

THE EFFECTS OF TAPE RECORDED TEXTBOOK
PASSAGES UPON SOCIAL STUDIES
ACHIEVEMENT OF SELECTED
ELEMENTARY SCHOOL
INTERMEDIATE
PUPILS

By

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TABLE OF CONTENTS

Chapter	Page
I. PRESENTATION OF THE PROBLEM	1
Introduction	1
Theoretical Background	3
Statement of the Problem	4
Hypotheses	5
Definitions of Terms	6
Delimitations	7
Significance of the Study	8
Limitations	9
Organization of the Study - Timing	9
Summary	10
II. REVIEW OF THE LITERATURE	12
Measurement and Development of Listening Comprehension Skills	13
The Tape Recorder as an Aid to the Development of Listening Skills	20
Listening and Reading Skills in the Content Subjects	21
Summary	22
III. METHODOLOGY AND DESIGN	24
Selection of the Subjects	24
Test Procedures	25
Assumptions	26
Pupil Testing Procedures	27
Summary	28
IV. STATISTICAL TECHNIQUES	29
Pupil Selection Instruments	29
Criterion Instrument	31
Criterion Test Item Question Classification and Error Analysis	32
Summary	42

Chapter	Page
V. SUMMARY AND CONCLUSIONS	43
General Summary of the Investigation	43
Conclusions of the Study	44
Discussion and Recommendations	45
SELECTED BIBLIOGRAPHY	47
APPENDIX A - CHRONOLOGICAL AND TEMPORAL CLASSIFICATION OF SIGNIFICANT PROJECT COMPONENTS	50
APPENDIX B - SOCIAL STUDIES TEXTBOOKS AND UNITS USED IN THIS STUDY	52

LIST OF TABLES

Table	Page
I. Test Item Classification by Cognitive Domain Area and Grade	33
II. Analysis of Variance of Grade Four Method of Obtaining Social Studies Concepts and Criterion Test Performance	39
III. Analysis of Variance of Grade Five Method of Obtaining Social Studies Concepts and Criterion Test Performance	40
IV. Analysis of Variance of Grade Six Method of Obtaining Social Studies Concepts and Criterion Test Performance	41

LIST OF FIGURES

Figure	Page
1. Test Item Classification by Cognitive Domain Area--Total For All Grades	34
2. Test Item Classification by Cognitive Domain Area--Total For Grade Four	36
3. Test Item Classification by Cognitive Domain Area--Total For Grade Five	37
4. Test Item Classification by Cognitive Domain Area--Total For Grade Six	38

CHAPTER I

PRESENTATION OF THE PROBLEM

Introduction

It has traditionally been most difficult for pupils with a lower reading level to progress satisfactorily in the content area subjects. Lack of reading skills, or of being able to successfully apply such skills, means that very little information or positive attitude changes can be obtained by readers when written texts are used in the elementary school social studies program. It is the intent of this study to examine in detail the possibility of the use of the magnetic tape recorder as a means of acquisition of knowledge and information in the social studies program. The content field of social studies was selected because considerable pupil textbook reading is a part of the average teacher expectation of all pupils of a given intermediate grade level.

In the American schools today, reading is generally divided into two segments--learning to read, and reading to learn. The former is chiefly concerned with the instruction of reading skills throughout the school years, with primary emphasis being placed in the elementary grades. Reading to learn implies an acquired knowledge of reading skills which can be applied to content area subjects for the purpose of obtaining additional information, changing attitudes, and developing various skills in these content area subjects.

The textbooks used in the content area subjects usually vary from fairly difficult to very difficult reading for the pupils of average ability and achievement when they are used at the levels for which they were designated by the authors and/or publishing company. Not only are the concepts frequently difficult and diverse, but often they are almost completely foreign to the previous experiences of the reader. If the pupil has difficulty with reading, the chances would be even greater that much reading of materials which were somewhat related in background and concept would have had to occur if he is to successfully comprehend the textbook material.

Lack of adequate reading skill mastery as well as a background of information relating to a content area subject can indeed become a formidable barrier to the successful acquisition of information from a printed textbook. To further complicate matters for the pupil with a lower reading level, each community, country, geographic area, or set of world physical characteristics has its own special technical vocabulary which must be mastered if information is to be obtained about different localities and regions--many of which are foreign, with numerous proper names as well as many words which are completely separated from the reader's background. In addition, the spelling of locational words is frequently phonetically irregular.

Frequently, an organizational and administrative school plan is developed to assist the reader in adjusting to his classes in reading skill development. This usually takes the form of some special auxiliary personnel who provide remedial instruction in the basic reading skills for one-hour periods three to five days per week. Not only are adjustments made in methods and techniques of instruction for these

pupils, but there are usually some materials available which contain a vocabulary which can be read with relative ease by the reader.

These materials frequently use a more elementary vocabulary to discuss concepts and stories which are compatible with the developmental needs of the pupils.

Materials developed for and used in the content area subjects, such as social studies, are concerned with a hierarchy of concepts and the integration and development of these throughout the body of knowledge. Consequently, it becomes increasingly difficult to maintain the smooth articulation of concept hierarchy with other factors, such as the readability of the materials in a content area field.

Pupils with a lower reading level find themselves caught in a paradox. They have the materials which they use during reading class adapted in level of difficulty to their present level of reading skill, while content-area materials are not so readily adjusted to their present lower reading level. In fact, material level discrepancies of three to four years in advance of a pupil's actual reading ability are all too common.

Theoretical Background

During recent years, considerable research and discussion have evolved concerning the importance of listening comprehension levels of elementary pupils. Of particular importance and relevance to the design of this study is the question of whether pupils with a lower reading level are able to function at a higher "comprehension level" by listening to textbook selections being read to them.

A previous study by Erickson and King (12) compared comprehension on material orally presented with that obtained by reading in grades three through nine found a distinct advantage in favor of the oral method of presentation. However, an examination of the individual pupil records indicated a tendency of the pupils to retain about the same relative class rank, whichever method of presentation was used. It was theorized in this study that pupils who were disabled readers would advance in their relative class standing in social studies as evidenced by their performance upon the evaluative instrument. It could be further theorized that a majority of intermediate grade pupils with a lower reading level would acquire social conceptual constructs more efficiently by an auditory approach, regardless of age, sex, or grade.

Statement of the Problem

The purpose of this study was to examine the effect of selected tape recorded social studies textbook passages upon the short-term comprehension of specified elementary school pupils. Pupils from the experimental groups simultaneously listen to recorded social studies textbook passages as they looked at that passage in their textbooks while members of the control group read the same selections in their textbooks.

Controlled variables for this study were (1) the length of time of the listening activities, (2) the time of day, and (3) the number of days per week in which the listening activities will be used.

Student achievement on test scores of social studies concepts at the appropriate grade level was the dependent variable.

The independent variable under consideration in this experiment was method of data input.

Hypotheses

The statistical significance of all hypotheses will be evaluated at the .05 percent level of significance.

Ho₁ There will be no significant difference in the mean performance on the social studies concept comprehension test of selected fourth grade pupils when social studies textbook assignments are accomplished by listening to the textbook reading assignments recorded verbatim or when they are simultaneously read silently by other students in the same room and grade.

Ho₂ There will be no significant difference in the mean performance on the social studies concept comprehension test of selected fifth grade pupils when social studies textbook assignments are accomplished by listening to the textbook reading assignments recorded verbatim or when they are simultaneously read silently by other students in the same room and grade.

Ho₃ There will be no significant difference in the mean performance on the social studies concept comprehension test of selected sixth grade pupils when social studies textbook assignments are accomplished by listening to the textbook reading assignments recorded verbatim or when they are simultaneously read silently by other students in the same room and grade.

Definitions of Terms

Social studies is referred to as an investigation of sociological and geographical elements as they interact with man.

Social studies concepts is used in this study to mean the basic social and geographic principles which lend themselves to application in different environments, yet maintaining a commonality of principle.

Hearing is a physiological process which leaves little or no impact on a person. It is the process, the entrance of sound into the ear.

Listening means aural recognition of sound leading to comprehension and the application of judgment in some active form. If the sounds we hear have no meaning, we are only hearing. If they do have meaning, then listening is taking place.

Self-contained classroom indicates a teaching station in which one teacher has primary responsibility for teaching all curriculum subjects to pupils throughout the length of the school day.

Knowledge involves the recall of specifics and universals, the recall of methods and processes, or the recall of a pattern, structure, or setting.

Comprehension represents the lowest level of understanding, and refers to a type of understanding such that the individual knows what is being communicated, without relating it to other material or seeing its fullest implications.

Application indicates the use of abstractions and concepts in particular and concrete situations.

Analysis is used to indicate the breaking down of ideas into elements to the extent that a hierarchy is made clear or that relations

between ideas are clarified.

Synthesis is the putting together of idea elements to form a whole.

Evaluation means the formation of judgments about the value of material and methods for given purposes.

Delimitations

The primary emphasis of this study is the assessment and classification of social studies listening comprehension skills. There has been no attempt to develop or measure, other than the initial placement test, vocabulary skills. The latter are, obviously, a significant factor in the comprehension of any material. Likewise, study skills and various personal habits of attending to a task and persevering until the task has been completed are of significant importance. These skills, too, have been omitted, except for the minor role which they played as measured by-products of the basic act of listening comprehension. These conditions were assumed to be equally distributed between the control and experimental groups.

Since the entire experimental group consisted of ninety-eight pupils, as well as the fact pupils were assigned to either the experimental or control groups, inferences regarding the behavior of other similar groups cannot be made. The data and conclusions contained in this study are intended to apply only to the groups and individuals participating directly in the study. Summaries and analyses of the data of this study are intended to be interpreted for the fourth, fifth, and sixth grade population directly concerned with this study. Inferences cannot be legitimately made to groups of differing age

levels or of differing experiences. The measurement of short-term listening comprehension skills was the purpose of this study.

Significance of the Study

The importance of this study centers around two major curriculum areas--social studies and reading. The results, however, will be applicable to related areas. One of the more obvious outcomes of this research study is the determination and location of data leading to the establishment of programs whereby those readers of subnormal, normal, or above intelligence, but who are lacking in reading skills, may be helped to develop in the content areas at school.

Secondly, this study examined the ability of intermediate grade pupils to perceive, comprehend, and apply information acquired through an auditory input. This examination, then, was based upon the performance of the learner as he applied his auditorily acquired information to present day circumstances and events. Based upon the classification of the pupil responses to questions at various levels of the hierarchy of knowledge as suggested in the Taxonomy of Educational Objectives, Volume I, by Bloom and Krathwohl (5), an analysis was made of the taxonomical hierarchy of questions which were generated through data which had been recorded upon magnetic tape.

Indicated in this study are areas of knowledge within the hierarchy classification by Bloom and Krathwohl. This study was designed to evaluate the effectiveness of various types of audio-visual media to determine the usefulness of the media as one means of adjusting instruction to the varying needs of pupils.

Limitations

One of the more serious limitations of the study was the curiosity of the subjects themselves. It is postulated that each group was most curious as to what the other group was doing--especially with those who were using special equipment. Careful orientation for the teachers and control of the pupils was needed to eliminate as much cross-contamination as possible.

A second major limitation was the varying extent of teacher effectiveness and willingness to cooperate throughout the duration of the entire experiment. Related to this attitude on the teachers' part was the effectiveness of each teacher in providing the proper background for an assignment, discussing selected vocabulary items, timing the length of the social studies units, and providing pertinent questions which would motivate a pupil to want to learn more about a topic.

The third major limitation was the ability of the pupil to read the evaluative instruments. Consequently, the tests for the pupils in the experimental and control groups were recorded on magnetic tape cassettes.

Organization of the Study - Timing

This study formally began shortly after the conclusion of the Fall Quarter of the 1969 school year, and was conducted for the duration of the first semester. This was a total experimentation period of approximately twenty-two school days. Pupils listened to the taped selections of a complete social studies unit at the same time as the remainder of the class read the identical selections in their textbooks. Headphones and cassette tape recorders permitted all of this study to

be conducted in the regular self-contained classroom of each youngster. The number of days of listening activity per week depended, of course, upon the frequency of the assigned reading. If a teacher assigned a certain period of unspecified reading in the social studies books, then the pupils who participated in the study used this time as a listening time. This experimental program was coordinated through the school district elementary coordinator, the director of research, the elementary school principals, and the district social studies department chairman.

The plan of organization was for each of the three participating schools to have a control and experimental group within one room in grades four, five, and six. In each of the rooms receiving the experimental treatment, another group simultaneously functioned as the control group in the same room as the experimental group. This organizational plan served the purpose of maintaining the teacher's proficiency as a controlled factor in the experiment. Differences in I.Q. between groups, as a co-variable with method of concept acquisition, were statistically adjusted by the use of the analysis of covariance statistic.

Actual participation by the pupils began in November, with the starting of the second quarter. The experimental and control group had their time allotment partitioned into three periods of approximately two weeks each.

Summary

This study is an attempt to measure the listening comprehension skills of ninety-eight selected pupils in the experimental and control

groups in grades four, five, and six. These listening comprehension skills were measured in the content field of social studies. Each of the pupil groups spent approximately one month studying a social studies unit. A number of controls were established to control extraneous variables which would likely influence the results of this study. One major variable was taken into account by having all pupils in this study listen to the tape recorded criterion test questions as they were presented for the written pupil responses.

CHAPTER II

REVIEW OF THE LITERATURE

Considerable research has been done concerning the significance of listening comprehension. Some of the areas which have received attention are the age levels at which listening comprehension skills are of particular significance, and the importance and types of listening comprehension skills which are found in pupils who experience varying degrees of success in other school curriculum areas--particularly reading and intelligence. But what about those pupils whose reading skills are inadequate for the difficulty level of the concepts which are a part of the curriculum for each grade? Many times, these reading skill deficiencies will be in the area of word attack skills. Several suggestions are offered by authorities concerning: (1) ways in which listening comprehension skills may be developed and measured, (2) descriptive studies of listening skill levels of development which are found at various age levels, and (3) specific techniques used to develop content-area subject matter concepts as well as various studies to determine the relationship of listening comprehension of pupils' over-all performance in the various content-area subjects. Since the primary concern of this study is with social studies, that body of content-area knowledge, and its acquisition, will be given primary emphasis in this literature review.

Measurement and Development of Listening Comprehension Skills

Berg (4) emphasizes that training in listening must take into account the necessary thought passages which are necessary for comprehension. Attention should be focused upon the development of these processes, rather than on dealing predominantly with the peripheral and mechanistic aspects of the media.

Silverstone (33) states that "technology and instruction concern themselves chiefly with visual approaches, while the auditory area is nearly wholly neglected in education." Silverstone's statistics indicate that in the course of a wakened day, an individual's time is spent as follows: listening, 45 percent of time; speaking, 30 percent; reading, 16 percent; and writing, 9 percent. These figures indicate the importance of the development of listening skills. Silverstone's findings indicate listeners can be designated as being in one of three classes: the participating, the intermittent, and the passive. A participating listener is one who achieves total or almost total listening. An intermittent listener tunes in about half the time, while the passive hearer listens only when something affects him vitally or he has an interest or need to listen.

Malter (26) found that specific demands of the content fields require special reading skills. Children in grades four through eight, for example, had difficulty with diagrammatic materials. In a related study by Hansen (16), comparing children superior in solving verbal arithmetic problems with sixth-grade children who were inferior in this skill, found that general language ability and the ability to read graphs, charts, and tables were most closely related to the ability

to solve arithmetic problems.

Reed (29) found that the intellectual abilities necessary for mastering the fundamentals of reading are different from those required for achieving proficiency on complex reading problems. He found evidence which indicates that the aural factor makes an extremely significant contribution to early progress in word-attack and word-recognition skills. The crucial role of auditory discrimination, and auding, more generally, is stressed in their importance to learning to read.

Spache (34) discovered from his work with an older population, that poor readers who are good aural learners have an excellent prognosis for reading success with remedial help. He found that little attention has been devoted to improving the listening ability of children. We have assumed that children either know how to listen already or that they will acquire this ability naturally. If listening ability can be improved, and some studies have indicated that it can be, it would appear that listening ability as a mode of learning need not lose its superiority over reading ability at the junior high level as it appears to do now. A number of investigators have attempted to determine whether the visual or auditory method of presentation gives a better result in the recall of material presented.

Superiority of Auditory Over Visual Presentation of Classroom Material

Erickson and King (12), in an early study, attempted to determine the relative effectiveness of presenting lesson materials visually through silent reading and orally by the teacher. The subjects were one hundred six pupils in grades three to nine. The subjects were divided into groups, which in turn were split into sections. While one

section of a group read a lesson, the other section listened as the teacher presented it orally. Each presentation was immediately followed by a test on the material covered. Each group had scores favoring the oral presentation.

Young (38), working with 2000 pupils in grades four, five, and six, contrasted four methods of presenting material. These were oral reading by the teacher, oral reading by the teacher plus simultaneous silent reading by the pupil, silent reading alone without time limits, and silent reading for the same length of time as given to oral reading by the teacher. He found that at grade four, the oral presentation was superior to any other, but by grade six the superiority of the oral presentation had disappeared.

Russell (31), using 1080 subjects in the fifth, seventh, and ninth grades, found that in the fifth grade pupils learned more from having material read to them than they did from reading it themselves. In the seventh grade the two methods were equally effective, while in grade nine there was a slight, but not significant, difference favoring learning by reading.

A series of lecture articles of approximately 2300 words each was prepared by Greene (14). One group of male college students read the articles and another group listened to them. On immediate recall, the difference between the groups was not significant. On delayed recall, the lecture group was superior. Students in the top quarter scholastically tended to do slightly better in recall based on reading, while students in the lower quarter tended to do better in a recall based on listening.

Superiority of Visual Over Auditory Presentation

Corey (10) had one group of college freshmen read a 2500 word passage while another group heard the same material as a lecture. On immediate recall, the superiority of the reading group was statistically significant but on delayed recall two weeks later there was no difference between the two groups.

Beighley (3) in another experiment with college students, investigates the effectiveness of (1) visual and auditory methods of operation, (2) vocal skill of the speaker in oral presentation, (3) difficulty of material presented, and (4) organization of material presented.

Two speeches were used. They were mimeographed for the silent reading part of the experiment. Two students judged as skilled speakers and two judged as unskilled speakers read the speeches for the listening part of the experiment. Beighley reported vocally skilled speakers helped listeners to achieve higher scores; easy material was better comprehended than difficult; and exposure to material by silent reading was always markedly superior to exposure by listening.

No Difference Between Visual and Auditory Presentation

Heye (18) compared the relative effectiveness of four types of auditory presentation of material. The same content material was presented in the form of lecture, dialogue, story, and drama. No significant differences in learning were found in any of the four methods.

On the basis of 27,969 answers on a true-false examination, Lehmann (27) found that 25.15% of the errors were made on reading the test and 24.74% by listening to the test. From this study he concluded

that the listening method produced substantially the same results as the reading method. His procedure consisted by presenting the same test items to classes in educational psychology. The test was first presented orally, and before the students left the room it was given by means of mimeographed sheets.

Jensen (20) repeated the experiment by Lehmann, with one addition. He read the test orally, presented it on mimeographed sheets, and then read it to the class while they read it simultaneously from the mimeographed sheet. After completing the tests, students were asked to state their preference for the three presentation methods. The visual was preferred by eighty-five percent of the students over the other two methods. Thirty percent preferred oral over visual-oral, and there were no preferences for oral over visual.

This study revealed that virtually the same results were obtained by listening as by reading. Some students were able to perform much better by visual means and others by oral means.

A study by Worchester (37) indicated that neither the auditory or visual method of presentation presented any marked degree of superiority in the rate of learning meaningful, connected material.

Hollingsworth (19) used two commercially-developed listening programs in a study involving 298 eighth-grade pupils. After ten weeks of instruction in listening, neither of the experimental groups following the two listening programs scored significantly higher on a standardized reading test than a matched control group.

Variations in Effectiveness of Reading and Listening Depending on Material Used

Larson and Feder (21) used comparable forms of the Nelson-Denny Reading Test to study reading comprehension and listening comprehension. In one case the students read the material and in another case the material was recorded. They found easy material is comprehended as well when read as when heard. In material of moderate difficulty there is a tendency for reading comprehension to be superior. Reading comprehension was markedly superior with difficult material.

Carver (9) studied the influence of four selected variables on reading and listening. The variables were: (1) the type of material presented, (2) the difficulty of the material, (3) the mental functions involved, and (4) the cultural level of the subjects. The college-age subjects were divided into two groups. Form "A" of one set of materials was visually presented to group I, and the same form to group II. Form "B" was presented orally to group I and visually to group II. The materials consisted of narrative, descriptive, explanatory, and abstract passages; series of directions; short selections of prose, poetry, and humorous stories; lists of vocabulary words and nonsense syllables, and digits. The following conclusions were drawn from this experiment: (1) For easy material the auditory mode is superior, for difficult material the reading mode is superior. (2) The effectiveness of auditory presentation is limited to familiar and meaningful material. It is inferior with strange or meaningless material. (3) The higher the cultural level, the greater the capacity to profit from auditory presentation.

A study by Schmidt (32) of 563 children (280 boys and 283 girls) from two elementary schools in Arlington, Texas, using fourth, fifth, and sixth grade pupils showed that the differences in listening achievement between fourth and sixth grade pupils were significant at the .01 level of confidence (31). No significant differences were found between the fourth and fifth grades, while the differences between the fifth and sixth grades were significant at the .01 level of confidence. There was no conclusion as to what had caused this significant improvement. Girls were found to be better listeners than boys at the .01 level of confidence. The researcher indicates that this implies that special understanding, time, and help be given boys in the development of their listening skills.

A study of adults by Webb and Wallon (35) used 100 male Naval personnel with a mean I.Q. of 125 in an experiment to determine which of three methods of presentation of material would give the greatest amount of retention over a twenty-four and a forty-eight hour period. Each of the three methods had a pre- and a post-test. The three methods used were (1) auditory (tape recorded passage selections), (2) read-through, and (3) read-study. The results indicated that a single read-through of the material and hearing the material read once resulted in equally effective comprehension. Studying (reading) the material (Greek Myths) for an equal time resulted in significantly greater comprehension. Reading and hearing simultaneously the material was as effective as studying the material.

The Tape Recorder as an Aid to the Development of Listening Skills

The first communication skill to be developed in the newborn child is that of listening. Without having learned to listen, a normal child cannot develop speaking or other communicative skills.

In a recent study attempting to increase reading skills with tape recorded lessons, Nichols (27) developed a series of twelve listening lessons for first grade. These lessons were prepared for the tape recorder, with the objective of helping children learn, through this medium, to shut out external stimuli and to increase their powers of concentration. The directions were also tape recorded. The lessons increased in complexity and length throughout the program. Individual headsets were used with the tape recorder. Transfer to regular classroom activities was noticeable in teacher directed lessons in which the same procedure was used as well as in self-directed study times when concentration was necessary. According to this researcher, "From this very short trial, it seems safe to assume that children can be trained to improve in listening and concentration skills through the use of the tape recorder."

Caffrey (8) found a correlation of .59 between auding and mental age. It was found that the reliability of a test was not affected when the test was administered by means of a recording.

Preparation of a recorded passage must be done after considerable planning has taken place. Silverstone (39) recommended that all scripts for tape teaching be written out word by word. This script should be rehearsed several times prior to recording, and then taped several times. "The basic ingredients of a script include: purpose,

setting, characters, timing, dialogue, sound effects, transitions, continuity, and time." The rate at which material is presented is also of considerable importance. Most audiences think at 400 words per minute (wpm). Normal conversation is 125 wpm. The presentation speed which most speakers use and the speed used in this study is 100 wpm.

Silverstone (33) found tape recordings and scripts could be segregated into three categories:

1. Directions--after listening to an explanation, the student is able to follow directions for completing an assignment on worksheet pages. This is the simplest kind of tape to make.
2. "Closed end"--this involves listening and participating. The listener can respond simultaneously with the teacher, take notes, or respond to a worksheet through a step-by-step procedure.
3. "Open end"--a student is given an exercise which has no formal ending. The listener will work independently to arrive at a conclusion.

Listening and Reading Skills in the Content Subjects

Within recent years, attempts have been made to investigate problems centering around listening and its relationship to other phases of language development.

Common to listening, speaking, reading, and writing are certain fundamental language elements. Among these are vocabulary, sentence patterns, the organization of ideas, and adjustment to the function of language in any particular instance. The importance of these elements increases greatly in cases where pupils cannot read, or do so only with considerable difficulty.

Of necessity, listening is the chief mode of learning in the early school years during which children are learning to read. Wilt (36) found that children are expected to listen in school on the average of two and one-half hours daily. Moreover, Reed (29) found that listening is the mode of learning which is often preferred by "retarded" readers. The lower the reading ability, the greater the advantage in favor of listening. It is disturbing to note, however, that even though listening is more effective at the elementary level for learning than is reading, an investigation by Young (38) found that children get a relatively low proportion of the facts in a single oral presentation.

Artley (2) conducted a study in which eleventh grade social studies pupils were tested to determine the relationships which exist between pupil test performance on specific social studies subject matter tests and test scores of general reading comprehension. A .79 correlation was found between social studies reading comprehension measures and tests of general reading comprehension. It was therefore concluded that the absence of a perfect correlation between general and specific reading comprehension measures provides evidence that a high degree of specificity exists in the factors relating to reading comprehension in the social studies. Likewise, general and specific reading abilities appear to be present to an equal extent on a general test of social studies achievement.

Summary

There have been numerous attempts at defining and measuring listening comprehension skills. Two of the most significant variables in this measurement are arriving at a syntactical and operational agreement

of the term "comprehension" and the elimination or reduction of confounding variables. Most researchers have found that listening skills can be developed, and that there is considerable variation in the effectiveness of listening as youngsters progress through school. In general, beginning at age ten and progressing through age sixteen, the aural processes are gradually surpassed by visual processes. The abscissa crosses the axis at about age twelve for the superiority of aural learning over visual learning.

The tape recorder can be effectively used as one means of developing listening skills. Transfer of these listening skills to other subjects has been found. The normal rate of recording is 100-125 wpm.

Reading and listening skills can be developed. In general, the lower the reading ability, the greater the advantage there is in favor of listening. Various levels of comprehension have been developed through oral presentations. These levels are dependent, in large part, upon the taxonomy of comprehension desired in the listening comprehension skill application.

CHAPTER III

METHODOLOGY AND DESIGN

Selection of the Subjects

The population for the purposes of this study consisted of one fourth, fifth, and sixth grade classroom in each of three elementary schools in Puyallup, Washington.

Puyallup, Washington is a formerly rural farm community which is rapidly undergoing change to an urban residential community of the adjacent cities of Tacoma and Seattle. The population within the Puyallup city limits is presently 15,210. There are an equal number of school patrons living outside the city limits.

The total school population of Puyallup is slightly over 10,000. These pupils are presently housed in two high schools, three junior high schools, and fifteen elementary schools. Five hundred twenty-three certified staff members are employed.

Schools which were selected to participate in this study possessed the following qualifications:

1. Had a minimum of two grades each of the fourth, fifth, and sixth grades.
2. Contained pupils who had been randomly assigned to classrooms.
3. Had faculty members at the appropriate levels willing to participate within the controls of this study.
4. A definite time allotment set aside weekly for social studies.

The sample for this study consisted of selected pupils in one fourth, fifth, and sixth grade at three selected buildings. One of the groups in each classroom at each grade level of the three buildings was selected as the experimental group, and the other group in the same room at each of the three levels was designated as the control group. Two distinct groups were formed within each classroom--pupils who ranked low in a test of silent reading comprehension at the time of the study and those who did not. It was then possible to utilize certain pupils in each of the experimental groups as the control group by examining their roles and controlling certain variables throughout the experiment. This organizational aspect of the study organization was a direct attempt to eradicate the confounding variable of the teacher. Differences in pupil mental ability were adjusted for by the analysis of covariance statistic.

Participants in this study had previously been administered an audiogram or similar test of hearing by the school nurse to determine their hearing capability. Equal amounts of time were allotted for the youngsters who were listening to the tape recorded materials and those who were reading their textbooks in the classroom. Sufficient range of recorded text materials were kept available to insure an accurate pacing of the control group when various topics and sentences were skipped in the textbook.

Test Procedures

Specific test items were written for the materials read and/or listened to. This study was primarily concerned with the short-range listening comprehension skills and retention of the pupils at the

various cognitive levels. The tape recorded selections were read verbatim from the textbook, with no embellishments or directional comments of any nature. Page numbers were given to aid in following along for the experimental groups. Captions for the various pictures were also read. Each taped selection was recorded by the same person. A normal rate of speaking (100 wpm) was used. Children listening to these taped selections were permitted to simultaneously read the textbook selections covering the taped material. This was their choice and was the foundation of an underlying hypothetical construct of the study--motivation.

The general reading ability of the population was determined by the reading section of the New Developmental Reading Tests (Intermediate level), Form A, by Bond, Balow and Hoyt (6).

In addition, pupils were administered the nonverbal section of the Lorge-Thorndike Intelligence Test, Level three, Form B, (23) prior to admittance to the study. Three equated social studies tests, covering the social studies concepts to be emphasized, were constructed for each unit, normed, and administered during the study after a predetermined point had been reached by each of the groups.

Assumptions

Each participating teacher was oriented as to the nature and purposes of the study prior to and during specific intervals throughout the study. Each pupil was assigned to either read in the social studies textbook or to listen to the appropriate taped selections--while reading the book for a minimum of three periods weekly. Each teacher was expected to check periodically to assure that the pupils were using

the appropriate means of input, as well as to offer any necessary assistance in the operation of the equipment. After an initial explanatory and practice session for the pupils and teachers, each was assumed to understand the proper operation of the equipment. Proper storage and maintenance of the tape playback equipment was assumed to not be a problem. It is the school district's policy that homework assignments at the elementary school level not be encouraged. Therefore, it was assumed that this policy was followed throughout the time of this research project.

Pupil Testing Procedures

A conscious and determined effort was made throughout this study to control the confounding variables to the extent that measurable differences in pupil behavior as determined by the criterion instruments were a valid measure of pupil performance. One means of accomplishing this control was a standardization scheme which was incorporated into the study at its inception and continued throughout the entire length of the experiment. Built into the program from the earliest pupil selection stages was the use of the cassette tape recorder as a means of data input for all members of the experimental groups. However, in order to provide data with the highest possible reliability, all instructions for test taking were recorded on cassette tapes. This plan included the general pupil assessment tests preceding the manipulation of the single variable, as well as the criterion tests administered to all pupils in the control and experimental groups. In addition, the exact timing of each subtest in each of these two tests was also placed on tape, so that timing for each group was regulated.

This procedure also freed the teacher so that better supervision could be given the testing program.

Scoring of these selection tests was all done by the director of this study, utilizing scoring marks for each of the two tests. After these data were tabulated and converted to some form of normal score, the classroom teacher and the director of this project mutually selected the pupils of the experimental and control groups by comparing their two test scores as well as considering their classroom performance. After two training sessions for teachers, the experiment was launched.

Summary

The basic design of this study involved a listening reading and a post-test situation. There was an experimental and control group for each of grades four, five, and six.

Subjects were selected on the basis of a lower reading comprehension test score in relation to their nonverbal I.Q. test score. Pupils from grades four, five, and six in the three elementary school participated.

Members of the experimental group and control group at each grade level had the same teacher and participated in all social studies activities together. Only during the times set aside for silent reading of the social studies textbook was the variable in effect. During the silent reading time, members of the experimental group listened to a tape recorded presentation of the identical material which the control group read silently. The time allotment for each group was identical.

CHAPTER IV

STATISTICAL TECHNIQUES

The purpose of this chapter was to present a description of the statistical treatment of the data and a statement of the results.

The major purpose of this study was concerned with a comparison of the effect upon pupil comprehension of social studies concepts when pupils read their social studies textbooks silently as compared with when they listen to the same material being read to them through a tape recorder.

This chapter has been divided under the following headings:

(1) pupil selection instruments; (2) criterion instrument; and (3) an analysis of the performance of the students on the criterion test when the students' performance was categorized and analyzed by methods of acquisition of social studies concepts through the single classification analysis of variance statistic.

Pupil Selection Instruments

After three elementary school buildings in the Puyallup School District had been selected, one combination experimental and control classroom was selected at each grade level. The pupils for the experimental group at each level (grades four, five, and six) were selected on the basis of their performance upon two instruments--a nonverbal pencil and paper I.Q. test and a test of reading comprehension.

The New Developmental Reading Tests, Intermediate Level, Form A, by Bond, Balow and Hoyt (6) was the instrument used for the measurement of each pupil's reading comprehension skills, and the Lorge-Thorndike Intelligence Test (nonverbal section) was used to measure mental ability. The vocabulary portion of The New Developmental Reading Tests was not used. The New Developmental Reading Test has a S_e of 5.3 raw score points for grade four, and 4.9 raw score points at grade six on the general comprehension section. The general comprehension internal consistency reliability (r_{tt}) is .94 at grades four and six for general comprehension. Parts II and III of the four-part comprehension test require comprehension on the level described as translated in the Taxonomy of Educational Objectives--Cognitive Domain (5). Part IV of this comprehension test requires comprehension of larger thought units as well as comprehension of the whole paragraph in the process of interpretation. Part V requires comprehension at the interpretative level.

The Lorge-Thorndike Intelligence Test, consummable edition, level three (grades four to six), Form B (nonverbal battery) was used as the criterion of pupil ability (28). The consummable edition was used to adequately evaluate pupils with perceptual transfer problems. The intelligence quotient norms were used based upon a deviation I.Q. This test has a standard deviation of sixteen points. According to the technical manual which accompanies this test, the average S_e for level three is 6.2, with a reliability coefficient of .85.

Twelve pupils were selected initially for the experimental group in each grade of grades four, five, and six. Pupils from three buildings were selected for participation in this experiment. After

adjusting for pupil relocation and transfer, there was a total N of 98 in the control and experimental groups.

Criterion Instrument

A multiple-choice social studies unit criterion test was administered. This criterion test was administered at the conclusion of the program. Each pupil in grades four, five, and six who took part in the study was administered a unit criterion test.

Prior to beginning the study, the criterion test was developed and administered in two classrooms at each grade level. These two classrooms were located in buildings other than those participating in the experiment. The pupils in each of the two classrooms had previously studied this material. Initially, each criterion test consisted of a minimum of 108 questions in grades four and five. The sixth grade test consisted of 119 questions. The criterion instruments, in their final form, consisted of 36 questions each for grades four and five. The grade six criterion test contained 39 questions. Due to the nature of the criterion test norming situation, the following correction factor for guessing was used in the norming procedure:

$$R - \frac{W}{3}$$

R = rights

W = wrongs

This is the correction factor for a four-item multiple choice test question. The primary purpose of norming the criterion test was to classify the questions from the least to the most difficult. The reliability coefficient (r_{tt}) used for the three final criterion instruments was computed by the split-half method. The test was halved

by odd and even items at all three grades. This reliability coefficient is of the internal consistency family. The method of reliability computation was based upon the Rulon's method. The calculated reliability coefficient was 0.7543 for all three grades. The standard error of measurement was 2.6534.

Criterion Test Item Question Classification and Error Analysis

A panel of five judges classified all criterion test questions into the six classifications as set forth in Taxonomy of Educational Objectives--Cognitive Domain by Bloom and Krathwohl (5). Each judge was individually instructed how to independently classify each of the test questions. In addition, a sheet listing the criteria for each step in the cognitive hierarchy was given each judge. The reliability of the classification scheme was strengthened by a written criteria scale. Opinions of the judges as to some of the question classifications did vary, but there was an over-all trend toward uniformity of judgment. In instances where the ratings of the judges were of some variance, a modal classification process was employed.

The total of the three tests for grades four, five, and six amounted to a total of 111 test items. Approximately one-half of these items were classified in the "knowledge" category, which is the most elementary classification. There was a gradual diminishing of the number of test questions from "comprehension" to "evaluation", the final classification. This profile of the over-all test question classification can be seen in Table I and Figure 1. Observation of this table and figure indicates that the frequency of criterion questions was in inverse proportion to the next higher cognitive level of thinking.

TABLE I

TEST ITEM CLASSIFICATION BY COGNITIVE DOMAIN AREA AND GRADE

Area	Grade 4		Grade 5		Grade 6		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Knowledge	12	33	16	44	29	74	57	51
Comprehension	7	19	9	25	4	10	20	18
Application	9	25	7	19	0	0	16	14
Analysis	5	14	2	6	3	8	10	9
Synthesis	0	0	2	6	2	5	4	4
Evaluation	3	8	0	0	1	3	4	4
Totals	36	99*	36	100	39	100	111	100

*= rounding error.

N = 111 test items

Dark vertical lines indicate
percentage of items in
tests

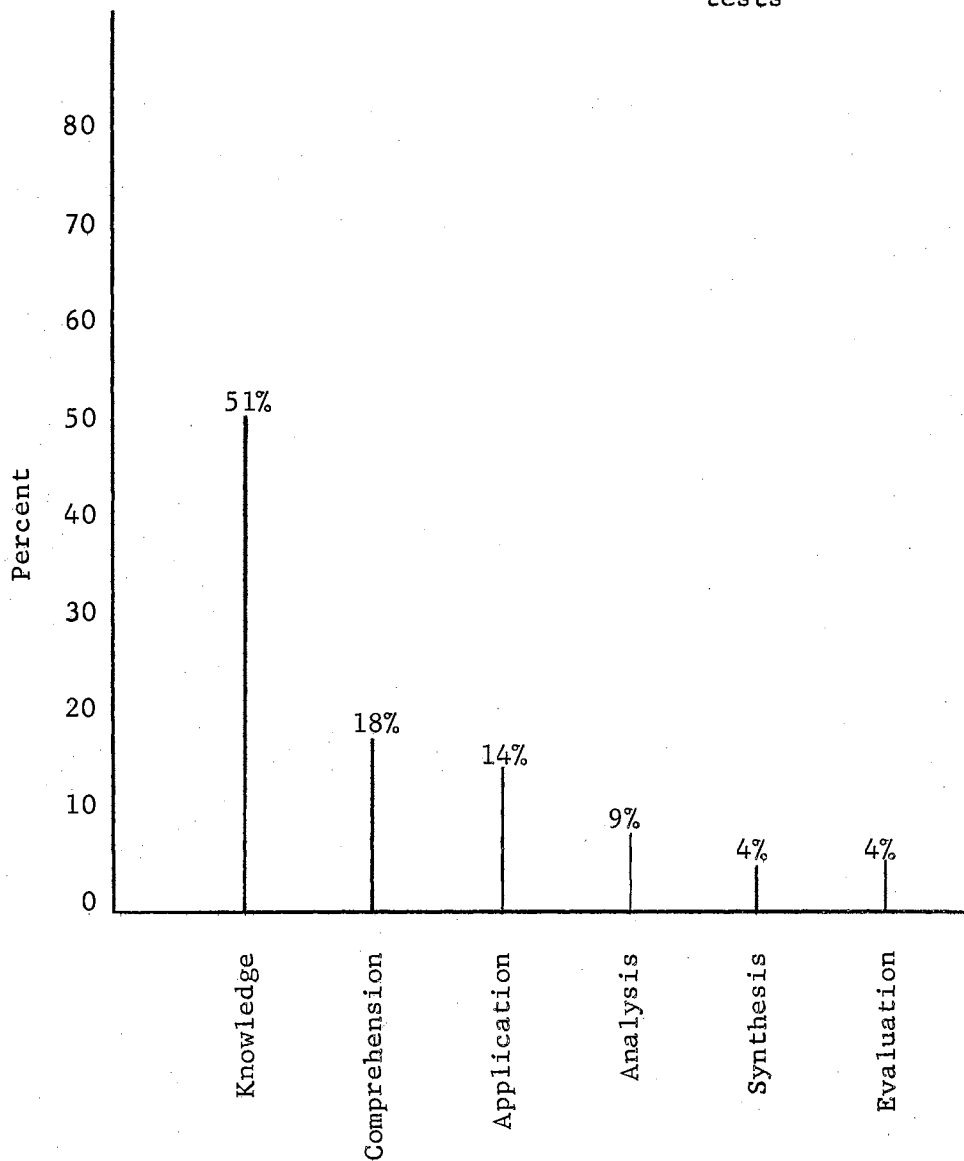


Figure 1. Test Item Classification by Cognitive Domain Area--Total for All Grades

Examination of Table I indicates that the six major classifications are arranged in descending order from top to bottom at the left table margin. The frequency and percentage of the total test items for each of the six major classifications is shown horizontally in Figure 1. The data on this table are shown by grade for grades four, five, and six in Figures 2, 3, and 4. Inspection of these latter three figures illustrates the increase in the number of the "knowledge" test items as one goes from the fourth grade (Figure 2) through the sixth grade (Figure 4). The classification of the test items as to their location in the cognitive domain also becomes apparent through inspection of Figures 2, 3, and 4.

Analysis of Variance

The single classification analysis of variance statistic was used to analyze the data in this study. This statistic allowed a comparison of the performance of the pupils who silently read their social studies textbook with those who listened to the tape recorded materials being read to them as they looked at their social studies textbook.

The null hypothesis was accepted at the .05 level of confidence for each comparison group. A statistical comparison of each group is shown by grade in Tables II, III, and IV.

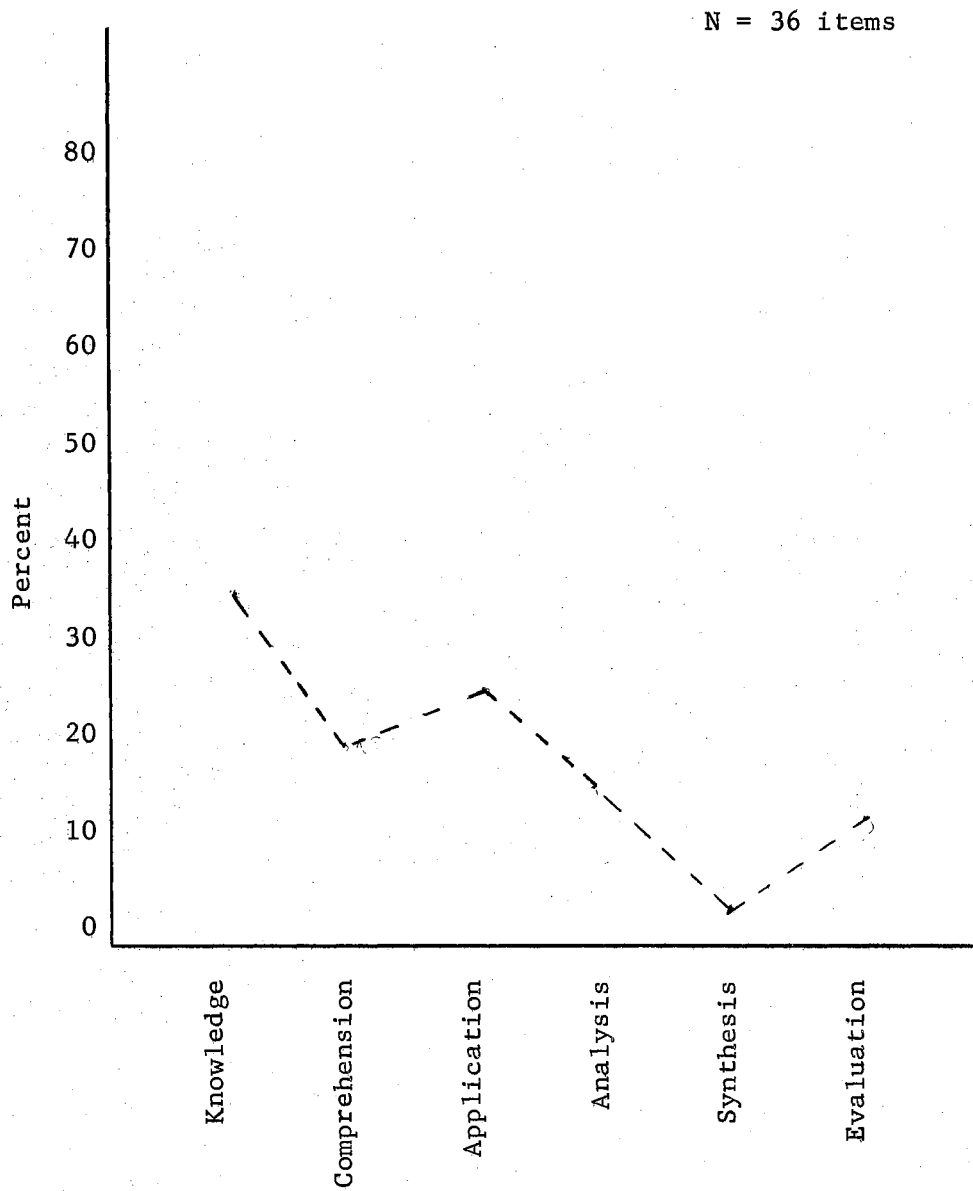


Figure 2. Test Item Classification by Cognitive Domain Area--Total for Grade Four

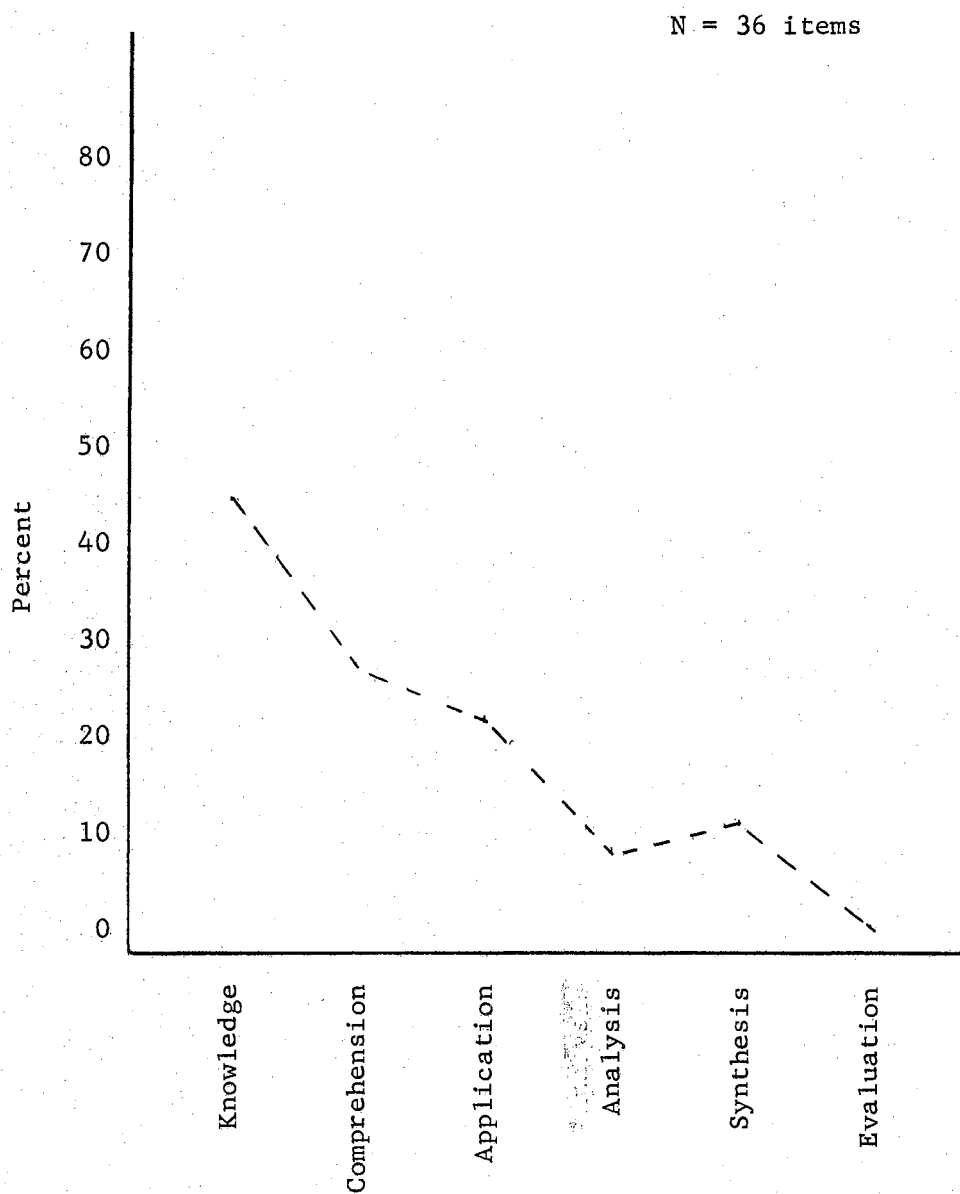


Figure 3. Test Item Classification by Cognitive Domain Area--Total for Grade Five.

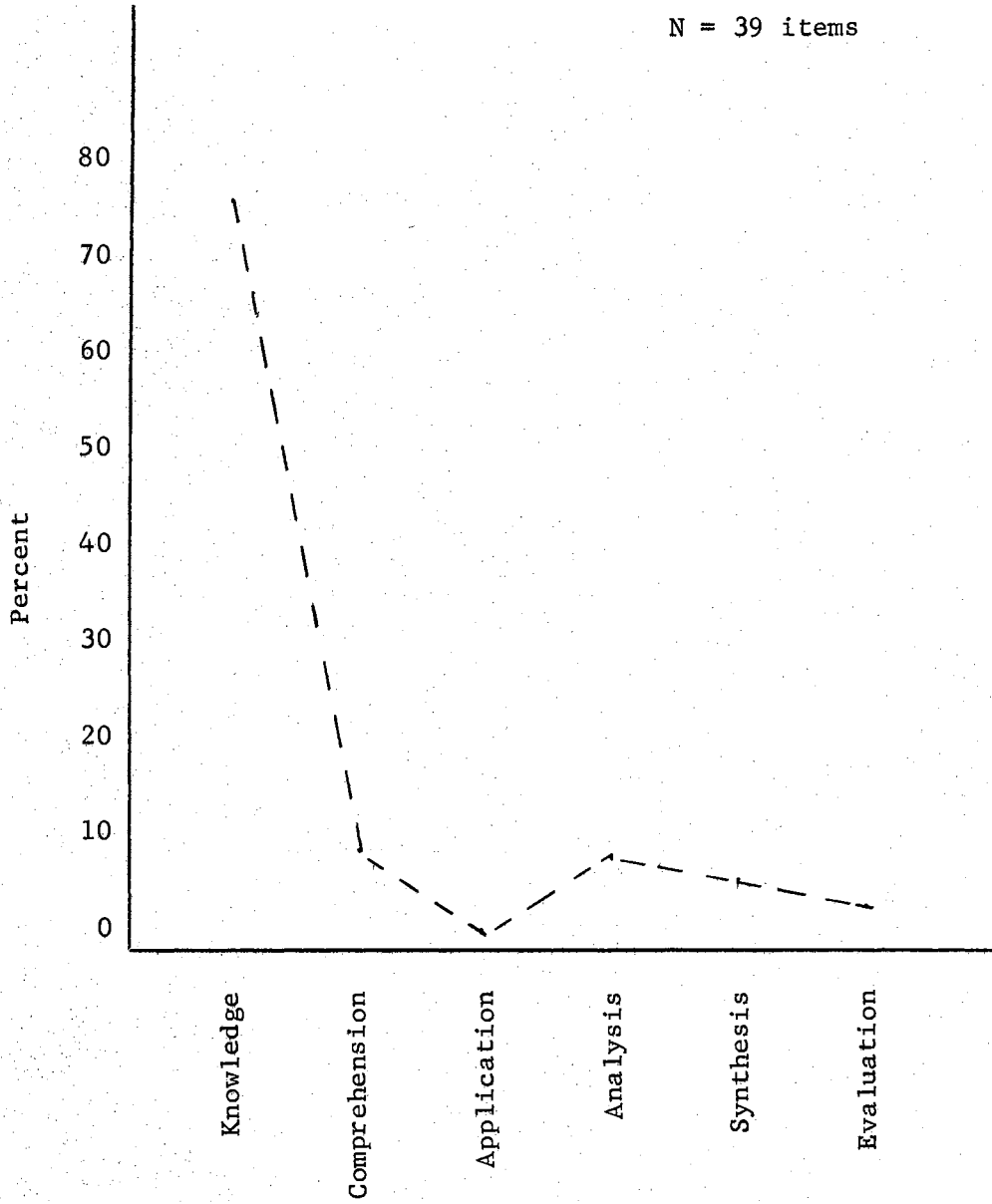


Figure 4. Test Item Classification by Cognitive Domain Area--Total for Grade Six

TABLE II
ANALYSIS OF VARIANCE OF GRADE FOUR METHOD OF OBTAINING SOCIAL
STUDIES CONCEPTS AND CRITERION TEST PERFORMANCE

Source	S.S.	df	M.S.	F	P
Total	1500.8824	67	--	--	--
Between (Exp)	3.7647	1	3.7647	0.1659	N.S.
Error	1497.1177	66	22.6836	--	--

The null hypothesis is accepted at the .05 level.

There is no significant difference between the groups.

TABLE III

ANALYSIS OF VARIANCE OF GRADE FIVE METHOD OF OBTAINING SOCIAL STUDIES CONCEPTS AND CRITERION TEST PERFORMANCE

Source	S.S.	df	M.S.	F	P
Total	1483.8182	65	--	---	--
Between (Exp)	26.7272	1	26.7272	1.1739	N.S.
Error	1457.0910	64	22.7670	--	--

The null hypothesis is accepted at the .05 level.

There are no significant differences between groups.

TABLE IV
ANALYSIS OF VARIANCE OF GRADE SIX METHOD OF OBTAINING SOCIAL
STUDIES CONCEPTS AND CRITERION TEST PERFORMANCE

Source	S.S.	df	M.S.	F	P
Total	2541.9355	61	--	--	--
Between (Exp)	103.2258	1	103.2258	2.5396	N.S.
Error	2438.7097	60	40.6451	--	--

The null hypothesis is accepted at the .05 level.

There are no significant differences between groups.

Summary

The null hypothesis was accepted at the .05 level of confidence for each group comparison. Differences in the cognitive performance of the experimental and control groups were classified according to the six-point hierarchy developed by Bloom and Krathwohl in the Taxonomy of Educational Objectives. Handbook I: The Cognitive Domain (5). There were no important differences between the experimental and control groups at any grade level or at any of the six taxonomy levels. The groups performed with considerable consistency at each level.

CHAPTER V

SUMMARY AND CONCLUSIONS

General Summary of the Investigation

This study compared pupil achievement in the content area of social studies when all means of data input were held constant except for the individual textbook. The control group in each of grades four, five, and six silently read a social studies unit, in addition to the numerous unit activities which were suggested by the social studies textbook authors or were improvised by the classroom teacher. The experimental group of pupils in each of grades four, five, and six listened to the same unit as the group mentioned above. This unit was recorded on magnetic cassette tape cartridges.

The sample for this study was an experimental group of ninety-eight children who were selected upon the basis of a lower reading comprehension test score in relation to a nonverbal I.Q. test score. There was also a total of ninety-eight pupils in the control group.

The instrument which was used to test for reading comprehension skills was the New Developmental Reading Tests (Intermediate grades), Form A (6). The Lorge-Thorndike Intelligence Test, nonverbal, Level Three, Form B, (23), was used to obtain a nonverbal estimation of each subject's learning potential. There were a total of forty-eight boys and fifty girls in the experimental group and fifty-two boys and forty-six girls in the control group.

The selection testing of the sample in this study was completed during December, 1969. All 196 pupils in this study were administered a total of three criterion unit tests at their particular grade level. These unit tests were also subjected to two item analyses. One analysis was part of the norming procedure, and the other was in relation to group criterion test achievement. Each test question was independently ranked by a panel of five judges as to the classification of the question in accordance with the Taxonomy of Educational Objectives. Handbook I: The Cognitive Domain (5).

The statistical treatment of the data to test three hypotheses included the following analyses:

1. The simple independent analysis of variance was used to analyze the group performance for grades four, five, and six.

2. The cognitive performance of each group was analyzed in accordance with the taxonomical classification as hypothesized by Benjamin Bloom and David Krathwohl in Taxonomy of Educational Objectives. Handbook I: The Cognitive Domain.

Conclusions of the Study

The following conclusions can be drawn from the results of the statistical treatment of the data:

1. The null hypothesis was accepted at the .05 level of confidence. No significant differences were found between the pupil comprehension of social studies concepts when pupils read their social studies textbooks silently as compared with when they listened to the same material being read to them through a tape recorder.

2. The cognitive performance of all groups was similar, with the exception of minor chance fluctuations, at all six levels of Bloom's taxonomical hierarchy. This performance consistency was evidenced in all three grades.

The lack of any important differences between the experimental and control groups at any of the six cognitive levels suggests the possibility that listening comprehension and reading comprehension are more similar than they are different.

The subjects for the experimental group in this study were selected on the basis of their lower reading comprehension scores. The criterion test performance of the experimental group was similar to that of the control group.

Discussion and Recommendations

Collection and analysis of these data have suggested the following additional areas of investigation which would be central to the theme of this study:

Expansion of this study could be made whereby the experimental and control groups would each serve as their own control by reversing the role of each half-way through the experiment. For example, the group which listened to the units would later read different material silently. The group which read the material silently would later listen to different material which had been recorded. This modification of the basic design of this study would permit analysis of the performance of each group with respect to other groups as well as its own prior performance.

An additional possibility which should yield valuable data would be to modify the techniques of data collection and statistical analyses. These modifications should include:

1. A statistical comparison and analysis of each grade-level criterion test performance by sex.
2. A statistical comparison and analysis of each grade level cognitive performance by sex and grade.
3. A further study and analysis of the function of the textbooks as they were used with the experimental group.
4. A replication of this study using randomly selected schools and subjects with random assignment to treatment.
5. A temporal cognitive classification and statistical analysis using more than one criterion test over an extended period of time.
6. A statistical comparison and analysis of each grade-level criterion test performance in a content area other than social studies.

Further investigation is needed to establish multiple correlations between age, sex, and listening comprehension. This study was designed to provide some basic background for the development of future listening comprehension research.

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APPENDIX A

CHRONOLOGICAL AND TEMPORAL CLASSIFICATION
OF SIGNIFICANT PROJECT COMPONENTS

<u>Event</u>	<u>Time</u>
	(X = 5 School Days)
1. Staff Selection and Orientation	XX
2. Selection of Experimental and Control Groups	XXX
3. Social Studies Unit Taught	XXXX
4. Three Pupil Criterion Tests	X·X·X
5. Teacher and Staff Critique	X

APPENDIX B

SOCIAL STUDIES TEXTBOOKS AND UNITS
USED IN THIS STUDY

SOCIAL STUDIES TEXTBOOKS AND UNITS USED IN THIS STUDY

Grade	Social Studies Textbooks	Unit	Page	Authors	Publisher	Copyright Date
4	<u>You and Regions</u> <u>Near and Far</u>	Coastal Regions of the Earth	87- 120	Clarence Sanford Edith McCall Floyd Cunningham	Benefic Press	1964
5	<u>The Changing</u> <u>New World</u>	The Northeast Grows and Changes	116- 135	Kenneth S. Cooper Clarence W. Sorensen Lewis Paul Todd	Silver Burdett Company	1964
6	<u>Knowing Our</u> <u>Neighbors in</u> <u>Canada and</u> <u>Latin America</u>	Two Great Differences From Sea to Sea	76- 89 90- 124	Norman Clark Frank E. Sorenson	Holt, Rinehart and Winston	1964

VITA

2
Clifford Wayne Laycock

Candidate for the Degree of

Doctor of Education

Thesis: THE EFFECTS OF TAPE RECORDED TEXTBOOK PASSAGES UPON SOCIAL STUDIES ACHIEVEMENT OF SELECTED ELEMENTARY SCHOOL INTERMEDIATE PUPILS

Major Field: Elementary Education

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Professional Experience: Taught self-contained sixth grade at Woodland Elementary School, Puyallup, Washington, 1957-61; elementary school principal and teacher of grade three at Firwood Elementary School, Puyallup, Washington, 1962-64; director of Title III federally-sponsored diagnostic reading clinic for Puyallup Public Schools, 1965-67; granted sabbatical leave from Puyallup Public Schools, 1968-69; taught reading improvement classes at Oklahoma State University, 1968-69; director of reading for Puyallup Public Schools, 1969-present. Member of Phi Delta Kappa, life member of National Education Association, member of Washington Education Association, and Puyallup Education Association.