprogrammed instructional materials

and with student-controlled learning. The **limits of a computer-assisted instructional** program lie within the imagination of the author.

(2) The instructional strategy must of necessity anticipate

all conceivable student responses.

Many routines which do not call for specified student responses are used. These routines can judge open-ended verbal responses and can distinguish between cognitive errors and spelling errors.

(3) Computer-assisted instruction is not of value in the

development of critical thinking.

Computer-assisted instruction should be consistent with the classroom approach and be related to class-room activities, prior to and after CAI contact. For example, CAI instruction in the teaching of literature provides a means for the student to scan a work for key words and ideas, to gather data, and to formulate hypotheses which will be discussed and challenged in the classroom. CAI is effective in eliciting students' judgments, interpretations, solutions to complex problems, and validations of hypotheses.

(4) The computer will replace the teacher.

Although the computer is a tool of instruction, as a book is a tool of instruction, the computer will challenge and change the role of the future teacher of English. The book does not challenge the teacher of English. In fact, the teaching of English is predicated on the book. If CAI is used wisely, it will replace the teacher in roles where leadership and discussion are not necessarily needed. CAI should eliminate the drudgery

from English teaching, drudgery such as teacher as proofreader, teacher
as reading improver, teacher as drill corrector. As computer-assisted
instructional programs and curriculums are developed and as the hardware
becomes available, fewer teachers will be needed and the teachers remaining
will have to be exceptionally well skilled in stimulating, leading, and
arousing interest and curiosity among learners. The teaching profession
will survive in spite of the computer, but the problems of focus of the
profession will change. As the English teaching profession changes, so
will the role of the teacher educator change.

CAI Program Development and Delivery

The development of our teacher education materials takes place at
The Pennsylvania State University campus. The testing and actual ap-
plication of the programs takes place in our mobile CAI van. This unique
innovation combines traditional education with new CAI technology.

The van is equipped with a central 1500 IBM computer instructional
system with 15 student stations. This van, traveling through rural
Pennsylvania as well as the large cities of the East, is parked in school
yards where it offers teachers special training which can be attempted
immediately in the local classrooms. When the teacher signs on at his
computer terminal, he is confronted with a multimedia happening. The
computer lectures, displays information on the cathode ray tube and the
image projector, and demands responses from the learner. With all this

happening, the teacher-learner has little time to daydream and if he does, the computer is a patient teacher. When questions are answered incorrectly, the computer reviews the information until the teacher-learner has mastered it. Teachers feel that they learn as well as or better than they do from a human instructor in the traditional classroom setting. One teacher who admitted that CAI was quite a new-fangled device for an old lady said, "You see it, you read it, you hear it, you say it, and it's all reviewed. You should learn something! Also, your attention doesn't wander."

The Programs in English Teacher Education

There are two CAI programs of interest to English educators being developed at Penn State University: (1) A Computer-Assisted Instructional Bilingual Program in Spanish and English for Elementary and Secondary School Teachers. (2) A Computer-Assisted Literacy Development Program for Career Oriented Youths and Adults.

A Bilingual Education Program

The need for bilingual elementary and secondary teachers of English is extensive. Vast numbers of children come to school not speaking English as their native language, about 400,000 in New York State, 30,000 in Pennsylvania, 40,000 in New Jersey, and 45,000 in the city of Chicago. The language difference of these children is also associated with a cultural difference even though the majority of these children are bestowed with coveted American citizenship. Most of these children are poor, their

parents earning less than $3,000 per year, and they suffer the social injustices of those in our culture who are different in color, culture, and language. It is not likely that an American teacher will escape meeting these children in his classroom, yet not many teachers are trained to teach these children.

A functional definition of bilingual education can also represent the goals of the CAI program for English teacher education being developed at Penn State. The dominant language of the children whom these teachers are being trained to teach is Spanish.

1. English is taught <u>as a second language</u> to children whose dominant language is other than English.

2. The children's dominant language is recognized and taught <u>as a first language</u>. Children are introduced to reading and writing in the dominant language as soon as they are ready.

3. The children are taught at least one academic subject in their dominant language until they have mastered enough English to enable learning in English.

4. The children whose dominant language is English are taught the dominant language of the other children.

5. Instructional use of both langu... is encouraged.

6. The children are taught the history and cultural
   background which reflect the value systems of speakers
   of both languages.

This computer-assisted instructional program in Spanish-English bilingual
education consists of ten units, each unit having two components: (1)
theoretical considerations, (2) pedagogical materials and methods ap-
propriate for students with varying language development. At the completion
of this program the teacher will be competent in the following teaching
areas:

(1) Contrast and describe the pedagogically important
    language and cultural differences between Latin
    and North American students.

(2) Speak and read with ease and in sentence patterns,
    at least 80% of students' Spanish and English
    vocabularies.

(3) Teach speaking, reading and writing in both Spanish
    and English.

(4) Teach the pedagogically important cultural, historical,
    and literary background of both language groups; the
    teacher will be able to teach mathematics or science
    in both languages.

(5) Use individualized instruction in a bilingual
    classroom.

(6) Adapt, use, and evaluate available bilingual
    units of instruction.

(7) Construct, use, and evaluate new bilingual units
    of instruction.

(8) Involve adults of a multi-ethnic background in
    a bilingual school program.

(9) Prepare bilingual students for the vocational
    demands of American urban environments.

(10) Develop and administer tests in a bilingual school
     program.

The evaluation of the degree of successful completion of the program
is based upon performance in the school-initiated bilingual program.

A Literacy Program for Career Oriented Youth

Illiteracy and low levels of literacy still haunt the American social
scene. There are more than two million adult illiterates in the United
States, the majority to be found in the large poverty pockets of our cities
or the rural regions of the Rio Grande Valley and Appalachia. The term

"literacy" is used in this context to include both ability to read and to write. Teachers of English are not trained as teachers of initial or intermediate reading and writing. This project will use its developed student reading and writing program as a basis for a teacher training program. This project involves reading materials derived from the career goals and interests of individual students.

At the completion of this CAI teacher education course in the literacy development of career-oriented youth, the participating teacher will be able to:

(1) Teach the initial teaching alphabet for rapid reading and writing progress.

(2) Teach a phonemic,orthography to sound system.

(3) Teach career-centered reading at various levels of comprehension.

(4) Teach critical thinking and problem solving activities.

(5) Teach a linguistic approach to spelling, punctuation, and usage.

(6) Teach controlled composition.

(7) Evaluate students' reading and writing progress.

Like the bilingual CAI teacher education program, the literacy teacher program will have its theoretical and pedagogical components.

Evaluation of the successful completion of the course will depend upon the teachers performance in the relevant classroom with students representing the target population.

Techniques and Strengths of CAI Programs

The advantage of CAI instruction over traditional instruction are as follows:

(1) A choice table upon initial entry into a lesson gives the student an opportunity to choose which parts of a lesson he wishes to do and in which order. A self-administered test is included as a part of each lesson and progress depends upon the student's successful completion of the test.

(2) Both voluntary and involuntary branching sequences are a part of each lesson.

(3) Drills and exercises are incorporated in each lesson.

(4) Various types of language judging routines in reading, writing, and speaking are helpful for students and provide instant or recently stored feedback.

Student reaction to teacher training in these critical areas is

generally favorable:

(1) Students enjoy working at their own pace.

(2) Students praise the individualized instruction.

(3) Students feel that it is effective to have help available during all stages of learning difficult teaching tasks.

(4) Students appreciate being spared the embarrassment of not knowing answers in class.

(5) Students find the computer-student situation personal enough for a comfortable learning situation.

(6) Students judge the material presented in the CAI programs to be better organized than most class lectures.

(7) Students generally recommend these CAI programs to other teachers.

(8) Students tend to work more rapidly in a CAI program than in a traditional program.

(9) Students' intensity of work on a program can be monitored.

(10) Students can master each lesson of each program so
that grading can be abolished except on classroom
performance criteria.

In the future, teacher education will not only include the use of
computers; it will also be accomplished through computers. As a result,
students and teachers will have to decide together what their new class-
room interaction roles will be.

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