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The Effects of Computer Assisted ESL Instruction on Limited English Proficient Students

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THE EFFECTS OF COMPUTER ASSISTED ESL INSTRUCTION
ON LIMITED ENGLISH PROFICIENT STUDENTS

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by
Raul M. Sanchez
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A study was conducted to determine whether computer assisted instruction or the traditional ESL teaching method was more effective in teaching Limited English Proficient (LEP) students, English language proficiency. Twenty-two second grade subjects were separated into two groups at one elementary school in Yakima, Washington. The experimental group received computer assisted ESL instruction, while the control group was instructed with the traditional ESL teaching method. Analysis of the results supported the research hypotheses for one of the three dependent variables. The null hypothesis could not be rejected for a second variable, while for a third variable, a significant difference was found in the opposite direction.

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CHAPTER I
INTRODUCTION

In the last decade, the field of English as a Second Language (ESL) has seen the emergence of a number of new approaches and methods for which overstated claims have sometimes been made. Certain proponents of new approaches have appeared to aim at entirely replacing former methods with the new. "It is essential to realize that this type of claim is not being made for computer assisted language learning (CALL)." (Esling, 1984). As the term itself implies, the emphasis is on the computer to assist the learning process. "The objective of CALL is to enhance teachers' ability to teach, not to replace them." (Wyatt, 1984).

The focus of this study was to show the effects of computer assisted instruction on Limited English Proficient (LEP) students. It provided an overview of computer applications in the field of language learning, the promise of CALL in the ESL curriculum, and the benefits offered by computer assisted language learning for ESL students. Following this is a description and the results of an original study.

Purpose of Study

The purpose of this study was to determine whether computer assisted ESL instruction or the traditional grammar translation ESL teaching method was more effective in teaching LEP students English language proficiency.

Scope of Study

The study was confined to one migrant resource room of second grade children at one elementary school in Yakima, Washington. The research involved twenty-two second-grade students. One group of eleven second graders received the treatment and eleven other second grade students served as the control group who received similar lessons in the form of traditional ESL instruction. The materials making up the computer assisted ESL and traditional ESL lessons were commercially made and covered the same topics of instruction. Students were chosen to participate in the study through the use of the level scores from the Language Assessment Scales (LAS). The oral language proficiency scores from the oral language section of the Woodcock Language Proficiency Battery (WLPB) were used as a pre and posttest of English language proficiency.

Hypotheses

The hypotheses of the research were as follows:

1. Computer assisted ESL instruction will lead to higher picture vocabulary test scores than will the traditional ESL teaching method.
2. Computer assisted ESL instruction will lead to higher antonyms-synonyms test scores than will the traditional ESL teaching method.
3. Computer assisted ESL instruction will lead to higher analogies test scores than will the traditional ESL teaching method.

The null hypothesis for each of the above research hypothesis was two-tailed with alpha set at .05.

Definition of Terms

CAI - Computer Assisted Instruction, a video/display terminal system that incorporates programmed instructional materials and is used as a supplementary learning tool for students from both classroom and learning laboratory settings. The following tasks can be performed using computer assisted instruction: (1) diagnosis of student learning problems, (2) presentation of individually appropriate learning material, and (3) the recording of student progress throughout the curriculum.

CALL - Computer Assisted Language Learning, a system that incorporates the use of computers to assist in the language learning process. The computer can potentially

serve the roles of instructor, collaborator, and facilitator.

COMPREHENSIBLE INPUT - Aural language made comprehensible through the use of context, visual aides, concrete objects, context clues, and gestures to make messages understood.

COURSEWARE - A type of software, i.e., one type of software is educational programs, which are known as courseware.

ESL - English as a Second Language, a teaching program used to instruct individuals of limited English proficiency the acquisition of skills in the English language.

HARDWARE - Physical equipment such as computers, video monitors, disk drives, and diskettes.

LEP - Limited English Proficiency, refers to: (1) individuals who were not born in the United States or whose native language is a language other than English, (2) individuals who come from environments where a language other than English is dominant, and (3) individuals who are American Indian and Alaskan Natives who come from environments where a language other than English has had a significant impact on their level of English language proficiency. (Bilingual Education Act, 1984).

MIGRANT - The legal definition of a migrant student is "a child who has moved with his family from one school

district to another the past year in order that a parent or other members of his family might secure employment in agriculture or in related food processing activities." (Dept. H.E.W., 1968:8).

SOFTWARE - Refers to computer programs (list of instructions that direct the computer's actions) and the data that are stored on diskettes and tapes or in the computer in magnetic or other forms.

VALT - Video Assisted Language Teaching.

Limitations of the Study

The number of subjects involved in this study was limited to 22 students in the second grade. Therefore, conclusions may be affected. Generalizations applicable to all students may be limited because the study was conducted at one elementary school with LEP students in a Migrant Language Room and random selection was restricted.

CHAPTER II

REVIEW OF THE LITERATURE

The purpose of this study was to determine whether computer assisted ESL instruction or the traditional grammar translation ESL teaching method was more effective in teaching LEP students English language proficiency. Inherent in the nature of this study are a number of essential elements.

However, before discussion is begun, basic understanding should be attained and consideration must be given to second language acquisition in order to comprehend and better appreciate the struggles LEP students must initially and continually undergo on the road towards English proficiency.

Two Kinds of Language

It is important to distinguish two kinds of language: conversational language, the language used for informal interpersonal communication, and academic language, the language style used in school for learning and discussing abstract ideas. Academic is the language used in textbooks, in intellectual discussions, and in "expository" writing. Academic language can be spoken or written.

How Language is Acquired

Research in language acquisition supports the hypothesis that people acquire language naturally, by understanding messages. People do not acquire language by

memorizing vocabulary lists or doing grammar exercises, but by understanding what people say to them or what they read. To acquire language, we need to understand what is said, not how it is said.

The best language lessons are interesting conversations, good books, fine films, etc., situations in which we are absorbed in the meaning of what is said to us or what we read. Given messages we understand, or "comprehensible input", language acquisition is nearly inevitable--our brains cannot help but acquire language. (Krashen and Biber, 1988).

How Long Does It Take?

Learning a different language takes time. Students with a good base knowledge in their native language tend to acquire language much quicker. Survival or conversational language is usually acquired first.

Research shows that it takes a different amount of time to acquire different kinds of languages. Conversational language is typically acquired more rapidly, usually in about two years, while the acquisition of formal or academic language takes from five to seven years. (Krashen and Biber, 1988).

The author's experience as a migrant language teacher and a bilingual and regular classroom teacher has provided the opportunity to work with and teach LEP students through the period of 15 years. Perhaps the single and most striking factor that has been clearly observed is the amount of time it takes Spanish-dominant students to acquire proficiency in the English language. This author has worked with three school districts in the state of Washington: Pasco, Wapato, and Yakima. This opportunity has provided

the awareness that **how well** and **how soon** LEP students learn and acquire the English language plays a significant role in their future. For LEP students, English language proficiency is the key to: being able to communicate with native English speakers on a daily basis, staying in school and obtaining a basic education, securing a decent occupation, entering a college or university, but especially in leading productive lives and becoming contributing members in our society.

Far too often LEP students become school dropouts or become the teacher's frustration problem because they are bored or, worse yet, ignored. Their second language learning is often too slow, frustrating, or uneventful. Soon they lose hope and become disillusioned with school. Often times, elementary schools provide LEP students bilingual and supplemental programs to assist them with second language learning only to find out that at middle school, they are on their own and high school may offer even less. Therefore, accelerated second language learning to this author is a very important issue. Time is of the essence and what and how LEP students are taught make it essentially critical.

Computer Applications in Language Learning

As early as 1981, Newsweek pointed out that there were more than 50,000 computers in use in the country's schools, and that the number was multiplying rapidly. "The schools

may be broke, but they're buying microcomputers."

(Newsweek, 1981). Another magazine, Time, pointed out that at a conservative estimate, the total number of microcomputers and terminals had reached 300,000 by the summer of 1983, an average of close to four computers per public school. (Time, 1983).

Now computers are becoming increasingly affordable, and even more prolific in our country's institutions. Therefore, answers are needed to a crucial question. Do computers have any role to play in English language learning? A study this author relied upon suggests the following: "Computers indisputably can make a worthwhile contribution to the teaching of English as a Second Language." (Wyatt, 1984). Another study which supports the effectiveness of CALL presented by Roberta Z. Levine and Sharon Ahern Fechter at the Conference of the Washington Area Teachers of English to Speakers of Other Languages suggests:

Although computer assisted instruction, commonly referred to as CAI, often invokes a forbidding picture of super-technology, sometimes considered beyond the realm of the humanist, computerized learning has proven to be an extremely versatile tool in the learning and teaching of languages. (Levine and Fechter, 1981).

Allen of Dartmouth, a pioneer in the CAI field, stated, "The use of a computer in helping teach language will increase in years to come: it has already been shown too effective to be ignored." Allen, 1971).

Computer Roles in Language Learning

The term computer assisted itself indicates only one role for the computer, exemplified in the drill-and-practice and tutorial materials. For this reason in 1983, Teachers of English to Speakers of Other Languages (TESOL) at a CAI symposium decided to adopt an alternative designation CALL: Computer Assisted Language Learning. This would then allow for a broader scope and dimension regarding the computer's role.

One of the strongest points for the computer is its flexibility. Unlike technological devices of the past that were restricted to a single or few functions, computers today, serve and provide us with a variety of options. In the area of language learning, the computer has the potential to play a large number of different roles in ESL. (Kemmis, et. al., 1977, Higgins and Johns, 1984). Therefore in this study, three main computer roles are discussed: the roles of instructor, collaborator, and facilitator. In the past, CALL has been primarily identified with the instruction role, which involve two types, the drill-and-practice exercise and tutorial programs.

In the instructional role, the computer program presents materials and conducts practice activities as an authority figure. In drill-and-practice, students are assumed to have already received an introduction to the

topic, and the drill is designed to provide carefully structured opportunities to use and master the relevant points. Tutorial CALL takes on the burden of introducing the topic to students assuming little or no prior introduction. Topics are broken down into small learning steps with questions following each one to determine whether the point was understood. Both activities mentioned have associated management systems that can provide extensive score and progress reports to students and their teachers. Thus, in the instructional role, students are taught in a highly pre-planned fashion, and they have only to follow directions and work at producing the anticipated forms and responses. Students are actively involved in the learning process, but their role is that of responder rather than initiator. This perhaps closely resembles some of the activities found in our workbooks, textbooks, and classrooms.

The second role, collaborative CALL, has a distinctive feature in that in this approach, the initiative is turned over to the student or group of students. For example, when working with question patterns, one type of activity might involve the students trying to discover some items of information that the computer alone possesses. As appropriate questions are made by students, the computer yields information addressed to it. Another example of the computer as a collaborator is through the use of simulation

or gaming modes. The computer provides simulation activities in which the students are responsible for initiating and directing the activities that occur in the learning process. Conceivably, certain activities such as simulation could be conducted in the classroom without computer equipment, although frequently, that would be more difficult to stage in this way and less attractive to work with. Most of the simulation activities however, represent entirely new ideas and involve sophisticated technological on-screen programming that could not be realized without the computer.

The third role consists of facilitative applications of the computer. In this role, the computer simply serves as a tool in other language-learning activities, because it is essentially empty of instructional content. One example would be the use of the computer as a word processor. All instruction can be taught in the traditional classroom lesson but assignments are done on the computer.

The computer can greatly facilitate the writing process for the area of CALL in that it has the ability to store each draft of an assignment and provide easy editing techniques. Similarly, a potential facilitative role is that of an electronic dictionary. (Chappell and Jamieson, 1982).

Another facilitative application is as teacher's and researcher's aide. The word processing capabilities, once experienced, soon become indispensable as it allows for storage of previously typed material that can be

automatically checked for spelling errors. It also allows researchers to gain immediate access to current and past sources of information.

CALL and the Standard Curriculum

After close examination of the specific roles the computer plays in CALL, a question to be asked is: How closely do the different types of computer assisted learning activities fit in with the standard curriculum? "As far as instructional CALL is concerned, there is a relatively high degree of correspondence. Drill-and-practice activities are one of the main ingredients of the workbooks that accompany many ESL courses." (Wyatt, 1981). Thus, the notion of using the computer as an electronic workbook is an interesting one with great potential as much of the material can be very easily computerized. Instructional CALL activities therefore, tend to parallel closely some aspects of the conventional curriculum because they can focus on, present, and provide practice with many of the teaching points and objectives.

Collaborative CALL activities are much more difficult to characterize since they are so diverse. Generally, they have a much less precise focus. Frequently, they deal with higher-level language use and most closely resemble the communication activities that are the culmination of a learning sequence in many classes or textbook approaches. They tend to be integrated, involving a number of different

linguistic elements rather than concentrating on a single aspect of language. In general, their 'fit' with the standard curriculum is much looser and less easy to specify.

Facilitative CALL activities correspond with the standard curriculum in obvious ways whenever they are appropriate. They merely function as tools that enable the classroom activities to proceed more easily and efficiently.

The Promise of CALL in the ESL Curriculum

The close relationship with many aspects of the curriculum, textbooks, and classroom practice, make instructional CALL materials able to be integrated with ESL courses.

One of the chief arguments for CALL is that it performs in a more efficient and individualized way the same types of activities that are implemented in the traditional classroom. Instructional courseware can thus be expected eventually to have a broad impact on the ESL curriculum. (Wyatt, 1981).

The potential impact of collaborative CALL is more difficult to assess because it is much harder to predict and define. It is not as specifically tied to certain aspects of the curriculum and many collaborative materials currently available are supplementary in nature. Collaborative materials also have the potential to involve students in quite new activities that cannot be implemented in the traditional classroom. However, quite a number of existing programs originally intended for entirely different purposes can be used without modification as collaborative courseware

in ESL classes. Some collaborative exercises are designed for use by individual students working one-on-one with the computer, although often they are also suitable for pair or group work. Certain collaborative materials cannot be used by fewer than two students, but yet in some cases, these same materials can be used successfully by five to six students at each computer. If computer assisted materials are to be used during class time, this type of CALL is the most feasible for many institutions.

Facilitative CALL has the potential for the greatest impact in the form of word processing. There are a great deal of different word processors now that are already developed and in use. Their only drawback is computer availability.

Benefits Offered by Computer Assisted Learning

One of the greatest advantages of CALL is the high degree of individualization as instruction is self-paced. Teachers or students may choose what they want to teach, study, or review and often the option of determining the number and difficulty level of the questions to be answered. "Because the CALL environment provides privacy of communication and time, the student is evaluated by the computer on the basis of his individual performance. Thus negative peer and teacher feedback is eliminated." (Levine and Fechter, 1981). A positive result of such individualization is that: "The number of student

interactions in the target language is increased tenfold as compared to the number of such interactions in the traditional classroom." (P. Rosenbaum, 1969).

Another positive quality of CALL is the degree of humanization and personalization which may be achieved by means of creating a dialogue, or "computerlogue," between student and computer. To achieve a high level of personal communication, students may be addressed by name and personal information about each student may be incorporated into the program. In addition, humor, creativity, synthetic speech through a voice system, and special effects, such as sound and graphics, may provide the backdrop for a high rate of student success with the medium.

A third advantage of CALL is that immediate, positive reinforcement, as well as guided error messages, may be provided. Errors can be extensively analyzed, thus providing the students with a clear conception of their individual weaknesses. Students may also be guided to an easier or more difficult exercise according to individual performance.

Another advantage of CALL is that testing can become a learning process. Testing by computer provides greater flexibility than that of the traditional classroom setting as the computer is well suited to handle many testing variations, such as random presentation of questions, repetition of errors, or practice testing.

CALL is advantageous to the teacher as well as to the student. The computer can provide almost unlimited opportunity for drill and practice and can do so with tireless patience. Thus the teacher is free to teach more creative and stimulating materials and to focus on concepts, abstract relationships, data analyses, or student assistance when progress is halted or minimal. It can allow the teacher time to work on special learning situations which merit teacher direction and instruction. In addition, the instructor can take advantage of the automatic record keeping system and error analysis functions that can be built into a CALL program, providing further insight into the individual problems and needs of the student. A major benefit CALL provides the instructor, is flexibility. It can allow the teacher to work with the rest of the class while students take turns working one-on-one, in pairs, or small groups at the available computers. One last benefit CALL provides is that of a teacher's or researcher's aide as it allows for storing all computer documents, running automatic spelling checks, generating readability indexes, and providing editing techniques.

The Future of CALL

One factor that offers both promise and pitfalls for CALL is the continuous arrival of newer, more advanced technology. In the area of hardware, an exciting development in the use of interactive video hardware is that

of videodiscs under computer control which will undoubtedly be used to enhance CALL materials. Another is video assisted language teaching (VALT). It has the potential to provide more realistic, authentic contexts for many of the activities that now take place in the classroom. Recent advances in large-screen television technology are opening up the way for the emergence of the television/videodisc combination as a striking new aid to traditional classroom teaching.

An area of concern in the past has been the lack of communication among CALL users at all levels. In the area of ESL, this essential function is now beginning to be better served. Books on the principles and programming of CALL and practical information on hardware and software for CALL have begun to appear. Organizations such as the Center for Applied Linguistics (CAL), the National Clearinghouse for Bilingual Education (NCBE), the Computer Assisted Language Instruction Consortium (CALICO), and the CALL Interest Section of TESOL will help to provide information on a continuing basis. With the encouraging progress in this and other areas of concern, the future of computer assisted language learning in ESL seems bright.

Summary

A review of the literature indicates that computer assisted language learning is an effective method of teaching Limited English Proficient students. Clearly,

however, far more research is needed into the effectiveness and value of computer assisted ESL. The potential contributions to ESL courses and its relative neglect in the past argue for admission into the area of language learning.

This chapter reviewed the literature pertinent to the effects of computer assisted instruction on LEP students in a migrant classroom.

CHAPTER III
METHODS AND PROCEDURES

This chapter describes the subjects, materials, testing situation, and procedures in this study.

Materials

The language tests used for this study were the Woodcock Language Proficiency Battery (WLPB) and the Language Assessment Scales (LAS). Three ESL units consisting of four lessons in each were used in the form of paper and pencil lessons for the traditional ESL methods. The computer lessons consisted of four to eight lessons per unit accompanied by two distinct drill disks related to each unit.

Testing Situation

The WLPB subtests A, B, and C were administered to all second grade migrant students that participated in the study. All three subtests tested English oral language proficiency. This test was given to 22 second grade students individually prior to the beginning of the study in a migrant language room at one elementary school in the Yakima School District in Yakima, Washington.

The same subtests of the WLPB were utilized as a posttesting session 15 weeks after all three ESL units were completed.

Methods and Procedures

The purpose of this study was to determine whether computer assisted ESL instruction or the traditional ESL grammar translation teaching method was more effective in teaching LEP students English language proficiency.

The study involved 22 students in the initial portion with two students dropping out during the course of the study due to withdrawal from school. Both the experimental and control group were composed of 11 students.

A 15-week study was undertaken with the experimental group utilizing computer assisted instruction for approximately 20-25 minutes every day of the week; the control group was instructed in the same units as the CAI group, but in a more traditional visual aide, concrete objects, contextual clues, gestures, and pencil and paper form.

A posttest was given to all students after they completed the three units presented.

Subjects

The sample involved in the study included 28 students identified as needing ESL services all from the author's elementary school in the Yakima School District. All 28 students were administered the LAS. Out of 28 students, 22 were selected to participate in the study based on their Level 1 score on the LAS. The students were then randomly assigned to two groups. Eleven students became the

experimental group. Students in this group experienced computer assisted instruction in the author's migrant language room 20-25 minutes every day of the week.

The control group also consisted of eleven students and they experienced traditional ESL instruction in the author's migrant language room 20-25 minutes every day of the week.

Tests

Two tests were utilized in this study. The first was the Language Assessment Scales (LAS). The LAS contained two levels but only Level 1, (K-5), Form A, English was used. The level score of the LAS was used as a means of selecting the subjects to take part in the pretesting for the study. The test was divided into five subtests. In the first subtest, minimal sound pairs, the student listened to a tape and once they heard two words, had to say whether the words were the same or different. The second subtest, lexical, required the student to say what a picture was after it was pointed to. In the third, phonemes, the student was checked for pronunciation of words in repeating a word heard on tape. The fourth, comprehension, had the students listen to a tape and then point to the picture that showed what they heard. On the final subtest, production, the student listened to a story with pictures and after listening, had to retell orally what happened in it.

The second test, the Woodcock Language Proficiency Battery (WLPB), English Form, served as the pre and

posttest. This test was composed of eight parts of which three were used: Subtest A: picture vocabulary, Subtest B: antonyms-synonyms, and Subtest C: analogies. Subtests A, B, and C composed the oral language section of the WLPB and measured the student's oral language proficiency. In the first subtest, picture vocabulary, the student had to identify the name of a given picture orally. In the second, antonyms-synonyms, the student had to respond orally with an appropriate antonym of a word shown and the same process involving synonyms. In the third subtest, analogies, the student was shown an incomplete sentence or phrase and had to respond orally with an appropriate answer to complete the analogy.

Procedures

The LAS was administered to all second grade LEP students who were referred for ESL services provided in the author's migrant language resource room. Results from this test were analyzed, and the students were selected according to the lowest English level scores. Twenty-two LAS Level 1 students were chosen to participate in the study. The students were randomly assigned to two groups. Thus eleven students made up the experimental group and eleven composed the control group. The WLPB was then given to all twenty-two students serving as the pretest initially and as a posttest at the end of the study.

The ESL lessons organized for this study began with a couple of basic computer lessons to students in the experimental group. These introductory lessons contributed to the student's general computer literacy and acquaintance with keyboarding and computer functions as lessons were later introduced. They also promoted the student's ability to work independently. Before the initial ESL lessons, the students in the control group received similar introductory lessons prior to each ESL unit to guide their learning. Each lesson ran approximately 20-25 minutes in duration. Students in the experimental group were given names and numbers of their lessons as their only teacher's direction, unless assistance to technical problems or lesson-related questions arose. Students in the control group received the same ESL lessons but with the more traditional ESL methods which required more paper/pencil, small group interaction.

Experimental group students worked both individually and in pairs on the computers. When lessons for each ESL unit were completed, the students took end-of-unit tests to determine knowledge gained through the use of computer assisted instruction. An 80% or better score on computer lessons and lesson tests was required as a measure of proficiency of the ESL material presented.

Control group students worked primarily as a small group on ESL lessons with some individualized instruction. Students were introduced to lesson vocabulary through the

use of visual aids and concept cards. After each lesson, paper and pencil activities were used to complete the instruction. When ESL lessons were completed, the students also took end-of-unit tests to determine knowledge gained through the use of traditional ESL instruction. Here again, an 80% or better score on paper and pencil assignments and lesson tests was required as a measure of proficiency of the ESL material presented.

Both groups were taught three ESL units involving their related vocabulary and concepts. Each unit of the control group consisted of three ESL lessons with paper/pencil activities and an evaluation lesson. ESL units for the experimental group varied from four to eight lessons in each. Every CAI unit had skill builder disks that provided drill-and-practice activities and a test at the end of each.

This chapter described the subjects, materials, testing situations, and procedures for the organization and administration of this study.

Chapter IV will discuss the results of the study and will include the comparison scores of each subtest of the WLPB.

CHAPTER IV

ANALYSIS OF DATA

The purpose of this study was to determine whether computer assisted ESL instruction or the traditional grammar translation ESL teaching method was more effective in teaching LEP students English language proficiency.

This chapter contains a summary of the data from the pre and posttest results found in the study. The hypotheses of the research were as follows:

1. Computer assisted ESL instruction will lead to higher picture vocabulary test scores than will the traditional ESL teaching method.
2. Computer assisted ESL instruction will lead to higher antonyms-synonyms test scores than will the traditional ESL teaching method.
3. Computer assisted ESL instruction will lead to higher analogies test scores than will the traditional ESL teaching method.

The null hypothesis for each of the above research hypothesis was two-tailed with alpha set at .05.

All students were tested with the WLPB. Tables 1 and 2 show the raw scores for the pre and posttests of the oral language section which contained subtests A: picture vocabulary; B: antonyms-synonyms; and C: analogies. Tables 3 through 5 also present summaries of the analysis to

determine whether there were significant differences between the experimental group and the control group.

The experimental and control groups were initially made up of 11 students, but a student from each group withdrew from school, and subsequently, those data were not available. These unavailable data are represented by the symbol "*" in all tables.

Table 1 shows the results of the experimental group's pre and posttests from the oral section of the WLPB.

Table 2 depicts raw scores from the control group's pre and posttest on the same section of the WLPB.

Scores from the pretests and posttests in each category of the oral language section were analyzed to determine whether there was any statistically significant difference between the means of the experimental and control groups. This was accomplished by utilizing a t -test. The t -test computations are located in Tables 3 through 5.

Table 3 displays pre and posttest scores and the differences between those scores from the picture vocabulary subtest of the WLPB, oral section. Scores for both the experimental and the control group are shown.

Table 3 also shows that, at the .05 level of significance, the value of t is 2.101 at 18 degrees of freedom. The analyzed value of t was found to be 2.20.

Table 1
 Raw Scores
 Experimental Group
 Woodcock Language Proficiency Battery
 Oral Section

Subject	Picture Vocabulary		Antonyms-Synonyms		Analogies	
	Pre-Test	Post-Test	Pre-Test	Post-Test	Pre-Test	Post-Test
S1	6	5	12	12	8	11
S2	9	10	12	14	10	11
S3	0	2	0	0	0	1
S4	4	4	5	8	4	7
S5	7	8	8	6	4	5
S6	4	4	0	11	5	8
S7	4	5	4	10	1	6
S8	7	8	5	7	8	9
S9	5	9	6	11	8	10
S10	8	12	14	17	12	12
S11	2	*	3	*	0	*

*Data not available

Table 2
 Raw Scores
 Control Group
 Woodcock Language Proficiency Battery
 Oral Section

Subject	Picture Vocabulary		Antonyms-Synonyms		Analogies	
	Pre-Test	Post-Test	Pre-Test	Post-Test	Pre-Test	Post-Test
S1	3	5	4	6	5	6
S2	5	10	9	12	10	13
S3	0	3	0	0	0	5
S4	7	9	13	12	12	11
S5	3	7	11	8	6	8
S6	9	10	11	8	3	8
S7	4	4	5	5	2	5
S8	9	11	11	9	9	8
S9	4	9	6	8	7	10
S10	6	11	6	6	7	8
S11	0	*	0	*	0	*

*Data not available

Table 3

Pretest and Posttest Scores
Woodcock Language Proficiency Battery
Picture Vocabulary Subtest of the WLPB
Oral Section

Subject	Experimental Group			Control Group		
	Pre-Test	Post-Test	Difference	Pre-Test	Post-Test	Difference
S1	6	5	-1	3	5	2
S2	9	10	1	5	10	5
S3	0	2	2	0	3	3
S4	4	4	0	7	9	2
S5	7	8	1	3	7	4
S6	4	4	0	9	10	1
S7	4	5	1	4	4	0
S8	7	8	1	9	11	2
S9	5	9	4	4	9	5
S10	8	12	4	6	11	5
S11	2	*	*	0	*	*
N		= 10		N		= 10
Sum of Scores		= 14		Sum of Scores		= 29
Mean		= 1.40		Mean		= 2.90
t= 2.20						

[Note: Critical value of t for alpha = .05, (df = 18), two-tailed test = 2.101]

*Data not available

These data indicate a statistically significant difference in the means of the two groups involved in the study in the opposite direction, favoring the control group.

Table 4 presents pre and posttest scores and the difference between those scores, from the antonyms-synonyms subtest of the WLPB, oral section. Scores for both the experimental and control groups are shown.

Table 4 also displays that, at the .05 level of significance, the value of t is 2.101 at 18 degrees of freedom. The analyzed value of t was found to be 2.52. These data indicate a statistically significant difference in the means of the two groups involved in the study in favor of the experimental group.

Table 5 presents pre and posttest scores and the difference between those scores, from the analogies subtest of the WLPB, oral section. Scores for both the experimental and control groups are shown.

Table 5 also shows that, at the .05 level of significance, the value of t is 2.101 at 18 degrees of freedom. The analyzed value of t was found to be 0.128. These data indicate no statistically significant difference in the means of the two groups involved in the study.

Analysis of the results supported the research hypotheses for one of three dependent variables, the null hypothesis could not be rejected for a second variable,

Table 4
 Pretest and Posttest Scores
 Woodcock Language Proficiency Battery
 Antonyms-Synonyms Subtest of the WLPB
 Oral Section

Subject	Experimental Group			Control Group		
	Pre-Test	Post-Test	Difference	Pre-Test	Post-Test	Difference
S1	12	12	0	4	6	2
S2	12	14	2	9	12	3
S3	0	0	0	0	0	0
S4	5	8	3	13	12	-1
S5	8	6	-2	11	8	-3
S6	0	11	11	11	8	-3
S7	4	10	6	5	5	0
S8	5	7	2	11	9	-2
S9	6	11	5	6	8	2
S10	14	17	3	6	6	0
S11	3	*	*	0	*	*
N		= 10		N		= 10
Sum of Scores		= 30		Sum of Scores		= -2
Mean		= 3.00		Mean		= 0.20
t= 2.52						

[Note: Critical value of t for alpha = .05, (df = 18), two-tailed test = 2.101]

*Data not available

Table 5
 Pretest and Posttest Scores
 Woodcock Language Proficiency Battery
 Analogies Subtest of the WLPB
 Oral Section

Subject	Experimental Group			Control Group		
	Pre-Test	Post-Test	Difference	Pre-Test	Post-Test	Difference
S1	8	11	3	5	6	1
S2	10	11	1	10	13	3
S3	0	1	1	0	5	5
S4	4	7	3	12	11	-1
S5	4	5	1	6	8	2
S6	5	8	3	3	8	5
S7	1	6	5	2	5	3
S8	8	9	1	9	8	-1
S9	8	10	2	7	10	3
S10	12	12	0	7	8	1
S11	0	*	*	0	*	*
N			= 10	N = 10		
Sum of Scores			= 20	Sum of Scores = 21		
Mean			= 2.00	Mean = 2.10		
t= 0.128						

[Note: Critical value of t for alpha = .05, (df = 18), two-tailed test = 2.101]

*Data not available

while for a third variable, a significant statistical difference was found in the opposite direction.

This chapter has discussed the results of the study. Chapter V will present a summary of the study, as well as conclusions and recommendations for the study.

CHAPTER V
SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study was to determine whether computer assisted ESL instruction or the traditional grammar translation ESL teaching method was more effective in teaching LEP students English language proficiency. The sample consisted of 22 second grade students in one elementary school in the Yakima School District. The study was composed of an experimental group and a control group of 11 students each. Students were chosen on the basis of the level scores attained on the Language Assessment Scales (LAS).

The WLPB subtests for picture vocabulary, antonyms-synonyms, and analogies, which comprised the oral language section of the test, were given as a pretest and a posttest after all three ESL units and lessons were completed. The t-test was utilized to determine whether there was a statistically significant difference in the means of the experimental and control groups. The research hypothesis was accepted at the .05 level of significance for the means of one of the subtests, antonyms-synonyms. The null hypothesis could not be rejected at the .05 level of significance for the subtest, analogies. A statistically significant difference in the opposite direction was found for the subtest, picture vocabulary.

Conclusions

The results of this study indicate the following conclusions:

1. Analysis of the results supported the research hypotheses that computer assisted language learning showed a more positive effect than the use of traditional teaching methods in one out of three oral language areas.
2. In a second oral language category, the null hypothesis could not be rejected as results showed no statistically significant level of difference.
3. In a third category of oral language, the null hypothesis was not rejected as a significant statistical difference was found in the opposite direction.
4. It appears that students using computer assisted instruction do not perform as well in some areas of oral language as they do in others. CALL is only as good as the programmed software used by second language learners. Because of this, consideration may be given to acquiring software that more closely instructs through a wider variety of picture vocabulary graphics and drill-and-practice lessons similar to that provided by traditional ESL teaching methods.

Recommendations

The data in this study have shown that second grade students involved in computer assisted instruction showed significant improvement in one out of three oral language categories over those students in the control group. Based on the results of this study, the following recommendations are presented:

1. A wider selection of ESL software to choose from would enhance the use of computer assisted ESL programs.
2. The software should provide a wider variety of picture graphics with the assistance of real speech in order to create greater interaction during the lesson between computer and learner.
3. Computer assisted instruction should provide a larger variation of tutorial and drill-and-practice lessons similar to those provided by traditional ESL methods.
4. The software should also provide varying degrees of lesson speeds not only to accommodate the learner but to prevent boredom and frustration. The pace of ESL lessons on computers should allow for differences in the student's quick or slow learning abilities.
5. Future studies need to include more subjects, various grade levels, different age groups, and

perhaps different types of ESL software.

6. A larger number of subjects would permit the use of a more effective random sampling technique.
7. A replication of the study should include lengthening the time of the study.
8. A final recommendation is that further research be undertaken to determine the effectiveness of an entire ESL program using CALL to produce an increase in student's second language learning.

These recommendations represent only a small portion of the potential for research in the area of computer assisted language learning.

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APPENDIX A
TRADITIONAL ESL LESSONS

APPENDIX A

Traditional ESL Lessons

Food Unit

This unit introduces foods and food groups, along with the language, concepts, and situations associated with them. It provides students with opportunities to learn about foods through a variety of communicative activities. (Note: In discussing balanced meals, allow for the cultural diversity of your students. Examples of balanced meals may include the foods listed on school cafeteria menus.)

Vocabulary Selection List

Before presenting the lessons in this unit, review the suggested vocabulary list below. Select the vocabulary words and their derivatives that you want to emphasize. As you select vocabulary words, keep in mind the level of proficiency, age, grade level, and interests of your students. Also, when appropriate, select words of particular relevance to your region. You may want to add any previously acquired words that are appropriate for this unit.

Food Groups:

Breads and Cereals

Fruits and Vegetables

Meats

Milk Products

Fruits:

apple	blueberry	melon	plum
applesauce	cherry	orange	raisin
apricot	grape	peach	strawberry
banana	grapefruit	pear	watermelon
blackberry	lemon	pineapple	

Vegetables:

bean	celery	onion	spinach
broccoli	corn	pea	squash
cabbage	cucumber	pepper	tomato
carrot	lettuce	potato	vegetable soup
cauliflower	olive		

Breads and Cereals:

bread	cracker	pie	sandwich
cake	macaroni	pizza	spaghetti
cereal	noodle	rice	tortilla
cookie	pancake	roll	

Milk Products:

cheese	cream	milk	yogurt
cottage cheese	ice cream	pudding	

Meats:

bacon	duck	hot dog	roast
beef	fish	lamb	steak
chicken	ham	liver	turkey
chop	hamburger	pork	

Alternates for Meat:

bean	egg	nut	peanut butter
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Miscellaneous Food:

butter	honey	margarine	vinegar
dressing	juice	salad	water

Where We Get Foods:

bakery	farm	garden	restaurant
grocery store	butcher shop	supermarket	
school cafeteria			

Cooking and Serving:

bowl	fork	place setting	sink
cabinet	kitchen	plate	spoon
chair	knife	pot	stove
cup	napkin	refrigerator	table
dining room	oven	saucer	table manners
drinking glass			

How We Feel About Food:

full	hungry	thirsty	sick
------	--------	---------	------

What We Do With Food:

bake	cook	like	put on table
bite	cut	look at	smell
boil	dislike	mix	stir
broil	drink	need	swallow
buy	eat	order	taste
chew	fry	peel	wash

Related Words:

balanced	flat	lunch	smooth
breakfast	good	meal	snack
cold	hard	raw	soft
cooked	healthy	recipe	sour
dessert	hot	rough	sweet
dinner	juicy	round	

Level I

Objectives: Using physical responses, students will demonstrate an understanding of the language, concepts, and situations associated with food.

Procedures: Begin each lesson by introducing the selected concepts and vocabulary. Present the lesson activities. Complete each lesson by helping students use physical responses to summarize what they have acquired.

LESSON 1 - INTRODUCING CONCEPTS AND VOCABULARY

Materials: Concept Cards 19-23, real food (optional), Skillmaster 16

Identifying: Display the concept cards. Say **These are pictures of food.** Point to each card, and name the type of food shown. Say, **These are fruits. There are many kinds of fruits. These are vegetables. Do you like vegetables, Marisela?** Continue until all the cards have been introduced. To enhance acquisition of vocabulary, you may

also want to show real food. Now put the Concept Cards in a pile. Show students the picture of the fruit and say, **If this is a picture of fruit, stand up.** Explain that if you show them a picture of something other than fruit, they should remain seated. Show the cards one at a time, and talk about each one after students have decided whether or not it is fruit. Alternate between Card 19, Fruits, and the other cards. When students can identify the picture of that fruit, use another command with another card, such as **Raise your hand if these are vegetables.** Continue until students can identify all the cards.

Describing: Name the specific foods shown on each Concept Card. Hold up one card at a time and ask such questions as the following: **Who can find the bananas? (Julio), are bananas yellow? (Student nods yes.) Who can find the apple? (Jose) are some apples red? (Student nods yes.) Raise your hand if you eat apples.** Continue until all the foods have been identified.

Reinforcement: Skillmaster 16

LESSON 2 - BUILDING CONCEPTS AND VOCABULARY

Materials: Concept Cards 19-24, bulletin board, crayons, drawing paper, scissors, thumbtacks, Skillmaster 17.

Identifying: Display the concept cards and explain to students that food is divided into four groups, including

Fruits and Vegetables, Cards 19 and 20; Breads, Card 21; Milk Products, Card 22; and Meats, Card 23. Then explain that in order to be healthy, people need to eat balanced meals. Show card 24, Breakfast, Lunch, and Dinner, and point out how foods from different groups are eaten at each meal. Divide the students into groups, and assign a food group to each. Give each student a piece of drawing paper. Have each student draw a favorite food from the group's food group and cut it out. Collect all the drawings of food. Hold them up one at a time, and identify them by saying, **This is a tortilla. (Marta) likes tortillas. Tortillas are part of the bread group.** If appropriate, have the student come to the front of the class and point to that food on one of the Concept Cards. Save the drawings for the next activity.

Analyzing: Distribute at random the pictures from the previous activity. Divide a bulletin board into four sections, and label each with the name of a food group. Say **All the bread group pictures will go here; all the meat group pictures will go here; and so on.** Then ask students with pictures from the bread group to stand up and hold their pictures so everyone can see them. Say, **(Azad), cereal is part of the bread group. Bring your cereal to the board. I'll pin the cereal up in the bread section.** Continue in this manner until all the pictures are displayed on the board.

Reinforcement: Skillmaster 17

LESSON 3 - EXTENDING CONCEPTS AND VOCABULARY

Materials: Vocabulary Cards, Skillmaster 18

Analyzing: Select and display the Vocabulary Cards showing foods. Point to each card, and use the name of the food it depicts in a sentence. Then ask students to respond to such commands as the following: **(Juan), point to the crackers (Sumi), point to the potatoes.** Continue until all the cards have been identified. Then give each student a Vocabulary Card showing the type of food. As you give out the cards, talk about the foods and the groups they belong to. Have students hold their cards in front of them and stand side by side against one wall of the classroom. Say, **All those holding pictures of fruits may take two steps forward. All those holding pictures of meats may take one hop forward.** Continue in this manner, alternating food groups and varying the commands, until one group reaches the opposite side of the classroom first. Continue the activity until students feel comfortable identifying the groups.

Analyzing: Distribute an even number of Vocabulary Cards to each student. Have students take turns picking cards from each other. Whenever they have two cards showing foods from the same food group, they can put the pair down with the pictures showing. The first student to lay down all of his or her cards wins. Comment on students' choices. For example, say **(Yasmin) chose grapes and pears. Grapes and pears are fruits. They're part of the fruits and**

vegetables group.

Reinforcement: Skillmaster 18

LESSON 4 - EVALUATION

Materials: Concept Cards 19-23, Vocabulary Cards, Skillmasters 19-20.

Ask students to respond to the commands suggested below to demonstrate acquisition of the vocabulary words and concepts introduced in Level I. Accept all reasonable responses.

Display Concept Cards 19-23.

1. Point to the meats.
2. Point to the vegetables.
3. Point to the fruits.
4. Point to the breads.
5. Point to the milk products.
6. Point to a piece of meat.
7. Point to the eggs.
8. Point to the peppers.
9. Point to the apple.
10. Point to a roll.

Display the Vocabulary Cards showing foods that have been used in this unit.

11. Pick up something from the milk group.
12. Pick up something from the bread group.
13. Pick up something from the meat group.
14. Pick up something from the fruits and vegetables

group.

15. Pick up something people might eat for breakfast.

Display the Vocabulary Cards showing foods that have been used in this unit.

16. Hold up the lettuce.

17. Hold up the beans.

18. Hold up the carrots.

19. Hold up the crackers.

20. Hold up the oranges.

For further evaluation, use Skillmaster 19. For further reinforcement, use Skillmaster 20.

Extension activities for Level I may be found on Page 51.

APPENDIX B
COMPUTER ASSISTED ESL LESSONS

APPENDIX B
COMPUTER ASSISTED ESL LESSONS
FOOD UNIT
CROAKER'S CAFE

**STUDENT
OBJECTIVES:**

Upon completion of the tutorial, the student will be able to

- identify different food items
- identify the three meals of the day
- recognize different components of each meal
- show aural/oral comprehension of the vocabulary by responding with appropriate input

CROAKER'S CAFE VOCABULARY

Breakfast

1. orange juice
2. grape juice
3. apple juice
4. eggs
5. pancakes
6. cereal
7. toast
8. biscuits
9. muffins
10. sausage
11. bacon
12. ham

Lunch

1. soda pop
2. chocolate milk
3. water
4. hamburger
5. hot dogs
6. sandwiches
7. french fries
8. potato chips
9. salad
10. apple
11. banana
12. orange

Dinner

1. milk
2. punch
3. lemonade
4. chicken
5. fish
6. steak
7. baked potato
8. carrots
9. peas
10. ice cream
11. cake
12. cookies

CROAKER'S CAFE SAMPLE GRAMMATICAL STRUCTURES

Each grammatical structure is followed by an example.

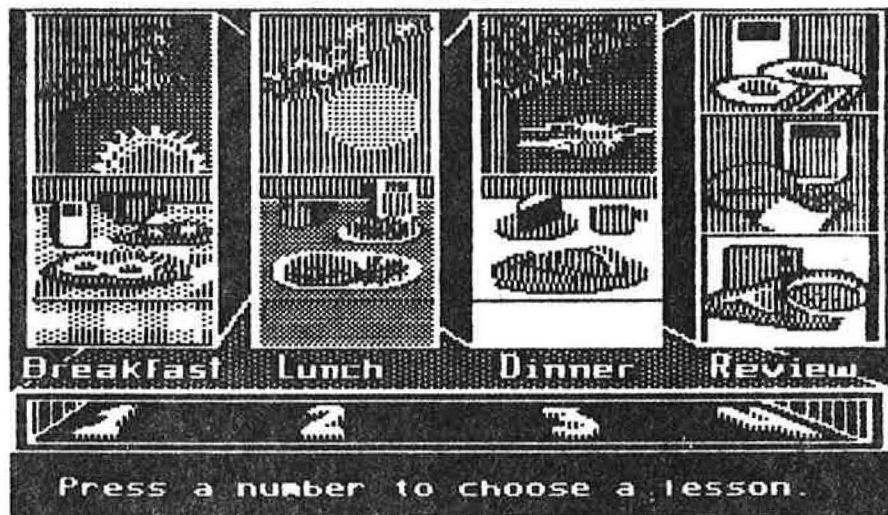
1. This is (food item).
This is cereal.
2. These are (food items).
These are muffins.
3. I like (food item).
I like cereal.
4. I don't like (food item).
I don't like muffins.
5. Do you want to (eat, drink) (food item), (food item), or (food item)?
Do you want to eat cereal, pancakes, or eggs?
6. I want the (food item).
I want the pancakes.
7. I want to (eat, drink) (food item).
I want to drink apple juice.
8. Is this (food item)?
Is this cereal?
9. Are these (food item)?
Are these pancakes?
10. This is (food item), not (food item).
This is bacon, not sausage.

IV. The Lessons

CROAKER'S CAFE CHARACTERS

- Frieda Frog is the waitress. She introduces the different food items.
- Mr. Muncher is the customer. He orders breakfast, lunch, and dinner and identifies the different food items.

This is the menu of Croaker's Cafe.



The menu is divided into four lessons.

1. breakfast
2. lunch
3. dinner
4. review

The student needs to press a number to choose a lesson.

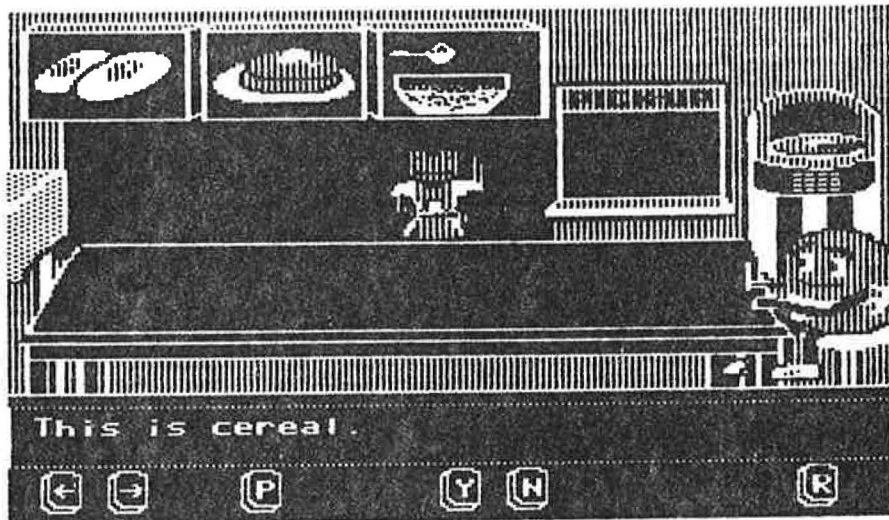
EXAMPLE: If the student wants to work on the breakfast lesson, s/he presses the 1 key.

THE TUTORIAL LESSONS

Lessons 1 - 3 are divided into three rounds.

ROUND 1--In this introductory round,

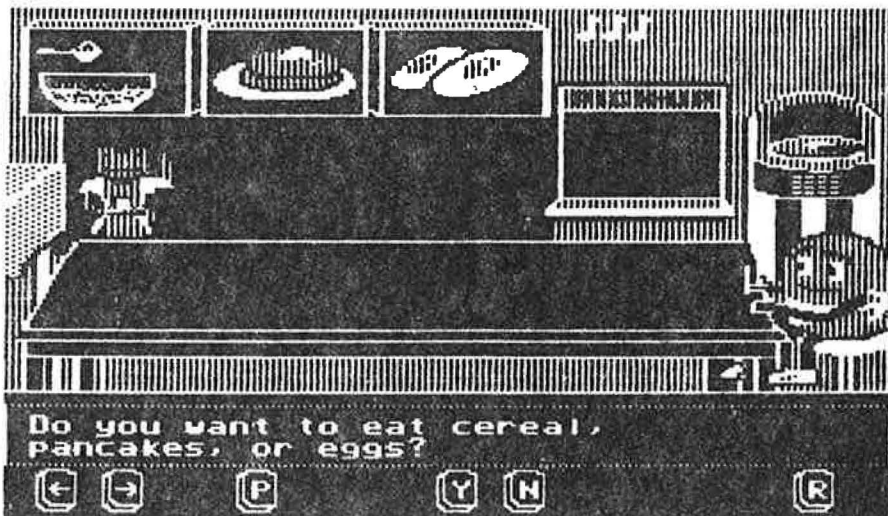
- using the grammatical structures "This is (food item)" and "These are (food items)," Frieda Frog introduces the different food items.
- using the grammatical structures "I like (food item)" and "I don't like (food item)," Mr. Muncher says if he likes or dislikes the food items.



The student uses the left and right arrow keys to move Frieda Frog across the screen.

ROUND 2--In this round,

- Mr. Muncher is shown three different food items.
- using the grammatical structure, "Do you want to (eat, drink) (food item), (food item), or (food item)?" Frieda Frog asks Mr. Muncher which food item he wants.
- using the grammatical structure, "I want the (food item)," Mr. Muncher chooses a food item.

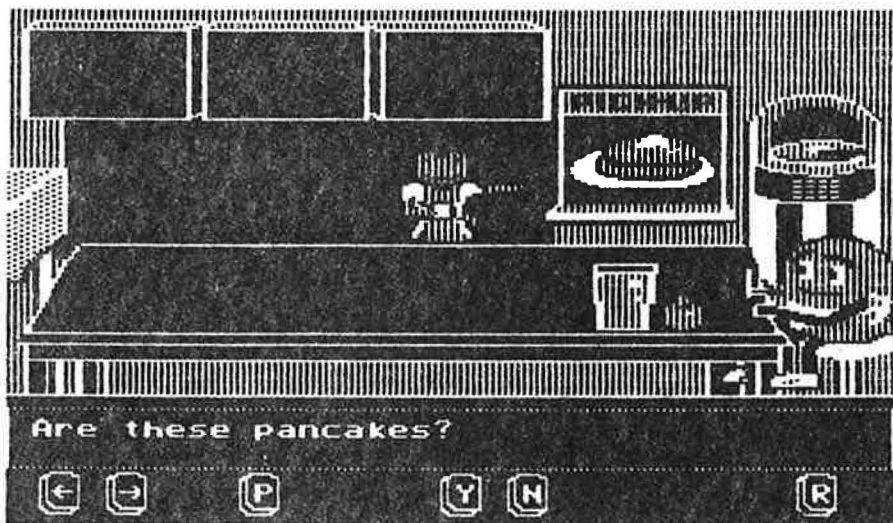


The student uses the left and right arrow keys to move Frieda Frog across the screen. The student needs to move Frieda under the food item that Mr. Muncher wants. The student should press the P key to pick the food item.

- When the student picks the correct food item, s/he is awarded a musical note. At the end of the round, the student can play the jukebox to listen to the musical notes that s/he won. Pressing the P key plays the jukebox.
- If the student does not pick the correct food item, s/he gets a second try. If the student does not pick the correct food item on the second try, s/he is told the correct answer.

ROUND 3--In this round,

- using the grammatical structure, "I want to (eat, drink) (food item)," Mr. Muncher asks for a specific food item.
- a food item appears in the pickup window.
- the student is asked if the food item in the pickup window is what Mr. Muncher wants. The grammatical structure, "Is this (Are these) (food item)?" is used.



The student uses the Y and N keys to answer the YES/NO questions.

- When the student answers the YES/NO question correctly, and the food item is what Mr. Muncher wants, the student is given positive feedback. The food item is placed on the counter for Mr. Muncher to eat or drink, and Mr. Muncher says, "I like to (eat, drink) (food item)."
- If the student answers the YES/NO question incorrectly, and the food item is what Mr. Muncher wants, s/he gets a second try. If the student does not answer correctly on the second try, s/he is told, "This is the (food item).\" The food is not put on the counter for Mr. Muncher.

EXAMPLE: Mr. Muncher wants to eat toast. Toast appears in the pickup window. The student is asked, "Is this toast?" The student presses the N key and receives appropriate feedback for the incorrect answer. S/he is then told, "This is the toast."

- When the student answers the YES/NO question correctly, but the food item is not what Mr. Muncher wants, the student is given positive feedback. Then s/he is told, "This is (food item), not (food item)."

EXAMPLE: Mr. Muncher wants to eat biscuits. Muffins appear in the pickup window. The student is asked, "Are these biscuits?" The student presses the N key and receives positive feedback. S/he is then told, "These are muffins, not biscuits."

- If the student answers the YES/NO question incorrectly, and the food item is not what Mr. Muncher wants, s/he gets a second try. If the student does not answer correctly on the second try, s/he is told, "This is (food item), not (food item)."

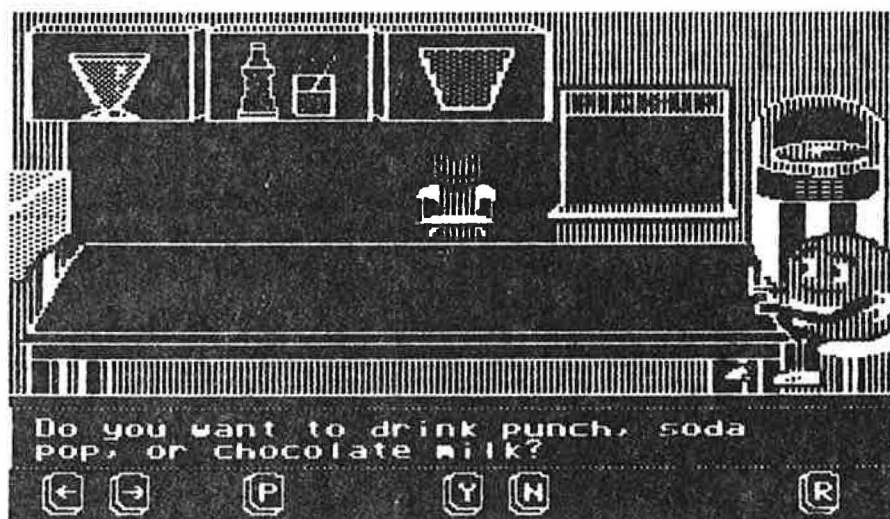
EXAMPLE: Mr. Muncher wants to eat eggs. Pancakes appear in the pickup window. The student is asked, "Are these eggs?" The student presses the Y key and receives appropriate feedback for the incorrect answer. S/he is then told, "These are pancakes, not eggs."

At the end of each lesson, the student is returned to the menu, where s/he can choose another lesson.

THE REVIEW LESSON

LESSON 4--This lesson is a review of the vocabulary taught in lessons 1-3.

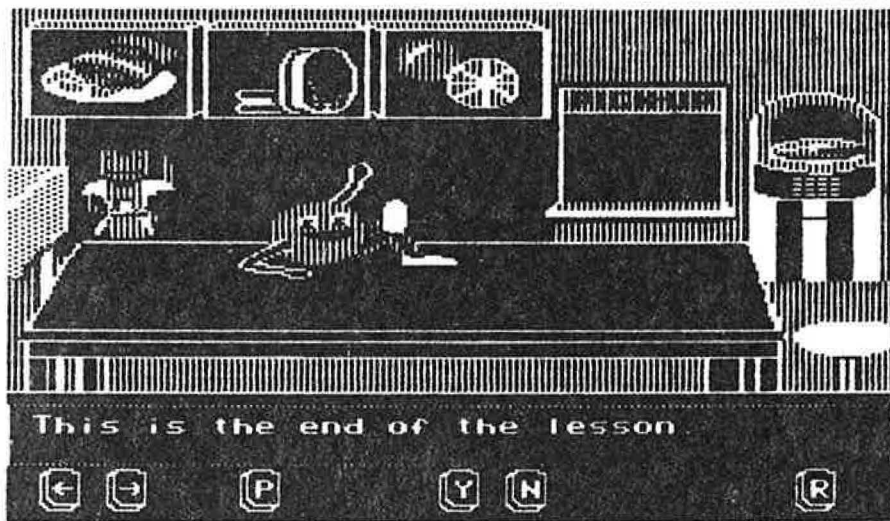
- Mr. Muncher is shown three different food items.
- Using the grammatical structure "Do you want to (eat, drink) (food item), (food item), or (food item)?" Frieda Frog asks Mr. Muncher which food item he wants.
- Using the grammatical structure "I want to (eat, drink) (food item)," Mr. Muncher chooses a food item.



The student uses the left and right arrow keys to move Frieda Frog across the screen. The student needs to move Frieda under the food item that Mr. Muncher wants. The student should press the P key to pick the food item.

- If the student does not pick the correct food item, s/he gets a second try. If the student does not pick the correct food item on the second try, s/he is told the correct answer.
- If the student picks the correct food item, Frieda places it on the counter for Mr. Muncher to eat.

At the end of the lesson, Mr. Muncher feels so energetic after eating such good food that he dances on the counter to the tune of "Mr. Muncher's Food Song."



Here are the words to "Mr. Muncher's Food Song" so the student can sing along as Mr. Muncher dances.

"Mr. Muncher's Food Song"

Hey there, Frieda, I'm the Muncher Man.
Fix me some breakfast as fast as you can!

I want the orange juice, apple juice, grape juice too,
Pancakes and sausages with eggs Ouoooo - Ouoooo!

I like the cereal, biscuits, toast and jam.
And don't forget I also love the bacon and ham!

Well hello now Mr. Muncher, it's time for lunch.
Have some oranges, sandwiches, fries, and punch.

Come on now Mr. Muncher, you're not getting any thinner.
There's milk, fish, carrots, peas, and cake for dinner.

You love to eat it, drink it every day.
There's always good food here at Croaker's Cafe. Yeah!!!!!!