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CARLOS: Computer-Assisted Instruction in Spanish at Dartmouth College.

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The computer-assisted instruction project in review Spanish, Computer-Assisted Review Lessons on Syntax (CARLOS), initiated at Dartmouth College in 1967-68, is described here. Tables are provided showing the results of the experiment on the basis of aptitude and achievement tests, and the procedure for implementing CARLOS as well as its place in the course routine are discussed. The article notes attitudes toward CARLOS as measured by an evaluation questionnaire filled out by the participants, and, in conclusion, comments on the cost and future of the project. Instructions for use, the program for Lesson Ten, and a sample lesson are included in the appendixes. (JH)

CARLOS:
COMPUTER-ASSISTED INSTRUCTION
IN SPANISH
AT DARTMOUTH COLLEGE

Kiewit Computation Center

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Languages

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APPENDICES

f. Summary

The computer-assisted instruction project in Spanish initiated at Dartmouth is unique for its approach to instructors' and students' problems at a practical level and for its comparative simplicity and economy. The exercises from a conventional review grammar were inputted together with correct answers, predictable errors, and advice to the student to be manipulated by a uniform control program, thus eliminating any costly and complicated reprogramming for the fifteen individual lessons. The program became a routine segment of a review course in Spanish, and achievement scores indicated that students performing the same work almost completely on their own outside of class with the computer compared very favorably with those who did the same work under the close supervision of their instructors. On an attitude rating scale marked by the CAI participants, every one of the questions received an average response which was favorable to the program.

II. Introduction

CARLOS (for Computer-Assisted Review Lessons On Syntax), as it was conceived and implemented at Dartmouth College in 1967-68 is felt to be unique among CAI projects for several reasons, some negative and some positive. First, the program had its origin not in pedagogical theory but in the day-to-day necessities of teaching and learning Spanish. Furthermore, the material used in the series was not merely provisional or experimental but was used as the sole basis of actual written grammar homework for those students who participated. Nor did CARLOS require the teamwork of a large number of collaborators; this writer did the bulk of the programming and lesson preparation for the computer as well as serving as the instructor in the classroom and the director of all three sections of Spanish 2, the level at which CARLOS was used. Thus one person could experience all of the problems connected with the program and, most importantly, remain sensitive to students' reactions. Finally, the time-sharing system at Dartmouth is the overriding factor which makes CARLOS practical, economical, and, judging by the results obtained, successful.

Further motivations for CARLOS are similar to those inherent in other CAI projects. The time-sharing system makes possible a flexibility in scheduling which is very attractive to the student. The participants currently can work on any lesson they choose at any time between 8:00 a.m. and 8:00 p.m., Monday through Saturday, and this schedule will be gradually expanded as the new GE-625 system is further implemented. Ideally a student may now go to CARLOS at any time in the semester for the preparation of an assignment, for extracurricular review for his final examination, or for review

during higher-level Spanish courses where he is expected to have already mastered the material. Since the machine is absolutely unfeeling, a student may repeatedly write the same drills until he has mastered the materials without needing to feel that he is bothering his instructor with "stupid mistakes," which may occur because of a shallow or too distant background. Any mistakes the student makes are entirely private and of course are instantly corrected for him.

From the instructor's standpoint the savings in time is incalculable. Among the participants in CARLOS during the first term in which it was implemented,242 lessons of written homework were performed on the computer. Furthermore the instructor can be assured that the corrections, written advice, and comments are carefully read as soon as the teletype produces them; we can never be certain of this with written comments in the margins of students' homework.

This report contains concrete information on the procedure for implementing the program, the place of CARLOS in everyday curriculum, the effectiveness of CARLOS in the mastery of Spanish grammar, students' attitudes, the cost of CARLOS, and its future at Dartmouth.

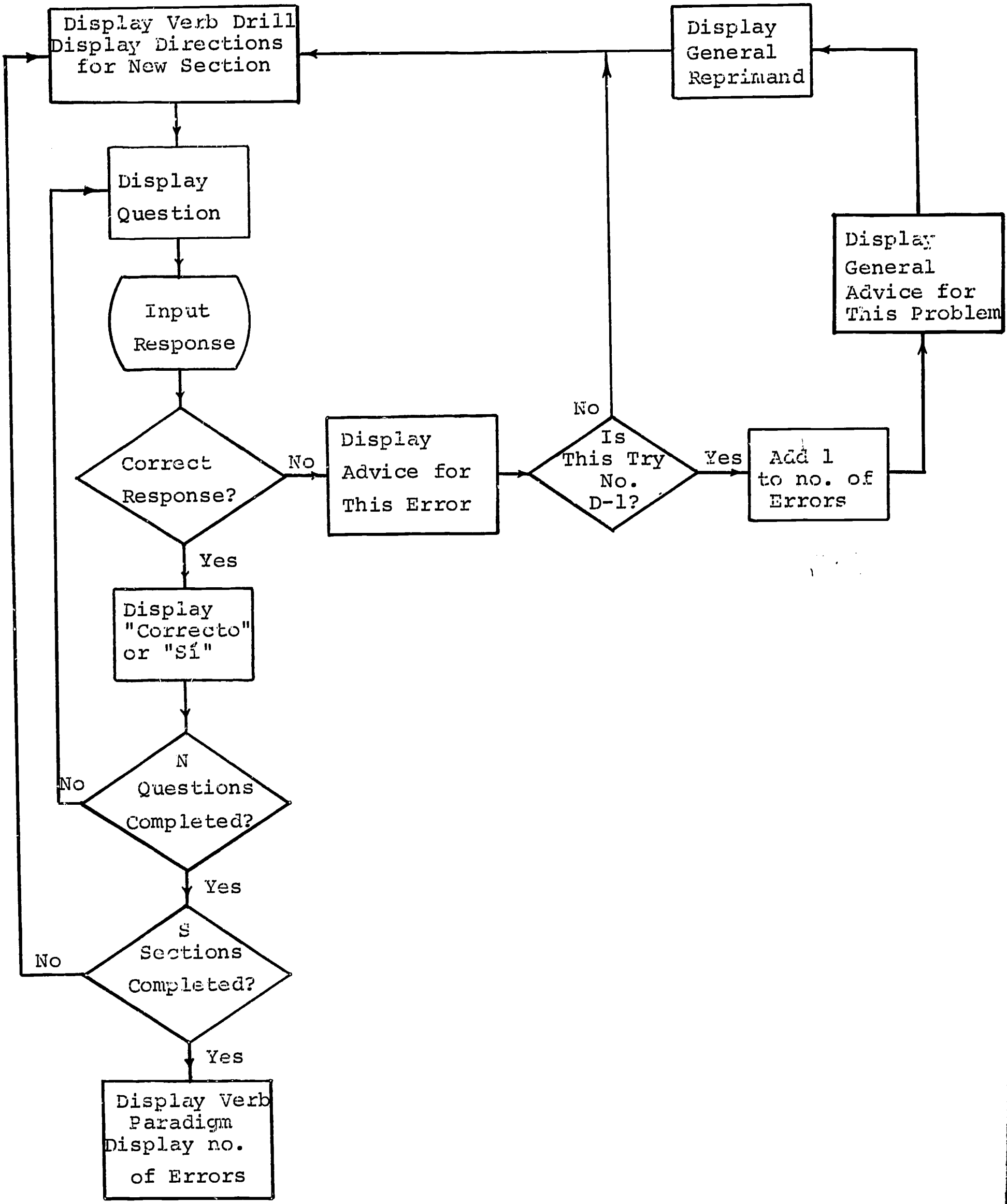

Figure 1. Flow diagram for original control program.

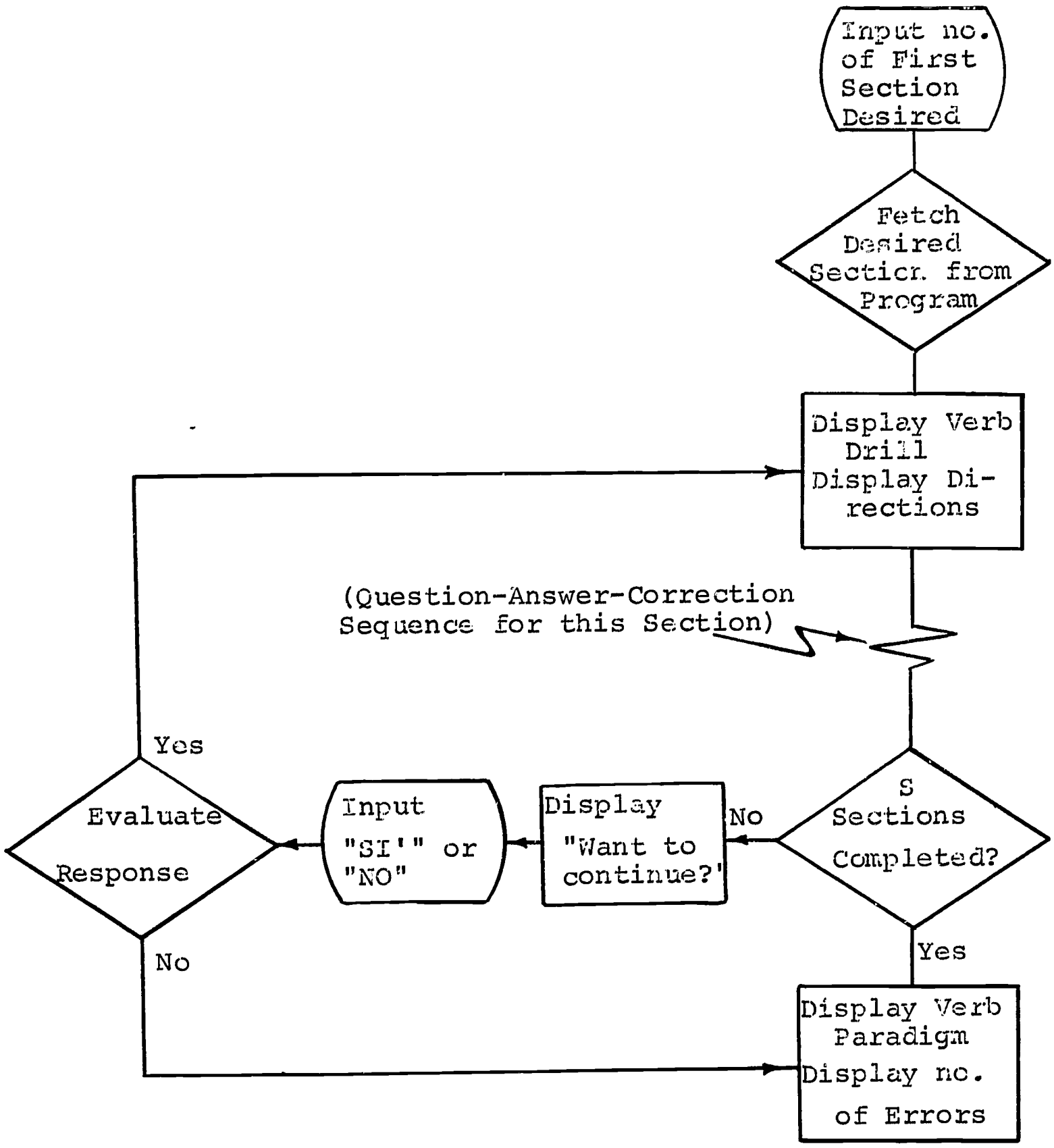

Figure 2. Modification of control program to allow entry and exit at student's discretion.

III. Procedure for Implementing CARLOS

With the advent of the GE-625 time-sharing system and its capability for string functions, the writer familiarized himself with the manipulation of string data and constructed some crude control programs which made simple dialogue with the computer possible. An undergraduate student was hired under a federal work-study arrangement for eight weeks in the summer of 1967 to develop a variety of such control programs. With these programs, written in BASIC, it was then possible to "plug in" any data desired. During the following school year these skeleton programs were adapted by the writer for use in the actual CARLOS series. Figure 1 shows the flow chart of the earlier chapters in the series. As the reader can observe, the student must work his way through a lesson from beginning to end in order to have his paper graded. However, when the lessons became longer and more difficult it became necessary to modify the control program as shown in Figure 2. Now the student may select the section of a particular lesson with which he wants to begin, and he may elect to terminate his session with CARLOS and have his paper graded at the end of any group of exercises within the lesson. The list of an actual program together with a lesson as performed by a student appear in the Appendix of this report.

Prior to the insertion of a lesson into CARLOS the writer surveyed the grammar drills of the classroom text, A New Shorter Spanish Review Grammar, by Castellano and Brown (Scribner's). From this intuitive survey the exercises were modified to fit into CARLOS. The criteria for excluding a particular question or group of questions from CARLOS were: ambiguity (an excessive number of possible correct answers), complexity (sentence-length translations

with too many possible answers), triviality (translation into English of very short items), or excessive length (an increased likelihood of typographical errors).

The next stage of preparing the material perhaps accomplished the most for the usefulness of the program. Various bits of advice, including references to page and section numbers in the text, were inserted near the beginning of many sections of the lessons so that errors anticipated by the instructor would be met with specific advice from CARLOS if the student was not beginning a section or topic correctly, if he had not read the grammar rules carefully, or if he had not adequately studied the model sentences and directions given (totally in Spanish after chapter two) at the beginning of each section. A copy of this textbook has been left in the Computing Center library for consultation by the user, in case he is not enrolled in a course that is using the book currently.

The format selected for inputting the CARLOS exercises is clearly a compromise. The most urgent concern was that enough freedom be allowed so that the students would not be made to feel that the machine was a tyrannical pedant which could only recognize a single correct answer for each stimulus. On the other hand the concept of a control program with easily detachable data for each lesson dictated that all of the data must be uniform and not cumbersome.

The exercises for a given lesson in CARLOS were inputted in the following manner:

1. Appropriate instructions for each group of exercises were supplied (in Spanish) along with a model clarifying what was

expected of the student, when this was thought necessary:

ESCRIBE EN ESPAN*OL SO'LO LAS EXPRESIONES ENTRE PARE'NTESIS. DOS RESPUESTAS DEBEN ESCRIBIRSE ASI':

ESTE'--ESTUVIERA

("In this section you are to write the appropriate form of each verb within parentheses. Two answers are to be written thus:")

2. Each stimulus was then entered exactly as the student should see it:

LOS VI (RUNNING) HACIA LA TIENDA.

3. The correct answer was then entered:

CORRER

4. Quite often there were two correct answers. If so, an alternate answer was entered here: CORRIENDO. If there was no alternate answer to a question, an "A" was typed into the program in this slot. (The questions were selected and the instructions were worded in such a way that no more than two correct answers per question were possible.)

5. If a particular student error in this question was anticipated, then that error was entered in this slot. For example, the student would very likely fail to use the infinitive in

ANTES DE (READING)LO YA SABI'A EL CONTENIDO.

Consequently, we entered the following as the "first predicted error":

LEYENDO

If no error was predicted, an "X" was entered here.

6. If we chose to anticipate a second error, this would next be entered in. Again, an "X" was entered if no particular error was anticipated.

7 and 8. In these two slots were inserted the specific items

of advice and commentary to "first predicted error" and "second predicted error" respectively. It was this feature of CARLOS which lent a somewhat personal touch to the program, indicating to a student (sometimes in a rather stern "tone of voice") why he missed the question, what to watch for, and what page or section of his textbook he ought to consult for help on this point. For making the above error the student was told, "VE'ASE 72:3 DE TU TEXTO." The New Shorter Spanish Review Grammar was particularly useful at this juncture, since the grammar in the book is arranged under conveniently numbered headings. If there were no predicted errors, then these slots were simply filled in with X's.

9. The last slot of the data section was reserved for general advice (sometimes worded rather strongly!) to the student who "struck out," i.e., used up all the opportunities for answering the question. This piece of advice was not in response to any particular error but was a general statement directing the student usually to the section or page number in his book where the point was covered. If no such comment was to be entered here a "B" was typed in. A typical statement for this slot was, "ESTUDIA OTRA VEZ LA SECCIO'N 47 DE TU LIBRO."

As the listed program in the Appendix indicates, the control of this data was completely separate from the actual grammar and comments entered in the data lines. On line 500 a series of numbers was written, each number followed by a comma. These numbers conveyed the following items of information:

1. Number of sections in the lesson.
2. Number of questions in section 1.
3. Number of tries permitted (plus 1) for each

question in section 1.

4. Number of questions in section 2.

5. Number of tries permitted (plus 1) for each question in section 2., etc.

A missed question was not counted as an error in the final tally unless the student had used his permitted number of tries and still failed to give a correct answer. When a question was thus officially missed, the student was then given the answer or answers in the following form:

LA RESPUESTA ES--A QUIEN
O QUIZA'S--QUE

Following this the student was given the most general advice within the program: JUAN, REPASA ESTE PUNTO, POR FAVOR. If the question was correctly answered, the student received the message CORRECTO (or perhaps SI'). If the response was incorrect and the student had not used up his tries, he was told NO or OTRA VEZ ("again").

In this series of lessons an informal verb drill was woven into each lesson so that the student was asked to repeat out loud a paradigm of a given irregular verb in the preterite or imperfect subjunctive. At the ends of most of the lessons there was a "verb sing-along": AHORA VAMOS A CANTAR JUNTOS...("Now let's sing together...") and the correct forms of the verb were then given.

Various greetings and farewells were included at either end of the program in an effort to personalize CARLOS as much as possible. During a period when Dartmouth's time-sharing system was experiencing rather severe difficulties, the students were told at the end of their lessons, after they were given (in Spanish) a report on their performance for the lesson, "(Student's name), I appreciate very much your patience with me. Until the next session." And in the final

lesson, CARLOS bade a rather melodramatic farewell: "(Student's name), I hope that you practice much the grammar that you have learned with me and that you do really well in the final exam."

The errors which occurred during the composition of a CARLOS lesson by the instructor were of two main types. First and most numerous were typographical errors, which could mean that the number of slots per question would be incorrect and thus the program would be inoperative. Errors in spelling were caught by the instructor when he worked his way through a lesson question by question, just as the student would later do. Any question could be freely modified at this stage. Grammatical errors or material that was out of sequence with the textbook were also discovered here. When the instructor had worked his way through the lesson a sufficient number of times to be satisfied with it, the program was moved from his personal file to the computer library where it became immediately available for student use. The margin of time therefore between proofreading the "copy" for a CARLOS lesson and use by the students was but a fraction of the time that would be necessary to run a mimeograph stencil and distribute paper copies of material to individual students. When errors occasionally slipped by the instructor in the proofreading stage and into the library the students lost no time in pointing these out, and corrections were then made on the material in the library. A library program could be removed from the computer and replaced as quickly and as easily as removing and replacing a book on a shelf.

A large share of the actual inputting of the data was performed by the instructor's wife, who had had no previous programming experience. The only instructions necessary for inputting were those having to do with the eight slots per question, as described above.

IV. The Place of CARLOS in the Course Routine

It is highly significant to note that there were neither positive nor negative emotional attitudes among the participants toward the computer itself, but that these students simply took CARLOS for granted as part of their course in Spanish. Nearly all of the participants had had previous experience with the computer. They responded emphatically in an attitude questionnaire at the termination of the course that they had felt neither fear nor hostility toward the computer prior to the course. Furthermore, there was certainly no sense of enchantment or "halo effect" attached to the program; the sheer regularity of fifteen lessons of grammar exercises, each requiring about half an hour per run, was enough in itself to neutralize any posible fascination with the gadgetry of the program.

At the outset of the course the students in the two sections of Spanish 2 taught by Turner (there were three sections in all) were offered the option of doing their written grammar drills on the computer. Of twenty-three regularly enrolled students in these two sections, sixteen opted to use CARLOS and four wrote out the same drills. The remaining three in Turner's sections had only the benefit of the classroom drill, which only occasionally used these drills orally. The ten students in the third section, taught by a native instructor, studied the grammar and did all the drills orally in class. The grammar points were explained at the time that the drilling was done. Thus, these drills formed the nucleus of the classroom experience for the ten students not taught

by Turner. In Turner's sections, the drills were relegated largely to homework assignments (with CARLOS or written out to be corrected by Turner); the drills were not used in class to any great extent. The CARLOS participants were told that they were to submit for the instructor's perusal their best performance of each CARLOS lesson. They were repeatedly told that there was no deadline for submitting each exercise; they were simply to submit their best performance. The exercises were examined to see whether a student might be experiencing severe difficulties with a particular point of grammar. Furthermore, this check provided the best opportunity to note the occurrences of machine malfunction; occasional failure to recognize correct responses or turning off completely were the primary distractions. Occasionally comments were hand-written by the instructor on the students' lesson sheets. The lessons were then recorded in the grade book with the number of errors and then returned to the students. It caused no problem to the instructor if the exercises were handed in at different times since the lesson number was printed in the heading of the teletype sheet along with the student's name. Nevertheless, the lessons were turned in quite regularly.

These exercises, taken from the classroom text, were sometimes adapted for intensive oral drilling which made up the bulk of the class routine.

In general, CARLOS made possible a de-emphasis of routine written exercises and allowed for greater attention to free compositions. The only regularly handwritten comments to the students were thus reserved for their major free compositions. It appeared that these notes were taken much more seriously than they would have been, had all of the routine exercises likewise been corrected

with time-consuming red-pencil comments. In addition all of the students attended a conventional language laboratory and listened to a series of tapes not coordinated with the classroom text.

Since the prime motivation of the CARLOS program was the improvement of the students' learning experience, the program could only be justified on the basis of the participants' achievement. The most basic question to be dealt with was, did those students using CARLOS for their written drillwork master Spanish grammar as effectively or more effectively than those who did not use CARLOS?

While educational research testing is difficult in real classroom situations, the structure of our Spanish 2 course seemed optimum for measuring the effect of CARLOS. Spanish 2 at Dartmouth is primarily a review course in Spanish grammar. The students have already learned enough Spanish at this stage so as not to make haphazard errors which could not be anticipated in this program. Two sections of the course were taught by Turner, a total of twenty-three students, sixteen of which elected to use CARLOS. The ten students in the third section were taught by a native Spanish instructor under the supervision of Turner. The other instructor used the same text and the drills. All of the students in the course had taken the CEEB SAT-Verbal tests and the CEEB Spanish Reading test prior to taking the course, and these scores were available for purposes of comparison. In addition, the students all took the same midterm and final examinations. Within the final examination certain blocks of grammar questions were included which were taken directly from the textbook exercises used in the conventional grammar work (for the non-CARLOS students), and in CARLOS. The scores for each student's performance in these portions of the final examination were isolated for use in comparing

the CARLOS and non-CARLOS students. And finally, CEEB Spanish Reading test scores for each of the Spanish 3 students before and after the course were also available.

Table 1 shows five significant points of contrast in the performance and aptitude of the CARLOS and non-CARLOS students. Item one is the average SAT-Verbal Aptitude score for each group. Item two is the CEEB Reading test score before the course, and Item three is the average score after the course. Next is the average number of points of improvement in the CEEB Spanish Reading test for each group. Item five is the average number of raw points (out of 142 possible points) missed in the sections of the final examination which covered specifically those items which were studied with the computer (for the CARLOS group) and conventionally (for the non-CARLOS group). These figures dispelled our initial suspicion that perhaps the superior performance of the CARLOS group was due simply to a higher overall verbal ability. Thus the performance of the CARLOS students appears to be relatively higher in the areas noted in Table 1, while the verbal aptitude of this group, according to the test given, was lower than that of the other group.

Table 2 matches by correlation coefficients those pairs among the items described above which were thought to be related. While the results shown in Table 1 did look encouraging, it was felt that coefficients of correlation between all of the possible pairs of data for each group would be more helpful and indicative of the relative effectiveness of the teaching methods employed. And indeed some impressive patterns among the data did become apparent.

Table 1: Aptitude and Achievement Scores for CARLOS and non-CARLOS students (all figures are averages)

	CARLOS	Non-CARLOS	Difference
1. SAT-Verbal	590.0	615.5	25.5
2. CEEB Spanish Reading, before course	515.7	497.9	17.8
3. CEEB Spanish Reading, after course	582.6	538.7	43.9
4. No. points improvement in CEEB	59.4	30.7	28.7
5. No. points missed on grammar on final examination	45.7	72.1	26.4

Table 2: Correlation Coefficients for Scores for CARLOS (C), non-Carlos (N), and all students (A)

		SAT-Verbal	Reading, before	Read., after	Improv't
Reading, before	(N)	.483			
	(C)	.223			
	(A)	.345			
Reading, after	(N)	.316	.737		
	(C)	-.062	.483		
	(A)	.064	.631		
Improv't, reading	(N)	-.396	----	.307	
	(C)	-.200	----	.799	
	(A)	-.324	----	.623	
Missed questions on final*	(N)	-.080	----	-.616	-.152
	(C)	-.098	----	-.823	-.580
	(A)	.043	----	-.757	-.521

* Since this compares missed questions with the other items, a favorable correlation here would be negative.

The most evident finding among the coefficients is the set of figures in the SAT-Verbal column. Here it is seen that there is either a negative or a very small positive correlation between verbal aptitude and the showing of each student in (1) the CEEB Spanish Reading test taken after Spanish 2, (2) number of points improved in the CEEB Reading test, and (3) performance in the grammar test. This appears to prove that, especially in the case of the CARLOS participants with their superior performances, the achievement of the students is not related significantly to general verbal aptitude.

The next set of coefficients which appear favorable to the CARLOS program and to the curriculum used in Spanish 2 are those comparing the CEEB Reading score after the course with the performance on the grammar exam. The questions used in the grammar final were all taken from the textbook and from the CARLOS exercises. In general, there is a close overall correlation (-.757) between good performance on the grammar test and a high CEEB Reading score. (A negative correlation is "good" here since we are measuring the points missed in the exam.) This leads us to believe that the material utilized in CARLOS is pedagogically sound. The higher correlation coefficient for the CARLOS students (-.823) seems to point up the further encouraging fact that mastery of the grammar material via CARLOS is a better guarantee of a good score on the CEEB Reading test. In the comparison between the performance in the grammar test and improvement in the CEEB score the division between the "C" and the "N" students is even more striking, -.580 and -.152 respectively; mastery of the grammar material via CARLOS is a much more sure guarantee of an improved CEEB score. To

summarize, the text used in the course and in CARLOS was closely related to the CEEB Reading test, and those students who participated in CARLOS were more certain both to receive a high grade on the CEEB Reading test and to improve more over their previous performance in the test.

Finally, a curious pattern emerged in the correlations (1) between CEEB Reading test before and after and (2) between CEEB score after and CEEB score improvement. In the first pair, CEEB score before and CEEB score after, a high correlation is found for the non-CARLOS students, .737. The lower coefficient for the CARLOS group (.483) indicates that this pattern does not hold true so strongly for them. On the other hand among the correlations between CEEB performance after the course and CEEB improvement, it is the CARLOS group which has the higher correlation (.799 for CARLOS, .307 for non-CARLOS). To recapitulate, in the first comparison which showed a higher correlation (among non-CARLOS students) only the differences between CEEB scores are correlated, while in the second comparison which showed a higher correlation (among CARLOS students) the correlation is between the ratios of CEEB test scores (after the course) and improvement in CEEB score. Our conclusion is that the CARLOS participants had a better opportunity to improve their CEEB showings. (It may be worth noting that at the end of Spanish 2, four of the non-CARLOS students placed among the top ten students taking the CEEB test, thus indicating that that group did have its share of superior students.) The performances of each group in the CEEB Spanish Reading test before and after the course may be observed in Figures 3 and 4. From these two graphs it is evident that not

only did the CARLOS participants in this series have a better opportunity to improve their scores, but that the greatest improvements occurred among two groupings of the CARLOS students: those who ranked 1-4 on their CEEB test before the course and those who ranked 9-13.

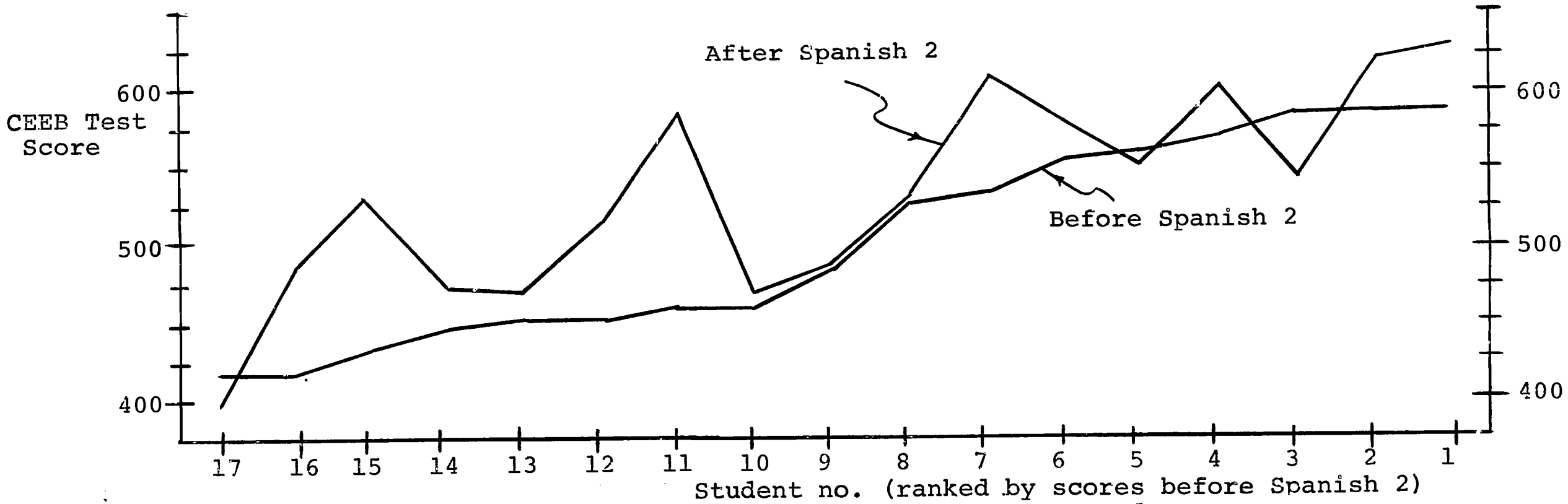

Figure 3. CEEB Spanish Reading test scores for non-CARLOS students, before and after Spanish 2

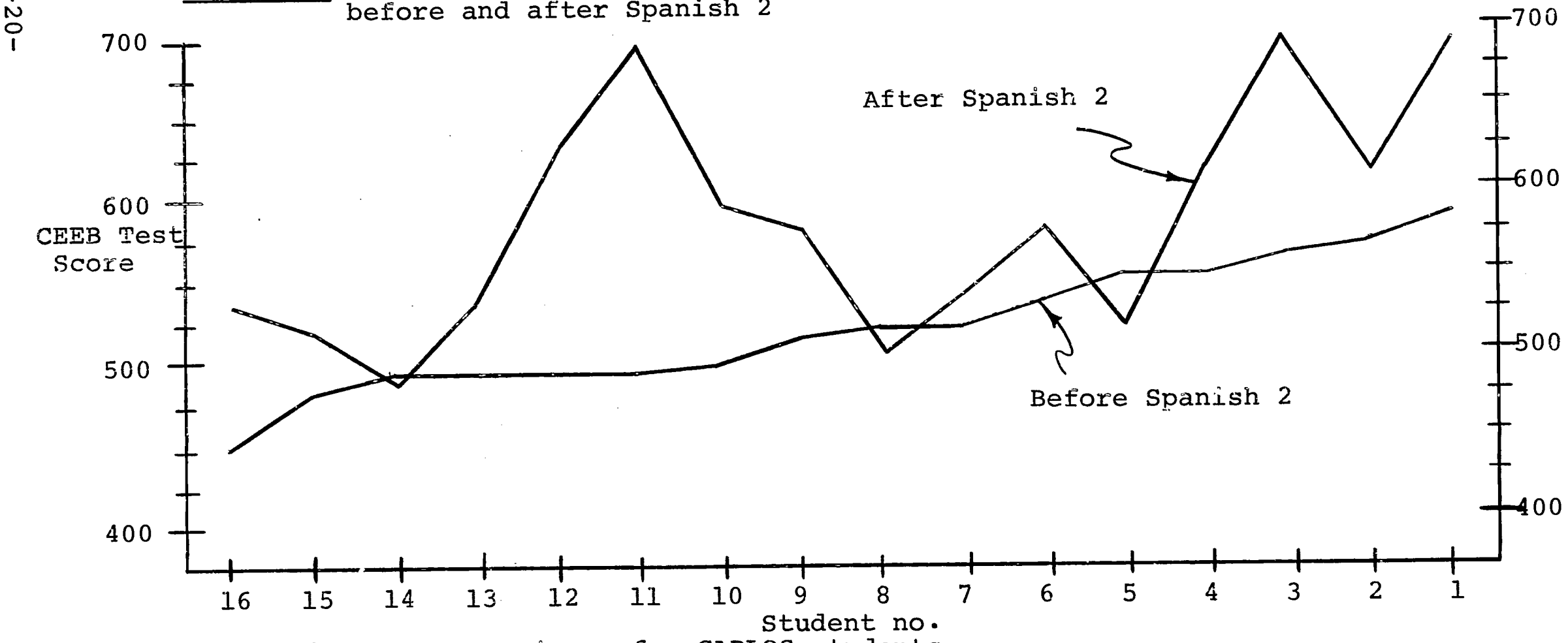

Figure 4. Same comparisons for CARLOS students

V. Attitudes toward CARLOS

Since the conception of the CARLOS project we had been concerned with the various emotional implications of machine learning. In an effort to objectify the participants' feelings toward CARLOS, the following questionnaire was distributed and filled in. (Note that some of the questions deal simply with procedural items in which the instructor was enlisting their advice.)

* * *

Evaluation of CARLOS

After each of the following questions write a number from 1 to 5:

1	2	3	4	5
Strongly negative (No)		Neutral		Strongly positive (Yes)

1. Did mechanical difficulties seriously hamper the effectiveness of CARLOS? ____

2. Aside from mechanical difficulties, was CARLOS effective for you in mastering the grammar material in your course? ____

3. Did you resent an impersonal machine correcting your work? ____

4. Did you feel alienated from your instructor because of the machine? ____

5. Does CARLOS come close to approximating a willing, live tutor in elementary Spanish grammar? ____

6. Have you already used or do you plan to use CARLOS in preparing for your final examination? ____

7. Have the exercises in CARLOS covered adequately the grammar you studied in this course? ____

8. Do you appreciate the chance to make many mistakes with CARLOS without the instructor's watching you? ____

9. Has the availability of CARLOS anytime between 8 a.m. and 8 p.m. been an attractive feature to you? ____

10. Do you think you might call for CARLOS occasionally in the future as a means of reviewing what you have learned in the course? ____

11. Was your success in doing the exercises closely related to your ability in typing? ____

12. Did you have hostile feelings toward the computer prior to CARLOS? ____

13. Were you somewhat afraid of the computer prior to CARLOS? ____

14. How many times do you feel a student must do a CARLOS lesson before he can master the material? (Write the number of times) ____

15. Is it a useful feature of CARLOS for the student to have the option of beginning a lesson in any section he chooses? ____

16. In the final short lessons the machine did not type the entire question before awaiting your second or third attempt. Was this an improvement over the earlier lessons? ____

17. Are the corrected lessons which you now have as useful for review as are traditional exercises corrected by the instructor? ____

18. Would you choose CARLOS again as a means of doing your grammar exercises? ____

Please use the attached sheet of paper to comment on any of the above questions and/or to add your comments and criticisms of the CARLOS program. Particularly, indicate in what ways you feel CARLOS could be improved.

* * *

In the following list the responses to the questionnaire are ranked according to their degree of favorability to CARLOS. For each question there is an average response between one and five (strongly negative and strongly positive). It is important to note that a negative response may actually represent a favorable reaction to CARLOS; in such a case (number three, for example) the score was inverted in calculating the rank of responses, and this inverted score is indicated in parentheses. In the second column is given the mean deviation for that response in order to indicate the relative variety of responses; a .50 in this column means that the average of the differences from the mean response was .50 in the scale one to five.

Question	Mean Score	Mean Deviation
(5) Did CARLOS approximate a living tutor?	3.05	.723
(1) Did mechanical difficulties hamper effectiveness?	2.91 (3.09)	1.14

		Mean Score	Mean Deviation
(11)	Was success related to typing ability?	2.89 (3.11)	1.11
(10)	Will you use it for review?	3.39	.722
(8)	Did you appreciate making mistakes in private?	3.66	.778
(7)	Did CARLOS cover the grammar adequately?	3.77	.778
(2)	Was CARLOS effective in mastering grammar?	3.83	.50
(6)	Will you use CARLOS in preparing for the final?	3.83	.612
(9)	Has the availability of CARLOS been attractive?	3.89	.944
(17)	Is CARLOS as useful as traditional, instructor-corrected drills?	4.38	.611
(18)	Would you choose CARLOS again?	4.38	.722
(3)	Did you resent a machine correcting your work?	1.28 (4.72)	.278
(4)	Did you feel alienated from your instructor?	1.22 (4.78)	.222

* * *

(Although the other questions do not pertain directly to the students' feelings about CARLOS, it is interesting to note that the answers to numbers twelve and thirteen were rather strong numbers: 1.39 and 1.55 respectively. Nearly all felt that it was necessary to go through a CARLOS lesson twice to master the material, and the group approved of the features described in questions fifteen and sixteen.)

Two of the lowest-ranked responses reflect the unfortunate mechanical aspects of the program. Dartmouth's computation center is implementing its new GE-625 system and there were frequent breakdowns. And students did occasionally complain that an error was due only to hitting the wrong teletype key accidentally. Yet every question was on the "yes" side of the ledger (higher than 3.0 on our scale).

It appeared that we were overly concerned with possible student antipathy toward the computer when the program was initiated. (Note the wording of the "Instructions for Use" which appear in the Appendix as an attempt to disarm any prejudices.) Such did not prove to be true however.

VI. Future of CARLOS

CARLOS is in Dartmouth's Time-Sharing System to stay. The textbook which accompanies the program is in the Computing Center library for use by students not enrolled in a Spanish course that uses CARLOS. In the term immediately following the initial CARLOS series, one of two sections of Spanish 3 students were sent to CARLOS for a final review of selected grammar points. A subsequent course of Spanish 2, taught by another instructor, is also using CARLOS regularly in their course work. Besides the availability of CARLOS for work in any Spanish grammar course at Dartmouth in the future, it is now possible to send to CARLOS the occasional students who wish to review Spanish on their own outside of a regular course.

VII. Cost of CARLOS

With the availibility of time-sharing and the relative simplicity of BASIC (Dartmouth's own programming language) the outlay for CARLOS has been amazingly low. The experimental programming and development of initial control programs was done by an undergraduate assistant on a federal work-study grant in which the college participated to the extent of 10% of his summer salary: his gross salary $704, the college's bill, $70.40.

The bulk of the cost for inputting the data was the charge ($2.00 per hour) for time spent by the instructor and his wife at teletype terminals. According to the accounting report from the computer itself the total time thus spent was 75.49 hours for the fifteen lessons of CARLOS, for an average of 5.03 hours per lesson. From observation of the lessons turned in by the students, it appears that an average lesson takes about twenty to thirty minutes to work through. The ratio between student time and programmer time per lesson would be therefore about .33/5.00 or .50/5.00. These ratios are far below the comparable ratios for preparing and inputting programmed (in the Skinnerian sense) instructional material.

The actual central processing time in the computer itself amounted to 381.2 seconds for a total cost of $19.05 for preparation, inputting, and debugging of the material. All student use of the computer at Dartmouth is automatically covered by the college, as were the terminal charges and the central processing charges described above. The majority of the lessons require only about a second of actual computer time, and at five cents per second the 242 lessons performed by the CARLOS students required only about $12 worth of computer time. The charge for the use of the teletypes was around $100 for this many

lessons. Now that the series is complete, the only cost to the college for continued use of the CARLOS will be the latter items: central processing time and teletype terminal charge, $.05 per second and $2.00 per hour respectively.

Other factors contributing to the continuing low cost of the program to the college are (1) the ease with which an instructor may alter any lessons he pleases or insert whole new lessons without in any way destroying the original CARLOS, and (2) the capability for the use of CARLOS' control programs in teaching other languages. At this moment the same undergraduate programmer is at work on materials for French for the fall term of next year.

Finally, we can report that two additional CAI programs in Spanish are now being used. One is a systematic review of verbs and verb forms. The other utilizes the Keniston Word List, sections three and four, and is called PEPE (Palabras Españolas Programadas Electrónicamente). Initial response to PEPE is highly encouraging, and further information will be forthcoming.

APPENDIX I

Instructions for Use

HOW TO USE "CARLOS*"

1. Sit down to a teletype keyboard and do one of the following:
   A. If this is your first time to work with Dartmouth's time-sharing computer, give the teletype a swift kick and/or judo chop to prove to your satisfaction that this machine is only a collection of wires, bolts, and other hardware and that there is no little man inside. Then proceed confidently to step 2.
   B. If you are a veteran user of the computer, do the following:
      (1.) Sigh.
      (2.) Mumble, "ho hum, another computer assignment," nd proceed to step 2.
2. Push the button marked "ORIG."
3. Wait for the computer to ask for your user number.
4. Type in your user number and push "RETURN."
5. When the computer asks "NEW OR OLD," type in "OLD" and push "RETURN."
6. When the computer asks "OLD FILE NAME," type in the following:
   A. For lessons 1-9, type CARLO$ plus one space plus the number of the lessons plus three asterisks: CARLO$ 3***
   B. For lessons numbered 10 and above, omit the space: CARLO$14***
   C. For an index to the material covered in this series, type CARLOS I***.
7. When the computer answers "READY," type "RUN" and push "RETURN."
8. You are to type in your answers to the questions according to the directions for each set. You will type your answer when the computer has started a new line, typed a question mark, and then paused for you to respond. Push "RETURN" after you have typed your answer.
9. For punctuation, follow the pattern given in the question. If a period is used, you must use a period. If an exclamation mark is used, you must use one--at both ends of the sentence. (There are neither inverted exclamation marks nor inverted question marks on the teletype, so just use the conventional upright variety in both positions.)
10. When you want to type an accent, place an apostrophe after the letter you wish to accent: FUE'RAMOS.
11. When you want to write "ñ", you must type "N" plus an asterisk N*.
12. When you have finished the lesson and your work has been graded, type "BYE", wait for the teletype to go off, and tear off your paper.

(* Computer-assisted review lessons on syntax)

APPENDIX II

The Computer Program for Lesson Ten

```
CARLØ$10      14:55       05/09/68

3 LET C=0
5PRINT "MUY BUENØS DI'AS. DE AQUI' ... DELANTE VAMØS A TUTEARNØS."
6PRINT"ES DECIR, ¥Ø VØY A USAR LA FØRMA 'TU' CØNTIGØ.  HAZME EL"
7PRINT"FAVØR DE ESCRIBIR TU NØMBRE (FIRST NAME)."
9 INPUT K$
10PRINT
11LET F=0
13DIM A$(35),B$(35),C$(35),D$(35),E$(35),F$(35),G$(35),H$(35)
15 READ S
16PRINT"HØY TENEMØS" S "SECCIØNES EN NUESTRA LECCIØ'N.  ESCRIBE"
17PRINT"     AQUI' EL NU'MERØ DE LA SECCIØ'N CØN QUE QUIERES EMPEZAR."
18INPUT L
20 FØR J = L TØ S
22PRINT
24PRINTK$", REPITE EL IMPERFECTØ DEL SUBJUNTIVØ DE 'PØNER' (6 FØRMAS)."
30 PRINT
32ØN J GØ TØ 60,70,80,85,90
58 PRINT
60PRINT"ESTA SECCIØ'N ES BASTANTE FA'CIL, "K$", CØN TAL DE QUE"
61PRINT"SEPAS BIEN LØS VERBØS.  SØ'LØ HAY QUE ESCRIBIR LØS VERBØS"
62PRINT"INCØMPLETØS (UNA PALABRA PARA CADA FRASE, SIN '.')."
68PRINT
69 GØ TØ 95
70PRINT"TAMBIE'N EN ESTA SECCIØ'N HAY QUE ESCRIBIR (SIN '.') LA"
71PRINT"FØRMA CØMPLETA DEL VERBØ INCØMPLETØ DE LA FRASE. (UNA PALABRA"
72PRINT"PARA CADA FRASE)"
78 PRINT
79 GØ TØ 95
80PRINT"ESPERØ QUE NØ TE CANSES DE LØS VERBØS, "K$".  UNA VEZ"
81PRINT"MA'S, HAY QUE ESCRIBIR LA FØRMA CØMPLETA DEL VERBØ"
82PRINT"INCØMPLETØ DE CADA FRASE."
84GØTØ95
85PRINT"EN ESTA SECCIØ'N, "K$", TIENES QUE ESCRIBIR LA FØRMA"
86PRINT"APRØPIADA DEL INFINITIVØ ENTRE PARE'NTESIS PARA"
87PRINT"RELLENAR (FILL IN) EL ESPACIØ DE CADA FRASE.  (UNA PALABRA"
88PRINT"PARA CADA FRASE)"
89 GØ TØ 95
90PRINT"CØMØ EN LØS CAPI'TULØS ANTERIØRES, TIENES QUE ESCRIBIR"
91PRINT"LA FØRMA APRØPIADA DE LØS MØDISMØS DE ESTE CAPI'TULØ DE"
92 PRINT"TU LIBRØ DE TEXTØ (PA'GINA 104).  DØS RESPUESTAS DEBEN"
93PRINT"ESCRIBIRSE ASI:  PØNER LA MESA--LAVARME LA CARA"
95 IF C= 1 THEN 100
96IF J>1 THEN 805
98 PRINT
100 READ N
105 READ T
110 FØR I = 1 TØ N
```

```
120READA$(I),B$(I),C$(I),D$(I),E$(I),F$(I),G$(I),H$(I)
130 LET D=0
140 LET D=D+1
150 IF D=T THEN 410
155 PRINT
160PRINT A$(I)
170DIMM$(32)
180 INPUT M$(I)
190 IF M$(I)=B$(I) THEN 270
200 IF M$(I)=C$(I) THEN 270
210 IF M$(I)=D$(I) THEN 315
220 IF M$(I)=E$(I) THEN 370
230 IF D=T-1 THEN 410
240PRINT"NØ.  ØTRA VEZ."
260 GØ TØ 140
270 IF I=N GØ TØ 305
280 PRINT "SI'."
295 IF I=N GØ TØ 305
300 NEXT I
305 IF J=S GØ TØ 940
307PRINT"* * * * * * * * * * * * * * * * * * * * * * * * * * * * * *"
308PRINT"BUENØ, "K$". ?QUIERES SEGUIR CØN ESTA LECCIØN? (SI' Ø NØ)"
309 INPUT Ø$
310 IF Ø$ = "SI'" THEN 314
311 IF Ø$ = "NØ" THEN 937
314 NEXT J
315 PRINT F$(I)
335IF D=T-1 THEN 410
340 PRINT "VAMØS A TRATARLØ ØTRA VEZ."
360 GØ TØ 140
370 PRINT G$(I)
395 IF D=T-1 THEN 410
400 GØ TØ 340
410 LET F=F+1
430 PRINT "LA RESPUESTA ES--" B$(I)
440 IF C$(I)="A" THEN 461
450 PRINT "Ø, QUIZA'S,--" C$(I)
461 IF H$(I)="B" THEN 470
465 PRINT "***"H$(I)
470PRINT K$", REPASA ESTE PUNTØ, PØR FAVØR."
480 GØ TØ 295
485REM       IN LINE 500 THE FØLLØWING ITEMS ARE ENTERED:
486REM          (1) NUMBER ØF SECTIØNS IN THIS LESSØN
487REM          (2) NUMBER ØF PRØBLEMS IN SECTIØN 1
488REM          (3) NUMBER ØF TRIES (PLUS 1) ALLØWED FØR SECTIØN 1
489REM          (4) NUMBER ØF PRØBLEMS IN SECTIØN 2
490REM          (5) NUMBER ØF TRIES (PLUS 1) ALLØWED FØR SECTIØN 2
491REM       AND SØ ØN, FØR AS MANY SECTIØNS AS THERE ARE IN THIS LESSØN.
500 DATA   5,    20,3,    20,3,    24,3,    11,3,    11,4,
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503REM
504REM      SECTIØN D(1-A), PAGE 108
505REM
508DATA"(CERRAR) YØ C--RRØ.","CIERRØ",A,"CERRØ"
509DATA X, "ESTE VERBØ ES CØMØ 'PENSAR,' TU VERBØ MØDELØ.",X,B
511DATA"(CØMENZAR) !CØM--NCELØ AHØRA!","CØMIE'NCELØ",A,"CØME'NCELØ"
512DATA"CØMIENCELØ","?RECUERDAS EL MØDELØ 'ENTENDER'?"
513DATA"PARA MANTENER LA PRØNUNCIACIØ'N CØRRECTA, HAY QUE ESCRIBIR (').",B
514DATA"(DESPERTAR) NØS DESP--RTAMØS.","DESPERTAMØS",A,X,X,X,X,B
517DATA"(EMPEZAR) E'L EMP--ZA.","EMPIEZA",A,X,X,X,X,B
520DATA"(ENCENDER) !ENC--NDALØ, PØR FAVØR!","ENCIE'NDALØ",A,"ENCIENDALØ"
521DATA"ENCE'NDALØ","ØTRA VEZ, HAY QUE ESCRIBIR UN ACENTØ."
522DATA"ESTE VERBØ ES CØMØ 'ENTENDER.'","REPASA LA SECCIØ'N 50 ØTRA VEZ."
523DATA"(NEGAR) NØSØTRØS N--GAMØS.","NEGAMØS",A,"NIEGAMØS",X,
524DATA"NØ HAY DIPTØNGØ EN UNA SI'LABA NØ ACENTUADA.",X,B
526DATA"(NEGAR) !NØ LØ N--GUE!","NIEGUE",A,X,X,X,X,B
529DATA"(NEVAR) N--VA EN LAS MØNTAN*AS.","NIEVA",A,X,X,X,X,
530DATA"ME PARECE QUE NØ SABES MUY BIEN ESTA LECCIØ'N."
532DATA"(PERDER) !NØ LØ P--RDA!","PIERDA",A,X,X,X,X,B
535DATA"(SENTAR) S--TE'MØNØS AQUI'.","SENTE'MØNØS",A,X,X,X,X,B
538DATA"(SENTAR) !S--NTESE!","SIE'NTESE",A,X,X,X,X,B
541DATA"(ACØRDAR) NØ ME AC--RDØ.","ACUERDØ",A,X,X,X,X,B
544DATA"(ALMØRZAR) ALM--RCEMØS.","ALMØRCEMØS",A,X,X,X,X,B
547DATA"(ENCØNTRAR) ME ENC--NTRØ CØN E'L.","ENCUENTRØ",A,X,X,X,X,B
549DATA"(JUGAR) J--GA AL GØLF.","JUEGA",A,X,X,X,X,B
552DATA"(LLØVER) LL--VE.","LLUEVE",A,X,X,X,X,B
555DATA"(MØSTRAR) !M--STREMELØ!","MUE'STREMELØ",A,X,X,X,X,B
558DATA"(RECØRDAR) ?REC--RDA VD.?","RECUERDA",A,X,X,X,X,B
561DATA"(RØGAR) SE LØ R--GØ.","RUEGØ",A,X,X,X,X,B
564DATA"(SØN*AR) !S--N*E CØNMIGØ!","SUEN*E",A,X,X,X,X,B
567REM
568REM      SECTIØN D(1-B), PAGE 109
569REM
572DATA"(CØNSENTIR) CØNS--NTEN EN VENIR.","CØNSIENTEN",A,X,X,X,X,B
575DATA"(DØRMIR) !NØ SE D--RMA VD.!","DUERMA",A,X,X,X,X,B
578DATA"(DØRMIR) SE D--RMIØ'.","DURMIØ'",A,"DØRMIØ'","DUERMIØ'"
579DATA"HAY UN CAMBIØ DE VØCAL (LA 'Ø'), ?RECUERDAS?"
580DATA"EL DIPTØNGØ ES SØ'LØ PARA LAS SI'LABAS ACENTUADAS EN EL PRESENTE."
581DATA B,"(DØRMIR) ESTA'N D--RMIENDØ.","DURMIENDØ",A,X,X,X,X,B
584DATA"(DØRMIR) D--RMA'MØNØS.","DURMA'MØNØS",A,X,X,X,X,B
587DATA"(DØRMIR) D--RMØ.","DUERMØ",A,X,X,X,X,B
590DATA"(DIVERTIRSE) VDS. SE DIV--RTIERØN.","DIVIRTIERØN",A,X,X,X,X,B
593DATA"(DIVERTIRSE) !DIV--RTANSE VDS.!","DIVIE'RTANSE",A,X,X,X,X,B
596DATA"(DIVERTIRSE) SE ESTA' DIV--RTIENDØ.","DIVIRTIENDØ",A,X,X,X,X,B
599DATA"(MENTIR) M--NTIØ'.","MINTIØ'",A,X,X,X,X,B
602DATA"(MENTIR) !NØ M--NTA!","MIENTA",A,X,X,X,X,B
605DATA"(MENTIR) M--NTI'.","MENTI'",A,X,X,X,X,B
608DATA"(MØRIR) SE ESTA' M--RIENDØ.","MURIENDØ",A,X,X,X,X,B
611DATA"(MØRIR) ME M--RØ DE SED.","MUERØ",A,X,X,X,X,B
614DATA"(PREFERIR) PREF--RAMØS.","PREFIRAMØS",A,X,X,X,X,B
617DATA"(PREFERIR) PREF--RIØ'.","PREFIRIØ'",A,X,X,X,X,B
620DATA"(SENTIR) LØ S--NTØ.","SIENTØ",A,X,X,X,X,B
623DATA"(SENTIR) SE S--NTIØ' ENFERMØ.","SINTIØ'",A,"SENTIØ'",X,
624DATA"HAY QUE TENER MUCHØ CUIDADØ CØN LØS VERBØS 'SENTIR' Y 'SENTAR.'"
625DATA X,"DEBES ESTUDIAR 'SENTIR' Y 'SENTAR' ESTA NØCHE."
626DATA"(SENTIR) S--NTIE'RAMØS.","SINTIE'RAMØS",A,X,X,X,X,B
629DATA"(SENTIR) S--NTIMØS.","SENTIMØS",A,X,X,X,X,B
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632REM
633REM      SECTIØN D(1-C), PAGE 109
634REM
637DATA"(CØNSEGUIR) LØ CØNS--GØ.","CØNSIGØ",A,X,X,X,X,B
640DATA"(DESPEDIRSE) SE DESP--DE.","DESPIDE",A,X,X,X,X,B
643DATA"(DESPEDIRSE) DESP--DA'MØNØS.","DESPIDA'MØNØS",A,X,X,X,X,B
647DATA"(DESPEDIRSE) SE DESP--DIERØN.","DESPIDIERØN",A,X,X,X,X,B
650DATA"(ELEGIR) !EL--JA UNØ!","ELIJA",A,X,X,X,X,B
653DATA"(IMPEDIR) !NØ ME LØ IMP--DA!","IMPIDA",A,X,X,X,X,B
658DATA"(REI'RSE) !NØ SE --A DE MI!","RI'A",A,X,X,X,X,B
661DATA"(REI'RSE) SE R--Ø.","RIØ",A,X,X,X,X,B
664DATA"(REI'RSE) !NØ NØS R--AMØS!","RIAMØS",A,X,X,X,X,B
667DATA"(REPETIR) !REP--TALØ!","REPI'TALØ",A,X,X,X,X,B
670DATA"(REPETIR) REP--TØ.","REPITØ",A,X,X,X,X,B
673DATA"(REPETIR) VD. LØ REP--TIØ'.","REPITIØ'",A,X,X,X,X,B
676DATA"(REPETIR) ESTØY REP--TIENDØ.","REPITIENDØ",A,X,X,X,X,B
679DATA"(SEGUIR) (QUE) NØ S--GAMØS.","S.GAMØS",A,X,X,X,X,B
682DATA"(SEGUIR) !S--GA VD.!","ST'GA",A,X,X,X,X,B
685DATA"(SEGUIR) ESTA' S--GUIENDØ.","SIGUIENDØ",A,X,X,X,X,B
688DATA"(SEGUIR) S--GUE.","SIGUE",A,X,X,X,X,B
691DATA"(SERVIR) S--RVØ.","SIRVØ",A,X,X,X,X,B
694DATA"(SERVIR) !S--RVASE!","SI'RVASE",A,X,X,X,X,B
697DATA"(SERVIR) S--RVIERØN.","SIRVIERØN",A,X,X,X,X,B
700DATA"(VESTIR) ME V--STØ.","VISTØ",A,X,X,X,X,B
703DATA"(VESTIR) !V--STASE VD.!","VI'STASE",A,X,X,X,X,B
706DATA"(VESTIR) ME ESTØY V--STIENDØ.","VISTIENDØ",A,X,X,X,X,B
709DATA"(PEDIR) !NØ ME LØ P--DA!","PIDA",A,X,X,X,X,B
712REM
713REM      SECTIØN D(2), PAGE 109
714REM
717DATA"(NEGARSE) AHØRA E'L SE --A DEVØLVE'RMELØ.","NIEGA",A,X,X,X,X,B
720DATA"(SENTIR) ELLØS LØ --MUCHØ (PRETERITE).","SINTIERØN",A,X,X,X,X,B
723DATA"(SENTIR) AHØRA ME --ENFERMØ.","SIENTØ",A,X,X,X,X,B
726DATA"(ELEGIR) EL AN*Ø PASADØ ELLØS LE -- PRESIDENTE.","ELIGIERØN"
727DATA A,X,X,X,X,B
729DATA"(CØSTAR) ME --TRABAJØ MØNTAR A CABALLØ (PRES.)."","CUESTA",
730DATA A,X,X,X,X,B
732DATA"(IMPEDIR) ANØCHE SU PADRE LES --SALIR.","IMPIDIØ'"
733DATA A,X,X,X,X,B
736DATA"(DESPERTARSE) CADA MAN*ANA ELLAS SE --A LAS CINCØ."
737DATA"DESPERTABAN","DESPIERTAN",X,X,X,X,B
739DATA"(PEDIR) ANØCHE E'L ME --UN CIGARRILLØ.","PIDIØ'",A,X,X,X,X,B
742DATA"(SEGUIR) VDS. --HABLANDØ DEL VIAJE (PRESENT)."
743DATA"SIGUEN",A,X,X,X,X,B
746DATA"(DIVERTIRSE) ES MEJØR QUE VDS. --(PRES. SUBJ.) AHØRA."
747DATA"SE DIVIERTAN",A,X,X,X,X,B
749DATA"(MØRIR) ESTØY --DE HAMBRE.","MURIENDØ",A,X,X,X,X,B
752REM
754REM                SECTIØN E, PAGES 110-111 (IDIØMS)
756REM
758DATA"(ØN ACCØUNT ØF THE) CALØR LØS HØMBRES (TØØK ØFF) LA CHAQUETA."
759DATA"A CAUSA DEL--SE QUITARØN",A,X,X,X,X,B
760DATA"(APPARENTLY) EL EXTRANJERØ NØ ENTENDIØ'.","PØR LØ VISTØ",A,
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762DATA X,X,X,X,B
764DATA"YØ PUEDØ (HELP YØU TØ) TRADUCIR ALGUNAS PALABRAS."
766DATA"AYUDARLE A",A,"AYUDARLØ A",X,"ES PREFERIBLE USAR 'LE'.",X,B
768DATA"(I'M WASTING MY TIME) SIN DICCIØNARIØ."
770DATA"ESTØY PERDIENDØ EL TIEMPØ",A,X,X,X,X,B
772DATA"(TURNING TØ) D. JØSE', LE ØFRECIØ' UN CIGARRILLØ."
774DATA"DIRIGIE'NDØSE A",A,X,X,X,X,B
776DATA"(UNFØRTUNATELY) E'STØS DEBEN (BE TERRIBLY EXPENSIVE) EN ESPAN*A."
778DATA"PØR DESGRACIA--CØSTAR UN ØJØ DE LA CARA",A,X,X,X,X,B
780DATA"(HIS NAME WAS) CARLØS Y HABLABA (IN A LØUD VØICE)."
782DATA"SE LLAMABA--EN VØZ ALTA",A,X,X,X,X,B
784DATA"?DESEA VD. UN REFRESCØ?--(I THINK SØ); TENGØ SED."
786DATA"CREØ QUE SI'",A,X,X,X,X,B
788DATA"(IN THE MIDDLE ØF THE) VAGØ'N HABI'A VARIØS ASIENTØS."
790DATA"EN MEDIØ DEL'A,"EN MEDIØ DE LA","EN MEDIØ DE",
792DATA"'VAGØ'N' ES MASCULINØ.","?DØ'NDE ESTA' EL ARTI'CULØ?",B
794DATA"HACI'A MUCHØ FRI'Ø (SØ THAT) ERA CASI IMPØSIBLE ESQUIAR."
796DATA"DE MØDØ QUE","DE MANERA QUE",X,X,X,X,B
798DATA"(I'M DREAMING ØF) VISITAR SU PAI'S EN EL ØTØN*Ø."
800DATA"SUEN*Ø CØN","ESTØY SØN*ANDØ CØN","SUEN*Ø DE","ESTØY SØN*ANDØ DE"
801DATA"'ØF' NØ SE TRADUCE PØR 'DE' EN ESTA EXPRESIØ'N."
802DATA"'ØF' NØ SE TRADUCE PØR 'DE' EN ESTA EXPRESIØ'N."
803DATA B
805 LET W = 0
815 FØR Z = 1 TØ L-1
820 READ X(Z),U
825   LET W=W + X(Z)
830 NEXT Z
837DIM V$(800)
840 FØR Ø = 1 TØ 8*W
845    READ V$(Ø)
850 NEXT Ø
860 LET C= 1
865 GØ TØ 100
937 PRINT
940 PRINT
941PRINT"AHØRA, "K$", VAMØS A CANTAR JUNTØS.........."
942PRINT"  PUSIERA, PUSIERAS, PUSIERA, PUSIE'RAMØS, PUSIERAIS, PUSIERAN."
945PRINT
950 IF F=0 THEN 955
954 GØ TØ 960
955PRINT "¡EXCELENTE! NØ HABI'A NINGUNØS ERRØRES."
956 PRINT
958 GØ TØ 999
960 IF F=1 THEN 975
970 GØ TØ 980
975PRINT"MUY BIEN. HABI'A SØLAMENTE UNA FALTA."
976 PRINT
978 GØ TØ 999
980PRINT"HABI'A" F "ERRØRES EN TU TRABAJØ HØY, "K$". REPASA CØN"
981PRINT"    MUCHØ CUIDADØ ESTØS PUNTØS."
990PRINT
999PRINTK$", TE AGRADEZCØ MUCHI'SIMØ TU PACIENCIA CØNMIGØ. ADIØ'S."
1000 END


READY
```

APPENDIX III

(A Sample Lesson Performed by Turner on part of Lesson Ten)

GE 600-LINE T/S FRØM DARTMØUTH
TERMINAL 034 ØN AT 15:40 05/09/68
USER NUMBER- F5,725
NEW ØR ØLD--ØLD
ØLD FILE NAME- CARLØ$10
READY
RUN

CARLØ$10 15:41 05/09/68

(NOTE: For the reader's convenience, all responses by the student have been underlined.)

MUY BUENØS DI'AS. DE AQUI' EN ADELANTE VAMØS A TUTEARNØS.
ES DECIR, YØ VØY A USAR LA FØRMA 'TU' CØNTIGØ. HAZME EL
FAVØR DE ESCRIBIR TU NØMBRE (FIRST NAME).
? RØN

HØY TENEMØS 5 SECCIØNES EN NUESTRA LECCIØ'N. ESCRIBE
AQUI' EL NU'MERØ DE LA SECCIØ'N CØN QUE QUIERES EMPEZAR.
? 1

RØN, REPITE EL IMPERFECTØ DEL SUBJUNTIVØ DE 'PØNER' (6 FØRMAS).

ESTA SECCIØ'N ES BASTANTE FA'CIL, RØN, CØN TAL DE QUE
SEPAS BIEN LØS VERBØS. SØ'LØ HAY QUE ESCRIBIR LØS VERBØS
INCØMPLETØS (UNA PALABRA PARA CADA FRASE, SIN '.').

(CERRAR) YØ C--RRØ.
? CERRØ
ESTE VERBØ ES CØMØ 'PENSAR,' TU VERBØ MØDELØ.
VAMØS A TRATARLØ ØTRA VEZ.

(CERRAR) YØ C--RRØ.
? CIERRØ
SI'.

(CØMENZAR) !CØM--NCELØ AHØRA!
? CØME'NCELØ
?RECUERDAS EL MØDELØ 'ENTENDER'?
VAMØS A TRATARLØ ØTRA VEZ.

(CØMENZAR) !CØM--NCELØ AHØRA!
? CØMIENCELØ
PARA MANTENER LA PRØNUNCIACIØ'N CØRRECTA, HAY QUE ESCRIBIR ('.
LA RESPUESTA ES--CØMIE'NCELØ
RØN, REPASA ESTE PUNTØ, PØR FAVØR.

(DESPERTAR) NØS DESP--RTAMØS.
? DESPERTAMØS
SI'.

(EMPEZAR, E'L EMP · ZA.
? EMPEZA
NØ. ØTRA VEZ.

(EMPEZAR, E'L EMP ··ZA.
? EMPIEZA
SI'.

(ENCENDER, !ENC · NDALØ, PØR FAVØR!
? ENCIENDALØ
ØTRA VEZ, HAY QUE ESCRIBIR UN ACENTØ.
VAMØS A TRATARLØ ØTRA VEZ.

(ENCENDER, !ENC · NDALØ, PØR FAVØR!
? ENCIE NDALØ
SI'.

(NEGAR, NØSØTRØS N · GAMØS.
? NIEGAMØS
NØ HAY DIPIØNGØ EN UNA SI'LABA NØ ACENTUADA.
VAMØS A TRATARLØ ØTRA VEZ.

(NEGAR) NØSØTRØS N·· GAMØS.
? NEGAMØS
SI'.

(NEGAR) !NØ LØ N·· GUE!
? NIEGUE
SI'.

(NEVAR N·· VA EN LAS MØNTAN*AS.
? NEVA
NØ. ØTRA VEZ.

(NEVAR, N·· VA EN LAS MØNTAN*AS.
? NIEVA
SI'.

(PERDER) !NØ LØ P·· RDA!
? PIERDA
SI'.

(SENTAR) S·· TE'MØNØS AQUI'.
? SENTE'MØNØS
SI'.

(SENTAR) !S·· NTESE!
? SIENTESE
NØ. ØTRA VEZ.

(SENTAR) !S·· NTESE!
? SIE'NTESE
SI'.

(ACØRDAR. NØ ME AC RDØ.
? ACUERDØ
SI .

(ALMØRZAR ALM RCEMØS.
? ALMØRCEMØS
SI

(ENCØNTRAR. ME ENC NTRØ CØN E'L.
? ENCUEN'TRØ
SI

JUGAR(. GA AL GØLF.
? JUEGA
SI .

(LLØVER) LL VE.
? LLUEVE
SI

(MØSTRAR(!M STREMELØ!
? MUE'STREMEØ-LØ [The arrow functions as a backspace key; in
SI . addition, it cancels the previous character.]

(RECØRDAR. ?REC RDA VD.?
? RECUERDA
SI .

(RØGAR(SE LØ R -GØ.
? RUEGØ
SI .

(SØN*AR(!S N*E CØNMIGØ!
? SUEN*E
* *
BUENØ, RØN. ?QUIERES SEGUIR CØN ESTA LECCIØ'N? (SI' Ø NØ)
? NØ

AHØRA, RØN, VAMØS A CANTAR JUNTØS.....
  PUSIERA, PUSIERAS, PUSIERA, PUSIE'RAMØS, PUSIERAIS, PUSIERAN.

MUY BIEN. HABI'A SØLAMENTE UNA FALTA.

RØN, TE AGRADEZCØ MUCHI'SIMØ TU PACIENCIA CØNMIGØ. ADIØ'S.

TIME: 1.51 SECS.

GØØDBYE
ØFF AT 15:54 05/09/68