THE UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

A COMPARISON OF THE ACHIEVEMENT OF AURAL RECOGNITION IN SPANISH BY THIRD-YEAR PRIMARY PUPILS WHEN EITHER RADIO OR TELEVISION IS UTILIZED AS THE INSTRUCTIONAL MEDIUM

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

degree of

DOCTOR OF EDUCATION

BY

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Norman, Oklahoma

1964

A COMPARISON OF THE ACHIEVEMENT OF AURAL RECOGNITION IN SPANISH BY THIRD-YEAR PRIMARY PUPILS WHEN EITHER RADIO OR TELEVISION IS UTILIZED AS THE INSTRUCTIONAL MEDIUM

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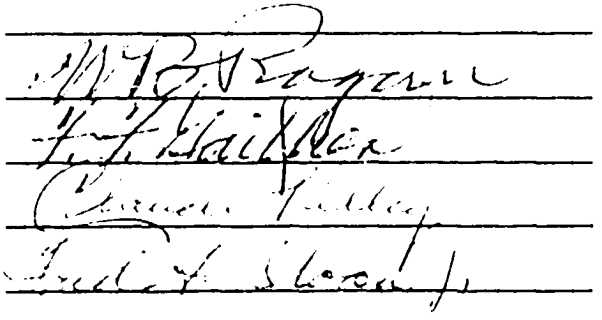

DISSERTATION COMMITTEE

ACKNOWLEDGMENTS

The writer wishes to express his appreciation to his chairman, Dr. William B. Ragan, and to members of his dissertation committee for their assistance and guidance in developing this study.

Appreciation is also extended to the associates of the writer who contributed toward the completion of the study.

The writer desires to recognize his indebtedness to his wife for her encouragement and support.

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CHAPTER I

THE PROBLEM: ITS BACKGROUND AND SCOPE

Introduction

Since the close of World War II, the United States has witnessed a tremendous growth in the extent to which elementary schools are providing instruction in modern foreign languages. It is reported that in 1943 there were 145,643 pupils in elementary schools of the United States studying a modern foreign language in classes sponsored by their schools. By 1960 the number of pupils studying a modern foreign language in classes sponsored by their schools had increased to 1,227,006.[1]

During this period of rapid growth, teacher-training institutions lagged well behind the demand in providing

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[1] Marjorie Breunig, "Foreign Languages in the Elementary Schools of the United States," Reports of Surveys and Studies in the Teaching of Modern Foreign Languages (New York: Modern Language Association of America, 1961), pp. 1-14.

opportunities for the preparation of teachers for this area. In 1960 it was found that less than 28 per cent of the institutions that provided training in the preparation of teachers for teaching foreign language in the high schools offered preparation programs for teaching in the elementary schools.[1]

This lag, plus the fact that traditionally few curricula preparatory to teaching in the elementary schools require students to take a modern foreign language, has led to a drastic shortage of teachers qualified to provide foreign language instruction in the elementary schools.[2] In order to meet the increased demands for instruction in modern foreign languages in the elementary schools, in light of the critical shortage of qualified language specialists, the possibilities and potentialities of the newer educational media must be considered, specifically tapes, records, radio, and television.[3]

Research has been done to establish the relative effectiveness of educational television in the instruction of

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[1] Wesley Childers, Barbara Bell, and Harry Margulis, "Teacher Education Curricula in the Modern Foreign Languages," Reports of Surveys and Studies in the Teaching of Modern Foreign Languages (New York: Modern Language Association of America, 1961), pp. 143-164.

[2] Edith Kern, "The Television Teacher--How Near and How Far," Modern Techniques in Teaching a Foreign Language (Connecticut Audio-Visual Education Association, 1959), pp. 129-134.

[3] Ibid., p. 167.

the elementary pupil in a modern foreign language.[1] This research justifies serious consideration of educational television as a means of providing instruction in a modern foreign language for the elementary pupil.

However, there are many concomitant problems involved in the utilization of educational television. Among these problems are the initial cost of facilities, the continuing high cost of operation, and the availability of open-circuit channels for telecasting.[2] The growth of educational television has been such that there is already a problem of finding sufficient open-circuit channels to meet the demands of school systems for telecast time.[3]

For the past forty years another medium, educational radio, has been available to the school.[4] The increase in demands for and utilization of television as an instructional

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[1]Charles E. Johnson, Joseph S. Flores, Fred P. Ellison, and Miguel A. Riestra, "The Development and Evaluation of Methods and Materials to Facilitate Foreign Language Instruction in Elementary Schools," Foreign Language Instruction Project (Urbana: University of Illinois, 1963), p. 12.

[2]William B. Levenson and Edward Stasheff, Teaching Through Radio and Television (New York: Rinehart and Company, 1952), p. 42.

[3]George R. Town, "Allocation for Educational Television," Educational Television, the Next Ten Years (Stanford: Institute for Communication Research, 1962), pp. 216-250.

[4]Harry J. Skornia, "Educational Radio: Its Past and Future," Educational Television, the Next Ten Years (Stanford: Institute of Communication Research, 1962), pp. 354-375.

medium has been accompanied by a decrease in the utilization of radio as an instructional medium.[1]

"Is educational radio that half-forgotten medium that is here along with, and in spite of, television being used as it should in the schools?"[2] Meaningful research is needed to investigate the teaching effectiveness of educational radio. Although it (radio) has developed through the years because great numbers of educators have been convinced by experience that radio programs are useful, educational radio has never experienced the concentrated research that educational television has.[3]

Educational television has been utilized to present a modern foreign language program in the elementary schools. Educational radio has also been used by other elementary schools to present a modern foreign language program. Considering the demand for a foreign language program in the elementary schools, the shortage of qualified language specialists, the potentialities of the newer educational media, the concomitant problems involved in the utilization of television, and the impact of the introduction of educational

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[1] Ibid.

[2] Edgar Fuller, "An Educator's View of Educational Television Network," National Association of Educational Broadcasting Journal, XIX (May and June, 1960), pp. 10-15.

[3] H. B. McCarty, "Educational Radio's Role," National Association of Educational Broadcasting Journal, XVIII (October, 1958), pp. 25-31.

television upon the utilization of educational radio, it seems in order to compare the effectiveness of radio and television in providing instruction in a modern foreign language program in the elementary schools.

Statement of the Problem

How does the achievement of aural recognition in Spanish of third-year primary pupils when television is utilized compare with the achievement of aural recognition in Spanish of third-year primary pupils when radio is utilized? Is sex or mental age a significant factor in the achievement of aural recognition when either radio or television is utilized?

Statement of the Purpose

The purpose of this study was to compare the effectiveness of educational television and radio when utilized to present instruction in aural recognition of Spanish to third-year primary pupils.

Hypothesis

There are no significant differences in the achievement of aural recognition of Spanish by third-year primary pupils when either radio or television is utilized as part of the instructional program. Sex and mental age are not significantly related to the achievement of aural recognition in Spanish by third-year primary pupils when either radio or television is utilized as part of the instructional program.

Delimitations

While this study compared the achievement of aural recognition in Spanish of the two groups and each group was taught the same basic vocabulary but by a different medium, its findings cannot be generalized to apply to all situations in which these media are used. Variations in the productions of telecast lessons, frequency of presentations, differences in production of radio lessons, contrasts in teachers' manuals, familiarity of teachers with the media, different age groups of pupils, and program content make clear the danger of overgeneralizing.

The instructional program developed for this study cannot be regarded as a fully developed elementary foreign language curriculum. It was based on the instructional program developed over the past four years in the Oklahoma City Public Schools, but this program is constantly being evaluated and adjusted.

A total of 118 third-year primary pupils in six classes taught by six teachers participated in this study. Although this was an adequate sample for purposes of this study, it does suggest certain restrictions upon the generalizations that can be made from this study.

This study was conducted during the summer of 1963 for a five-week period with a daily thirty-minute instruction period.

The achievement of aural recognition was identified as the first stage in the learning of a foreign language in the aural-oral approach. A test was developed to measure the achievement of aural recognition of the basic vocabulary utilized. The evidence presented in Chapter IV justified the utilization of this test for purposes of this study. However, because this test was developed specifically to measure the aural recognition vocabulary of this study, it does impose some limitations on the interpretations of these results for other groups that may have had an instructional program with a different aural recognition vocabulary.

Furthermore, it was never assumed that the utilization of the educational radio or television was the best or only means of presenting a modern foreign language in the elementary school program. The purpose was to compare the aural recognition achievement of pupils using these educational media without direct contact with language specialists. The use of specialists and the comparison of these results with achievement of pupils under specialists cannot be projected from this study.

CHAPTER II

REVIEW OF SELECTED LITERATURE

Survey of Literature Related to Radio and Television

This study focused upon the comparative effectiveness of radio and television when utilized as part of the instructional program for third-year primary pupils to achieve aural recognition in Spanish. For the purposes of this study, then, the most important literature and research would be that which deals with a comparison of the effectiveness of radio and television as instructional media. An exhaustive survey revealed that only three studies had been reported in which comparisons had been made between radio and television as instructional media.

The most recent and comprehensive study was done in 1958 by Lionel C. Barrow, Jr., and Bruce H. Westley.[1] Barrow and Westley conducted an experiment designed to compare the effectiveness of equivalent radio and television versions of a children's news program, "Exploring the News," designed for sixth grade pupils. Some 228 sixth grade pupils in eight

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[1] Lionel C. Barrow, Jr., and Bruce H. Westley, "An Experiment in the Relative Effectiveness of a Radio and Television Version of a Children's News Program," Audio-Visual Communication Review, VII (Winter, 1959), pp. 14-23.

classrooms in four Madison, Wisconsin, public schools took part in the experiment. The pupils were randomly assigned to radio or television treatment groups. The four lessons were each fifteen minutes in length as part of a thirty-minute instructional period. An achievement test was developed to test both the delayed and immediate recall of factual information. The California Test of Mental Maturity was administered to establish a mental age score.

The television group made significantly higher achievement scores than the radio group on the immediate recall test of factual information, and the superiority of the television group was consistent for all mental age groups. The television group was still higher than the radio group on the delayed recall test of factual information, but the differences were not statistically significant.

The study done by Barrow and Westley was a replication of study done by Williams in 1954 in which Williams concluded that television was superior to radio in transmitting factual information using a paper and pencil recall test administered immediately.[1]

The third study, and possibly the least useful for purposes of this study, was done by Joseph Henry Frank in

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[1]D. C. Williams, "Mass Media and Learning--An Experiment," Explorations, III (Winter, 1954), pp. 75-82.

1955.[1] Frank compared the effectiveness of television and radio in communicating weather information during flight training at Tyndall Air Force Base, Florida. Identical weather information was transmitted to interceptor students by radio and television. Six sets of synthetic weather briefs were developed and a test was developed to measure the immediate recall of the students.

A t-test between the means of the groups was significant at the .01 level of confidence in four of the television groups. Analysis of the problem situations on the test by chi-square was significant at the .01 level of confidence in favor of television. Responses from an opinionnaire showed a preponderance of attitude among flight personnel in favor of television. Frank's conclusion was, "Weather information gained by televised briefings is retained better than the information retained by the present radio system of briefings."

Every effort was made to locate additional research studies comparing radio and television as instructional media. The Educational Index was reviewed through the past ten years. The card catalog of The University of Oklahoma was reviewed and each likely source traced. In addition, the bibliography developed by Kenneth R. Sparks listing "doctoral dissertations completed at American universities through 1961 in the

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[1]Joseph Henry Frank, "An Evaluation of Closed Circuit Television for Interceptor Pilot Training." Unpublished Doctor's dissertation. (Bloomington: Indiana University, 1955).

field of radio and television" was reviewed.[1] This bibliography listed some 250 doctoral dissertations in this area. Seventy of these were studies done involving in-school television or radio, 59 in-school television and 11 in-school radio. One of this group of seventy was a comparative study, the study done by Frank which was cited earlier. This imbalance, 59 in-school television studies and 11 in-school radio studies, indicates the need for additional studies of radio as an instructional medium and also the comparative effectiveness of radio and television as instructional media.

Although this study was primarily concerned with the comparative effectiveness of radio and television as instructional media in the establishment of an aural recognition vocabulary in Spanish for third-year primary pupils, a less comprehensive survey of the literature was made in other categories. First, the literature related to the effectiveness of television as an instructional medium with particular emphasis upon the utilization of television in foreign language programs. Second, the literature related to the effectiveness of radio as an instructional medium with particular emphasis upon the utilization of radio in a foreign language program.

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[1] Kenneth A. Sparks, A Bibliography of Doctoral Dissertations in Radio and Television (Syracuse: School of Journalism, Newboren Communications Center, Syracuse University, 1962).

Survey of Literature Related to Television

Within the past decade, sixty broadcasting stations came on the air beaming television lessons to schools by day and to homes by night. Between two and three hundred closed-circuit television systems have been installed by local public schools, school districts, colleges and universities.[1]

Wilbur Schramm, in an article entitled "What We Know About Learning from Instructional Television," summarizes the results of some 393 research studies concerned with the effectiveness of television as an instructional medium as compared to regular classroom procedure in such areas as mathematics, science, social studies, humanities, history, literature, art, language skills, and health and safety. Schramm presented a summary of these 393 studies in the following table:[2]

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[1]LeRoy Collins and Leland Hazard, "A National Policy for Educational Television," Educational Television, the Next Ten Years (Stanford: Institute for Communications Research, 1962), pp. 1-13.

[2]Wilbur Schramm, "What We Know About Learning from Instructional Television," Educational Television, the Next Ten Years (Stanford: Institute for Communications Research, 1962), p. 54.

SUMMARY OF 393 STUDIES COMPARING THE EFFECTIVENESS OF TELEVISION WITH REGULAR CLASSROOM PROCEDURES

	Television More Effective	No Significant Differences	Television Less Effective	Total Studies
Grades 3-9	33%	56%	11%	203
High School	13%	63%	24%	90
College	3%	84%	13%	100

Interpreting these studies Schramm says, "There can no longer be any doubt that students can learn from instructional television. This fact has been demonstrated by hundreds of schools, thousands of students, in every part of the United States and in several other countries. The average student is likely to learn about as much from television classes as from ordinary classroom methods! In some cases he will learn more, and in some, less, but overall the conclusion has been "no significant differences."[1]

A review of these same 393 studies would suggest that some subject matter areas have apparently been taught more successfully by television than others. Mathematics, science, and social studies seem to have been very successful. History, humanities, and literature have been somewhat less successful. Language skills have been in the middle, neither as

[1] Ibid., p. 52.

successful as the most effective subjects nor as ineffective as the humanities group.[1]

An example of a language study favoring television was the study done in the Seattle Public Schools. A test of aural recognition in Spanish was administered to 1140 third grade pupils to determine the vocabulary understanding of pupils with access to television as compared with students who did not have access to television. Those pupils who had a combination of access to television and follow-up by the classroom teacher had an average of 3.00 errors. The pupils who did not have access to television but did receive instruction from the classroom teacher had an average of 6.5 errors. The pupils who had access to television alone without follow-up by the classroom teacher had an average of 7.2 errors.[2]

A study was done by Johnson and others to determine the effectiveness of nonspecialist teachers in helping elementary pupils learn Spanish when the instructional program was especially designed and presented by television. Pupils in five classrooms of the Champaign, Illinois, public elementary schools were involved in the study for a period of three years. They began studying Spanish in the fall of 1959 in fourth grade and continued until they had completed the sixth

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[1] Ibid., p. 55.

[2] Chester O. Babcock, "Audio-Visual Aids in Teaching Foreign Languages," The National Elementary Principal, XXXIX (May, 1960), pp. 16-19.

grade. Two classrooms were taught by teachers who had specialized in Spanish. Two other classrooms, comparable to the aforementioned in chronological and mental age, mean IQ, and distribution of boys and girls, were guided by teachers unfamiliar with the Spanish language. These other groups utilized television and tape recordings prepared and presented by language specialists. Once each week this group received instruction by television and the remaining days by tape recordings. The fifth group was a pilot group used in the development of materials for the study. Evaluation involved the use of pictorial tests. The difference between the mean Spanish achievement test scores favored the group taught by Spanish specialists and gradually became more significant during the three-year period.

The codirector of the study arrived at the following generalized conclusions: "Elementary teachers with no training in Spanish can, with a minimum of daily preparation, guide their pupils in learning that language, provided (1) the aural-oral approach is utilized, (2) the efficient use is made of television, and (3) that the level of achievement expected of pupils is somewhat lower in some aspects of language learning than that which would have been achieved by pupils taught by language specialists."[1]

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[1] Charles E. Johnson, et al., op. cit., pp. 164-170.

Survey of Literature Related to Radio

A review of the considerable literature concerned with the utilization of in-school radio reveals that few research projects have been done. "Research projects in radio have been piecemeal; they lack comprehension and unified design. How much of even this type of research has been done? Very little!"[1]

In 1941 Wrightstone reviewed the "basic research" studies including radio as an instructional medium and concluded that although the evidence may be inadequate it suggested that simple factual material may be acquired by elementary school pupils as effectively by radio as by "textbook teaching" in the subjects of music, science, geography, and the pronunciation of Spanish.[2]

Even though the research evidence is limited, the advocates of radio have not hesitated to state its merits and to lash out at television.

"Educational radio and television are in a fluid state. Radio broadcasting is affected because many stations are in a period of transition from radio to a

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[1]Max J. Herzberg, ed., Radio and English Teaching (New York: D. Appleton Century Company, 1941), p. 102.

[2]J. Wayne Wrightstone, "Research Projects in the Field of Radio," Radio and English Teaching, Max J. Herzberg, Editor (New York: D. Appleton Century Company, 1941), pp. 104-113.

radio-television setup. Everyone wants to break into television. Radio is losing its glamour and as a result is suffering."[1]

Another example is the statement by Lubera to the effect that radio could successfully contribute towards the achievement of "any and all general education objectives."[2]

A recent statement by Harley made to a convention for radio broadcasters was, "Radio and television will be used in the classroom in conjunction with or as selected alternatives to one another."[3]

Several individuals have commented on the value of radio as part of a foreign language program. Babcock indicated that radio, like television, provides a means for introducing children to good native speech; and although it lacks the visual stimulus of television, radio will offer excellent aural training possibilities.[4] Merden reinforces Babcock's statements by indicating that pronunciation is an important aspect of any beginning language, and the possibilities of

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[1] Margaret C. Tyler, "School Broadcasting--Which Way," National Association of Educational Broadcasting Journal, XVII (November, 1957), pp. 11-15.

[2] T. J. Lubera, "Radio Serves the Upper Grades," The Journal of the Air, IX (October, 1949), pp. 15-16.

[3] William G. Harley, "A Profession Within a Profession," National Association of Educational Broadcasting Journal, XXII (March-April, 1963), pp. 59-68.

[4] Chester D. Babcock, op. cit., pp. 16-19.

auditory training over the air make radio an especially effective medium for training in pronunciation.[1]

Braun reports that radio has been successfully used by the Santa Monica, California, Unified School District in a foreign language program.[2]

The three studies most often cited by advocates of radio were done in the 1930's. Phillips prepared a formal speech and presented it by radio and then in a face-to-face situation. His testing of the recall of the two groups of listeners indicated that direct listening to a formal speech was more effective. He then prepared an informal speech and presented it by radio and in a face-to-face situation. His testing of recall of the two groups indicated the radio group was superior.[3]

Also in 1931 in the Southwort Central School in London, England, a study was done to determine the effectiveness of wireless (radio) upon the improvement in the pronunciation of certain speech sounds. Two groups of pupils were selected, 37 in the wireless group and 31 in the control group. Thirty broadcasts were presented during the 1931-32 school year.

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[1] Walter Merden, "Methods of the Radio Language Course," The Journal of the Air, IX (October, 1949), pp. 18-20.

[2] Lois A. Braun, "An Extended-Day Foreign Language Program," The National Elementary Principal, XXXIX (May, 1960), pp. 26-28.

[3] Richard Phillips, "The Relative Instructional Values of Radio and Platform Speaking," unpublished Master's thesis (Madison: University of Wisconsin, 1931).

The statistician, Cyril Burt, D. Sc., concluded that "we may accordingly conclude that the main result of this experiment--a superior improvement in the class trained by wireless--is statistically reliable."[1]

The most extensive study done appears to have been done by a research staff at the University of Wisconsin.[2] For two years, 1937-39, a research staff supported by a grant of $41,752 from the General Education Board conducted an investigation in classrooms in Wisconsin.

The effectiveness of radio broadcasts in intermediate grade music, junior high nature study, civics, geography, high school English literature, and speech was studied. For each broadcast program series, they planned a series of broadcasts designed to attain certain educational principles, provided teacher aids to assure the effective use of the broadcasts, created and produced the programs, and conducted a "controlled experiment" to measure the effectiveness of the broadcast in a sampling of listening schools.[3]

The findings of this study in the words of the research staff from their final report were: "In general the experimental study yielded decidedly mixed results with some

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[1] Central Council for School Broadcasting, The Evidence Regarding Broadcast Speech Training (London: British Broadcasting Corporation, 1932), p. 30.

[2] Arvil S. Barr, ed., Radio in the Classroom (Madison: University of Wisconsin Press, 1942), p. 2.

[3] Ibid., p. 14.

comparisons favoring the radio group and others the control group, but no differences were large enough to be statistically significant."[1]

This survey of the literature concerned with the effectiveness of radio as an instructional medium certainly, in the writer's view, established the need for additional research in this area.

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[1] Ibid., p. 194.

CHAPTER III

METHODOLOGY OF STUDY

Procedure

This study was designed to compare the achievement test scores of aural recognition in Spanish of two groups of subjects when educational television or radio was utilized as part of the instructional program. Both groups received thirty minutes of instruction per day for a five-week period during the 1963 summer session in the Oklahoma City Public Schools. During fifteen minutes of each instructional period, one group utilized educational radio and the other group, educational television. The remaining fifteen minutes of each instructional period was devoted to follow-up activities under the direction of the classroom teacher.

Composition of Groups

A total of 118 pupils in six third-year primary classes was involved in this study. These pupils had not had previous instruction in Spanish. Educational television was utilized as part of the instructional program by 59 pupils in six groups. Educational radio was utilized by 59 pupils in

six groups. The pupils were randomly assigned to the groups within their class by drawing their names from a container.[1]

During the semester prior to the experiment, a second group of 105 pupils was involved and participated in the development and establishment of the statistical reliability and validity of the instrument designed to test aural recognition in Spanish for the purposes of this study.

Selection of Schools

Six elementary schools in Oklahoma City, Oklahoma, participated in the study. These schools were selected because the parents, pupils, teachers, and building principals showed interest in the project. Also, these schools were in the various diversified areas found in a system of this size. More information about the pupils, teachers and schools is given in Chapter V.

Teachers

Six classroom teachers, five women and one man, participated in the study. Each teacher taught two groups of pupils; one group of pupils utilized television, and the other group utilized radio. The teachers ranged in teaching experience from two and one-half years to forty years. Four of the teachers had bachelor's degrees; the other two had Master of Teaching degrees. Two of the teachers had no

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[1] Henry E. Garrett, Statistics in Psychology and Education (New York: Longmans, Green and Company, 1961), p. 203.

training, either high school or college, in Spanish. Two of the teachers had two years of Spanish in high school. The remaining two had eight and ten credit hours respectively in Spanish during their undergraduate college education.

Testing Procedures

The Goodenough Intelligence test was administered during the first week of the study to establish a mental age score; these tests were scored by a qualified psychometrist.

An aural recognition achievement test (See Appendix II) was developed for purposes of this study. This test consisted of twenty items. Each item consisted of four illustrations. A stimulus in Spanish (See Appendix I) was given and the student selected the illustration which best represented the Spanish stimulus. The Spanish stimuli were tape recorded by the language specialist. The test was administered by the classroom teacher as both a pre- and post-test and required approximately thirty-five minutes to administer. A description of the development of this test appears in the following chapter.

Statistical Treatment

The analysis of covariance and the Spearman rank correlation coefficient (Rho) were the statistical treatments utilized to analyze the data. The analysis of covariance was used to analyze the significance of the differences between

the groups within each school and between that total radio and television group.

The use of the analysis of covariance was justified on (1) the basis of interval data, (2) "F" tests suggested that the samples were from the same population, and (3) because the pupils were assigned to the various groups on a random basis.

Analysis of covariance represents an extension of the analysis of variance to allow for the correlation between initial and final scores. Covariance analysis is especially useful to experimental psychologists when, for various reasons, it is impossible or quite difficult to equate control and experimental groups at the start, a situation which often occurs in actual experiments; through covariance analysis, one is able to effect adjustments in final or terminal scores which allow for differences in some initial variable.[1]

The Spearman rank correlation coefficient, or Rho, was used to analyze the pre- and post-test scores for each group and method as well as to correlate the mental age scores with the post-test achievement scores for each group and method.

"Of all the statistics based on ranks, the Spearman rank correlation coefficient was the earliest to be developed and is perhaps the best known today. It is a measure of

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[1] Ibid., p. 295.

association which requires that both variables be measured in at least an ordinal scale so that the objects or individuals under study can be ranked in two ordered series."[1]

The chi-square test of independence was utilized to test the significance of the relationship between sex and high or low scores on the post-test of achievement of aural recognition for the total radio and television group. "A useful application of chi-square can be made when we wish to investigate the relationship between traits or attributes which can be classified into two or more categories."[2]

The following statistical formulae were used to analyze the reliability and validity of the aural recognition achievement test constructed for the study: Kuder-Richardson formula for estimating test reliability; Spearman-Brown prophesy formula for test length reliability; and the Biserial coefficient of correlation to determine the correlation of the various test items with the criterion.

Controlling Experimental Conditions

Certain variables were controlled in an effort to offer some assurance that any differences in the achievement of aural recognition were likely to be as a result of the medium of instruction, radio or television. These variables

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[1]Sidney Siegel, Nonparametric Statistics for the Behavioral Sciences (New York: McGraw-Hill Book Company, 1956), p. 202.

[2]Henry E. Garrett, op cit., p. 262.

were: length of the instructional period; curricular content; the basic approach to the aural-oral method; the follow-up activities conducted by the classroom teacher; the language specialist presenting both the radio and television lessons and preparing tapes for testing purposes; and by assigning each classroom teacher to both a television and radio group.

A daily thirty-minute period of instruction was prescribed for the following reasons: First, the radio and television lessons were presented as daily fifteen-minute lessons; then the classroom teacher used a fifteen-minute follow-up study from the activities prescribed in the manual developed for this program (See Appendix III). Second, as this was a five-week summer session, it seemed desirable to provide sufficient time to be approximately the equivalent of a semester's study during the regular school year. Third, during the regular school year two thirty-minute periods per week were used so the teachers were familiar with this pattern. Fourth, this pattern and length of period were recommended in a study done by Charles Johnson and reported in The Modern Language Journal.[1]

The language specialist presented both the television and radio lessons and also prepared the tapes used in the achievement testing program. This assured the pupils of only

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[1]Charles E. Johnson, Fred P. Ellison, and Joseph S. Flores, "The Effects of Foreign Language Instruction on Basic Learnings in the Elementary Schools," The Modern Language Journal, XLV (May, 1961), pp. 200-202.

one voice and model. The language specialist was an experienced radio and television teacher.

The basic aural vocabulary of both the television and radio lessons was identical. Although each presentation was planned to best suit the particular medium, variations were in approach and not in the aural recognition vocabulary. This method is similar to the one used Barrow and Westley in their comparative study of radio and television.[1]

The selection of the aural recognition vocabulary for the study was done by the language specialist. The selection of the basic vocabulary was governed by the following considerations: First, the words and phrases were common to the immediate environment of the learners. Second, the words and phrases were those frequently used by Spanish-speaking people in normal life situations. Third, attention was given to the inclusion of as many patterns of the structure of Spanish as possible. Fourth, the aural vocabulary was from the aural vocabulary of the topics in the first year's Spanish program used in the Oklahoma City Public Schools.

The vocabulary content was then organized into topics for instructional purposes. These topics were: "Exchanging Greetings and Introductions," "The School," "The Home," "The Weather," and "Number Words."

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[1]Lionel Barrow, op. cit., pp. 14-23.

The aural-oral approach to the learning of a modern foreign language used in this study was developed by the Modern Language Association and is patterned after the manner in which a first language is learned.[1] First, the sounds and vocabulary of the language are heard usually from a native model; second, the sounds and vocabulary are imitated and spoken; and third, readiness for reading and writing occurs. The initial stages of both teaching and learning are done in the language, insofar as possible. Translation into the first or native language is discouraged at all stages of instruction.

These principles, the manual, and the follow-up activities prescribed in the manual were reviewed with the participating classroom teachers. An effort was also made during these meetings to explain the purposes of the study and to reduce or eliminate any previous commitment a teacher may have had to a particular medium. The testing, grouping, and information-gathering procedures were presented to the teachers during these meetings.

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[1] Manual Andrade, John L. Hayman, Jr., and James T. Johnson, Jr., "Measurement of Listening Comprehension in Elementary School Spanish Instruction," The Elementary School Journal, LXIV (November, 1963), pp. 84-93.

CHAPTER IV

THE DEVELOPMENT OF A TEST OF AURAL RECOGNITION

Justification

The objectives of the first stages of instruction in the aural-oral approach as defined by the Modern Foreign Language Association are to establish a beginning aural recognition and speaking vocabulary.[1] As this study was concerned with the instruction which was the equivalent of the first fourteen to sixteen weeks of the first year's program, the primary objective of the instruction program was the development of skills in aural recognition.

Dr. Ralph Garry and Dr. Edna Mauriello have established a pattern for the testing of aural recognition.[2] Andrade and others in the Denver study also developed a similar pattern for testing aural recognition in Spanish.[3] The test developed for this study followed the pattern developed in the two previous studies and measures the achievement of

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[1] Brooks Nelson, Language and Language Learning (New York: Harcourt, Brace and Company, 1960), p. 123.

[2] Modern Language Project, Administrative Handbook for Parlons Francais (Boston: Modern Language Project, 1962), p. 14.

[3] Manual Andrade, et al., op. cit., p. 85.

aural recognition as the objective of the first stages of instruction within the aural-oral approach to the learning of a modern foreign language.

Illustrations were developed by the language specialist, the writer, and an artist in order to represent the aural recognition vocabulary to be tested, as well as the additional illustrations necessary for a multiple-choice test.

The first draft of the test was administered to seventy pupils who had studied Spanish for one year. These results were studied to eliminate any illustrations that were not understood by the pupils. The test was revised and again administered individually to pupils who were closely observed and later interviewed to identify illustrations that were not yet accurate. Again, the test was revised and was judged ready to be administered to a group for the purpose of establishing the statistical validity and reliability of the test.

Validation

The item content of the test was carefully selected from the aural vocabulary of the instructional program. As finally constructed, the test had twenty items testing the aural recognition of 35 basic vocabulary words. Some vocabulary items were not tested because of the difficulty of illustrating the item, or it seemed appropriate to sample rather than test all items of a similar nature--number words for an example.

The revised test was administered to thirty-five pupils in both Spanish and English. These pupils had had one year of Spanish. The responses of these students in Spanish and English were correlated. This yielded a Spearman rank correlation coefficient of +.443. A positive correlation of +.443 is significant at the .01 level of confidence. This positive, significant correlation between the Spanish and English responses indicated that the illustrations are accurate and free from elements that may have confused the pupil.

The language specialist placed in rank order thirty-five pupils on the basis of her estimate of the pupils' knowledge of Spanish. The revised test was then administered to these pupils. The specialist's ranking and the test scores were correlated. This yielded a Spearman rank correlation coefficient of +.752. A positive correlation coefficient of +.752 is significant at the .01 level of confidence. This high, positive correlation between the specialist's judgment and the test scores indicated that the test was successful in identifying the aural recognition achievement of these pupils in Spanish.

Reliability

The formula for estimating test reliability from the relationship of total test variance to item variance is the Kuder-Richardson Formula.[1]

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[1] E. F. Lindquist, Educational Measurements (Washington, D. C.: American Council on Education, 1951), p. 587.

This formula is:

$$r_{++} = \frac{n}{n-1}\left\{\frac{S_+^2 - \sum_{i=1}^{n} p_i q_i}{S_+^2}\right\}$$

r_{++} = reliability of total test

n = number of items in test

S_+^2 = variance of total test

p_i = proportion passing item i

q_i = 1 - p

Substituting the appropriate data from the study, the formula is:

$$r_{++} = \frac{20}{19}\left[\frac{(2.784)^2 - 3.286}{(2.784)^2}\right]$$

$$r_{++} = +.604$$

The Kuder-Richardson estimate of reliability of the total test is then ++.604 based on Kelley's definition of the minimum correlation needed for purposes of evaluating the level of group accomplishment,[1] a positive correlation of .604 is sufficient for purposes of this test and study.

The Spearman-Brown prophesy formula for estimating the effect of lengthening the test upon the reliability was utilized.[2] The Spearman-Brown formula is:

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[1] Ibid., p. 609. [2] Ibid., p. 581.

$$r_{nn} = \frac{nr_{11}}{1+(n-1)r_{11}}$$

If the test included ten items rather than twenty, the estimated reliability would be ++.495. This estimated reliability coefficient is less than the minimum recommended by Kelley.

If the test included forty items rather than twenty, the estimated reliability would be ++.746. Increasing the number of items from twenty to forty would then increase the estimated reliability from a ++.604 to a ++.746. However, doubling the length of the test would also increase the time required to administer the test to over seventy minutes. As the test was administered to third-year primary students, an administration time of seventy minutes seemed too long.

The following reasons were the justifications for utilizing a test of twenty items and an administration time of thirty-five minutes. First, the estimated reliability of +.604 was adequate for purposes of the study. Seccnd, the item content was homogeneous. Third, a single testing session of thirty-five minutes seemed appropriate for third-year primary pupils.

To determine the correlations of the various test items with the criterion, the point biserial γ formula was utilized.[1]

Point Biserial γ Coefficient of Correlation for Each Test Item with Test Criterion

Item	p bis
1	.595*
2	.590*
3	.505*
4	.699*
5	.819*
6	.754*
7	.757*
8	.175
9	.195
10	.119
11	.460*
12	1.00 *
13	.854*
14	.214
15	.090
16	.748*
17	.654*
18	.704*
19	.933*
20	.120

* Significant at .05 level

Fourteen of the test items, numbered 1, 2, 3, 4, 5, 6, 7, 11, 12, 13, 16, 17, 18, and 19, were substantially correlated with the criterion. Six of the test items, numbered 8, 9, 10, 14, 15, and 20, were not significantly correlated with the criterion. These items were studied and revised.

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[1] Henry E. Garrett, op. cit., p. 380.

Summary

The previously mentioned procedures seemed to establish sufficient grounds for utilizing the test for purposes of this study. However, a test for aural recognition is needed by the elementary schools, and further testing and analysis would be appropriate.

CHAPTER V

PRESENTATION AND ANALYSIS OF DATA

This chapter will present, describe, and report the analysis of the data obtained during this study. These data and findings will be reported for each school and the radio and television groups within that school, and then the data and findings for the total radio and television group will be reported.

The following information will be presented for both the radio and television groups within each of the six schools:

1. Total number of pupils participating
2. A description of each teacher's experience, training, and preparation in Spanish
3. The number of boys and girls in each radio or television group
4. The mental age for each pupil and the range for the radio or television group
5. The pre-test scores, range of scores, and mean for the radio or television group
6. The post-test scores, range of scores, and mean for the radio or television group

7. Spearman rank correlation coefficient for pre- and post-test achievement scores and for mental age as related to the post-test achievement scores for each radio and television group
8. The analysis of covariance for each radio and television group's achievement test for each school.

School I

Twenty-eight third-year primary pupils from School I participated in the study. These pupils were randomly assigned to either a radio or television group. Both groups were taught by a woman who had forty years of teaching experience, a bachelor's degree, and two years of study of Spanish in high school.

The radio group had fourteen pupils, seven boys and seven girls. The range in mental age was from 6 years 6 months to 10 years 2 months. The range in scores on the pre-test for the achievement of aural recognition was from a score of 5 to a score of 11, with a mean pre-test achievement score of 8.5. The range in scores on the post-test for the achievement of aural recognition was from a score of 5 to a score of 20, with a mean post-test achievement score of 14.1 The mean improvement in post-test scores was 5.6. (See Table 1.)

TABLE 1

DATA FOR THE DISTRIBUTION OF SEX, MENTAL AGE, AND PRE- AND POST-TEST ACHIEVEMENT SCORES FOR RADIO GROUP IN SCHOOL I

Pupil No.	Sex	Mental Age	Pre-Test	Post-Test
1	G	9.6	11	12
2	B	9.6	8	5
3	G	9.3	7	20
4	B	8.7	6	14
5	G	10.2	11	17
6	G	9.0	11	17
7	G	6.6	11	17
8	B	8.7	9	13
9	B	8.7	7	16
10	G	7.5	11	16
11	B	7.5	5	11
12	G	8.7	7	13
13	B	8.1	8	12
14	B	9.6	7	15
	7 Boys 7 Girls	Range 6.6 to 10.2	Mean 8.5	Mean 14.1

The Spearman rank correlation coefficient (Rho) for the relationship between the pre- and post-test achievement scores was positive +.3040 which was not significant at the .05 level of confidence. This eliminated prior knowledge of Spanish on the part of this group as a significant factor.

Rho was also used to analyze the significance of the relationship between mental age and scores on the post-test of achievment of aural recognition, yielding a Rho of positive +.1081 which was not significant at the .05 level of confidence. For this group there was not a significant relationship between mental age and the achievement of aural recognition when radio was utilized. (See Table 2.)

TABLE 2

SPEARMAN RANK CORRELATION COEFFICIENT (RHO) OF PRE- AND POST-TEST SCORES AND FOR MENTAL AGE AND POST-TEST SCORES FOR RADIO GROUP IN SCHOOL I

	Pre-Test Scores Related to Post-Test Scores	Mental Age Related to Post-Test Scores
Rho	+.3040	+.1081
Significance at .05 level	No	No

The television group had fourteen pupils, nine boys and five girls. The range in mental age was from 8 years 7 months to 12 years 3 months. The range in scores on the pre-test for the achievement of aural recognition was from a

score of 6 to a score of 11, with a mean pre-test achievement score of 8.9. The range in scores on the post-test for the achievement of aural recognition was from a score of 15 to a score of 20, with a mean post-test achievement score of 17.8. The mean improvement in post-test scores was 8.9. (See Table 3.)

The Spearman rank correlation coefficient (Rho) for the relationship between the pre- and post-test achievement scores was positive +.1347 which was not significant at the .05 level of confidence. This eliminated prior knowledge of Spanish on the part of this group as a significant factor.

Rho was also used to analyze the significance of the relationship between mental age and scores on the post-test of achievement of aural recognition, yielding a Rho of negative -.0971 which was not significant at the .05 level of confidence. For this group there was not a significant relationship between mental age and the achievement of aural recognition when television was utilized. (See Table 4.)

The analysis of covariance was used to analyze the significance of the differences between the radio and television groups in the achievement of aural recognition. This yielded an Fyx of 10.9273 which is significant at the .05 level of confidence. There was, then, a significant difference between the radio and television groups in the achievement of aural recognition favoring the television group. (See Table 5.)

TABLE 3

DATA FOR THE DISTRIBUTION OF SEX, MENTAL AGE, AND PRE- AND POST-TEST ACHIEVEMENT SCORES FOR TELEVISION GROUP IN SCHOOL I

Pupil No.	Sex	Mental Age	Pre-Test	Post-Test
1	B	9.3	9	17
2	G	12.3	8	18
3	G	9.0	9	17
4	G	9.6	9	18
5	B	9.9	6	17
6	B	9.0	9	20
7	B	8.7	8	20
8	B	12.0	10	18
9	G	9.9	11	20
10	B	9.6	9	18
11	B	9.3	9	17
12	G	8.7	9	15
13	B	12.0	9	15
14	B	9.0	9	19
	9 Boys 5 Girls	Range 8.7 to 12.3	Mean 8.9	Mean 17.8

TABLE 4

SPEARMAN RANK CORRELATION COEFFICIENT (RHO) OF PRE- AND POST-TEST SCORES AND FOR MENTAL AGE AND POST-TEST SCORES FOR TELEVISION GROUP IN SCHOOL I

	Pre-Test Scores Related to Post-Test Scores	Mental Age Related to Post-Test Scores
Rho	+.1347	-.0971
Significance at .05 level	No	No

TABLE 5

ANALYSIS OF COVARIANCE FOR RADIO AND TELEVISION ACHIEVEMENT SCORES IN SCHOOL I

Source	df	SSx	SSy	SSxy	SSyx	MSyx(Vyx)
Among	1	.8924	92.8928	9.1000	84.6381	84.6381
Within	25	75.2148	206.0718	30.5786	193.6398	7.7455

$$Fyx = \frac{84.6381}{7.7455} = 10.9273$$

F. table
1/25 df
F.05 = 4.24

School II

Twenty third-year primary pupils from School II participated in the study. These pupils were randomly assigned to either a radio or television group. Both groups were taught by a woman who had had four years of teaching experience, a master's degree, and ten semester credit hours of Spanish in college.

The radio group had ten pupils, six boys and four girls. The range in mental age was from 7 years 3 months to 10 years and 8 months. The range in scores on the pre-test for the achievement of aural recognition was from a score of 2 to a score of 13, with a mean pre-test achievement score of 7.1. The range in scores on the post-test for the achievement of aural recognition was from a score of 15 to a score of 20, with a mean post-test achievement score of 18.6. The mean improvement in post-test scores was 11.5. (See Table 6.)

The Spearman rank correlation coefficient (Rho) for the relationship between the pre- and post-test achievement scores was a positive +.2523 which was not significant at the .05 level of confidence. This eliminated prior knowledge of Spanish on the part of this group as a significant factor.

Rho was also used to analyze the significance of the relationship between mental age and scores on the post-tests of achievement of aural recognition, yielding a Rho negative of -.0946 which was not significant at the .05 level of confidence. For this group there was not a significant relationship between mental age and the achievement of aural recognition when radio was utilized. (See Table 7.)

The television group had ten pupils, six boys and four girls. The range in mental age was from 8 years 1 month to 11 years and 1 month. The range in scores on the pre-test for the achievement of aural recognition was from a score of 1 to a score of 9, with a mean pre-test achievement score of

TABLE 6

DATA FOR THE DISTRIBUTION OF SEX, MENTAL AGE, AND PRE- AND POST-TEST ACHIEVEMENT SCORES FOR RADIO GROUP IN SCHOOL II

Pupil No.	Sex	Mental Age	Pre-Test	Post-Test
1	G	9.0	2	15
2	B	9.6	8	20
3	B	7.8	9	17
4	B	9.9	2	17
5	G	9.0	6	20
6	G	10.8	13	20
7	B	7.3	8	20
8	G	9.9	11	18
9	B	7.8	2	20
10	B	8.4	10	19
	6 Boys 4 Girls	Range 7.3 to 10.8	Mean 7.1	Mean 18.6

5.1. The range in scores on the post-test for the achievement of aural recognition was from a score of 16 to a score of 20, with a mean post-test achievement score of 18.0. The mean improvement in post-test scores was 12.9. (See Table 8.)

The Spearman rank correlation coefficient (Rho) for the relationship between the pre- and post-test achievement scores was a positive +.1195 which was not significant at the

TABLE 7

SPEARMAN RANK CORRELATION COEFFICIENT (RHO) OF PRE- AND POST-TEST SCORES AND FOR MENTAL AGE AND POST-TEST SCORES FOR RADIO GROUP IN SCHOOL II

	Pre-Test Scores Related to Post-Test Scores	Mental Age Related to Post-Test Scores
Rho	+.2523	-.0946
Significance at .05 level	No	No

TABLE 8

DATA FOR THE DISTRIBUTION OF SEX, MENTAL AGE, AND PRE- AND POST-TEST ACHIEVEMENT SCORES FOR TELEVISION GROUP IN SCHOOL II

Pupil No.	Sex	Mental Age	Pre-Test	Post-Test
1	B	9.3	1	18
2	G	10.3	2	19
3	G	8.4	7	17
4	B	8.4	7	16
5	G	8.4	9	20
6	B	9.3	8	19
7	B	8.1	3	17
8	G	11.1	8	18
9	B	9.6	1	19
10	B	9.6	5	17
	6 Boys 4 Girls	Range 8.1 to 11.1	Mean 5.1	Mean 18.0

.05 level of confidence. This eliminated prior knowledge of Spanish on the part of this group as a significant factor.

Rho was also used to analyze the significance of the relationship between mental age and scores on the post-tests of achievement of aural recognition, yielding a Rho of positive +.2096 which was not significant at the .05 level of confidence. For this group there was not a significant relationship between mental age and the achievement of aural recognition when television was utilized. (See Table 9.)

TABLE 9

SPEARMAN RANK CORRELATION COEFFICIENT (RHO) OF PRE- AND POST-TEST SCORES AND FOR MENTAL AGE AND POST-TEST SCORES FOR TELEVISION GROUP IN SCHOOL II

	Pre-Test Scores Related to Post-Test Scores	Mental Age Related to Post-Test Scores
Rho	+.1195	+.2096
Significance at .05 level	No	No

The analysis of covariance was used to analyze the significance of the differences between the radio and television groups in the achievement of aural recognition. This yielded an Fyx of positive +.4245 which was not significant at the .05 level of confidence. There was, then, no significant difference between the radio and television groups in the achievement of aural recognition. (See Table 10.)

TABLE 10

ANALYSIS OF COVARIANCE FOR RADIO AND TELEVISION ACHIEVEMENT SCORES IN SCHOOL II

Source	df	SSx	SSy	SSxy	SSyx	MSyx(Vyx)
Among	1	20.0000	1.8000	6.0000	1.0364	1.0364
Within	17	229.8000	42.4000	14.4000	41.4977	2.4410

$Fyx = \frac{1.0364}{2.4410} = .4245$

F. table
1/12 df
F.05 = 4.45

School III

Thirty-two third-year primary pupils from School III participated in the study. These pupils were randomly assigned to either a radio or television group. Both groups were taught by a man who had two and one-half years of teaching experience, a bachelor's degree, and eight credit hours of study in Spanish in college.

The radio group had sixteen pupils, eight boys and eight girls. The range in mental age was from 6 years 9 months to 10 years and 8 months. The range in scores on the pre-test for the achievement of aural recognition was from a score of 3 to a score of 14, with a mean pre-test achievement score of 9.1. The range in scores on the post-test for the achievement of aural recognition was from a score of 16 to a score of 20, with a mean post-test achievement score of 18.4. The mean improvement in post-test scores was 9.3. (See Table 11.)

TABLE 11

DATA FOR THE DISTRIBUTION OF SEX, MENTAL AGE, AND PRE- AND POST-TEST ACHIEVEMENT SCORES FOR RADIO GROUP IN SCHOOL III

Pupil No.	Sex	Mental Age	Pre-Test	Post-Test
1	G	9.3	6	19
2	B	10.8	3	20
3	G	8.7	14	19
4	B	8.7	9	17
5	B	7.5	7	19
6	B	9.3	6	20
7	B	9.9	8	20
8	G	9.9	9	20
9	G	8.7	10	20
10	G	7.5	11	18
11	B	6.9	13	17
12	G	7.2	10	17
13	B	8.1	9	18
14	G	7.5	12	18
15	B	6.9	7	16
16	G	7.5	12	17
	8 Boys 8 Girls	Range 6.9 to 10.8	Mean 9.1	Mean 18.4

The Spearman rank correlation coefficient (Rho) for the relationship between the pre- and post-test achievement scores was a negative -.3973 which was not significant at the .05 level of confidence. This eliminated prior knowledge of Spanish on the part of this group as a significant factor.

Rho was also used to analyze the significance of the relationship between mental age and scores on the post-test of achievement of aural recognition, yielding a Rho of positive +.8387 which was significant at the .05 level of confidence. For this group there was a significant relationship between mental age and the achievement of aural recognition when radio was utilized. (See Table 12.)

TABLE 12

SPEARMAN RANK CORRELATION COEFFICIENT (RHO) OF PRE- AND POST-TEST SCORES AND FOR MENTAL AGE AND POST-TEST SCORES FOR RADIO GROUP IN SCHOOL III

	Pre-Test Scores Related to Post-Test Scores	Mental Age Related to Post-Test Scores
Rho	-.3973	+.8387
Significance at .05 level	No	Yes

The television group had sixteen pupils, twelve boys and four girls. The range in mental age was from 7 years 5 months to 10 years and 8 months. The range in scores on the pre-test for the achievement of aural recognition was from a

score of 4 to a score of 13, with a mean pre-test achievement score of 7.6. The range in scores on the post-test for the achievement of aural recognition was from a score of 13 to a score of 20, with a mean post-test achievement score of 18.8. The mean improvement in post-test scores was 11.2. (See Table 13.)

The Spearman rank correlation coefficient (Rho) for the relationship between the pre- and post-test achievement scores was a negative -.2390 which was not significant at the .05 level of confidence. This eliminated prior knowledge of Spanish on the part of this group as a significant factor.

Rho was also used to analyze the significance of the relationship between mental age and scores on the post-test of achievement of aural recognition, yielding a Rho of negative -.2955 which was not significant at the .05 level of confidence. For this group there was not a significant relationship between mental age and the achievement of aural recognition when television was utilized. (See Table 14.)

The analysis of covariance was used to analyze the significance of the differences between the radio and television groups in the achievement of aural recognition. This yielded an Fyx of positive +.1215 which was not significant at the .05 level of confidence. There was, then, no significant difference between the radio and television groups in the achievement of aural recognition. (See Table 15.)

TABLE 13

DATA FOR THE DISTRIBUTION OF SEX, MENTAL AGE, AND PRE- AND POST-TEST ACHIEVEMENT SCORES FOR TELEVISION GROUP IN SCHOOL III

Pupil No.	Sex	Mental Age	Pre-Test	Post-Test
1	B	7.5	6	20
2	B	9.0	10	20
3	B	8.7	7	13
4	G	8.1	7	20
5	B	8.7	13	20
6	B	10.8	7	20
7	B	9.6	6	20
8	B	10.8	6	16
9	B	8.7	8	17
10	G	8.7	12	19
11	G	8.1	4	20
12	B	9.3	10	18
13	B	8.7	4	20
14	B	10.2	7	20
15	B	8.1	7	20
16	G	10.3	8	18
	12 Boys 4 Girls	Range 7.5 to 10.8	Mean 7.6	Mean 18.8

TABLE 14

SPEARMAN RANK CORRELATION COEFFICIENT (RHO) OF PRE- AND POST-TEST SCORES AND FOR MENTAL AGE AND POST-TEST SCORES FOR TELEVISION GROUP IN SCHOOL III

	Pre-Test Scores Related to Post-Test Scores	Mental Age Related to Post-Test Scores
Rho	-.2390	-.2955
Significance at .05 level	No	No

TABLE 15

ANALYSIS OF COVARIANCE FOR RADIO AND TELEVISION ACHIEVEMENT SCORES IN SCHOOL III

Source	df	SSx	SSy	SSxy	SSyx	MSyx(Vyx)
Among	1	18.0000	1.1250	-4.5000	.3604	.3604
Within	29	223.5000	88.3750	-23.0000	86.0082	2.9658

$$Fyx = \frac{.3604}{2.9658} = .1215$$

F. table
1/29 df
F.05 = 4.18

School IV

Eighteen third-year primary pupils from School IV participated in the study. These pupils were randomly assigned to either a radio or television group. Both groups were taught by a woman who had seven years of teaching experience, a bachelor's degree, and no study of Spanish in high school or college.

The radio group had nine pupils, eight boys and one girl. The range in mental age was from 7 years 5 months to 9 years and 6 months. The range in scores on the pre-test for the achievement of aural recognition was from a score of 0 to a score of 11, with a mean pre-test achievement score of 7.2. The range in scores on the post-test for the achievement of aural recognition was from a score of 15 to a score of 19, with a mean post-test achievement score of 17.1. The mean improvement in post-test scores was 9.9. (See Table 16.)

TABLE 16

DATA FOR THE DISTRIBUTION OF SEX, MENTAL AGE, AND PRE- AND POST-TEST ACHIEVEMENT SCORES FOR RADIO GROUP IN SCHOOL IV

Pupil No.	Sex	Mental Age	Pre-Test	Post-Test
1	G	7.5	3	16
2	B	8.4	0	19
3	B	7.5	11	15
4	B	8.1	11	17
5	B	8.7	9	19
6	B	9.6	9	18
7	B	8.1	7	16
8	B	8.2	8	18
9	B	9.0	7	16
	8 Boys 1 Girl	Range 7.5 to 9.6	Mean 7.2	Mean 17.1

The Spearman rank correlation coefficient (Rho) for the relationship between the pre- and post-test achievement scores was a negative -.1239 which was not significant at the .05 level of confidence. This eliminated prior knowledge of Spanish on the part of this group as a significant factor.

Rho was also used to analyze the significance of the relationship between mental age and scores on the post-test of achievement of aural recognition, yielding a Rho of positive +.5949 which was not significant at the .05 level of confidence. For this group there was not a significant relationship between mental age and the achievement of aural recognition when radio was utilized. (See Table 17.)

TABLE 17

SPEARMAN RANK CORRELATION COEFFICIENT (RHO) OF PRE- AND POST-TEST SCORES AND FOR MENTAL AGE AND POST-TEST SCORES FOR RADIO GROUP IN SCHOOL IV

	Pre-Test Scores Related to Post-Test Scores	Mental Age Related to Post-Test Scores
Rho	+.1239	+.5949
Significance at .05 level	No	No

The television group had nine pupils, six boys and three girls. The range in mental age was from 6 years 0 months to 10 years and 5 months. The range in scores on the pre-test for the achievement of aural recognition was from a

score of 2 to a score of 10, with a mean pre-test achievement score of 7.9. The range in scores on the post-test for the achievement of aural recognition was from a score of 14 to a score of 20, with a mean post-test achievement score of 17.9. The mean improvement in post-test scores was 10. (See Table 18.)

TABLE 18

DATA FOR THE DISTRIBUTION OF SEX, MENTAL AGE, AND PRE- AND POST-TEST ACHIEVEMENT SCORES FOR TELEVISION GROUP IN SCHOOL IV

Pupil No.	Sex	Mental Age	Pre-Test	Post-Test
1	G	9.6	9	17
2	B	7.5	10	20
3	G	8.8	9	20
4	B	9.0	10	20
5	B	9.9	9	17
6	G	10.5	6	17
7	B	8.1	9	20
8	B	9.2	2	14
9	B	6.0	7	16
	6 Boys 3 Girls	Range 6.0 to 10.5	Mean 7.9	Mean 17.9

The Spearman rank correlation coefficient (Rho) for the relationship between the pre- and post-test achievement

scores was a positive +.8187 which was significant at the .05 level of confidence. This significant correlation indicated that there was some prior knowledge of Spanish which would affect conclusions based upon this group.

Rho was also used to analyze the significance of the relationship between mental age and scores on the post-test of achievement of aural recognition, yielding a negative -.2837 which was not significant at the .05 level of confidence. For this group there was not a significant relationship between mental age and the achievement of aural recognition when television was utilized. (See Table 19.)

TABLE 19

SPEARMAN RANK CORRELATION COEFFICIENT (RHO) OF PRE- AND POST-TEST SCORES AND FOR MENTAL AGE AND POST-TEST SCORES FOR TELEVISION GROUP IN SCHOOL IV

	Pre-Test Scores Related to Post-Test Scores	Mental Age Related to Post-Test Scores
Rho	+.8187	-.2837
Significance at .05 level	Yes	No

The analysis of covariance was used to analyze the significance of the differences between the radio and television groups in the achievement of aural recognition. This yielded an Fyx of positive +.5757 which was not significant at the .05 level of confidence. There was, then, no

significant difference between the radio and television groups in the achievement of aural recognition. (See Table 20.)

TABLE 20

ANALYSIS OF COVARIANCE FOR RADIO AND TELEVISION ACHIEVEMENT SCORES IN SCHOOL IV

Source	df	SSx	SSy	SSxy	SSyx	MSyx(Vyx)
Among	1	2.0000	2.7222	2.3333	1.9686	1.9686
Within	15	158.4445	55.7778	26.6667	51.2898	3.4193

$Fyx = \frac{1.9686}{3.4193} = .5757$

F. table
1/15 df
F.05 = 4.54

School V

Twelve third-year primary pupils from School V participated in the study. These pupils were randomly assigned to either a radio or television group. Both groups were taught by a woman who had four years of teaching experience, a master's degree, and two years of study of Spanish in high school.

The radio group had six pupils, three boys and three girls. The range in mental age was from 5 years 4 months to 12 years and 3 months. The range in scores on the pre-test for the achievement of aural recognition was from a score of 5 to a score of 15, with a mean pre-test achievement score of 10.1. The range in scores on the post-test for the

achievement of aural recognition was from a score of 14 to a score of 20, with a mean post-test achievement score of 17.9. The mean improvement in post-test scores was 7.8. (See Table 21.)

TABLE 21

DATA FOR THE DISTRIBUTION OF SEX, MENTAL AGE, AND PRE- AND POST-TEST ACHIEVEMENT SCORES FOR RADIO GROUP IN SCHOOL V

Pupil No.	Sex	Mental Age	Pre-Test	Post-Test
1	B	12.3	5	18
2	G	9.9	9	17
3	G	8.7	13	20
4	G	7.8	10	19
5	B	9.3	15	17
6	B	5.4	9	14
	3 Boys 3 Girls	Range 5.4 to 12.3	Mean 10.1	Mean 17.9

The Spearman rank correlation coefficient (Rho) for the relationship between the pre- and post-test achievement scores was a positive +.2794 which was not significant at the .05 level of confidence. This eliminated prior knowledge of Spanish on the part of this group as a significant factor.

Rho was also used to analyze the significance of the relationship between mental age and scores on the post-test

of achievement of aural recognition, yielding a Rho of positive +.1159 which was not significant at the .05 level of confidence. For this group there was not a significant relationship between mental age and the achievement of aural recognition when radio was utilized. (See Table 22.)

TABLE 22

SPEARMAN RANK CORRELATION COEFFICIENT (RHO) OF PRE- AND POST-TEST SCORES AND FOR MENTAL AGE AND POST-TEST SCORES FOR RADIO GROUP IN SCHOOL V

	Pre-Test Scores Related to Post-Test Scores	Mental Age Related to Post-Test Scores
Rho	+.2794	+.1159
Significance at .05 level	No	No

The television group had six pupils, four boys and two girls. The range in mental age was from 6 years 6 months to 12 years 0 months. The range in scores on the pre-test for the achievement of aural recognition was from a score of 0 to a score of 11, with a mean pre-test achievement score of 7.5. The range in scores on the post-test for the achievement of aural recognition was from a score of 8 to a score of 19, with a mean post-test achievement score of 14.7. The mean improvement in post-test scores was 7.2. (See Table 23.)

TABLE 23

DATA FOR THE DISTRIBUTION OF SEX, MENTAL AGE, AND PRE- AND POST-TEST ACHIEVEMENT SCORES FOR TELEVISION GROUP IN SCHOOL V

Pupil No.	Sex	Mental Age	Pre-Test	Post-Test
1	B	8.1	10	16
2	G	6.6	0	8
3	B	12.0	8	19
4	G	7.5	11	12
5	B	11.1	7	17
6	B	8.4	9	16
	4 Boys 2 Girls	Range 6.6 to 12.0	Mean 7.5	Mean 14.7

The Spearman rank correlation coefficient (Rho) for the relationship between the pre- and post-test achievement scores was a negative -.0579 which was not significant at the .05 level of confidence. This eliminated prior knowledge of Spanish on the part of this group as a significant factor.

Rho was also used to analyze the significance of the relationship between mental age and scores on the post-test of achievement of aural recognition, yielding a Rho of positive +.8956 which was significant at the .05 level of confidence. For this group there was a significant relationship between mental age and the achievement of aural recognition when television was utilized. (See Table 24.)

TABLE 24

SPEARMAN RANK CORRELATION COEFFICIENT (RHO) OF PRE- AND POST-TEST SCORES AND FOR MENTAL AGE AND POST-TEST SCORES FOR TELEVISION GROUP IN SCHOOL V

	Pre-Test Scores Related to Post-Test Scores	Mental Age Related to Post-Test Scores
Rho	-.0579	+.9856
Significance at .05 level	No	Yes

The analysis of covariance was used to analyze the significance of the differences between the radio and television groups in the achievement of aural recognition. This yielded an Fyx of positive +.9478 which was not significant at the .05 level of confidence. There was, then, no significant difference between the radio and television groups in the achievement of aural recognition. (See Table 25.)

TABLE 25

ANALYSIS OF COVARIANCE FOR RADIO AND TELEVISION ACHIEVEMENT SCORES IN SCHOOL V

Source	df	SSx	SSy	SSxy	SSyx	MSyx(Vyx)
Among	1	21.3333	24.0833	22.6667	8.4400	8.4400
Within	9	138.3334	100.8334	53.5000	80.1425	8.9047

$$Fyx = \frac{8.4400}{8.9047} = .9478$$

F. table
1/9 df
F.05 = 5.12

School VI

Eight third-year primary pupils from School VI participated in the study. These pupils were randomly assigned to either a radio or television group. Both groups were taught by a woman who had five years of teaching experience, a bachelor's degree, and no previous study in Spanish.

The radio group had four pupils, two boys and two girls. The range in mental age was from 6 years 3 months to 10 years 5 months. The range in scores on the pre-test for the achievement of aural recognition was from a score of 5 to a score of 11, with a mean pre-test achievement score of 7.2. The range in scores on the post-test for the achievement of aural recognition was from a score of 9 to a score of 14, with a mean post-test achievement score of 12.2. The mean improvement in post-test scores was 5. (See Table 26.)

The Spearman rank correlation coefficient (Rho) for the relationship between the pre- and post-test achievement scores was a positive +.2108 which was not significant at the .05 level of confidence. This eliminated prior knowledge of Spanish on the part of this group as a significant factor.

Rho was also used to analyze the significance of the relationship between mental age and scores on the post-test of achievement of aural recognition, yielding a Rho of negative -.2108 which was not significant at the .05 level of confidence. For this group there was not a significant

TABLE 26

DATA FOR THE DISTRIBUTION OF SEX, MENTAL AGE, AND PRE- AND POST-TEST ACHIEVEMENT SCORES FOR RADIO GROUP IN SCHOOL VI

Pupil No.	Sex	Mental Age	Pre-Test	Post-Test
1	G	7.8	7	9
2	G	9.0	6	14
3	B	6.3	11	14
4	B	10.5	5	12
	2 Boys 2 Girls	Range 6.3 to 10.5	Mean 7.2	Mean 12.2

relationship between mental age and the achievement of aural recognition when radio was utilized. (See Table 27.)

TABLE 27

SPEARMAN RANK CORRELATION COEFFICIENT (RHO) OF PRE- AND POST-TEST SCORES AND FOR MENTAL AGE AND POST-TEST SCORES FOR RADIO GROUP IN SCHOOL VI

	Pre-Test Scores Related to Post-Test Scores	Mental Age Related to Post-Test Scores
Rho	+.2108	-.2108
Significance at .05 level	No	No

The television group had four pupils, two boys and two girls. The range in mental age was from 8 years 4 months

to 9 years and 0 months. The range in scores on the pre-test for the achievement of aural recognition was from a score of 5 to a score of 13, with a mean pre-test achievement score of 9.2. The range in scores on the post-test for the achievement of aural recognition was from a score of 11 to a score of 17, with a mean post-test achievement score of 14.7. The mean improvement in post-test scores was 5.5. (See Table 28.)

TABLE 28

DATA FOR THE DISTRIBUTION OF SEX, MENTAL AGE, AND PRE- AND POST-TEST ACHIEVEMENT SCORES FOR TELEVISION GROUP IN SCHOOL VI

Pupil No.	Sex	Mental Age	Pre-Test	Post-Test
1	B	9.0	7	14
2	G	9.6	5	11
3	B	8.7	12	17
4	G	8.4	13	17
	2 Boys 2 Girls	Range 8.4 to 9.6	Mean 9.2	Mean 14.7

The Spearman rank correlation coefficient (Rho) for the relationship between the pre- and post-test achievement scores was a positive +.9486 which was not significant at the .05 level of confidence. This eliminated prior knowledge of Spanish on the part of this group as a significant factor.

Rho was also used to analyze the significance of the relationship between mental age and scores on the post-tests of achievement of aural recognition, yielding a Rho of negative -.9486 which was not significant at the .05 level of confidence. For this group there was not a significant relationship between mental age and the achievement of aural recognition when television was utilized. (See Table 29.)

TABLE 29

SPEARMAN RANK CORRELATION COEFFICIENT (RHO) OF PRE- AND POST-TEST SCORES AND FOR MENTAL AGE AND POST-TEST SCORES FOR TELEVISION GROUP IN SCHOOL VI

	Pre-Test Scores Related to Post-Test Scores	Mental Age Related to Post-Test Scores
Rho	+.9486	-.9486
Significance at .05 level	No	No

The analysis of covariance was used to analyze the significance of the differences between the radio and television groups in the achievement of aural recognition. This yielded an Fyx of positive +.8221 which was not significant at the .05 level of confidence. There was, then, no significant difference between the radio and television groups in the achievement of aural recognition. (See Table 30.)

TABLE 30

ANALYSIS OF COVARIANCE FOR RADIO AND TELEVISION ACHIEVEMENT SCORES IN SCHOOL VI

Source	df	SSx	SSy	SSxy	SSyx	MSyx(Vyx)
Among	1	8.0000	12.5000	10.0000	3.1990	3.1990
Within	5	65.5000	41.5000	38.0000	19.4540	3.8908

$$Fyx = \frac{3.1990}{3.8908} = .8221$$

F. table
1/5 df
F.05 = 6.61

Summary

The Spearman rank correlation coefficient for the relationship between the pre- and post-test achievement score was significant for only one of the six radio and six television groups. Therefore, except in one case, prior knowledge of Spanish was not a significant factor.

In this one case, the television group in School IV, there was a significant correlation between the pre- and post-test achievement scores which indicated the possibility of some prior knowledge of Spanish. There were nine pupils in this group. The high pre-test scores of six of the pupils may indicate, among other possibilities, that they may have had older brothers or sisters who had had instruction in Spanish. (See Table 31.)

The Spearman rank correlation coefficient for the relationship between mental age and scores on the post-tests

TABLE 31

SPEARMAN RANK CORRELATION COEFFICIENT FOR THE RELATIONSHIP BETWEEN PRE- AND POST-TEST ACHIEVEMENT SCORES FOR BOTH RADIO AND TELEVISION GROUPS IN ALL SCHOOLS

School	Radio	Television
1	Rho: +.3040	Rho: +.1347
2	+.2423	+.1195
3	-.3973	-.2390
4	-.1239	.8187*
5	+.2794	-.0579
6	+.2104	+.9486

*Significant at the .05 level.

of achievement in aural recognition was significant in two cases, one radio group and one television group. Ten of the comparisons did not identify a significant relationship between mental age and the utilization of either radio or television. (See Table 32.)

The analysis of covariance was utilized to analyze the significance of the differences between the radio and television groups in the achievement of aural recognition. This comparison identified one school in which there was a significant difference, and this favored the television group. The other five comparisons did not identify any significant differences.

TABLE 32

SPEARMAN RANK CORRELATION COEFFICIENT FOR MENTAL AGE AS RELATED TO EITHER RADIO OR TELEVISION

RHO FOR MENTAL AGE RADIO AND TELEVISION

School	Radio	Television
1	Rho: +.1081	Rho: -.0971
2	-.0946	+.2096
3	+.8387*	-.2955
4	+.5949	-.2837
5	+.1159	+.9856*
6	-.2108	-.9486

*Significant at the .05 level.

In the one comparison of achievement which favored the television group, School I, the teacher had expressed a definite preference and bias for television. Although this teacher participated in several meetings with the other teachers, she may have maintained her commitment to television so strongly that it influenced her actions and enthusiasm, thereby affecting the pupils. (See Table 33.)

The analysis of covariance was also utilized to analyze the significance of the difference between the total radio and television group in the achievement of aural recognition. This yielded an Fyx of 3.4228 which was not significant at the .05 level of confidence. Therefore, for the

TABLE 33

ANALYSIS OF COVARIANCE FOR RADIO OR TELEVISION ACHIEVEMENT SCORES IN ALL SCHOOLS

School	Fyx
1	10.9237*
2	.4245
3	.1215
4	.5757
5	.9478
6	.8221

*Significant at the .05 level.

total group there was no significant difference in achievement between groups using radio or television. (See Table 34.)

TABLE 34

ANALYSIS OF COVARIANCE FOR TOTAL RADIO AND TELEVISION GROUPS AND THE ACHIEVEMENT SCORES

Source	df	SSx	SSy	SSxy	SSyx	MSyx(Vyx)
Among	1	14.2458	22.0432	17.7203	26.4515	26.4515
Within	115	1048.6780	905.8987	134.2063	888.7235	7.7280

$$Fyx = \frac{26.4515}{7.7280} = 3.5228$$

F. table
1/115 df
F.05 = 3.93

Chi-square was used to analyze the significance of the relationship between sex and the post-test scores for both the total radio and television groups. This was done by classifying each pupil according to sex and whether his post-test achievement score was above or below the mean post-test achievement score for the total radio or television group. The mean post-test achievement score for the total radio group was 16.7 and for the total television group was 17.6.

The resulting chi-square for the radio group was positive +.1090 and for the television group was positive +.070. Neither chi-square was significant at the .05 level of confidence. This indicates that neither boys nor girls have a particular affinity for radio or television when utilized as a medium of instruction in Spanish. (See Tables 35 and 36.)

TABLE 35

CHI-SQUARE FOR TOTAL RADIO GROUP RELATING SEX TO POST-TEST SCORES OF ACHIEVEMENT

	Above Mean	Below Mean	Total
Boys	20	14	34
Girls	18	7	25
	38	21	59

$$\chi^2 = \frac{59(140 - 252)^2}{(34)(25)(21)(38)}$$

$\chi^2 = 1.090$ (not significant at .05 level)

TABLE 36

CHI-SQUARE FOR TOTAL TELEVISION GROUP RELATING SEX TO POST-TEST SCORES OF ACHIEVEMENT

	Above Mean	Below Mean	Total
Boys	21	18	39
Girls	11	9	20
	32	27	59

$$\chi^2 = \frac{59(189 - 198)^2}{(39)(920)(32)(27)}$$

$\chi^2 = .070$ (not significant at .05 level)

CHAPTER VI

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Purpose

The main purpose of this study was to compare the achievement of aural recognition in Spanish of third-year primary pupils who utilized radio with third-year pupils who utilized television.

Procedure

One hundred eighteen pupils in six classes of the Oklahoma City Public Schools were involved in the study for a period of five weeks during the 1963 summer session. Each classroom was randomly divided into two groups; one group utilized radio and the other group, television. Both groups were taught by the same classroom teacher.

The aural-oral approach was utilized, and the major objective of the instruction was the achievement of aural recognition of a definite vocabulary. The vocabulary was identical for both the radio and television lessons. The same language specialist taught the radio and television lessons. The follow-up activities lead by the classroom teacher were prescribed for both groups. The radio and television

lessons were fifteen minutes in length, and the total instructional period was thirty minutes.

Evaluation was centered on data gathered from the application of an aural recognition achievement test, developed for this study as a pre- and post-test. The Goodenough Intelligence Test was also administered to establish a mental age score.

Statistical analysis utilized the analysis of covariance to determine the significance of the difference in achievement between the radio and television groups within each classroom and as a total group. The Spearman Rho was used to determine the significance of the relationship between the pre- and post-test achievement scores and mental age as related to the post-test scores. Chi-square was utilized to determine the relationship between sex and post-test scores of achievement for both the radio and television groups.

Major Findings

The differences between the achievement scores of the radio and television groups were not significant in five of the six classes and for the total radio and television group.

In only two of the twelve comparisons was there a significant relationship between mental age and the utilization of either radio or television. There was no significant

difference between the achievement of boys and girls when either radio or television was utilized.

Generalized Conclusions

This study suggests that there was for this group of 118 third-year primary pupils no significant advantage in either radio or television as a medium of instruction to achieve aural recognition in Spanish. It also suggests that mental age is not significantly related to the use of radio or television, and possibly not to the achievement of aural recognition in Spanish. Another result suggests that radio is equally effective with either boys or girls and that there are no significant differences between the achievement of aural recognition between boys and girls when either radio or television is utilized.

Limitation of Conclusions

Some false impression can evolve from making broad interpretations of the generalized conclusions from this study; therefore, the following precautions should be kept in mind.

First, these conclusions are based on a study which involved 118 pupils and which had a particular instructional program as its core. The key of any program, project, or study is its curriculum and instructional pattern. Therefore, the conclusions for this study should not be extended to

include foreign language instructional programs which may be similar but vary in content and method of presentation.

The instructional area involved was the study of Spanish. Similar results may have occurred if another language or subject area had been chosen, but this cannot be said with certainty until it has been done experimentally.

Recommendations

Based upon the results of this study, it is suggested that additional research is needed to further identify and clarify the optimum relationship between the instructional media of radio and television. Similar studies should be done utilizing different curricular areas. The same study can be replicated but more pupils could be involved and the instructional time lengthened. This study indicated rather clearly that the popular assumption that television is superior to radio is not true in this one case. This certainly justifies and calls for more intensive study in this area.

BIBLIOGRAPHY

Books

Barr, Arvil S. (ed.) Radio in the Classroom. Madison: University of Wisconsin Press, 1942.

Collins, LeRoy, and Hazard, Leland. "A National Policy for Educational Television." Educational Television, the Next Ten Years. Stanford: Institute for Communication Research, 1962.

Garrett, Henry E. Statistics in Psychology and Education. New York: Longmans, Green and Company, 1961.

Herzberg, Max J. (ed.) Radio and English Teaching. D. Appleton Century Company, 1941.

Levenson, William B., and Stasheff, Edward. Teaching Through Radio and Television. New York: Rinehart and Company, 1952.

Lindquist, E. F. Educational Measurements. Washington, D. C.: American Council on Education, 1951.

Nelson, Brooks. Language and Language Learning. New York: Harcourt, Brace and Company, 1960.

Schramm, Wilbur. "What We Know About Learning from Instructional Television." Educational Television, the Next Ten Years. Stanford: Institute for Communication Research, 1962.

Siegel, Sidney. Nonparametric Statistics for the Behavioral Sciences. New York: McGraw-Hill Book Company, 1956.

Skornia, Harry J. "Educational Radio: Its Past and Future." Educational Television, the Next Ten Years. Stanford: Institute for Communication Research, 1962.

Sparks, Kenneth A. A Bibliography of Doctoral Dissertations in Radio and Television. Syracuse: School of Journalism, Newboren Communications Center, Syracuse University, 1962.

Town, George R. "Allocation for Educational Television." Educational Television, the Next Ten Years. Stanford: Institute for Communication Research, 1962.

Wrightstone, J. Wayne. "Research Projects in the Field of Radio." Radio and English Teaching. Edited by Max J. Herzberg. New York: D. Appleton Century Company, 1941.

Articles

Andrade, Manual; Hayman, John L., Jr.; and Johnson, James T., Jr. "Measurement of Listening Comprehension in Elementary School Spanish Instruction." The Elementary School Journal, LXIV (November, 1963), 84-93.

Babcock, Chester O. "Audio-Visual Aids in Teaching Foreign Languages." The National Elementary Principal, XXXIX (May, 1960), 16-19.

Barrow, Lionel C., and Westley, Bruce H. "An Experiment in the Relative Effectiveness of a Radio and Television Version of a Children's News Program." Audio-Visual Communication Review, VII (Winter, 1959), 14-23.

Braun, Lois A. "An Extended-Day Foreign Language Program." The National Elementary Principal, XXXIX (May, 1960), 26-28.

Fuller, Edgar. "An Educator's View of Educational Television Network." National Association of Educational Broadcasting Journal, XIX (May and June, 1960), 10-15.

Harley, William G. "A Profession Within a Profession." National Association of Educational Broadcasting Journal, XXII (March-April, 1963), 59-68.

Johnson, Charles E.; Ellison, Fred P.; and Flores, Joseph S. "The Effects of Foreign Language Instruction on Basic Learnings in the Elementary Schools." The Modern Language Journal, XLV (May, 1961), 200-202.

Lubera, T. J. "Radio Serves the Upper Grades." The Journal of the Air, IX (October, 1949), 15-16.

McCarty, H. B. "Educational Radio's Role." National Association of Educational Broadcasting Journal, XVIII (October, 1958), 25-33.

Merden, Walter. "Methods of the Radio Language Course." The Journal of the Air, IX (October, 1949), 18-20.

Tyler, Margaret C. "School Broadcasting--Which Way." National Association of Educational Broadcasting Journal, XVII (November, 1957), 11-15.

Williams, D. C. "Mass Media in Learning--An Experiment." Explorations, III (Winter, 1954), 75-82.

Pamphlets

Kern, Edith. "The Television Teacher--How Near and How Far." Modern Techniques in Teaching a Foreign Language. Connecticut Audio-Visual Education Association, 1959, 129-134.

Modern Language Project. Administrators Handbook for Parlons Francais. Boston: Modern Language Project, 1962, 14.

Reports

Breunig, Marjorie. "Foreign Languages in the Elementary Schools of the United States." Reports of Surveys and Studies in the Teaching of Modern Foreign Languages. New York: Modern Language Association of America, 1961, 1-14.

Central Council for School Broadcasting. The Evidence Regarding Broadcast Speech Training. London: British Broadcasting Corporation, 1932, 30.

Childers, Wesley; Bell, Barbara; and Margulis, Harry. "Teacher Education Curricula in the Modern Foreign Languages." New York: Modern Language Association of America, 1961, 143-164.

Johnson, Charles E.; Flores, Joseph S.; Ellison, Fred P.; and Riestra, Miguel A. The Development and Evaluation of Methods and Materials to Facilitate Foreign Language Instruction in the Elementary Schools. Foreign Language Instruction Project. Urbana: University of Illinois, 1963, 1-120.

Unpublished Materials

Frank, Joseph Henry. "An Evaluation of Closed Circuit Television for Interceptor Pilot Training." Unpublished Doctor's dissertation. Bloomington: Indiana University, 1955.

Phillips, Richard. "The Relative Instructional Values of Radio and Platform Speaking." Unpublished Master's thesis. Madison: University of Wisconsin, 1931.

APPENDIX I

SPANISH STIMULI FOR TEST OF AURAL RECOGNITION

1. Adios, clase, hasta mañana
2. Este es un libro
3. María tiene ocho años
4. Hay dos mesas
5. El papel está en la mesa
6. Hay cinco lápices
7. El libro está en la mesa
8. Esta es la tiza
9. ¿Qué tiempo hace? Hace frío
10. Roberto tiene diez años
11. El papel está en el libro
12. ¿Qué tiempo hace? Hace calor
13. Ocho y dos son diez
14. Seis y tres son nueve
15. Doce y uno son trece
16. Esta es la pizarra
17. El lápiz está en el libro
18. ¿Qué tiempo hace? Hace buen tiempo
19. Los niños están en la clase
20. El pápel, lapiz, y el libro están en la mesa
21. Uno, dos, tres están en la pizarra

APPENDIX II

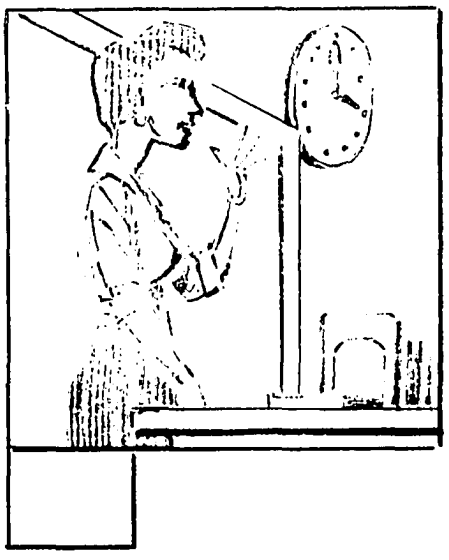
TEST OF AURAL RECOGNITION

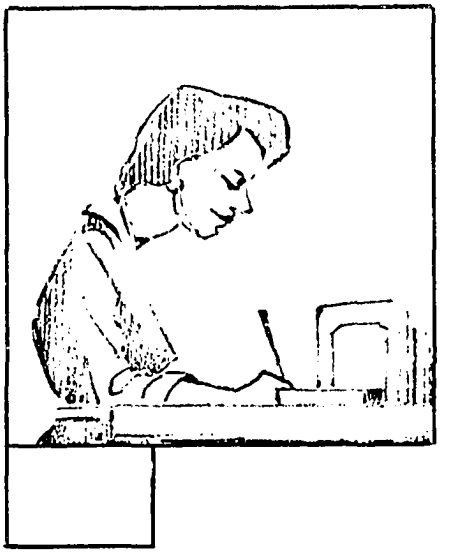
OKLAHOMA CITY PUBLIC SCHOOLS

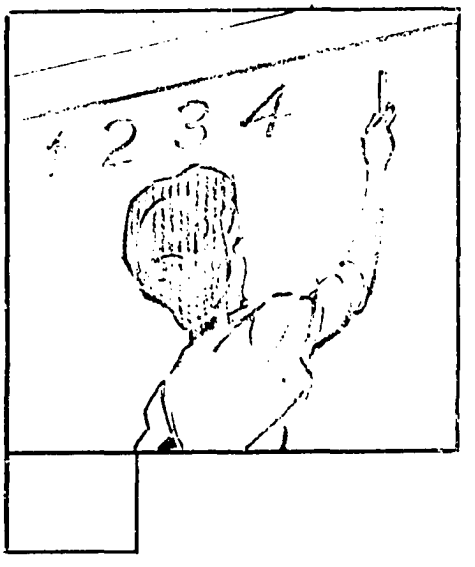
NAME _____

SCHOOL _____

TEACHER _____



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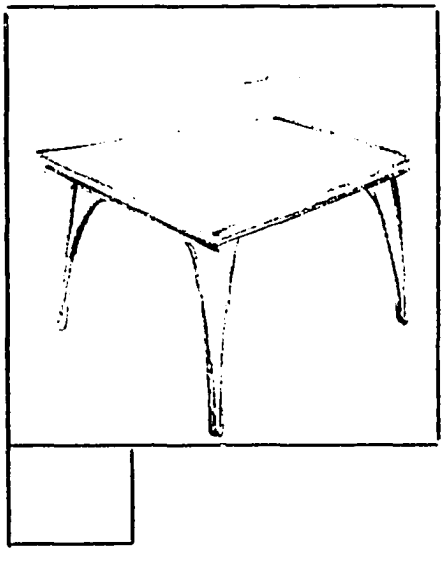

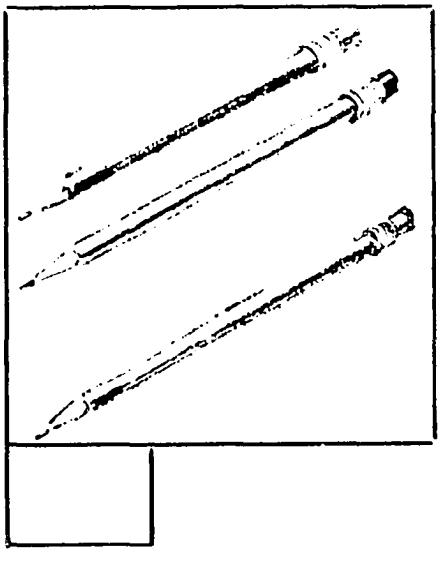

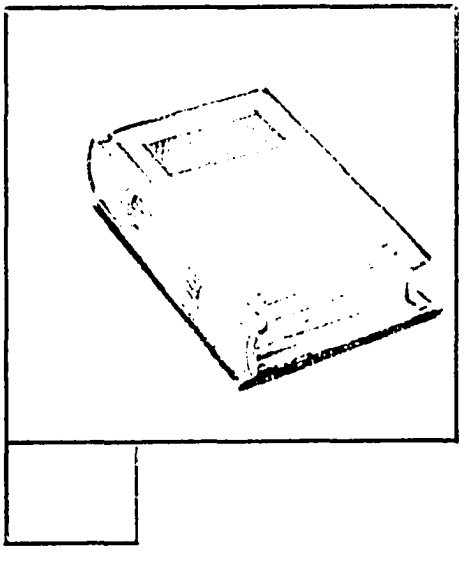

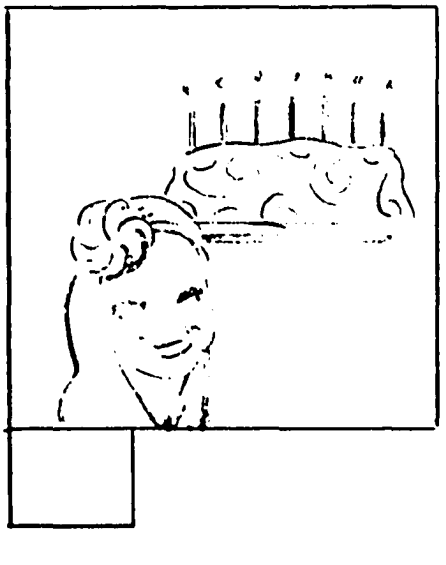

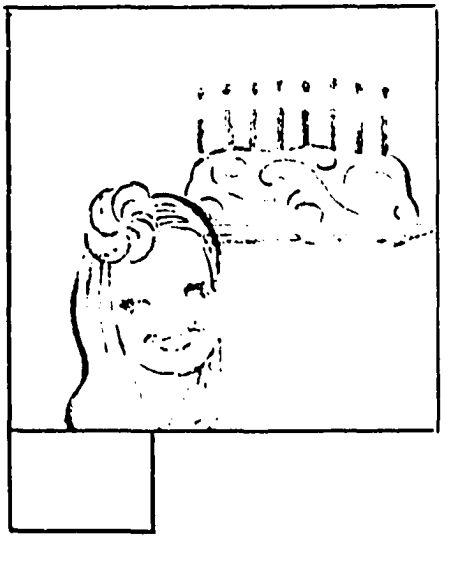

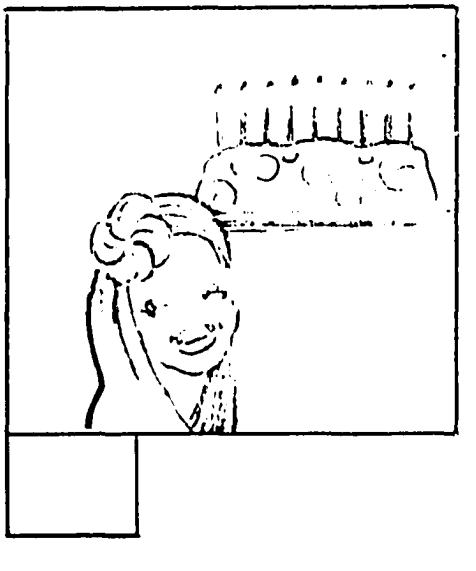

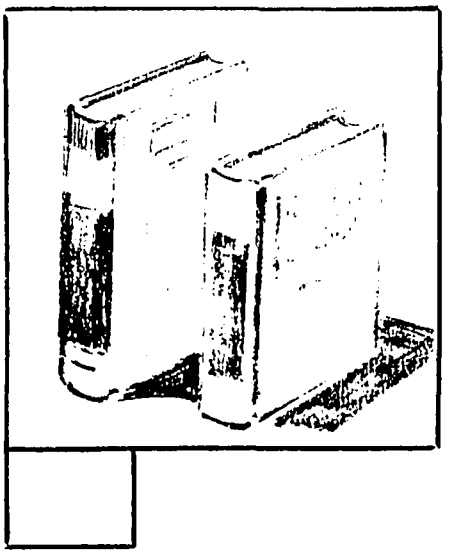

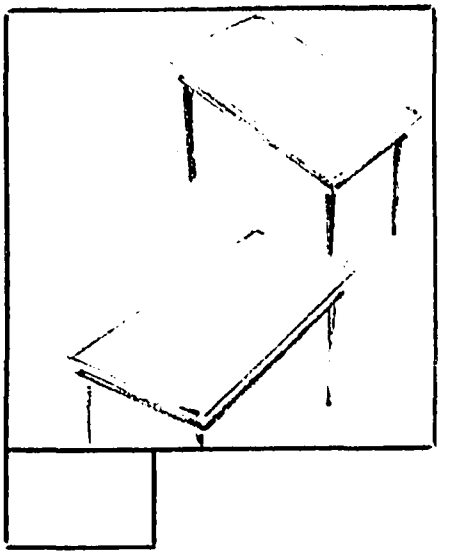

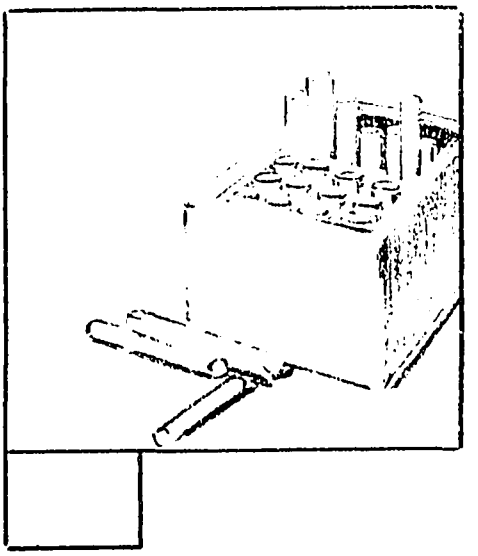

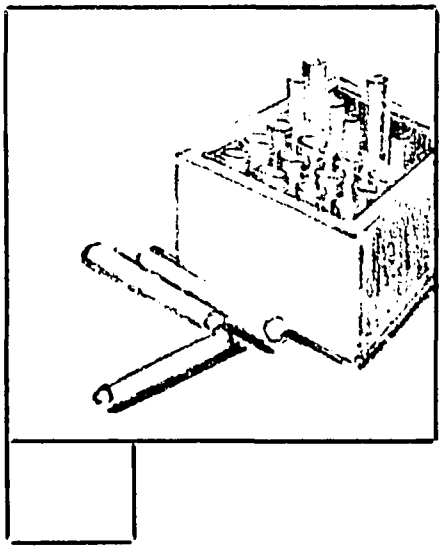

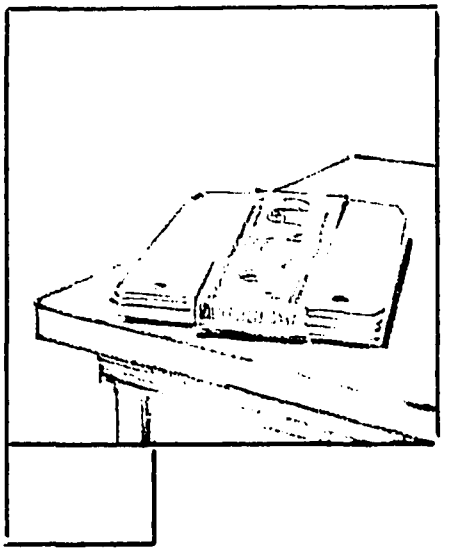

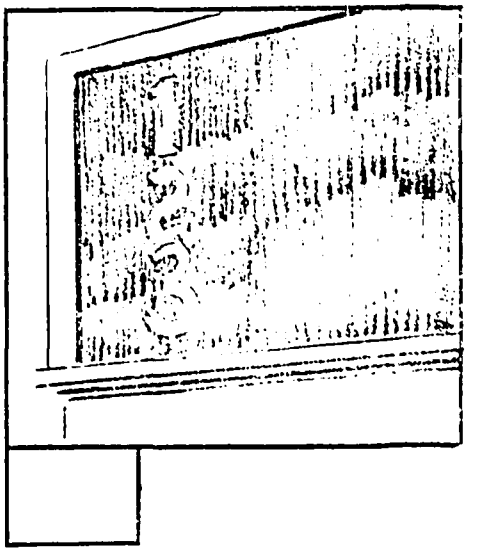

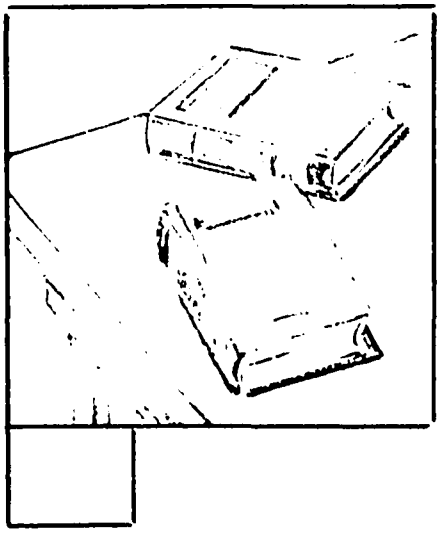

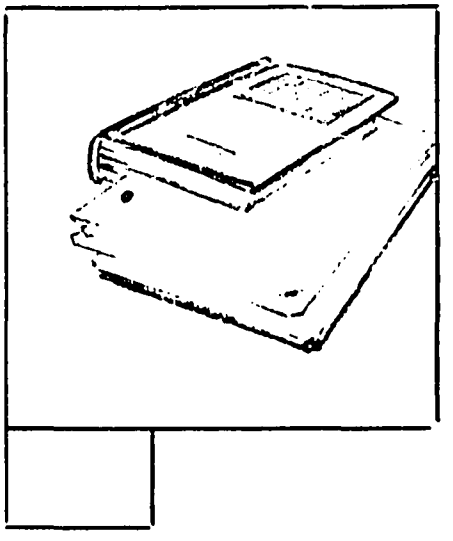

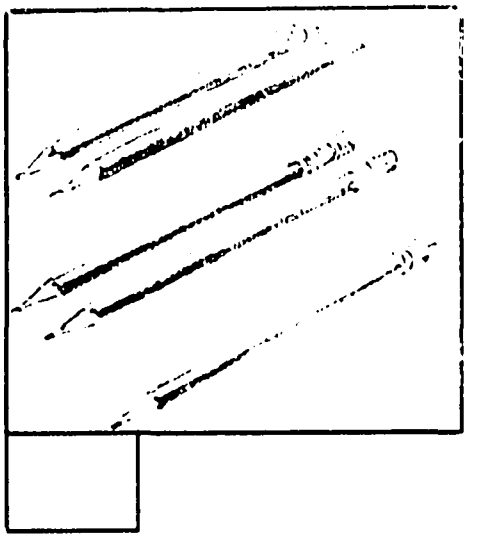

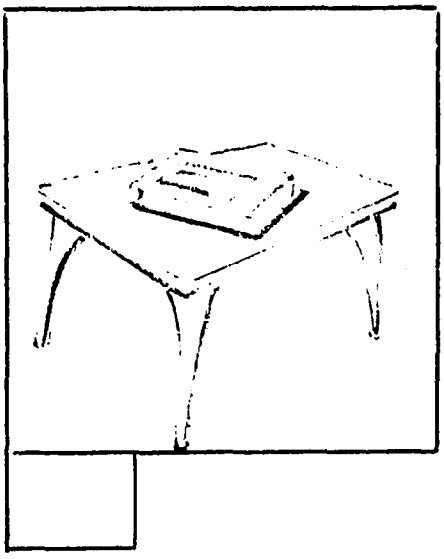
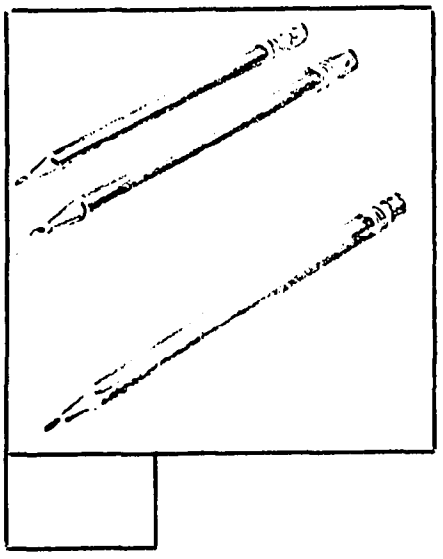
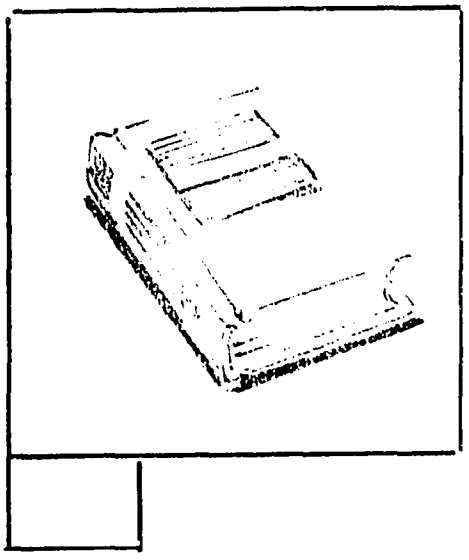
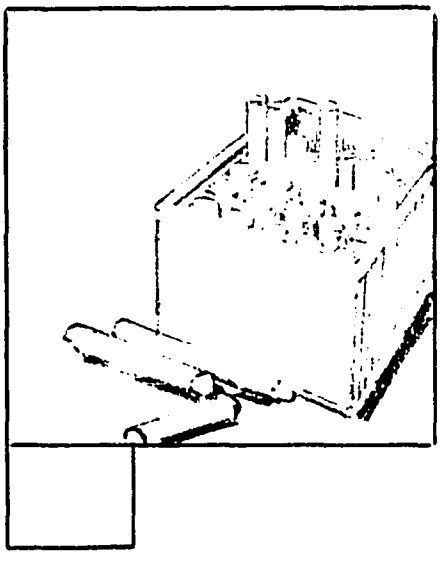
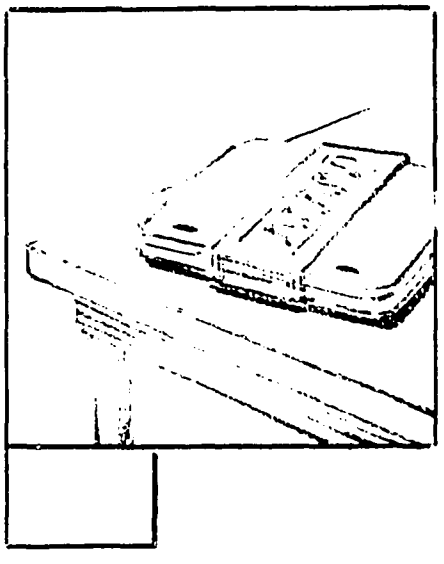
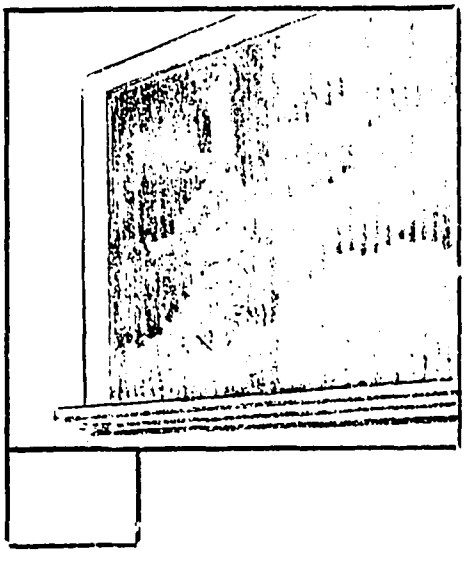
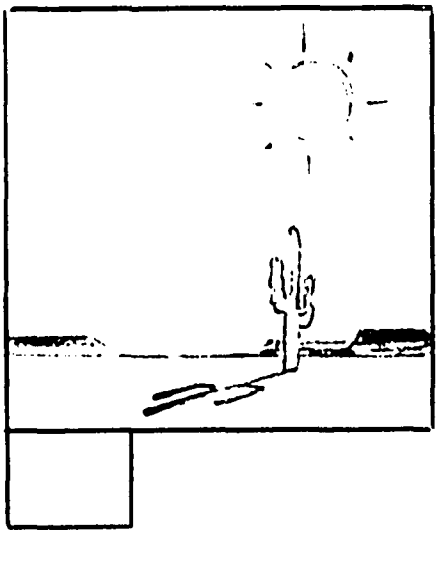
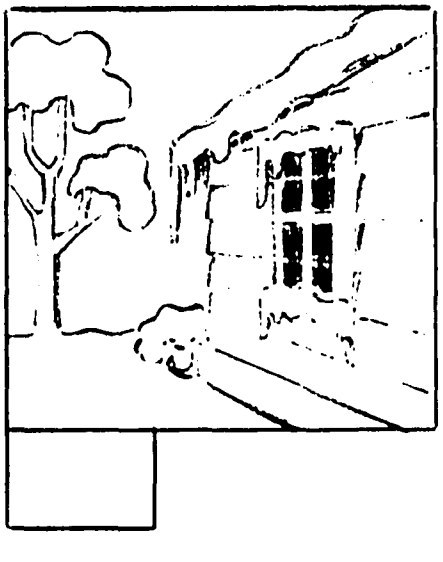
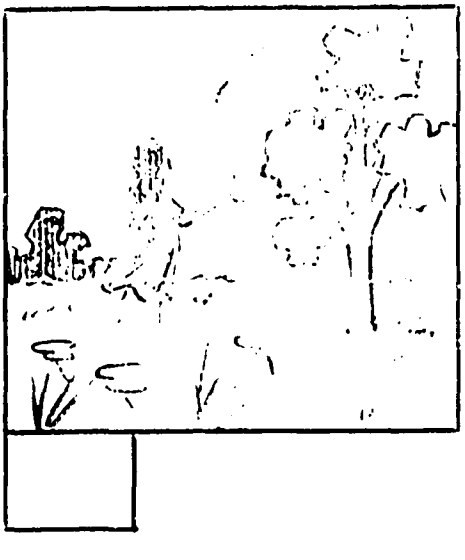

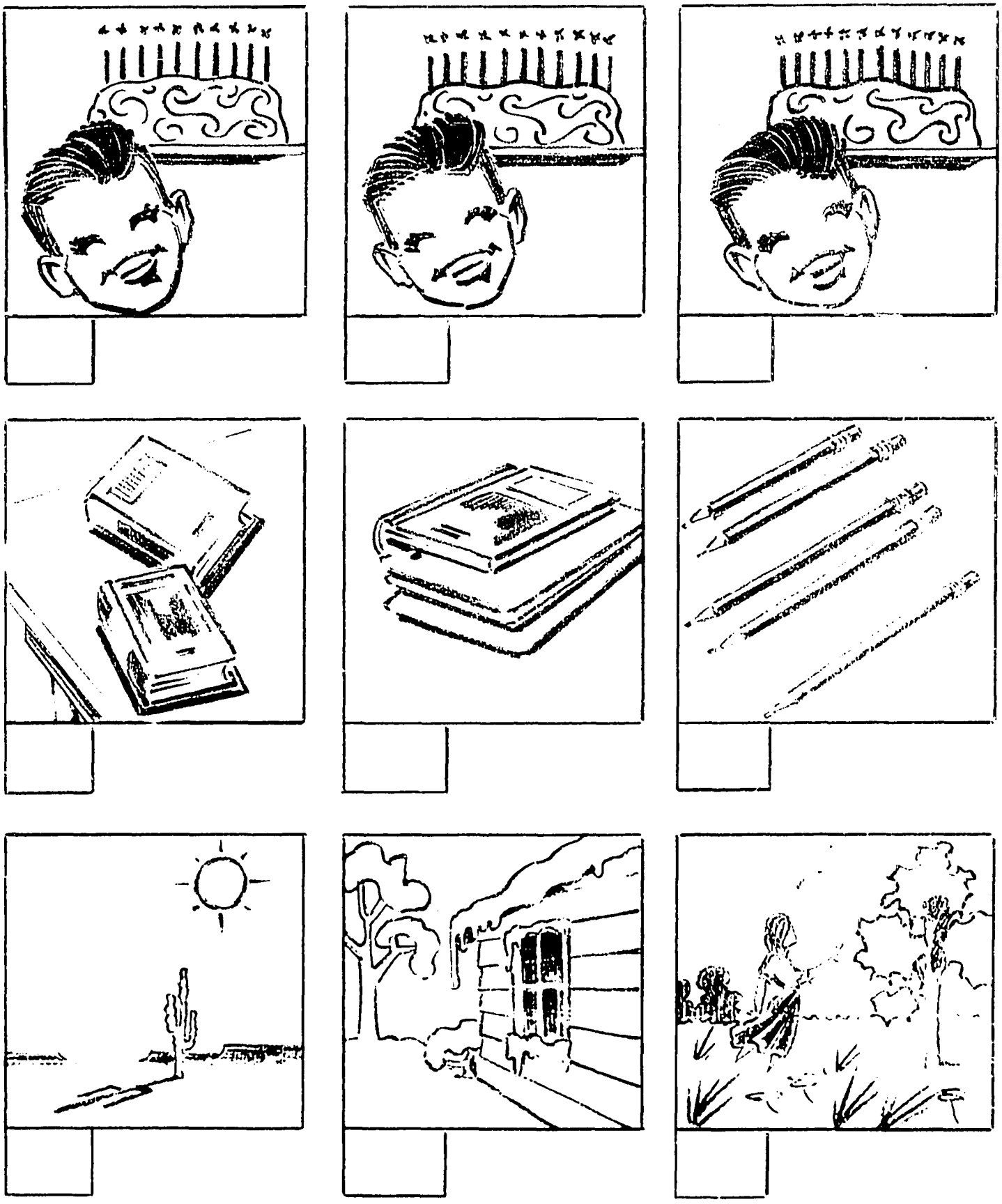

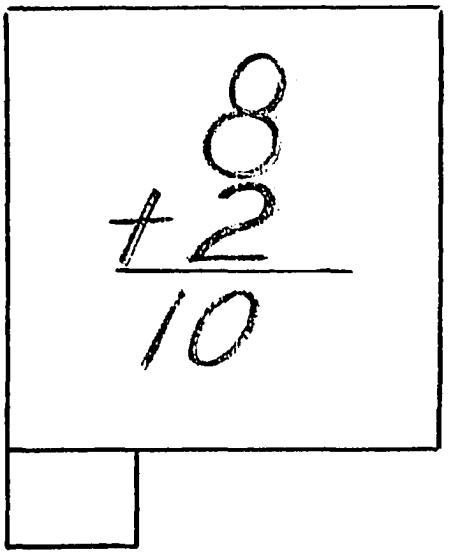
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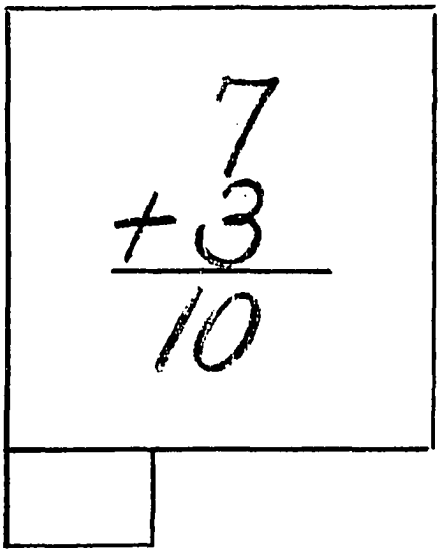
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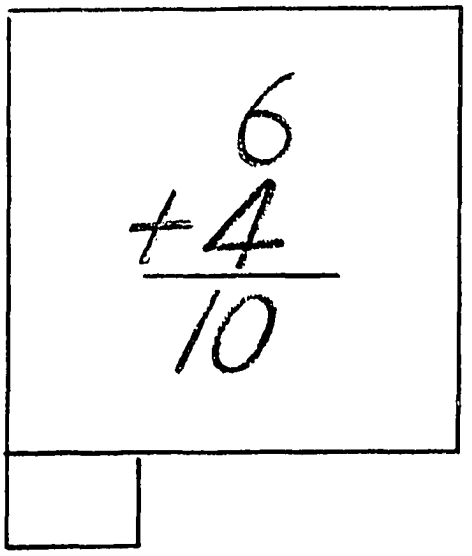
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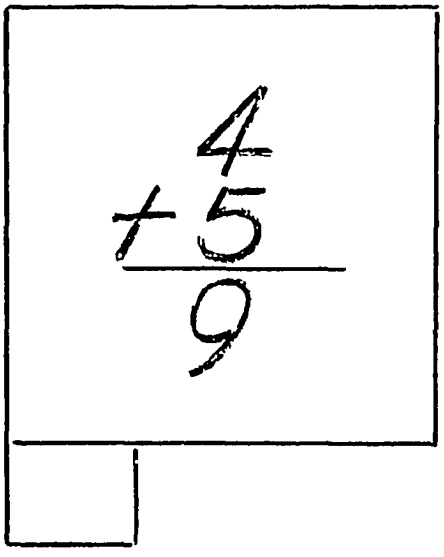
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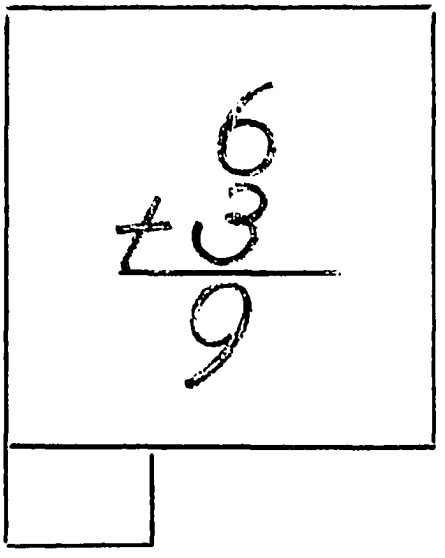
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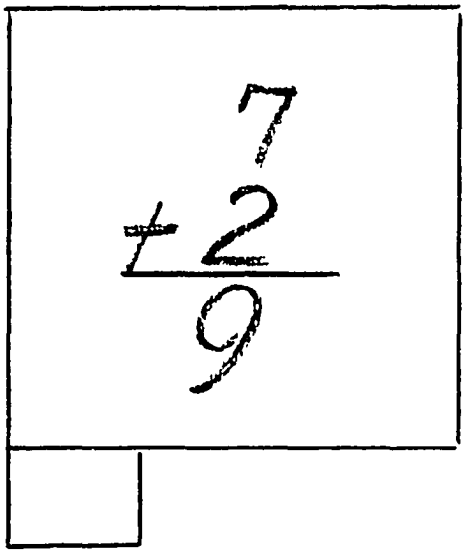
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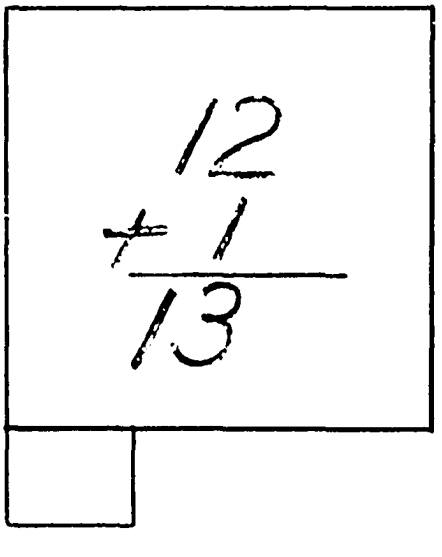
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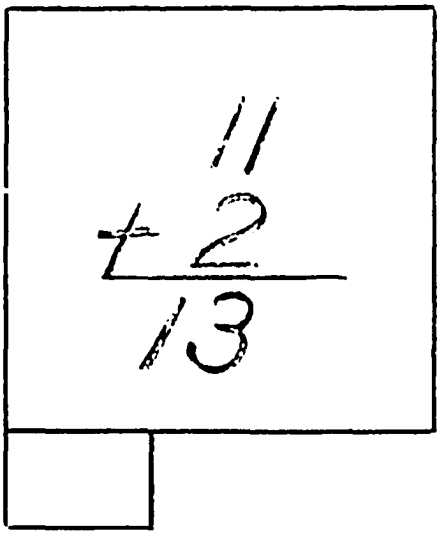
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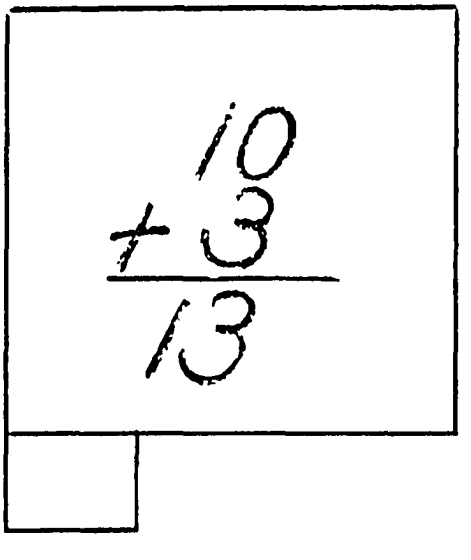
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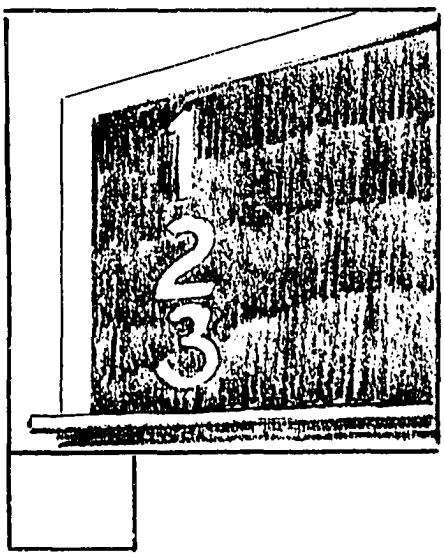
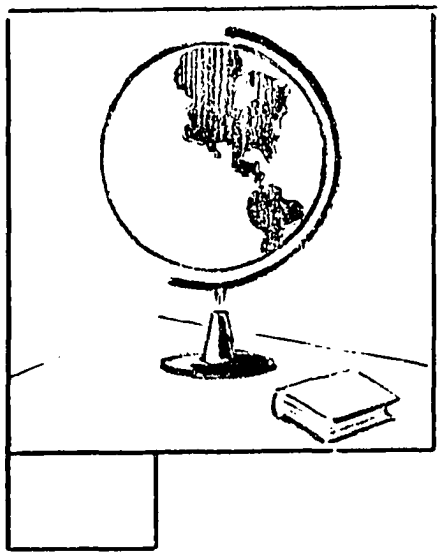
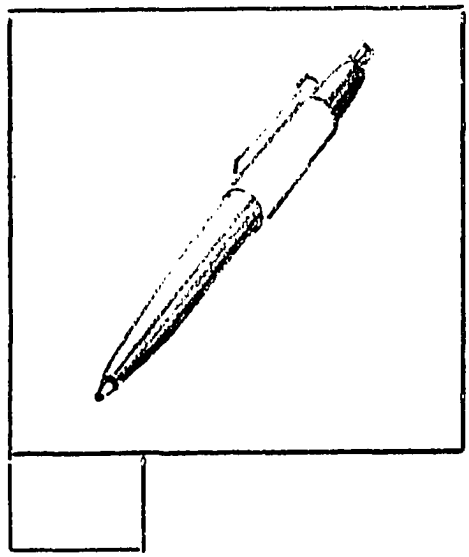
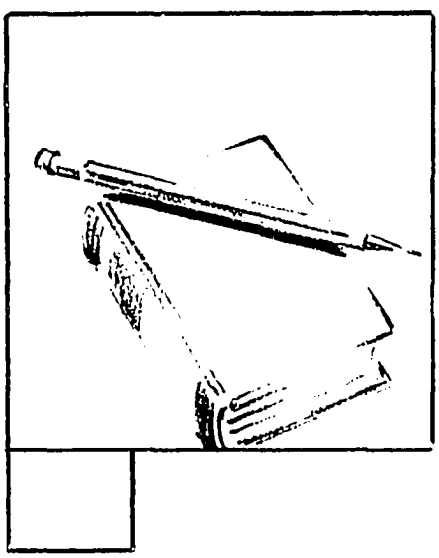
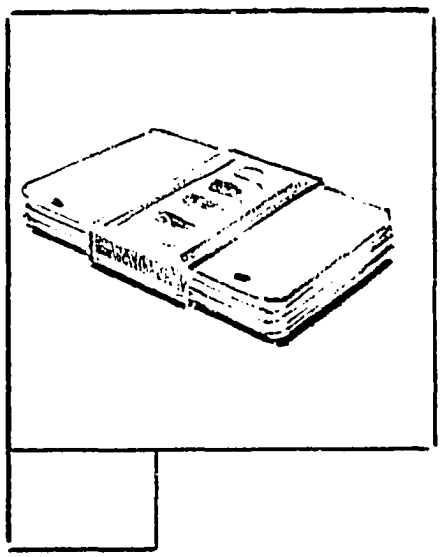
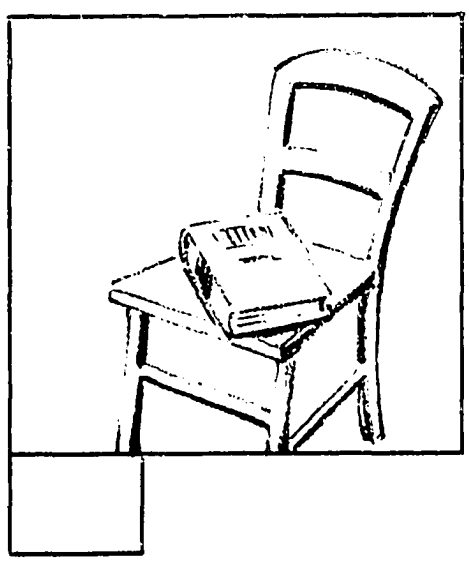
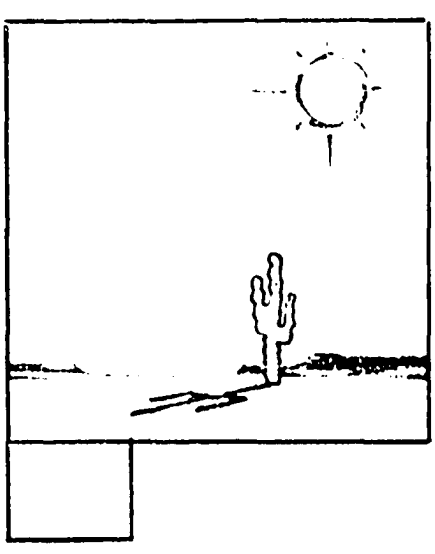
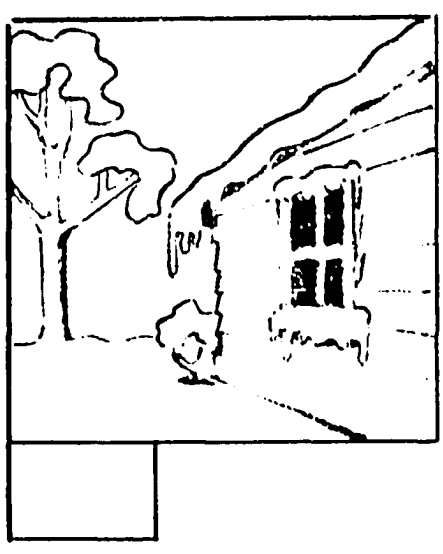
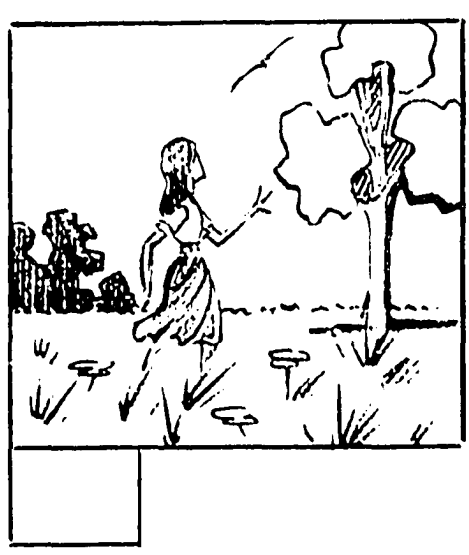

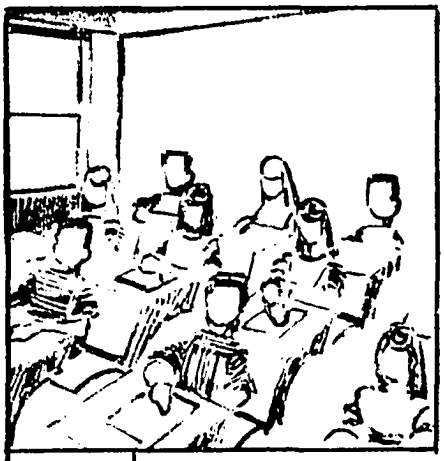

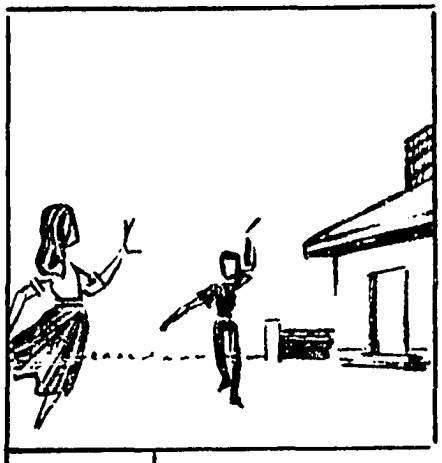

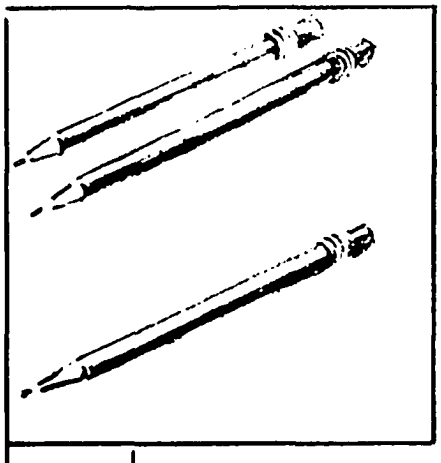

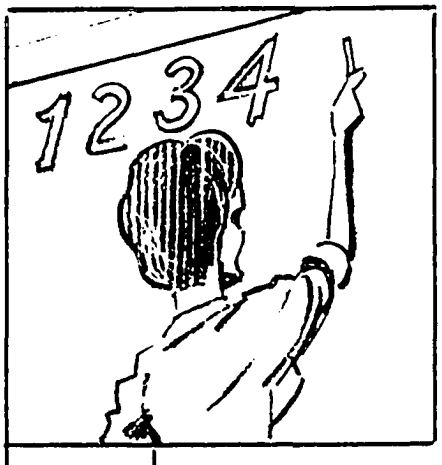
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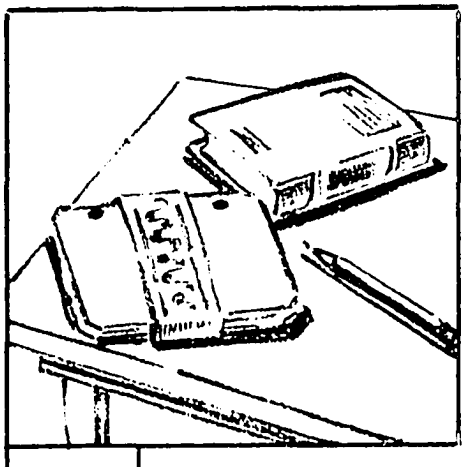

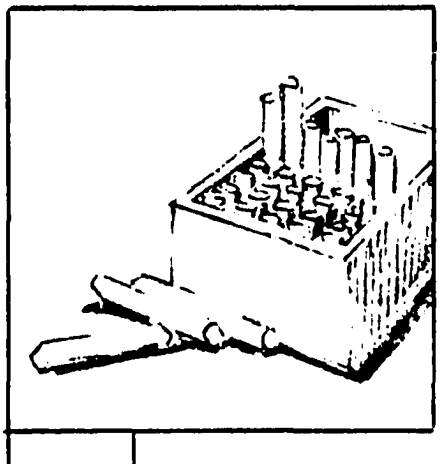

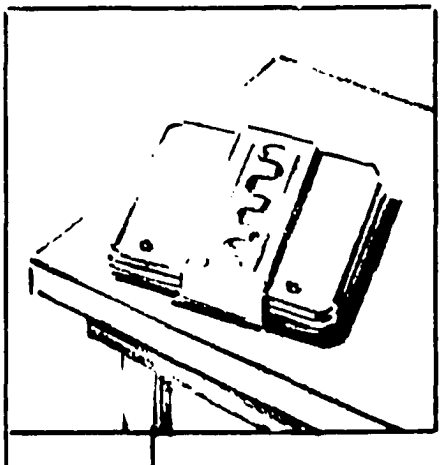

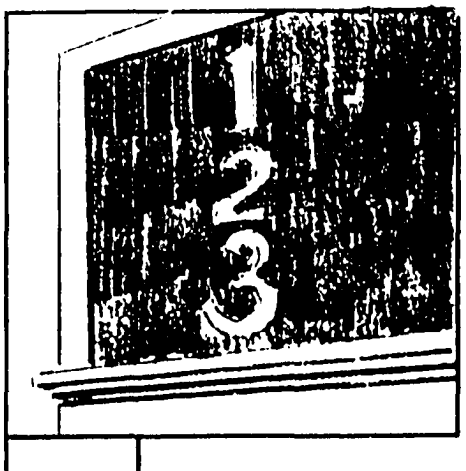

APPENDIX III

GUIDE FOR TEACHERS

CONVERSATIONAL SPANISH 1

Teacher's Lesson Guide (1963 Summer School) Third-Year-Primary

UNIT 1 (June 10 - 14)

The purpose of this unit is to learn greetings which will be used daily. "Buenos días" (morning); "Buenas tardes" (afternoon); "Hola, ¿Qué tal?" (informal hi, how are things?); "Adiós," "Hasta mañana," and "Hasta luego" can all be used for good-byes. Students will learn to ask a person his name and to answer, "¿Cómo se llama?" "Me llamo_____." "¿Cómo se llama él, (ella)?" (What is his, her name?) Children will also learn to count from 1 - 10 and will learn a poem in which numbers are used. You can call children "niños," "clase," "niño" (boy), "niña" (girl).

Suggested classroom material such as flash cards for the numbers and pictures showing morning and afternoon scenes will be very helpful.

Dialogue: (greetings)

Buenos días, niños
Buenos días, Señora_____(use the one applicable, señora, (Mrs.)
Señorita_____señorita, (Miss), señor (Mr.)
Señor_____

Buenas tardes, clase
Buenas tardes, Señora _____

Hola, clase, ¿qué tal?
Hola, señora.

Adiós, niños.
Adiós, señora.

Hasta mañana clase.
Hasta mañana profesora. (woman)

Hasta luego, niños.
Hasta luego, profesor. (man)

Dialogo:

Profesora: ¿Cómo se llama?
Estudiante: Me llamo María. (each student gives own name)

Estudiante: ¿Cómo se llama él?
Other student: Se llama Roberto.

Estudiante: ¿Cómo se llama ella?
Other student: Se llama María.

CONVERSATIONAL SPANISH I

Teacher's Lesson Guide (1963 Summer School) Third-Year Primary

Unit 1 - continued

Números:

1	2	3	4	5
uno	dos	tres	cuatro	cinco
6	7	8	9	10
seis	siete	ocho	nueve	diez

Poem: Uno, dos, tres

Uno, dos, tres, cho-
Uno, dos, tres, co-
Uno, dos, tres, la-
Uno, dos, tres, te
¡Chocolate! ¡Chocolate!

¡Bate, bate el chocolate!

Classroom Follow-Up Activities:

1. Have children greet each other using their own names i.e..."Buenos días, Roberto"; "Buenos días, María."

2. Teacher should greet class daily in Spanish (morning and afternoon) "Buenos días, clase"; "Buenas tardes, niños"; or "Hola, ¿qué tal?" Have them return greeting in proper form, "Buenos días senora (Mrs.)", or "Buenos días, señorita (Miss)"; or "Buenos días señor (Mr.)..."; or "Buenos días, profesora (woman)"; "Buenos días, profesor (man)."

3. Have children ask each other "¿Cómo se llama?" The other one gives his or her name "Me, llamo _____." Ask another student to give his neighbor's name, "¿Cómo se llama él? (his)"; or "¿Cómo se llama ella? (her)."

4. Use flash cards so they can be sure of numbers. Skip around to ensure that they know them and are not just remembering them in order.

5. Have students give poem in unison, in groups, or individually.

6. Play game "Carreras" (races). Choose two pupils to come to blackboard to write numbers as you give them. (Today we will see who knows numbers very well.) "Hoy vamos a ver quien sabe los números muy bien." "Vamos a jugar a las carreras." In English you can explain that you will give the numbers in Spanish and for them to write them on the board as soon as possible. Keep score, giving points for each correct number. Five figures for each team is a good game unless you have a tie, then give more numbers as needed. Class could say to the winner, "Muy bien" (very well).

CONVERSATIONAL SPANISH I

Teacher's Lesson Guide (1963 Summer School) Third-Year Primary

UNIT 2 (June 17 - 21)

The purpose of this unit is to learn how to ask a person how he is and to answer "¿Cómo está?" "Muy bien, gracias, ¿y usted?" Class will also learn to ask "How old are you?" and to answer, "¿Cuántos años tiene?" "Tengo _____ años." Polite phrases, i.e....please, "por favor," thank you "gracias" are used in our "dialogo." Numbers 1-15 are also learned in this unit.

Suggested classroom material: flash cards for your numbers.

Dialogo

Profesora:	¿Cómo está?	(use correct word for teacher, "profesora," female; "profesor," male; "estudiante" student.)
Estudiante:	Muy bien, gracias, ¿y usted?	
Profesora:	Bien, gracias.	
Juan	¿Cómo esta, María?	
María	Muy bien, Juan, ¿y usted?	
Juan	Bien, gracias.	
Profesora:	Cuenta (count) de uno a cinco, por favor, María. (or any child)	
María:	Uno, dos, tres, cuatro, cinco.	
Profesora:	Muy bien, gracias.	
Profesora:	Cuenta de seis a diez, por favor, Juan. (or any child)	
Juan:	Seis, siete, ocho, nueve, diez.	
Profesora:	Muy bien, gracias.	

. . . . . .

Profesora:	¿Cuántos años tiene, Juan?
Juan:	Tengo ocho años.
Profesora:	¿Cuántos años tiene, María?
María:	Tengo ocho años.
Profesora:	María, ¿cuántos años tiene Juan?
María:	Él tiene ocho años.
Profesora:	Juan, ¿cuántos años tiene ella? (pointing to María)
Juan	Ella tiene ocho años.

Números:

11	12	13	14	15
once	doce	trece	catorce	quince

CONVERSATIONAL SPANISH I

Teacher s Lesson Guide (1963 Summer School) Third Year Primary

Unit 2 - continued

Classroom Follow-Up Activities

1. Use daily "por favor" and "gracias" in classroom.
2. Have chain drill on new material. One student asks, "¿Cómo está?" Next student answers, "Muy bien, gracias, ¿y usted?" third person adds, "Bien, gracias." Have every student participate. Have students use their own names. "¿Cómo está,_____?" "Muy bien _____¿y usted?"
3. Ask each student, "¿Cuántos años tiene?" Have them answer, "Tengo _____años." Also refer to someone else's age... He is 8 years old, "Él tiene ocho años." "Ella (she) tiene ocho años."
4. Review numbers. Play "Carreras," adding new numbers. (see Unit 1)
5. Review Unit 1, especially greetings. Have students greet each other.
6. Have different ones do dialogue in class.

UNIT 3 (June 24 - 28)

The purpose of this unit is to learn the names of objects used every day in the classroom "clase"; i.e....book, "libro"; pencil, "lápiz"; paper, "papel"; chalk, "tiza"; table, "mesa." The question, what is this? "¿Qué es esto?" is one that will be used daily from now on. Children will also learn to ask, "Where is the book?" etc., "¿Dónde está el libro?" (lápiz, papel, etc.) and to answer, "El libro está en la mesa." Learn new song about numbers and actions--getting up, jumping, and sitting again.

Este es un libro
Este es un lápiz
Este es un papel
Esta es una tiza
Esta es una mesa
Esta es una pizarra

Este (this) is used with masculine objects
Esta (this) is used with feminine nouns.

Dialogo:

Profesora: ¿Qué es esto?
Marta: Es un libro.
Profesora: ¿Dónde está el libro?
Miguel: El libro está en la mesa.

CONVERSATIONAL SPANISH 1

Unit 2 - continued

Dialogo:

Profesora:	¿Qué es esto?
Linda	Es un papel.
Profesora:	¿Dónde está el papel?
Pepe:	El papel está en el libro
Profesora	Y (and) ¿dónde está el libro?
Pepe:	El libro está en la mesa
Profesora	¿Dónde está la tiza, (el papel, el lápiz?, etc.)?

Canción: (Teacher, to introduce song, say "Vamos a cantar." (let us sing)

Uno, dos, tres, cuatro, y cinco

Uno, dos, tres, cuatro y cinco
Me pongo de pie y brinco.
Seis, siete, ocho, nueve, diez
Ya me siento otra vez.

Classroom Follow-Up Activities:

1. Have chain drill using "¿Dónde está el libro (la mesa, el lápiz, etc.)?" "El libro está en la mesa." "El papel está en el libro." "El lápiz está en el papel, etc." Use the same objects, going around the room until they are sure, then change.
2. Review greetings with dialogue adaption such as:
   - Profesora: "Buenos días. ¿Cómo se llama?"
   - Estudiante "Buenos días. Me llamo María."
   - Profesora: "¿Cómo esta?"
   - María: "Muy bien, gracias, ¿y usted?"
   - Profesora: "Bien, gracias."
3. Sing the new song; after 1,2,3,4,5, have students stand and jump, then after 6,7,8,9,10, they can sit down.
4. Review poem.
5. Review numbers (flash cards) or "Carreras" game.

CONVERSATIONAL SPANISH 1

Teacher's Lesson Guide (1963 Summer School) Third-Year Primary

UNIT 4 (July 1 - 5)

The purpose of this unit is to learn plurals of objects and verbs already learned. (These are the books.) "Estos son los libros." Children will be asked, "How many books, pencils?" etc. "¿Cuántos libros hay?"; "¿Cuántos lápices, papeles, etc.?"

Conversation pertaining to the weather is always good. Children will be asked from now on. "How's the weather?" "¿Qué tiempo hace?" They will learn to reply. "Hace bien tiempo," (fine). "¿Hace calor?" (hot); "¿Hace frío?" (cold). Addition "en español" begins in this unit. (How many are two and two?) "¿Cuantos son dos y dos?" (Two and two are four.) "Dos y dos son cuatro." New song having to do with addition is also included in this unit.

Suggested classroom materials: Have pictures illustrating different types of weather (cold, hot, pleasant, etc.). Have books, pencils, papers, and chalk on table. Use flash cards for your numbers.

Identification Exercise:

Estos son libros
Estos son lápices
Estos son papeles
Estas son tizas
Esta es la pizarra
Estas son mesas

Exercise:

Profesora:	Estos son libros	¿Cuántos libros hay?
Rosa.	Hay tres libros	
Profesora	Estos son lápices	¿Cuántos lápices hay?
Paco:	Hay cinco lápices.	
Profesora:	Alberto, ¿dónde están los libros?	
Alberto:	Los libros están en la mesa.	
Profesora:	Eduardo, ¿donde están los lápices?	
Eduardo:	Los lápices están en el libro.	
Profesora:	Susana, ¿Cuántos papeles hay?	
Susana.	Hay diez papeles.	

Dialogo: (Weather)

Marta:	Hola, Rosa, ¿Qué tal?
Rosa:	Hola, Marta, estoy bien, gracias
Marta:	¿Qué tiempo hace?
Rosa	Hace buen tiempo.

CONVERSATIONAL SPANISH 1

Teacher's Lesson Guide (1963 Summer School) Third-Year Primary

Unit 4 - continued

Dialogo (Weather)

Daniel: Hola, José
José: Hola, Daniel, ¿Hace frío?
Daniel: No, no hace frío, hace calor (or "hace buen tiempo").

Números: (Teacher, you can introduce addition. "Clase vamos a sumar.") (Class, let us add.)

Q. ¿Cuántos son dos y dos?
A. Dos y dos son cuatro.

Q. ¿Cuántos son cinco y tres?
A. Cinco y tres son ocho.

Q. ¿Cuántos son tres y tres?
A. Tres y tres son seis.

Canción: (You can introduce song, "Clase, vamos a cantar, Dos y dos.")
Dos y dos son cuatro

Dos y dos son cuatro
Cuatro y dos son seis
Seis y dos son ocho
Y ocho diez y seis

Classroom Follow-Up Activities:

1. Put addition problems on board and have "niños"say them in "español."
2. Use flash cards to review numbers.
3. Drill on new material as well as old, using questions, i.e...
   Teacher: "¿Están los libros en la mesa?"
   Student: "Sí, los libros están en la mesa."
   Q. "¿Cuántos lápices (libros, papeles, tizas) hay?"
   A. "Hay 2 (3,4,5,6,11,15, etc.) lápices."

   Q. "¿Qué son estos?"
   A. "Son_____(vary all objects)"
4. Ask them daily about the weather, "¿Qué tiempo hace?" Have them reply properly, "Hace buen tiempo, or"hace calor." Ask them, "Is it cold?" "¿Hace frío?" "No, no hace frío, hace calor."
5. Sing the song.
6. Review use of singulars from Unit 3.
7. Review daily.

CONVERSATIONAL SPANISH 1

Teacher's Lesson Guide (1963 Summer School) Third-Year Primary

UNIT 5 (July 8 - 12)

The purpose of this unit is to review all material covered. General review will also include all songs and poem learned during this study.

Greetings:
Buenos días, niños.
Buenos días, profesora.

Hola, clase, ¿qué tal?
Hola, profesora, ¿qué tal?

¿Como está usted?
Muy bien gracias, ¿y usted?
Bien gracias.

Various ways learned to say good-by:
Adiós
Adiós, hasta luego
Hasta mañana.
Hasta luego.

How to ask and answer to the following questions: (What is your name?..... What is his name?.....What is her name?)
¿Cómo se llama?
Me llamo María, Roberto, etc...
¿Cómo se llama él?
Se llama Roberto, Miguel, etc...
¿Como se llama ella?
Se llama Marta, María, etc.,

Review how to ask and to answer question, (How old are you?...How old is he?..(she)
¿Cuántos años tiene?
Tengo 8 años
Tengo 9 años
¿Cuántos años tiene él?
El tiene ocho años. (8)
¿Cuántos años tiene ella?
Ella tiene siete años. (7)

Review all numbers learned:
Clase, cuenten de uno a quince, por favor.
uno, dos, tres, cuatro, cinco, seis, siete, ocho, nueve, diez, once, doce,
1 2 3 4 5 6 7 8 9 10 11 12
trece, catorce, quince.
13 14 15

CONVERSATIONAL SPANISH 1

Unit 5 - continued

Review poem....Uno, dos, tres, cho-
Uno, dos, tres, co-
Uno, dos, tres, la-
Uno, dos, tres, te
¡Chocolate! ¡Chocolate!
¡Bate, bate el chocolate!

Classroom Follow-Up Activities:

1. Have "los niños" greet each other using their own names..."buenos días, Roberto," "¿Qué tal, Marta?" Practice all other greetings..."Hola, niños," class answers, "Hola, profesora, (profesor)."
2. Ask them, "¿Cómo se llama?" Point to another student and ask, "¿Cómo se llama él, (ella)?"
3. Have niños participate in dialogue using "Buenos días, hola, or ¿qué tal?" and also using, "Adiós, hasta mañana, hasta luego."
4. Ask every student, "¿Cuántos años tiene?" Tengo _____ años. Pointing to someone else ask, "¿Cuántos años tiene él, (ella)?"
5. Review all numbers learned by using your flash cards or playing game "Carreras." (Unit 1)
6. Anytime they answer always say "Gracias"...when you ask them to count... "Cuenta de uno a cinco, por favor." Always include, "por favor" and stress "gracias."
7. Holding up all objects, ask, "¿Qué es este?" "Este es el libro, (el papel la tiza, el lápiz)." Placing them on table, ask, "¿Dónde esta el lápiz?" "¿Cuántos lápices hay?" (libros, papeles, etc.)
8. Review addition, "Clase vamos a sumar." "¿Cuántos son dos y dos?" "Dos y dos son cuatro." Use all the number combinations used on lessons and in your guide. Sing addition song and ask particularly about these numbers to insure comprehension.
9. Daily during this review period ask them, "¿Qué tiempo hace?" They can answer "Hace calor" or "Hace buen tiempo." Ask question "¿Hace frío?" "No, no hace frío, hace calor."
10. Play all games, sing songs, and review poem.