

1940

# The effect of vocabulary drill on achievement in grade seven.

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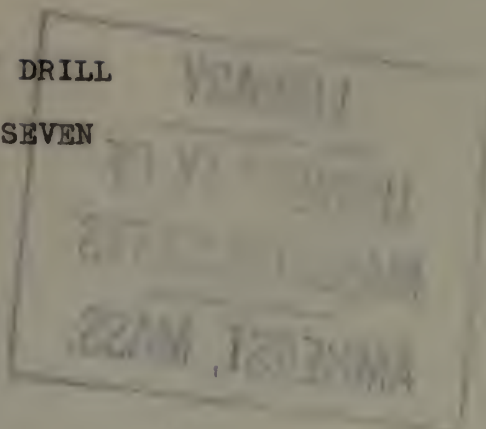
THE EFFECT OF VOCABULARY DRILL  
ON ACHIEVEMENT IN GRADE SEVEN

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THE EFFECT OF VOCABULARY DRILL  
ON ACHIEVEMENT IN GRADE SEVEN



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MARGARET JOSKO

by

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THE INTRODUCTION

## CHAPTER I

### The Introduction

One of the most fundamental needs of the human race has been to communicate ideas. So far as it is possible to discover evidences of men on earth, we also find evidence that they used some means of recording their deeds and thoughts. Writing in some form is nearly as old as the human race. Early savages used a crude system of grunts and signs. Although these symbols can hardly be called a form of writing they were a forerunner of the first form of writing called Egyptian hieroglyphics. Other nations developed their forms of writing from these beginnings. The Phoenicians invented an alphabet of twenty-two letters upon which our alphabet of twenty-six letters is based. From these primitive signs have evolved our complex modern languages with their thousands of words offering opportunity for expressing the most minute shades of meaning.

(1) Need for Language: Our present inexhaustible supply of words has brought on difficulties. We are faced with the problem of acquiring a vocabulary adequate for our daily needs. This is necessary if we are to listen intelligently, or to talk or write well. Recognizing words is no longer sufficient; we must also know the various interpretations that may be placed upon words. This has become increasingly important since the

invention of the radio and the "talkies" in the movies. A large reading vocabulary must contain the words of our native tongue as well as the words which have been coined by our people.

(2) Specific Need is Oral: The most frequent and important use for a good vocabulary is in conversation. Let us understand by conversation not merely the recreational, pleasant chat, but also the more serious discussion of problems of individual living and public concern. Conversation is the foundation of all our social institutions.<sup>1</sup> It is the medium of expression used by all races. Giving all due credit to newspapers, and the radio, conversation is the chief factor in forming public opinion. The kind of government schools and churches are going to have can be gauged by the kind of conversation we use. Conversation makes a good vocabulary immensely important.

(3) Writing: In modern society, in which so few opportunities are at our disposal, relative to the number of candidates who covet them, facility in writing as well as oral speech has become a necessity. No longer is the knowledge of writing a grocery list or a friendly letter sufficient. We must acquire the ability to apply for all sorts of positions in writing. This necessitates a command of the words which will express our abilities, desires, and capableness most effectively.

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1. Baker, E. "Teaching of Social Conversation", Educational Method (March, 1937) pp. 315

(4) Specific Necessity in Reading: The size of our vocabulary also determines and limits the scope of our reading. Authors presuppose man's ability to interpret what they have written. Not even the newspaper can be thoroughly read if one is not the possessor of an adequate vocabulary. Stephenson Smith<sup>2</sup> declares that it takes a minimum of from five thousand to fourteen thousand words to read an ordinary newspaper. This fact alone should help to convince one that there is a necessity for a command of words in our daily lives.

(5) School and Vocabulary: Much of the responsibility of vocabulary building belongs rightfully to the schools. There is, in every class, a definite need for the mastery of certain words or groups of words. The important aim in the primary grades is the development of a definite vocabulary. This aim should also be emphasized in succeeding grades. By the time the pupil has reached the upper grades he should have gained an independence in understanding and using the words which he ordinarily encounters. In these upper grades, the lack of a good vocabulary will hinder pupil achievement in all subjects and this situation will be aggravated as later grades are reached because of the cumulative effect of failure to grasp essential meanings.

Although the early grades are primarily responsible

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2. Smith, Stephenson, The Command of Words, p. 16

for fundamental vocabulary building, the fact remains that, many pupils reach the upper grades without good vocabularies and with little understanding of words and their shades of meaning. It thus behooves the teachers of these upper grades to attempt to remedy the situation as best they can, even to the extent of giving definite drill and remedial work in word study.

(6) This Study: The present study is concerned with an attempt of this kind. The situation was one in which the class consisted of a large proportion of pupils with foreign born parents; their vocabularies were inadequate; they were having difficulty in subject-matter courses. The question which initiated this study was whether definite remedial vocabulary drill would improve the subject-matter achievement of these pupils?

BACKGROUND OF THE STUDY

## CHAPTER II

### Background of the Study

(1) Early Consideration of Words: The importance of words and of the right use of words has been recognized for a long time. As early as the time of the Greeks and Hebrews we can find evidences of the prevailing thought as to the value of an adequate vocabulary. A Greek proverb says, "A word out of season may mar the course of a whole life." A Hebrew proverb says, "A word spoken in due season, how good is it!" The impatient Hamlet said to Polonius, "Words, Words, Words," however<sup>1</sup> Kelley expresses the opinion:

To despise words is to despise what has made civilization possible and what conditions human progress. Words have raised us above the beasts that perish. Without them we could not do the business of life.

Writers of more recent times have also recognized the value of words. Robert Louis Stevenson writes, "In short, the first duty of a man is to speak; that is his chief business in this world." Thus we have presented the idea that all day and every day words matter.

(2) General Need for an Adequate Vocabulary: We do not inherit from our ancestors the ability to use words correctly. This ability is acquired and developed by study. Its scope, however, is not limited only to school work. It

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1. Kelley, J. P. Workmanship in Words; p. 5



is the recognized concern of all ages and all types of people. Miller<sup>2</sup> stresses the necessity of a definite plan for teaching vocabulary because:

The increasing concern of teachers in social studies as well as in English, of department heads, of administrators, of college instructors, and even of high schools and college students themselves over the paucity of their vocabularies makes such an effort imperative.

(3) Efforts to Include Necessary Words in a Vocabulary: A core vocabulary is of vital importance in language learning, whether it is in letter writing, spelling, or composition. Many studies have been made in an attempt to determine the necessary words in a vocabulary.

<sup>3</sup>  
Horn has shown that:

A relatively few words with their repetitions make up a large part of the running correspondence of adult writing. In fact the most commonly used 100 words with their repetitions comprise more than 58% of the running correspondence of adults. The most commonly used 1000 words make up 90% and the most common 2000 words comprise 95% of the running written correspondence of adults.

<sup>4</sup>  
Teacher's Word Book by Thorndike reduces the language to 20000 necessary words. In this book there has been made an alphabetical list of the 1000 words which are found to occur most widely in a count of about

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2. Miller, W.S. "A Plan for Teaching Vocabulary" The English Journal (Sept. 1938) p. 566
  3. Horn, E. "The Curriculum of the Gifted" Twenty-third Year-book of the National Society for the Study of Education
  4. Thorndike, E.L. The Teacher's Word Book p. 5

625000 words from literature for children; about 3000000 words from the Bible and English classics; about 300000 words from elementary school text books; about 50000 words from books about cooking, sewing, farming, the trades and the like; and about 500000 words from correspondence. In determining his word list, Thorndike used forty-one different sources. A measure of the range and frequency of each word's occurrence is given by a credit number.

Language is now considered as more than the "tool subject", as it has been previously called by so many curriculum builders. It is now the very material of thought as well as of communication. The isolation of the home is gone: consideration is now given to the frequency with which the pupil needs to use language in contact with strangers. The pupil now uses the telephone, greets callers, delivers messages, asks directions, and makes numerous contacts with strangers. Ethel Falk<sup>5</sup> makes this statement:

Our aim must be to include in the school program situations that are similar to those the child meets outside of school and to give him confidence in meeting those situations.

A constant effort is being made to stress the types of English which are most commonly used by the majority of

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5. Falk, E.B. "Language for Today's Children" Education (Oct. 1937) p. 74

people. According to Elizabeth Baker<sup>6</sup> the needs of most Americans for the English Language falls under these three main heads:

1. Ability to read with understanding and pleasure.
2. Ability to write interesting, appropriate, and entertaining social letters and clear, courteous business letters.
3. Ability to talk well especially in social conversation.

(4) Relation of Vocabulary to Total Achievement: Let us consider what writers have said concerning vocabulary and total achievement scores. This concerns the school pupil specifically. Kelley<sup>7</sup> states: "Words are tools of thought, you often think badly because you use the wrong tools." It is in the schools that the habit of using these tools must be taught and established. Will these vocabulary habits, once established, and constantly practiced, have any effect upon the total achievement of the pupil? Some studies have indicated that vocabulary training is of considerable value.

<sup>8</sup>  
Miller bases his Plan for Teaching Vocabulary upon four premises which are widely believed to be facts:

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6. Baker, E. "The Teaching of Social Conversation" Educational Method (March 1937) p. 315
  7. Kelley, J.P. Workmanship in Words p. 5
  8. Miller, W.S. "A Plan for Teaching Vocabulary" The English Journal (Sept. 1938) p. 566

1. Vocabulary deficiency is one major cause of low reading comprehension scores and therefore of poor reading.
2. There is a significant correlation between vocabulary and intelligence.
3. Improving a student's vocabulary increases (ultimately) his standing in all of his subjects.
4. Vocabulary, unlike character, must be taught rather than caught.

9

Traxler makes the following statement:

It is known that, given constant environmental conditions, growth in vocabulary bears a rather close functional relationship to growth in intelligence.

(5) Relation of Vocabulary to Specific Sub-

jects: Many students have made efforts to determine the relationship between success in vocabulary building and success in other subjects.

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McLaughlin has found that intensive word study with dull and average secondary-school pupils enriched their vocabulary and raised their reading ability to significant degree.

Considering the influence of vocabulary on other subjects Thomas states:

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9. Traxler, A.E. "Improvement of Vocabulary Through Drill", The English Journal (June 1938) p. 340

10. McLaughlin, M.L. Measured Results of Special Vocabulary Study; Master's Thesis, University of Southern California, 1929

11. Thomas, C.S. Teaching of English p. 15

A large part of the difficulty of school and college work is traceable to the student's inability to read the printed page.

Spelling is a subject commonly taught to increase the pupil's vocabulary. Curtis and Dolch<sup>12</sup> have shown that certain words need no teaching, others need much teaching. Also, that good spellers learn most of the words without teaching; poor spellers need much teaching.

Referring to Traxler<sup>13</sup> again, we find the statement: "It is known that extensive reading, with attention directed to the gaining of meaning from content, will accelerate vocabulary growth to some extent."

In investigating the common and differential factors<sup>14</sup> in a reading and hearing vocabulary Anderson and Fairbanks have concluded that:

Since words which an individual learns in auditory experience are also encountered in reading material, in time a sight vocabulary should be accumulated which more or less duplicates the hearing vocabulary. Since there is a high correlation between reading vocabulary and reading ability one should expect that this overlapping is most complete in good readers. On the other hand one might suspect that poor readers recognize the meaning of more words when they hear rather than read them.

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12. Curtis and Dolch "Do Spelling Books Teach Spelling?"  
The Elementary School Journal (April 1939) p. 584
  13. Traxler, A.E. "Improvement of Vocabulary Through Drill"  
The English Journal (June 1938) p. 340
  14. Anderson and Fairbanks, "Common and Differential Factors in Reading Vocabulary and Hearing Vocabulary" Journal of Educational Research XXX (Ja. 1937) p. 317

(6) Bilingualism: There is a general belief that instruction of children from homes in which foreign languages are spoken is a serious educational problem. Educators maintain that a child entering school knowing none of the English Language presents a different problem from that presented by a child who understands the language. Foreign language children must learn both the oral and the written language of the school. A.J. Mitchell<sup>15</sup> in his article: The Effect of Bilingualism in the Measurement of Intelligence says:

Since this child really thinks in his own language, he has much less ability to respond to the language of the school as an instrument of instruction.

Little progress has been made in determining the rate at which this handicap diminishes. Otis<sup>16</sup> apparently believes that the language handicap of these foreign language speaking children is serious, particularly in the elementary grades, for he writes:

The Otis Classification Test like all so called verbal tests, requires familiarity with the printed English Language. Pupils from homes where a foreign language is spoken cannot be considered as properly tested by this test. This simply means that some allowance must be made for such a pupil's

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15. Mitchell, A.J. "The Effect of Bilingualism in the Measurement of Intelligence" The Elementary School Journal (Sept. 1937) pp. 29-37
16. Otis, A.S. Otis Classification Test, Manual of Directions p. 3

score being lower than otherwise on account of what is generally termed "language difficulty". How much allowance to make is not known.

(7) Summary: We find writers discussing the value of vocabulary from the social and scholastic viewpoints; we find some writers discussing the place of vocabulary in the school; and we find some persons attempting to measure values of vocabulary drill in other subject matter. Many writers have devised methods for increasing vocabularies. This entire review does little more than to suggest the direction of the answer to the question that the writer of this study has raised. As yet we have not discovered exactly how much effect vocabulary drill has on subject matter achievement. Since we wish to know what effect vocabulary drill will have on achievement, and there is no available information, we must make a study which will supply the desired information. This, the writer has attempted to do.

THE PROCEDURE



### CHAPTER III

#### The Procedure

As indicated in the preceding chapters, the purpose of this study is to measure the effect of definite vocabulary drill on achievement in Grade 7. The problem to which an answer is sought is as follows:

(1) Problem: Is drill in English vocabulary in Grade 7 followed by an increase in pupil achievement in all fields? If so, how great is this increase?

(2) Locality of Study: This study was made in the Town of Sunderland, Massachusetts. Sunderland has a population of approximately 1290. The majority of the people are Polish. The chief occupation of the community is farming.

(3) School System: The one school in this town is the Sunderland Grammar School. This school cares for the educational needs of pupils from grades one to eight inclusive. It has an enrollment of 175. Seventy-three per cent of this number are Polish.

(4) Subjects: The experiment was conducted with a seventh grade class of 27 pupils - 16 boys and 11 girls. Out of this group, 20 of the pupils came from Polish speaking homes.

(5) Material: The measurement in the study was made by means of the New Stanford Achievement Test, Advanced Examination, Forms V, W, X, Y, and Z. This test

is intended for grades four to nine. It has a reliability coefficient of .89 to .98 for different grades. The different sections of each form of the test deal with:

Paragraph Meaning,  
Word Meaning,  
Dictation,  
Language Usage,  
Literature,  
History and Civics,  
Geography,  
Physiology and Hygiene,  
Arithmetic Reasoning,  
Arithmetic Computation.

(6) Procedure: Since it was impossible to obtain two classes for the equivalent group method, the one-group method had to be utilized. The steps were as follows:

- (a) administer a preliminary test (Form V)
- (b) teach six weeks without vocabulary drill
- (c) administer second test (Form W)
- (d) teach six weeks with vocabulary drill
- (e) administer third test (Form X)
- (f) teach six weeks without vocabulary
- (g) administer fourth test (Form Y)
- (h) teach six weeks with vocabulary drill
- (i) administer final test (Form Z)
- (j) Compare gains in different sections

Every attempt was made to control all variables in the different sections except the one variable of vocabulary drill.

A description of the method of vocabulary drill used in the two vocabulary periods of the study is found in Appendix I.

The results of the study are found in the following chapters.

DESCRIPTION OF DATA

CHAPTER IV

Description of Data

Chapter III gives a description of the One-group method by which this experiment was conducted. The present chapter is concerned with presenting the results of the testing program and with comparing the pupil gains in the first and third periods, when no vocabulary program was used, with results in the second and fourth periods when a definite attempt was made to build up the vocabulary of the pupils. Before presenting this material an attempt will be made to describe more fully the class which was used in the experiment.

(1) General Intelligence of the Class: Table I gives the Chronological Age and the Mental Age of the group used in the experiment. The mental age was determined from the scores of the Metropolitan Achievement Tests given to the group at the completion of grade six.

It will be noticed that the Mental Age of the group with which the experiment was conducted ranged from 12-9 to 9-0 with a mean age of 11.5. The Chronological Age ranged from 16-1 to 10-10 with a mean age of 11.6. In general, the group is fairly homogeneous as regards mental age with the exception of one pupil who falls very low. In Chronological Age the group is not so homogeneous as several range one or more years above the 12-6 group. The pupil who has a chronological age of 16-0 is to be

Table I

The Distribution of the Chronological and Mental Ages of the Pupils Used in the Experiment.

<u>Age Distribution</u>	<u>Mental Age</u>	<u>Chronological Age</u>
16-0		1
15-6		
15-0		
14-6		
14-0		1
13-6		1
13-0		1
12-6	5	5
12-0	3	5
11-6	11	6
11-0	5	3
10-6	2	4
10-0		
9-6		
9-0	1	
<u>Means</u>	<u>11.5</u>	<u>11.63</u>

noted. His corresponding mental age was 9-0. Very little can be expected from this pupil in the abilities measured by the Stanford Achievement Test.

The results of the method of vocabulary drill on the test scores in subject-achievement are shown in the following pages. For ease of reading, the different subjects will be considered separately.

(2) Paragraph Meaning: Section 1 of the Stanford Achievement Test measures the pupil's ability to grasp the meaning of groups of words. It is assumed that Vocabulary is directly correlated with the ability to understand the content of paragraphs. Does extra training in Vocabulary aid in comprehending paragraph meanings? Table II shows the results of the experiment so far as this ability is concerned.

Table II

Total Gains Made by Pupils in First and  
Third Periods Compared With Total Gains

In Second and Fourth Periods In Paragraph Meaning

Gain	#Number in First and Third Periods	Number in Second and Fourth Periods
30		4
20		5
10	3	6
0	4	8
10	11	2
20	8	2
30	3	2
Means	-6.3	10.5
Standard Deviations	11.0	16.7
Standard Error of Means	2.0	3.1
Standard Error of Differences between Means		3.7
##Critical Ratio of Difference between Means		4.5

# These periods in which no special vocabulary given.

## For an example of this statistical procedure see  
Appendix I.

It is to be noted from Table II that greater gains were made during the second and fourth periods when special drill in vocabulary work was given.

The question arises as to whether the difference between the means (16.8) is reliable. A critical ratio of 3.0 is taken by convention <sup>1</sup> to mean that the difference is reliable. The critical ratio in connection with Paragraph Meaning in Table II is 4.5. Therefore, it may be assumed that extra drill in Vocabulary will aid the pupil in paragraph comprehension.

1. Garrett, Henry C. Statistics in Psychology and Education  
p. 134

(3) Word Meaning: Section 2 of the Stanford Achievement Test deals with the comprehension of word definitions. Word meaning is the foundation upon which the mastery of English and Reading depends. Does extra vocabulary drill help in recognizing word meanings? Table III shows the results of the experiment so far as this ability is concerned.

Table III

Total Gains Made by Pupils in First and Third Periods Compared With Total Gains In Second and Fourth Periods in Word Meaning

Gain	#Number in First and Third Periods	Number in Second and Fourth Periods
28		
21		2
14	2	4
7	4	4
0	8	11
-7	13	7
-14	2	1
Means	1.3	5.6
Standard Deviations	7.0	8.8
Standard Error of Means	1.3	1.6
Standard Error of Differences Between Means	2.06	
Critical Ratio of Difference Between Means	2.0	

# Those periods in which no special vocabulary given.

It is to be noted from Table III that the mean for the Second and Fourth period, the time when vocabulary building was stressed, was 4.3 higher than it was for the periods during which no extra vocabulary work was given. The critical ratio of 2.0 is not sufficiently large (it

should be 3.0) so that one can say with certainty that the difference is reliable. However, the chances are 98 out of 100 that the difference is reliable.<sup>2</sup> From this it can be assumed that it is rather probable that extra vocabulary work will aid in Word Meaning.

(4) Spelling Dictation: Section 3 of the Stanford Achievement Test deals with the ability to spell dictated words correctly. Spelling is directly correlated with all written English. Will extra training in

Table IV

Total Gains Made by Pupils in First and Third Periods Compared With Total Gains In Second and Fourth Periods in Spelling Dictation

Gain	#Number in First and Third Periods	Number in Second and Fourth Periods
36		
30		1
24		1
18		2
12	1	6
6	7	7
0	11	11
-6	6	
-12	3	1
-18	1	
Means	2.9	10.0
Standard Deviations	6.6	8.7
Standard Error of Means	1.2	1.6
Standard Error of Differences Between Means		2.0
Critical Ratio of Differences Between Means		3.5

# Those periods in which no special vocabulary was given.

2. Garrett, Henry C. Statistics in Psychology and Education p. 134



Vocabulary aid in spelling? Table IV shows the results of the experiment so far as this ability is concerned.

Table IV shows that the total gains made by the pupils during the second and fourth periods were considerably larger than those made at the time when no vocabulary drill was given. The mean during the periods of special drill is 7.1 higher than the other periods. The critical ratio of 3.5 indicates that this difference is reliable and one can conclude that vocabulary drill will aid spelling work.

(5) Language Usage: Section 4 of the test deals

Table V

Total Gains Made by Pupils in First and Third Periods Compared With Total Gains In Second and Fourth Periods in Language Usage

Gain	#Number in First and Third Periods	Number in Second and Fourth Periods
60		1
45		
30	3	1
15	3	3
0	12	12
-15	18	9
-30	2	3
-45	1	1
-60	1	
Means	3.9	4.7
Standard Deviations	18.6	18.15
Standard Error of Means	3.4	3.3
Standard Error of Differences Between Means		4.6
Critical Ratio of Differences Between Means		.1

# Those periods in which no special vocabulary was given.

with the ability of the pupil to use the English Language correctly. Grammar is one of the most important factors in correct Language Usage. Does extra vocabulary drill effect Language Usage? Table V shows the results of the experiment so far as this ability is concerned.

It is to be noted from Table V that the mean gains in the two periods were 3.9 and 4.7. Since the means are so nearly alike it is to be assumed that vocabulary drill will not aid in Language Usage. The critical ratio is .1 which indicates no significant difference.

(6) Literature: Section 5 of the Stanford Achievement Test measures the pupils' knowledge of Literature. It is usually assumed that there is a high correlation between English and Literature since one must understand what one is reading. Will extra work in vocabulary aid in gaining a broader knowledge of Literature? Table VI shows the results of the experiment so far as this ability is concerned.

Table VI shows that the mean during the period without extra drill was -4.3 as compared with 8.5 during the time of extra drill. The critical ratio is 2.4 and is not sufficiently large so that one can say with certainty that the difference is reliable. However, the chances are 99.2 out of 100 that the difference is reliable.<sup>3</sup>

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3. Garrett, Henry C. Statistics in Psychology and Education p. 134

Table VI

Total Gains Made by Pupils in First and Third Periods Compared With Total Gains In Second and Fourth Periods in Literature

Gain	#Number in First and Third Periods	Number in Second and Fourth Periods
45		1
30	1	3
15	4	5
0	9	10
-15	8	9
-30	3	
-45	1	1
-60	3	
Means	-4.3	8.5
Standard Deviations	22.8	18.4
Standard Error of Means	4.22	3.41
Standard Error of Differences Between Means		5.4
Critical Ratio of Difference Between Means		2.4

# Those periods when no special vocabulary work was given.

From this it can be assumed that it is highly probable that extra vocabulary work will aid in the study of Literature.

(7) History and Civics: Section 6 of the Stanford Achievement Test deals with ability to answer History and Civic questions. It is assumed that English is directly correlated with History and Civics because these subjects are taught almost entirely by reading from a textbook or reference material. Does extra training in Vocabulary aid in studying History? Table VII shows the results.

It is to be noted from Table VII that the mean for the second and fourth periods, the times when vocabulary drill

Table VII

Total Gains Made by Pupils in First and  
Third Periods Compared With Total Gains In  
Second and Fourth Periods in History and Civics

Gain	#Number in First and Third Periods	Number in Second and Fourth Periods
35	1	
28	2	1
21	2	2
14	2	7
7	1	10
0	8	7
-7	4	1
-14	3	1
-21	5	
-28	1	
Means	1.8	10.98
Standard Deviations	16.1	8.54
Standard Error of Means	3.0	1.6
Standard Error of Differences Between Means		3.4
Critical Ratio of Differences Between Means		2.7

# Those periods in which no special vocabulary was given.

was stressed, was 9.1 higher than it was for the periods during which no extra vocabulary drill was given. The critical ratio of 2.7 is not sufficiently large so that one can say with certainty that the difference is reliable. However, the chances are 99.5 out of 100 that the difference is reliable.<sup>4</sup> From this it can be assumed that it is highly probable that extra vocabulary work will aid in History and Civics.

4. Garrett, Henry C. op. cit. p. 134

(8) Geography: Section 7 of the Stanford Achievement Test pertains to Geography. Geography and English are closely related because one must be able to read to have a complete understanding of Geography. Will extra vocabulary drill aid geography marks? Table VIII shows the results of the experiment so far as geography is concerned.

Table VIII

Total Gains Made by Pupils in First and Third Periods Compared With Total Gains In Second and Fourth Periods in Geography

Gain	#Number in First and Third Periods	Number in Second and Fourth Periods
60		1
45		
30		1
15	4	5
0	8	10
-15	11	1
-30	1	
-45		
-60		
-75	1	
Means	-.9	9.3
Standard Deviations	18.0	17.1
Standard Error of Means	3.6	3.4
Standard Error of Differences Between Means		4.9
Critical Ratio of Differences Between Means		2.1

# Those periods in which there was no special vocabulary drill.

The critical ratio of the difference between means in Table VIII is 2.1. The chances of this difference be-

ing unreliable are sufficiently great that one would be unjustified in saying that drill in vocabulary will always be followed by gains in Geography.

(9) Physiology and Hygiene: Section 8 of the Stanford Achievement Test measures the knowledge of Physiology and Hygiene. Will extra training in vocabulary aid in understanding Physiology and Hygiene? Table IX shows the results for this subject.

Table IX

Total Gains Made by Pupils in First and Third Periods Compared With Total Gains In Second and Fourth Periods in Physiology and Hygiene

Gain	#Number in First and Third Periods	Number in Second and Fourth Periods
24		2
16	4	3
8	5	7
0	6	8
-8	7	7
-16	4	2
-24	3	
Means	1.0	6.2
Standard Deviations	12.1	10.5
Standard Error of Means	2.2	1.9
Standard Error of Difference Between Means		2.9
Critical Ratio of Difference Between Means		1.8

# Those periods when no special vocabulary work was given.

It is to be noted from Table IX that the mean gain for the non-vocabulary periods was 1.0 and for the vocabulary periods 6.2. The difference is 5.2. The critical

ratio of the difference is 1.8. The chances are only 96 out of 100 that this difference is reliable. We cannot say with any degree of certainty that vocabulary drill will be followed by improvement in Physiology and Hygiene.

(10) Arithmetic Reasoning: Section 9 of the test deals with ability to solve problems in arithmetic. It is usually assumed that English is directly correlated with ability to solve problems since one must naturally be able to read and understand the problem as a preliminary step. Does extra training in vocabulary aid in solving problems in arithmetic? Table X shows

Table X

Total Gains Made by Pupils in First and Third Periods Compared With Total Gains In Second and Fourth Periods in Arithmetic Reasoning

Gain	#Number in First and Third Periods	Number in Second and Fourth Periods
24	1	2
18	1	3
12	3	3
6	6	7
0	10	4
-6	4	9
-12	4	1
-18		1
Means	4.24	4.68
Standard Deviations	10.15	13.4
Standard Error of Means	2.03	2.68
Standard Error of Difference Between Means		3.3
Critical Ratio of Difference Between Means		.1

# Those periods in which no special vocabulary given.

the results of the experiment so far as this ability is concerned.

Table X shows that the mean was only .44 larger during the period of extra vocabulary drill. The chances of this difference being unreliable are sufficiently great that there is no evidence that drill in Vocabulary will be followed by gains in Arithmetic Reasoning.

(11) Arithmetic Computation: Section 10 of the Stanford Achievement Test measures ability in Arithmetic Comprehension. How much vocabulary drill helps

Table XI

Total Gains Made by Pupils in First and Third Periods Compared With Total Gains In Second and Fourth Periods in Arithmetic Computation

Gain	#Number in First and Third Periods	Number in Second and Fourth Periods
40		4
32	2	1
24	2	3
16	6	
8	6	5
0	5	10
-8	4	4
-16	1	1
-24	2	
-32	1	1
Means	8.4	11.7
Standard Deviations	16.32	17.84
Standard Error of Means	3.2	3.3
Standard Error of Difference Between Means		4.6
Critical Ratio of Difference Between Means		.7

# Those periods in which no special vocabulary work was given.



arithmetic computation may be noted in Table XI.

The critical ratio of the difference between means is .7. It is evident that there is no adequate basis for believing that drill in vocabulary will be followed by greater progress in Arithmetic Computation.

(12) Total Achievement: So far the achievement of the two periods has been compared for special test sections. There remains to be discovered the effect of vocabulary drill upon the total achievement as

Table XII

Total Test Scores During the First and  
Third Periods Compared With Total Test  
Scores During the Second and Fourth Periods

Gains	Number in First and Third Periods	Number in Second and Fourth Periods
150		1
120		2
90	1	10
60	4	5
30	6	5
0	7	4
-30	6	1
-60	1	1
-90	2	
-120	1	
-150	1	
Means	8.8	71.9
Standard Deviation	54.0	45.0
Standard Error of Means	10.0	8.3
Standard Error of Difference		13.0
Critical Ratio of Difference		4.8

measured by the total scores on the Stanford Achievement Test. These results are shown in Table XII.

Table XII shows that so far as total achievement is concerned the pupils gained an average of 71.9 points when vocabulary was drilled and 8.8 points when no vocabulary was taught. The critical ratio of 4.8 is sufficiently large so that one can have confidence that the difference is reliable. That is, if the experiment were repeated the gains would again favor the vocabulary periods.

A summary of the findings of this chapter is found in Chapter 5.

SUMMARY AND CONCLUSIONS

## CHAPTER V

### Restatement of Problem and Summary of Conclusions

The problem which this study sought to solve was as follows:

(1) The Problem: Can the subject matter achievement of children of foreign born parents be increased by an intensive vocabulary building program in grade seven?

(2) Summary of Conclusions: In this study some differences were discovered which were sufficiently large to give certainty of reliability, some were not so large but there was still a high degree of probability of a reliable difference, while in other cases the difference was so small that little significance could be attached to it. The results are classified under these three headings below.

A. Highly reliable differences were found in:

1. Paragraph Meaning
2. Spelling and Dictation
3. Total Achievement

B. There was high probability of a real difference in:

1. Word Meaning
2. Literature
3. History and Civics
4. Geography

C. There was no significant difference in:

1. Language Usage
2. Physiology and Hygiene
3. Arithmetic Reasoning
4. Arithmetic Computation

(3) Generalizations:

1. It is probable that an intensive vocabulary building program will increase subject matter achievement in Paragraph Meaning and Spelling Dictation.
2. It is highly probable that there will be increased subject matter achievement in Word Meaning, Literature, History and Civics, and Geography when an intensive vocabulary drill program is followed.
3. Vocabulary drill did not cause any significant difference in Language Usage, Physiology and Hygiene, Arithmetic Reasoning, and Arithmetic Computation.
4. A highly reliable difference was found in Total Achievement Scores.

(4) Limitations: During the study several points of weakness were noted which should be rectified by anyone continuing to experiment along these lines. These were as follows:

1. A group of 29 pupils is rather small for a study of this kind. Even this had to be reduced by 4 in places because some pupils missed some of the tests.
2. The one-group method has points of evident weakness. First is the likelihood of considerable

carry-over of ability from one period to the next. Second is the uncertainty that gains at one point in the learning curve are comparable to gains at another point. Third, arising from the second, is that uncertainty as to whether six or eight weeks of additional educational maturity might not have some effect upon achievement.

In spite of these weaknesses, however, the writer feels that there is sufficient evidence of benefit from definite vocabulary drill to warrant further experiments along the same line.

APPENDICES

THE PROGRAM OF VOCABULARY DRILL



### The Program of Vocabulary Drill

An attempt was made in this study to interest the pupils in words, to have them learn to recognize as many words as possible, and to know the definitions of those words occurring most frequently in their daily lessons.

(1) Restrictions: It was difficult to cover any great amount of work within the six week periods. The amount of activity work which could be done was limited because of the various abilities of the group.

(2) Subjects into which vocabulary drill was introduced: Working on the theory that an adequate vocabulary is necessary for better comprehension in all subjects, vocabulary drill was introduced in the following subjects: spelling, arithmetic, reading, history, geography, and composition.

(3) The Spelling Program: Each week the pupils were to have 25 spelling words. Ten of these words were taken from the Horn-Ashbough Spellers. Fifteen of the words were selected from the lessons for the coming week. The pupils were given a definition for each word, a synonym for each word, and sentences in which the words were correctly used. It was the pupils' assignment to master the spelling words and as many synonyms for each word as they could find. These words were to be used as often as there was opportunity to do so. The following procedure was used:

Monday - Copy spelling words and find synonyms.

Tuesday - Play a word game using the spelling words.

Wednesday - Play a game using the synonyms of the spelling words.

Thursday - A test on the definitions and applications of the words.

Friday - Test on words and a review of words used in previous lessons.

(4) A Successful Motivation: During our periods of special drill on vocabulary we played a game called: "Hard Nuts to Crack". Each morning on the board, when the pupils came to class, there was a riddle or question to be solved: Example, What is the difference between a turtle and a tortoise?

The pupils could use any of the reference books in the room for answering their questions. Their answers were written on slips of paper which were collected at the close of school each day. The points made by the pupils for correct answers were kept on file cards. A small prize was offered to the winner at the end of the semester.

(5) Other Motivations: During our extra drill periods we also used a game called: "A Word A Day Will Keep Poor Expression Away". During our reading periods each pupil was to find a new word in his lesson. He was to find the word in the dictionary, notice its pronunciation, its meaning, and a synonym for the word. The new

words were kept in vocabulary notebooks. Every day a part of the class had the opportunity to tell their new words to the class.

Flash cards played an important part in our drills. New words were printed on one side of the card and synonyms of the word were printed on the other side. The pupils were allowed to keep the cards if they could give the correct word on the back of the card they were shown.

When playing Verbarium, the pupils were to see how many words they could make from each letter of a spelling word. Three letter words or less were not counted. This was done without a dictionary. Example:

THANKS

T --tune, terminate, talk  
H --hurry, haphazard  
A --always, automatic  
N --numerical  
K --king, knives, kangaroo  
S --servants, solitude

In our language lessons, we studied prefixes, homonyms, words often confused in meaning, synonyms, and matching correct definitions.

(6) Ways of Building a Vocabulary: It would be impossible to say which of the methods used were most valuable, however the following are some of the devices successfully employed:

1. Synonyms and Homonyms of common words.
2. Use of new words in sentences during recitation periods.
3. Vocabulary Notebooks.
4. Acting out meanings of words.
5. Contests on spelling, definitions, or pronunciation.



The standard deviation of the distribution is found. Standard deviation equals, the interval times, the square root of, the sum of the fd squares divided by the number of scores minus the correction factors. Thus:

$$\begin{aligned} \sigma &= \sqrt{\frac{\sum fd^2}{N} - \frac{(\sum fd)^2}{N}} \times I \\ &= \sqrt{\frac{73}{29} - \frac{32^2}{29}} \times 30 \\ &= \sqrt{2.5 - .01} \times 30 \\ &= \sqrt{2.49} \times 30 \\ &= 1.5 \times 30 \\ &= 45.0 \end{aligned}$$

$$\begin{aligned} \sigma &= \sqrt{\frac{\sum fd^2}{N} - \frac{(\sum fd)^2}{N}} \times I \\ &= \sqrt{\frac{100}{29} - \frac{6^2}{29}} \times 30 \\ &= \sqrt{3.4 - (.2)^2} \times 30 \\ &= \sqrt{3.4 - .04} \times 30 \\ &= \sqrt{3.36} \times 30 \\ &= 1.8 \times 30 \\ &= 54.0 \end{aligned}$$

The standard error of the mean is then found. Standard error of the mean equals, the deviation of the distribution, divided by the square root of the number of scores. Thus:

$$\begin{aligned} \sigma_{M_3} &= \frac{\sigma}{\sqrt{N}} \\ &= \frac{45}{\sqrt{29}} \\ &= \frac{45}{5.38} \\ &= 8.3 \end{aligned}$$

$$\begin{aligned} \sigma_M &= \frac{\sigma}{\sqrt{N}} \\ &= \frac{54}{\sqrt{29}} \\ &= \frac{54}{5.38} \\ &= 10.0 \end{aligned}$$

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2. Ibid p. 199

3. The correction is equal to the square of the sum of the fd's divided by the number of scores.

4. Ibid p. 133

For a comparison of the two groups: The difference between the mean scores of the 2 groups is found. Thus:

$$D = 8.3 \qquad D = 10.0$$

The standard error of this difference is found. Standard error of the difference equals, the square root of, the sum of the squares of the standard deviations of the mean of the two distributions. Thus:

$$\begin{aligned}
\sigma_d &= \sqrt{\sigma_{M_3}^2 + \sigma_{M_4}^2} \\
&= \sqrt{8.3^2 + 10.0^2} \\
&= \sqrt{68.89 + 100.0} \\
&= \sqrt{168.89} \\
&= 12.9 = 13.
\end{aligned}$$

The critical ratio of the difference is found. The critical ratio is the relation of the point difference between the means to the standard deviation of this difference.<sup>6</sup> Thus:

$$\begin{aligned}
C.R. &= \frac{D}{\sigma_d} \\
&= \frac{63.1}{13} \\
&= 4.8
\end{aligned}$$

The size of the critical ratio shows the probability of the difference being reliable. A critical ratio of 4.8 is very significant, i.e. there is a very high probability that the difference between the means is significant.

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5. Ibid p. 139

6. Ibid p. 140

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BIBLIOGRAPHY

A complete bibliography of the many references to the value of vocabulary building in current educational writings would be a large treatise in itself. It was considered of more value in this study to give a bibliography of a few selected references. The selection was made with the view of meeting the needs of anyone who might contemplate continuing the investigation from where this study ended; and who, therefore, would desire to build up a background of information with regard to what has been done in the subject.

The bibliography is divided into two parts:

Part I includes books.

Part II is a list of articles from magazines and periodicals.



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