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COMPUTER-BASED FOREIGN LANGUAGE INSTRUCTION IN ILLINOIS SCHOOLS

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PREFACE

The information contained in this report is based on findings made during an ongoing piece of educational research entitled Computer-based Foreign Language Instruction in the State of Illinois. It should be understood that because the study is not completed, present conclusions are subject to revision prior to final completion of the project. Names of the schools involved and the particulars of events observed will not be revealed to protect the privacy of the individuals and institutions involved.

The research is being supported by the Language Learning Laboratory of the University of Illinois at Urbana-Champaign and the Illinois State Board of Education, where the author is working as an intern in the Program Planning and Development division under the direction of Mr. Paul Griffith. The contents of this report are the responsibility of the author and no official endorsement by either the Language Learning Laboratory or any division of the Illinois State Board of Education should be inferred.

Microcomputers have suddenly invaded classrooms nationwide. The National Council on Educational Statistics (NCES) 1982 survey indicates that there are approximately 96,000 microcomputers in public schools (NCES, Early Release, 1982). This is nearly triple the 36,000 microcomputers that were present in the schools in the fall of 1980 (NCES, Early Release, 1982). More recently, a national study of educational technology in the U.S. reported that 53 percent of all schools had at least one computer as of January 1983 (Center for the Organization of Schools, 1983). This massive influx of hardware into the nation's schools creates a wealth of technological resources which can be used in addition to more traditional methods of instructional delivery.

The humanities are no exception to this generally increasing utilization of computers. Although, a limited amount of effective courseware exists for use in some subject areas, there now exists a significant body of commercial software available to implement aspects of foreign language instruction in the microcomputer-based medium. Language teachers in some school districts are beginning to incorporate these commercial materials into their syllabus design. In some cases the teachers are becoming actively involved in the design and production of their own foreign language courseware. But in the State of Illinois, these teachers are still in a minority. The vast majority of language teachers are trying to determine the potential and limitations of the medium for foreign language, English as a second language, and bilingual instruction.

Language Instruction On Mainframe Computer Systems

Existing studies on integrating CAI with language teaching are based primarily on research with mainframe computer systems rather than with microcomputers that are now being used in public schools. The mainframe is a computer system with a large central memory to which many terminals are attached. These terminals work on a time-sharing basis off the mainframe. As the name implies, the microcomputer is a small, free-standing com-

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puter system with a more limited memory than the mainframe and it can generally be used only by one person at a time.

Lesson designers now writing in professional publications tend to give general descriptions of the lesson content and of the structural and technical aspects of the program design and hardware configuration (including details of any audio or speech synthesis devices used to supply aural stimuli to the student). They give little information on strategies for the best ways to use CAI software in second language curricula.

The strengths of mainframe CAI language lesson materials all relate to the ability of the materials to deliver self-pacing, individualized lessons consisting primarily of vocabulary and grammar drills. These require student responses to written stimuli presented on a line printer, a CRT (cathode ray tube) monitor, or a plasma panel (as in the PLATO system). In some programs, students respond to an aural stimulus produced by various audio or audio-visual and speech synthesis devices (Van Campen, 1981; Hart, 1981; Marty, 1981; Kidd and Holmes, 1982). Instant feedback on the appropriateness of a given response can be provided to the student. In addition, more advanced diagnostic routines have been developed to provide remedial vocabulary and grammar information (Marty, 1981; Levin, 1981; and Barson et al., 1981). A possible future development of this technique may be the use of intelligent programs and parsing routines that analyze written free expression (Marty, 1981: Hart, 1981). The greatest limitation of CAI material for language instruction is the inability of the technology to measure oral language production. The majority of these language CAI programs use drill and practice routines that are similar to the type usually associated with the skill learning practices of the audio-lingual method. At present, second-language CAI has limited possibilities for strategies intended to increase students' oral communicative competence. According to Van Campen, Markosian, and Seropian, the principal drawback to CAI language instruction is that the computer cannot evaluate oral input. It cannot hear (Van Campen et al., 1981). This will continue to be the case until CAI gains the capabity to measure or analyze speech.

Some simple speech recognition devices have been developed using powerful mainframe computers (Electronics, 1980), and several companies are marketing speech recognition devices which can be used with micro-computers and are capable of recognizing approximately 40 - 80 words. It is not reasonable, however, to anticipate that in the near future a hardware system will be developed that can respond to natural speech in a dialogic manner (Marty, 1981).

There now exists a significant body of commerical software available to implement aspects of foreign language instruction in the microcomputer- based medium.

Despite the limitations of computers for oral language instruction, it has been demonstrated that CAI can be effectively delivered with recording devices to document student oral performance for self-evaluation or for evaluation by the instructor (E-Shi Wu, 1981). If teachers use the computer to introduce and practice vocabulary and grammar information, they are freed from tutorial time for concentration on oral skills and other activities that cannot effectively be simulated on a computer (Barson et al., 1981; Van Campen et al., 1981). It appears that the most effective means of integrating computers into language instruction is to combine these supplementary and remedial uses of CAI with a classroom teacher (Kidd and Holmes, 1982).

Language Instruction on Microcomputers

As indicated previously, most discussions of language CAI software have been concerned with mainframe computer systems. Information on the use of microcomputers in the public schools is limited primarily to data on the numbers located in the schools and their general use within the curriculum, e.g., computer literacy, basic skills enrichment, administrative uses, etc. (NCES, Early Release, 1982). A recent survey by Marketing Data Retrieval Services indicates that microcomputers present in the surveyed schools are used for language instruction in only two percent of all cases (MDRS, 1982). According to James Pusack of the University of Iowa, widespread adoption of CAI in foreign language instruction has been hampered by several problems, including lack of equipment, lack of computing skills, suspicion of technology, and a lack of appropriate computer programs (Pusack, 1982, p. 64).

Little comprehensive information is available on the specific contents of available microcomputer programs for second language studies. An existing resource for information on computer-based foreign language courseware is found in the February 1982 Newsletter of the Northeast Conference on the Teaching of Foreign Languages. In a short, but highly informative article, John Harrison gives a listing of all the commercially produced software packages currently available, with substantive information on those he has personally reviewed. The article lists approximately 83 packages and lessons from a variety of sources. Among these are many drill and practice format exercises and a smaller, but significant, number of simulation type programs involving use of the target language in order to participate in the machine-simulation of various complex scenarios.

Since the publication of the Harrison article in the Northeast Conference Newsletter, a series of reviews that have been written by Gerald Culley and his students at the University of Delaware has been included in issues of the publication (Newsletter No. 14, August 1983). Professor Culley and his students were also responsible for publication of guidelines for software evaluation and a series of software reviews that were the product of an NEH summer institute at U of Delaware in the summer of 1982 (Culley and Mulford, 1983).

Most recently, a resource bibliography has been published by the National Center for Bilingual Research entitled: *Microcomputers in Bilingual and Foreign Language Instruction: A Guide and Bibliography* (National Center for Bilingual Research, June 1983). This publication contains a brief but complete introduction to concepts and terms useful for describing CAI in a manner relevant for language instruction. Its main content is a two hundred page inclusive bibliography of software resources for foreign languages, bilingual/multicultural education and English as a Second Language. This is an annotated bibliography of the courseware providing information on hardware requirements, prices and availability. The information does not include qualitative assessment of either the content or design of the programs. Assessment of the suitability of the materials is left to the reader. A listing of schools currently using CAI in language classes is provided for persons who wish to contact indicated resource persons for recommendations and suggestions. The publication plans to update the bibliography and other databases as additional information becomes available.

Beyond the reviews by Professor Culley and his students, evaluations of existing CAI software are limited to (1) data on student performance (This is seen occasionally in a control/experimental group design using CAI as the dependent variable. See: Van Campen, 1981 and Van Campen et al., 1981) and (2) articles by authors and designers on the accomplishments of the courses. At the present time few studies report on the human factors of CAI use or on the broader impacts of CAI on the process of classroom instruction. A recent article by McCoy and Weible (1983) provides some speculation on some of the human aspects of microcomputer use in foreign language teaching. The authors are foreign language teachers with experience in both the use of the CAI medium and the production and use of video materials on magnetic tape and videodisc. They conclude that microcomputers *might* be able to free language teachers from routine classroom work for more communicative activities. McCoy and Weible suggest that a better approach to language CAI would be to incorporate the use of video materials with microcomputer courseware. Courseware based on videotapes or videodisc recordings of natural language dialogues could provide training materials to boost oral comprehension and provide contextual cueing of a sort that has previously been possible only in actual conversational practice. Unfortunately, such materials exist only in prototype form and will probably remain too expensive for use in most public school foreign language programs (V. Stevens, 1983).

A possible future development may be the use of intelligent programs and parsing routines that analyze written free expression.

Although instruction involving oral conversation is presently limited by the high cost or the unavailability of the necessary technology, there exists another possibility for integrating microcomputers into instruction in foreign language communication skills. Readily available communications packages provide both the hardware and software for sending and receiving written communications or electronic mail. These tools are already being used by elementary school students in various parts of the United States to facilitate the exchange of computer-mediated discourse.

Preliminary evidence indicates that computer-based discourse could have linguistic characteristics more like oral communication than traditional letters (Scollon, 1982, p. 19). Although at present there is no known application of this facility for electronic mail to languages other than English, the only element present lacking is the special characters necessary for correct spelling in the given languages (accents, etc.). It is easy to speculate that with the availability of compatible communications packages in various parts of the world, student-to-student electronic communications might well encourage the development of communicative competence.

Existing foreign language microcomputer courseware primarily exploits the presentation of written text on a computer screen in instructional formats that rely heavily on drill and practice exercises. Some audio devices have become available in recent months, but these are expensive and limited to the vocabulary stored on the audio tape or in the speech synthesis device (Hertz, pg. 24). Although some other formats for foreign language courseware do presently exist (simulation type programs and language games), they are primitive, few in number and of questionable value for classroom language learning.

Since at present the greatest value of computer use in foreign language instruction seems to be as a supplement to the teacher, he or she must play a central role not only in controlling the integration of software into the language studies curriculum (Putnam, 1983) but also in the design of the courseware (Russell, 1983).

Two central points seem to emerge from the existing body of literature on computer-based language instruction. The most frequent recommendation common to the sources reviewed is that foreign language teachers should have control over the vocabulary and specific grammar items in foreign language courseware. This factor is viewed as critical for the successful integration of the computer-based activities into the total syllabus. The second point is that foreign language teachers must become knowledgeable about the alternatives available for implementing computer-based foreign language instruction. Individual teachers must attain a reasonable level of computer literacy before they can begin to explore the possibilities and actually preview materials that might be useful to them.

However, at present there appears to be no single definition of the term computer literacy appropriate to the teachers considering CAI. Indeed, definitions of literacy may be as numerous as the software programs that perform a variety of instructional and non-instructional tasks (Levin and Souviney,

1983). One of the more common conceptions of computer literacy views it as a dynamic range of possibilities rather than a single definition. This viewpoint has been used by Robert Hertz to describe four levels of computer literacy for language teachers:

1. the computer-using teacher,
2. the nonprogramming author of courseware content, 3.
3. users of authoring systems, and
4. the teacher-programmer (Hertz, pp. 14-19)

It seems then that the definition of computer literacy is dependent on the context of the individual school and the structure of its foreign language teaching program. Observation of foreign language teaching programs where the foreign language teachers are actually using microcomputer-based courseware suggests that the term computer literacy requires a functional definition to match the context in which it is being used.

Observations on CAI and Foreign Language Teaching

Two of the three schools participating in this research are very large suburban high schools in the Chicago area. In the following narrative, these schools will be referred to as school one and school two. A third high school (with an enrollment close to the state's average enrollment of about 2000-2500) is located in a downstate school district.

It is clear that the limited number of situations studied cannot be representative of all the school situations possible in a state as large and diverse as Illinois. However, it is the considered opinion of the author that many foreign language teaching situations at the secondary school level are similar enough to justify some methodological conclusions and limited recommendations.

1. CAI can be incorporated into FL classrooms at both the beginning and advanced levels of language instruction and used as a supplement to a variety of strategies and approaches.

The primary factor in the foreign language teachers' decision to use CAI to supplement classroom teaching was their conclusion that some part of the instruction was suitable for delivery by the computer. In each case observed thus far the courseware used was designed or modified by the teacher or by a cooperating teacher in the same school. As a result the contents of the computerized lessons have been very closely tailored to the vocabulary and grammar particulars of the individual classes.

A common element in the teaching style of the teachers observed to date has been their use of a wide variety of learning activities and formats in their classes. These include both oral and written practice on vocabulary, grammar and cultural aspects of an individual lesson's content. The computer-based lessons that have been observed in use with these more standard classroom routines are primarily drill and practice on those same areas. Computer-assisted testing was used in an Advanced Placement French class, as a simulation of the grammar test that the students would be encountering on the placement test.

The principle drawback to CAI language instruction is that the computer cannot evaluate oral input. It cannot hear.

In beginning and intermediate Spanish and German classes, drill and practice on vocabulary and grammar provided a supplementary exercise on materials encountered in other classroom contexts. These teachers felt that vocabulary review was accomplished neatly and efficiently by using vocabulary translation exercises on the microcomputers. Overall, the teachers observed seemed to be using the microcomputer-based lessons as just another of a variety of strategies within a comprehensive syllabus including passive and active skills in both oral and written contexts.

(FN: It should be noted that most of the foreign language teachers in the State of Illinois will probably need to rely more on commercially available software. Use of commercial software can imply an entirely different set of conditions regarding the control of lesson content by the teacher.)

2. CAI appears to work best as a FL classroom resource if the students have previously been introduced to educational computing in other contexts.

Two different situations have been observed: in school one, limited microcomputer resources are available in a single centralized location primarily used for math, business applications and programming, whereas in school number two, an ample number of microcomputers are available in several sites where they can be easily used for educational computing in all subject areas. School two has a course requirement for all incoming freshmen in the use of microcomputers for instructional purposes, giving them some basic concepts of programming, and advises them of the vocational choices in the computer technology area and the particular special training that could be necessary to pursue these options.

In school one, some students could complete their schooling without using a microcomputer for any purpose. Language classes in this school, which lacked any firm policy on student computer literacy, needed much more in-class instruction on the basics of using the microcomputers themselves. The students in school one were observed in conversations with the teacher that sometimes demonstrated unrealistic expectations of the microcomputer's contribution to learning, sometimes an outright aversion to their use. In these cases the foreign language teacher had to work individually with the student to develop more productive attitudes toward the use of the microcomputers or provide individualized assignments that could be completed using paper and pencil exercises or reading.

In school two, it was not necessary to take class time to instruct the students on the use or potential of the microcomputer resources. The students were all able to use the computer-based learning programs effectively. When present with classes in the computer

labs, teachers supervised the use of the materials and answered questions about lesson content. This allowed the teachers to spend more time observing the work of all the students and evaluating student progress. Student evaluations also provided valuable insights about the design and content of the courseware to aid in the revision and updating of lessons already in use.

3. Although integration of computer-based materials into a syllabus is easier and more efficient when they have been produced by the teachers who use them, the design and implementation of computer-based foreign language materials is technically demanding and time consuming.

As previously noted, the cases studied showed a high degree of integration between the syllabus materials and classroom routines, but the teachers involved had paid a high price in terms of their time. In shcool one, the teacher had voluntarily taken a reduction to half-time status, in order to have the time to study programming techniques and to produce materials. In school two, the district had made a sizeable investment in an ambitious inservice training program. Initially, inservice training was provided to all teachers in the school. These first experiences were followed by voluntary summer workshops in which the participating teachers worked with student programmers to develop and implement materials to be used in the following school year. The participating teachers were paid a stipend to subsidize their attendence. After the initial workshops they used summers, weekends and evenings to write and revise instructional programs. The teachers who continued to work on materials development and teach a full schedule of classes simultaneously found that the time necessary to maintain existing lessons and work on new projects cut deeply into their personal time. They gave this time willingly because of their professional pride but it was evident that this commitment was taking its toll. All of them remarked in interviews and conversations that they did not consider it to be reasonable for administrators to assume that teacher produced materials would be a primary source of instructional software in most schools.

In school two, some of this demand for time and specialized skills was filled by providing computer aides and programming consultants to assist with the development of new materials in high priority areas. However the maintenance and revision of existing materials was still the job of the individual teachers. These aide and programmer positions seemed to be filled by persons without professional education background. Their salaries were therefore not competitive with industry and the positions seemed to have a high turnover rate. Additionally, these individuals lacked the specific skills in instructional design which makes possible the production of more sophisticated and useful courseware.

Computer-based discourse could have linguistic characteristics more like oral communication than traditional letters.

4. Most existing computer-based foreign language teaching materials have design, content, and technical shortcomings that may make them unusable by a large number of foreign language teachers in the public schools.

Although it might seem logical to assume that the use of commercial software is less time-consuming than local software development, this is not always the case. As foreign language courseware continues to come on the commercial market, the teachers participating in this study find that the task of pre-screening and selecting materials for examination is both time-consuming and complex, and is moreover made more difficult by the fact that individual distributors often are reluctant to send preview copies on approval for fear of software piracy.

When computerized materials are made available for preview, a thorough review for content and technical implementation requires large amounts of time and an understanding of the pedagogical implications involved in the design of computer-based instructional materials. In previewing software, teachers found errors in the grammar and spelling of the material and found much of it to be of questionable relevance. In one school the teachers felt they had to edit the commercial programs to remove the errors. However, this solution requires a high degree of technical sophistication in programming and in many cases the programs are protected to make modification of the computer code nearly impossible.

The problem of software compatibility is also a complicating factor. One school district owning Tandy microcomputers found that much of the available foreign language software could not be used on their particular hardware system. At the present time, there appear to be more foreign language software programs available for Apple computers than for any other variety. Although translations of these programs for other hardware are beginning to appear, schools will have to consider this problem in software selection until the microcomputer industry agrees on uniform standards for hardware and software design.

5. Two principal design strategies should be given priority in the development of computer-based language instruction: a) flexible Drill and Practice utility programs which gave the teacher control over program content, and b) comprehensive materials available as a supplement to major foreign language series textbooks.

A) Many of the teachers cooperating in this research were beginning to implement flexible open-ended utility programs that allow the specific vocabulary used in a drill or tutorial program to be varied easily without changing the structure of the program itself. In both schools the teachers were trying to write programs of this nature but lacked specific technical knowledge in design or programming. Although some commercial programs of this sort are available, their cost is generally higher than that of other available foreign language courseware. Until prices drop or schools make much more money available for the purchase of foreign language courseware, they are not likely to be widely purchased.

B) Teachers also discussed the need for the publication of foreign language textbooks accompanied by fully developed computerized materials keyed to the individual chapters and lessons. They agreed that teachers like themselves do not have the time or the resources to begin development of materials of this scope. Unless such comprehensive materials do become available, the large number of language teachers who rely upon published instructional materials will never attempt to use even the most flexible computer-based lessons.

At present I am aware of only one company that has produced a series of books with fully implemented computer-based supplementary materials. This was a French series. The foreign languages department chairperson from one of the cooperating schools had seen this series but was not, as far as I know, planning to purchase it. The largest textbook publishing houses evidently have not as yet made the decision to make the investment necessary to begin production of computer-based foreign language materials of this type.

6. Foreign language teachers working in school districts where funding for software acquisition is scarce might be prevented from obtaining financial assistance for software acquisition from federal sources (Chapter II Block Grant funding for Educational Improvement) by district-level determination that these funds are reserved for the support of computer literacy, i.e. math, science and computer technology.

An example of this restriction of federal funding was encountered in the third cooperating school in a downstate school district. In this case a foreign language teacher submitted a Chapter II minigrant proposal to the regional superintendent's office. The proposal requested funding to purchase instructional software to use in the teacher's secondary level language classes. The request for proposal had specified that the purpose of the grants was to support school activities related to computer literacy, so the teacher contacted the regional superintendent's office prior to writing the application to ask if the proposed use for foreign language instruction was acceptable, and was told that it was.

Some weeks later however, the teacher was notified by the regional superintendent's office that the grant proposal had been turned down because the proposed use of computer-assisted instruction for foreign language teaching had nothing to do with computer literacy. The regional office had decided on three areas of the curriculum as being of high priority, i.e. math, science, and computer technology. Accordingly, the proposal was given a low competitive ranking because regional specification of priorities had, in effect, provided a restrictive definition of computer literacy that excluded the use of microcomputers for foreign language instruction. This case may be an isolated one but foreign language teachers should be aware of the possibility of such restructions and cooperate in seeking to remove them.

Foreign language teachers should have control over the vocabulary and specific grammar items in foreign language courseware.

7. Whether foreign language teaching courseware is locally produced or commercially obtained, the results of its use could be influenced more by local school practices regarding the management of available microcomputer resources than the materials themselves.

A clear example of the influence exerted by management of computer resources in the local shcools is seen in the comparison between the interpretations of the phrase "instructional use of computers" in school one and school two. In the case of school one, a more limited number of microcomputers made it necessary to establish priorities on the use of equipment. Because math, programming and business applications were given a high priority for use of the available resources, the language teacher was only able to schedule the use of the site if these teachers were willing to give up their regularly scheduled times. In school two, all subject areas in the curriculum had access to the microcomputers as a medium for the delivery of instruction.

It is interesting to note that in neither school studied was there a formal statement of policy regarding the instructional usage of microcomputers. The substantial differences seemed to be in the requirement for the basic computer literacy course for incoming freshmen and in the amount of financial support available to purchase microcomputers for open use in the school curriculum and support for the local development and purchase of instructional software.

Other logistical decisions regarding the purchase and set-up of hardware facilities can strongly influence the practices the teachers must follow when using them. Not only do different hardware systems (Tandy vs. Apple, etc.) vary in features and capacity, but their arrangement either as free-standing individual workstations or as members of an instructional network will influence their efficacy. In school one, the microcomputers all had individual disk drives and were loaded with the necessary programs from individual 5¼ inch diskettes. In school two, the student terminals did not have disk drives and were loaded from a master terminal in the front of the computer lab. The duties of the teachers in the two settings were very different for these reasons.

In school one the teacher spent a great deal of time passing out disks to students and later recovering them. In cases where insufficient disks were available for all the students present, the students were often required to stop their work and borrow a disk to reload part of a program before they could continue. The teacher in school one had substantially less time to observe the work of the students and actively circulate around the computer lab to monitor their activities. Teachers using the networked microcomputers in school two generally had more opportunity to manage the instructional setting. Additionally, the supervision of program loading by the teacher allowed control of sequence and pacing of materials by the teacher and prevented the use of unauthorized materials.

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An unanticipated spinoff of the requirement for a minimum understanding of microcomputer use for all the students (as observed in school two) was the recreational entry of classroom students into the program code for the purpose of altering the instructional program. This phenomenon was more marked in the case of lower level students who were less serious about their grades and general participation in the class activities. If the students were actively involved in this recreational activity, it kept them from doing their assigned work. On one or two occasions it became quite disruptive in the computer lab setting.

During my second week of observation in school two, the programs in use were revised to prevent the students from altering the programs. It was still possible for them to switch off or abort the program, but this was obvious to the teacher as their progress was monitored and class participation could be graded accordingly. This problem suggests that in cases where there is a local school requirment for student computer literacy, the degree of technical sophistication of the instructional programs should be high enough to prevent them from being altered by the student users.

Summary of the Observations

Foreign language teachers in a limited number of Illinois secondary schools are beginning to use computer-assisted instruction as part of their instructional plan. At present it appears that only in large Chicago-area schools, with the financial resources of high income suburban areas, is computer-based foreign language instruction being systematically used. Downstate school districts are known where the foreign language teachers have access to microcomputer laboratories for their classes, and where they are receiving training in the instructional use of computers. In at least one downstate school district the present budget includes the purchase of computer software. However, it appears that actual use of microcomputers-based instructiona by foreign language teachers is limited to a very few of the largest and wealthiest school districts in the Chicago suburbs.

Even where foreign language teachers are using CAI, only a small portion of the teachers in the school's foreign language department were making use of the available resources. Teachers who were already using CAI were generally very knowledgeable about instructional uses of microcomputers and most were trying to program their own materials.

These teacher/programmers were largely self-educated with some assistance from organized inservice training. Because of the special problems of designing computer-based instruction as distinct from other applications (management, record-keeping, answer judging, etc.) and the additional technical necessity of foreign language characters (accents, ets.), much of what they learned in their initial training experiences had to be adapted or discarded as new techniques were devised by trial and error.

Use of commercial software can imply an entirely different set of conditions regarding the control of lesson content by the teacher.

In all cases studied, the teachers were helping their colleagues to learn about the possibilities of CAI in foreign language teaching. These activities seemed to present a teacher self-service alternative to the other available training. These people are active as presenters at seminars and inservice training workshops that provide introductory experiences for teachers from other area school districts. They also participate in presentations such as those given at the annual Illinois Foreign Language Teachers Association Convention, which are attended by teachers from all over the state.

In the two schools where CAI was being used on a regular basis, the teachers had varying amounts of support from their departments and school administrations. One aspect of computer use that was a common influence on both situations was the scheduling of a central computer laboratory. The local priorities for use and availability of these facilities constituted one of the strongest factors influencing computer use by language classes.

The unavailability of usable software seems to be the greatest hindrance to the implementation of computer-based foreign language instruction at the present time. Both the local production of software and the review of commercial materials for their eventual acquisition are time-consuming. In the schools observed, school support is available for software purchase but the allocation of these funds within departments was determined largely by the department chairperson in consultation with the teaching staff. Present information indicates that school support for software purchases may not be available in many school districts, particularly in the downstate school districts.

If we assume that foreign language teachers in Illinois will gain access to the use of microcomputers as they are purchased by additional school districts, two things are needed to encourage the thoughtful and appropriate use of these new resources: 1. teacher training on the basics of educational computing, with special attention to the special needs of foreign language teaching; and 2. adequate foreign language courseware availabilty.

Editor's Note: The following recommendations to the Illinois State Board of Education are reproduced for the benefit of consortium members who may have needs or interests in this aspect of CAI.

Recommendations

Recommendation 1:

The Illinois State Board of Education should make training programs available so that foreign language teachers can become familiar a) with educational computing and b) with the specific use of microcomputers for foreign language instruction.

a) The first need can be addressed by the presently existing training opportunities available through the Educational Computer Consortia funded under the statewide Computer Technology in Education Program.

b) The second can be met by making follow-up training experiences available to language teachers who complete the basic computer literacy curriculum. The scope of the existing consortia should be be broadened to include training specific to sub-areas of instruction (i.e. foreign languages) and additional specialized training experiences can be made available through alternative agencies like IFLTA or other professional organizations, institutions of higher education having demonstrated special capacity, or on a consulting basis.

Recommendation 2:

The Illinois State Board of Education should consider the long-range feasibility of amending the certification requirements for foreign language teachers to include basic familiarity with the instructional uses of computers. It is too early to determine the extent to which foreign language teachers in the State of Illinois will make use of computers; however, as computer-assisted foreign language instruction is tested through use, and as additional infromation becomes available on effective strategies for teacher training, teacher expertise in this area will become increasingly important in insuring that the use of computers does not follow the same course as did the use of language labs in the 1960's.

Recommendation 3:

The Illinois State Board of Education should consider the feasibility of a mandate for a required secondary school course in basic computer literacy, which would include introductory experiences in the use of microcomputers for educational purposes. Such an introduction should include applications in the social sciences, arts and humanities (specifically foreign language instruction) as well as the more prevalent uses in math, science and computer technology.

The present review of statewide curriculum requirements contains a recommendation allowing the substitutions of one-half unti of computer technology for an equal amount of required mathematics. However, this alternative does not take into consideration the trend toward increasing use of user-friendly software which makes the use of computers virtually unrelated to mathematics for a variety of purposes (financial business applications, word processing, and nonformal self-instruction). As a broader definition of the term computer literacy becomes more prevalent, the current state recommendation relating computer technology to math instruction, risks the implication of a definition restricting access to computer education resources in other subject areas.

Regional specification of priorities had in effect provided a restrictive definition of computer literacy that excluded the use of microcomputers for foreign language instruction.

Recommendation 4:

The Illinois State Board of Education should take appropriate action to encourage school districts with microcomputer facilities to clarify their local definitions of computer literacy and instructional applications of computers. This clarification should include a stated determination that microcomputer facilities will be available for classroom use by instructional personnel and students in all subject areas. As a policy is established allowing the social sciences, arts and humanities (including foreign language instruction) equal access to the available hardware resources, the school districts should be encouraged to make funding for the acquisition of instructional software available to the individual departments. An effective way to make this funding available (where district support is feasible) would be the creation of a new budgetary line item to be used by the departments as designated discretionary funding. In this way the departments would be encouraged to discuss the role of computer-based instruction and set internal priorities for acquisition of software based on a departmental consensus.

Recommendation 5:

The Illinois State Board of Education should consider providing support to foreign language teachers in Illinois public schools to aquire foreign language courseware. This initiative can be undertaken through two existing programs: a) the statewide Educational Computer Consortia, and b) the Chapter II Block Grant funding for the purchase of foreign languages instructional software. In addition, the state board should consider the provision of direct support for materials development projects undertaken to produce foreign languages courseware.

1) A comprehensive demonstration library of all commercially available microcomputer-based foreign language teaching materials should be acquired by the Illinois State Board of Education and made available on request to specific service regions and member schools in the statewide consortium network for training and demonstration purposes *only*. Access to such materials would greatly facilitate the preview and aquisition of materials and would provide a resource for the training of teachers in software selection. It could also provide the basis for establishing a software evaluation database where foreign language teachers could contribute their assesments of the quality and usability of the various materials, as they are reviewed in consideration for local purchasing.

2) The Illinois State Board of Education should consider the feasibility of making available specific funding for the support of software development projects that would produce quality foreign language courseware which could be distributed to foreign language teachers throughout the state at nominal cost. Although it is unlikely that sufficient resources could be assembled to produce series books with comprehensive supplementary computer-based exercises, the development of easy-to-use utility programs or drill drivers, allowing easy teacher control over specific lexical and grammatical content, might be possible. Commercial sources are not likely to produce these at a price that will make them affordable by many school districts. Subsequent distribution of suc-

cessful materials outside the state might well offset the start-up costs. Such materials-development projects should, however, be undertaken only where there is demonstrated expertise either on the part of participating teachers or in state institutions of higher education (i.e. universities and teacher training schools).

Recommendation 6

The Illinois State Board of Education should consider conducting a statewide inventory of human and institutional resources that are available to advise foreign language teachers on computer-based foreign language instruction. These resource inventories could also contribute to the development and implementation of new foreign language courseware as support becomes available. Such an inventory of resources could be maintained as an online database by the offices of the Educational Computer Technology Consortium network with access provided to the member school districts. One function of such an inventory would be to create a network of classroom teachers, programmers and other related specialists who could benefit from contact with others engaged in foreign language CAI. The teachers participating in this research were all in contact with one another through involvement in local and statewide professional organizations, but a single focused network would facilitate the exchange of ideas throughout the state and help to alleviate the inevitable frustrations that come with being at the forefront of any new educational technique or innovation. As the culture of high technology and the culture of traditional classroom teacher meet in foreign language instruction, mutual support may become one of the real needs of the teachers who become involved.

Conclusion

The recommendations expressed here are based on first-hand observation of foreign language teachers using computer-assisted instruction as one of many teaching strategies. Recent research funded by the National Institute of Education (NIE) has indicated that the major conclusions of this study are representative of research with a broader focus, including aspects of public education outside foreign language teaching and outside of secondary schools (see: Sheingold, Kane, and Endreweit, 1983). However, this broader research is viewed by its authors as lacking any specific information on how microcomputers will affect educational practice (pg. 431).

The subject specific research upon which these recommendations are based has vividly illustrated one of the final conclusions of Sheingold, et. al.:

> The results suggest that the effects of microcomputers on education, will depend, to a large extent, on the social and educational contexts within which they are imbedded. (ibid.)

The unavailability of usable software seems to be the greatest hindrance to the implementation of computer-based foreign language instruction.

Individuals at all levels of federal, state, and local educational agencies are co-participants with the teachers and students in the events that will ultimately determine the effects of microcomputer use on foreign language learning as well as learning in all other areas of curriculum.

The teachers themselves are the ultimate agents of educational improvement and change. It is the responsibility of the Illinois State Board of Education to provide them with information and other resources necessary to realize the optimal use of computer-assisted instruction.

BIBLIOGRAPHY

Barson, J.,Smith, R., Devine, D., Scholl, M., and Scholl, P., University-level CAI in French, in Suppes, P. (ed.), *University-Level Computer-Assisted Instruction at Stanford: 1963-1980.* Stanford: Stanford University, pp. 685-706 (1981).

Center for the Organization of Schools (CSOS), School Uses of Micro-computers: Reports from a National Survey (Issues 1 and 2), The John Hopkins University: April and June 1983.

Culley, G., and Mulford, G.(eds.), *Foreign Language Teaching Programs for Microcomputers: A Volume of Reviews,* University of Delaware (1983).

Electronics. 1980. April 24

E-Shi Wu, P., Construction and Evaluation of a Computer-assisted Curriculum in Spoken Mandarin, 1981, in Suppes, P. (ed)., *University-Level Computer-Assisted Instruction at Stanford: 1968-1980.* Stanford: Stanford University, pp. 707-716 (1981).

Harrison, J. S., Foreign Language Computer Software: What? Where? How Good? *Northeast Conference on the Teaching of Foreign Languages Newsletter,* No. 13, February 1983, pp. 26-30.

Hart, R., Languages Study and the PLATO System, in Hart, R. (ed.), *Studies in Language Learning: The PLATO System and Language Study,* Vol. 3, No. 1, Champaign-Urbana: University of Illinois (Spring 1981), pp. 1-24.

Hertz, R., *Microcomputers in Bilingual and Foreign Language Instruction: A Guide and Bibliography,* National Center for Bilingual Research, Los Alamitos, CA, June 1983.

Instructional Use of Computers in Public Schools, 1982, *NCES, Early Release,* Washington D.C.: September 7.

Kidd, M. E., and Holmes, G., The Computer and Language Remediation, *Programmed Learning and Educational Technology,* Vol. 19, No. 3, 1982, pp. 234-239.

Levin, D. R., Computer-based Analytic Grading for German Grammar Instruction, in Suppes, P. (ed.), *University-level Computer-assisted Instruction at Stanford: 1968-1980.* Stanford: Stanford University, pp. 675-684.

Market Data Retrieval Systems, 1982, Westport, Conn.

Marty, F., Reflections on the use of computers in second-language acquisition, in Hart, R. (ed.), Studies in Language Learning: The PLATO System and Language Study, Vol. 3, No. 1, (Spring, 1981), pp. 25-53.

McCoy, I. H., and Weible, D. M., Foreign Languages and the New Media: The Videodisc and the Microcomputer, in James, C. J., (ed.), *Practical Applications of Research in Foreign Language Teaching.* Skokie, Ill.: National Textbook Co., 1983, pp. 105-152.

Northeast Conference on the Teaching of Foreign Languages Newsletter, No. 14, August 1983

Pusack, J. P., Dasher: A Natural Language Answer Processor, *Conduit,* Vol. 7, No. 1, Spring 1982, pp. 64-66.

Putnam, C. E., Foreign Language Instructional Technology: The State of the Art, *CALICO Journal,* Vol. 1, No. 1, June 1983, pp. 35-41.

Russell, J. R., On Getting Started, *CALICO Journal,* Vol. 1, No. 1, June 1983, pp. 51-53.

Scollon, R. K. Gutenberg, Babbage and Woz: Will Pac-Man Gobble Up the Humanities?, Lecture to the Washington Linguistics Club, December, 1982.

Sheingold, K., Kane, J., Endreweit, M., Microcomputer Use in Schools: Developing a Research Agenda, *Harvard Educational Review,* Vol. 53, No. 4, November 1983, pp. 412-432.

Stevens, V., A Report on a Project Illustrating the Feasibility of VideoComputer Interface, *CALICO Journal,* Vol. 1, No. 1, June 1983, pp. 27-30 and 50.

Van Campen, J., A Computer-assisted course in Russian, in Suppes, P. (ed.), *University-Level Computer-Assisted Instruction at Stanford: 1968-1980,* Stanford: Stanford University, 1981, pp. 603-646.

Van Campen J., Markosian, L., and Seropian, H., A Computer-Assisted Language Instruction System with Initial Application to Armenian, in Suppes, P., (ed.), *University-Level Computer-Assisted Instruction at Stanford: 1968-1980,* Stanford: Stanford University, 1981, pp. 717-734.