THE ROLE OF READING ABILITY AS A FACTOR FOR SUCCESS IN THE SCHOLASTIC ACHIEVEMENT OF THE SECONDARY SCHOOL PUPILS

by

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A Thesis

submitted to the faculty of the

Department of Education

in partial fulfillment of

the requirements for the degree of

Master of Arts

in the Graduate College

University of Arizona

1 9 4 0

Approvod: J. F. Walker
Director of Thesis

Aug 13. 1940
Date

ACKNOWLEDGEMENT

The author desires to express her gratitude to the following individuals, or groups of individuals, for their contributions which made this experiment possible:

To Dr. J. W. Clarson, Jr., Dean of Education, to the members of the Staff of the Educational Department of the University of Arizona, and, particularly, to Dr. J. F. Walker for his friendly criticisms as to methods of procedure and his assistance and guidance in the analysis of the results of this experiment.

To Superintendent T. N. Lamb and The Board of Education of Bendle High School, Flint, Michigan for executive permission and for the financing of the testing program necessary to secure the data for this study.

To the pupils of the ninth grade of Bendle High School and their faculty sponsors for their interest and cooperation throughout the progress of this investigation.

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CHAPTER I

INTRODUCTION

Academic failures have long constituted a serious and perplexing problem to both school administrators and teachers, and during the last decade the situation which they create has become increasingly important to the secondary schools. They are congested with pupils who, because of failures, must spend nine or ten semesters in completing the work which should be covered in four years.

Economic pressure from without has resulted in an increased school population, and in a lower average intellectual caliber of this population.

An adjustment by educators to meet these new conditions is apparent in the movements to develop new curricula and to reorganize and add to the material in the curricula already offered. These efforts, while they are of great value, attack the problem from the angle of the adjustment of the school to the individual which is a rather long and somewhat circuitous approach. Educators have felt that there is an urgent need for a more direct method of dealing with the problem, a method which shall act directly on the individual pupil, and by equipping him with the necessary skills and techniques of study, increase his ability to meet the fundamental requirements of the secondary school.

An attempt to satisfy this need by finding some subject which can act as a common denominator for the work in the various fields of the secondary school curricula has led to the advancement by educational leaders of various opinions and theories and to the carrying on of studies to test the validity of these beliefs. The conclusion in many of the investigations is that reading is the tool subject which can render most effective assistance in the study of all of the secondary school subjects. Bess Goodykoontz, Assistant Commissioner of Education says in this regard:

> "Evidence is plentiful to show that at each level of the school--elementary, secondary, and college--proficiency in reading is necessary for success in practically every subject field. Reading is not, of course, the only method of study, but it is so clearly the most frequently used method in our schools that to many persons 'study' is synonymous with 'reading' and increasing importance has been attached to discouraging and remedying reading difficulties as a means of increasing efficiency in all phases of school work."[1]

Snedaker and Horn[2] also point out the significance of the relationship existing between reading and other fields of the curriculum forcefully. Their statements are:

> "Reading and other curricular fields are reciprocally related. On the one hand, skill in reading plays an important part in motivating and enriching thought. On the other hand, the various fields of the curriculum motivate, develop, and maintain the

1. Goodykoontz, Bess. "The Place of Reading in the Curriculum," Thirty-Sixth Yearbook of the National Society for the Study of Education, Chap. III, p. 45, Part I.
2. Snedaker, Mabel and Horn, Ernest. "Reading in the Various Fields of the Curriculum," Thirty-Sixth Yearbook of the National Society for the Study of Education, Chap. V, p. 134, Part I.

abilities essential to the use of books and create permanent interests in reading.

"Although much has been written about the importance of reading in the various curricular fields, the degree to which reading limits learning does not in practice seem to be fully recognized. Under present conditions, and, perhaps, under ideal conditions, pupils must obtain from books a large part of their knowledge and much of their stimulation to thinking. Reading is, therefore, an essential tool in the study of most parts of the curriculum."

Uhl completes a discussion of the effect of reading comprehension on other subjects by saying:

"Reading and literature courses...are not only very important in themselves, but also are basic for other courses. For decades, teachers of arithmetic have charged much of the inferior work done in their classes to the pupils' inability to read accurately. Likewise, many pupils in history and geography classes cannot distinguish between the important and unimportant statements in their books; this deficiency is due largely to poor reading ability, and is overcome by appropriate training in silent reading."[3]

Germane and Germane reached somewhat the same conclusion with regard to the value of silent reading. They say:

"Training in quick apprehension and in comprehension is the important task, because it is the basis of the pupils' possible progress in all subjects. Failure to solve arithmetic problems is often due to inability to get the meaning from the printed page. This ability is almost entirely a product of training; the logical and ideal time to give specific drill in developing it is during the silent reading period."[4]

There seems to be a consensus of opinion among authorities that there are two general methods of improving reading through instruction. These two according to

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3. Uhl. W. L. The Materials of Reading, pp. 2-3.
4. Germane, Charles E. and Germane. Edith Gayton. Silent Reading, p. 45.

Traxler,[5] Gray,[6] and McCallister,[7] are the corrective and the remedial. Under the corrective method, pupils who, by means of standardized tests, are shown to be deficient in reading, are given special help in each field by the teachers of the classes in which they are enrolled. Under the remedial method, those whom the testing program shows to be in need of special reading aid, are segregated in a class and given training in general reading skills and techniques which they are expected to transfer to the various fields of study as need may arise.

This study seeks to discover the value and efficiency of the latter method, namely, the remedial method, as an aid to the mastery of subjects in the fields of mathematics, science, social studies, and English.

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5. Traxler, Arthur E. "Problems of Group Remedial Reading in the Secondary School," High Points, XX, pp. 5-18, (December 1938).
6. Gray, William S. "The Language Arts-Reading," The Implications of Research for the Classroom Teacher, Joint Yearbook of the American Educational Research Association and the Department of Classroom Teachers, pp. 128-41.
7. McCallister, J. M., Shepherd, Edith E., and Traxler, Arthur E. "Corrective Work in Reading," An Experience Curriculum in English, English Monograph No. 4, National Council Teachers of English, Ch. XX.

The Problem

Statement: This problem consists of the organization of an experimental study to determine the value of remedial instruction in reading as a factor in reducing the number of pupils in the secondary schools who are academically maladjusted.

Methods: 1. Selection of the group by means of a battery of tests administered to the entire 9B class of Bendle High School, Flint, Michigan.

2. Division of those who show reading deficiencies into two equated groups, remedial and control.

3. The control group is to receive no special instruction in reading.

4. The remedial group is to have a period set apart each day for reading instruction.

Details of Technique: 1. Administration of The Myers-Ruch Progress Test, Form A, at the beginning of the year and Form B at the end of the year to all 9B students for the purpose of marking the achievement in (a) the superior group, (b) the control group, and (c) the remedial group.

2. Administration of The California Test of Mental Maturity, Advanced, to all 9B students at the beginning of the year.

3. Administration of The Iowa Silent Reading Test to all members of the 9B class at the beginning of the year, and, on the basis of this test selection of the poor readers.

Division of this group into two groups paired individual against individual on the basis of mental and reading scores.

4. Administration of Sangren-Woody Reading Test to one group designated as the experimental group for the purpose of diagnosis of their reading difficulties, after which they were placed under the instruction of a competent teacher with whom they met for a regular class period each day. The paired group, designated as the control group, was given no special attention as to reading habits.

5. Comparison of growth of groups 1, 2, and 3 was measured by comparing the scores on forms A and B of the Myers-Ruch Progress Test.

CHAPTER II

RELATED STUDIES

There have been many studies which have had for their object the investigation of the results brought about by remedial reading instruction. A brief survey of these discloses that they are unlike the present study in one or more points.

Witty and Kopel[8] carried on a project in "motivated remedial reading" in a Chicago high school. The class group was selected by means of standardized tests, but at the close of the experiment, the results were not measured objectively. The writers explain that pupil-progress was gauged by apparent gains in:

> "1. Ability to organize reading content into comprehensive thought units.
>
> "2. Capacity to grasp the relationship of new reading acquisitions to past experience.
>
> "3. Tendency to question, criticize, and evaluate basic assumptions included in reading matter.
>
> "4. Ability to grasp, and assimilate a rather long episode calling for sustained attention and discrimination.
>
> "5. Propensity to reconstruct and extend experience and meaning."

8. Witty, P. A. and Kopel, D. "Motivated Remedial Reading in the High School." English Journal (H. S. and Col.) Vol. 25, pp. 533-42, (September 1936)

They report the following results:

"1. More adequate classroom reading.

"2. Increased leisure reading.

"3. More intelligent and frequent use of books and library facilities.

"4. Change in attitude shown in trait rating scales and general behavior.

"5. Reduction in the number of failures."

Fitzgerald[9] describes a remedial reading program carried on in Walsh Elementary School in Chicago. Both the selection and the measurement of progress were standardized, but the growth was measured only in reading progress, no account being made of the effect upon other subjects.

Ansley[10] describes an experiment in remedial reading in which she paired groups of low ability tenth grade pupils. Here again growth was measured by progress in reading ability only.

Stone[11] and Eames[12] report investigations in word recognition and vocabulary drill. Both of these carried on the study in grades below the high school. In Stone's

9. Fitzgerald, James A. "A Diagnostic and Remedial Program in Reading," Educational Method, Vol. XVII, pp. 221-25, (February 1938).
10. Ansley, M. L. "Extensive and Remedial Reading," English Journal (H. S.), Vol. 25, pp. 121-23 (Feb. 1936).
11. Stone, Munley H. The Effect of Intensive Vocabulary Study on Average Achievement, Unpublished Master's Thesis, University of Arizona, 1936.
12. Eames, Thomas Harrison. "A Study of the Speed of Word Recognition," Journal of Educational Research, XXXI, pp. 181-187 (November 1937)

group, both the equating and the measurement of the groups was done by means of standardized achievement tests administered to seventh grade pupils. The statistical value of his findings is lessened because of a decrease in the number of pupils who finished the experiment, while the factor of difference between Mexican and non-Mexican population decreases its value as a measure of evaluation for general situations.

Eames gives the results of a study of speed of word recognition measured in the fractions of seconds. His group consisted of ninety cases of whom fifty were cases of difficult reading and forty were children without difficulty. He says that he found a definite differentiation between the distributions of the two groups. The median of the poor group fell at 0.145 second, the range being from 1.00 second and slower to 0.01 second and faster. Ten cases were treated for an average of 6.3 months. They showed an average gain of 0.49 second in speed of word recognition. Furthermore, all showed improvement in school work. This gain seems not to have been measured objectively, however.

Barry and Pratt[13] describe a remedial reading program in which the objective was improvement of comprehension and rate. Progress was measured by standardized reading tests and showed growth in about ninety percent of the cases.

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13. Barry, L. and Pratt, M. "A Remedial Program in a Public High School," School Review, XLV, pp. 17-27 (1937).

However, inability to check transfer of skills to content subjects is mentioned by the authors as a weakness of the program.

Rothenbuch[14] outlines a somewhat lengthy program in junior high school remedial reading and concludes that a remedial program should carry throughout the entire school, that cooperation of the whole faculty corps is necessary, and that all poor readers do not respond to a remedial class.

McCullough[15] carried on a nine weeks' course of remedial reading with ninth grade pupils. She records that half the class improved a grade or more in reading achievement, but she makes no record of its reflection upon content subjects except that a comparison was made between the honor points for the "two subjects besides English which require reading" on the final reports for the first semester and for the second six weeks of the second semester. The increase in the number of honor points correlated positively but insignificantly with the mean reading improvement made during the nine weeks' course, the correlation being .18 ± .20 .

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14. Rothenbush, Verona F. "Two and One-half Years of Remedial English," Ohio Schools, XVIII, No. 9, pp. 410-11, (November 1939).
15. McCullough, C. M. "Improving Reading Comprehension in Grade IX." School Review, Vol. 45, pp. 266-273 (April 1937).

Ivans[16] made an investigation of the relation of achievement in reading, vocabulary, and English in relation to arithmetic, history, geography, and spelling in grades four to eight, inclusive, of Pima County, Arizona schools. He used paired groups and concludes that indications are that achievement in vocabulary has more effect upon achievement in other subjects than either achievement in English or reading.

Lack of Studies

These nine studies probably represent a fair sampling of the more recent investigations in the field of remedial reading, but there is still a dearth of studies which do what the present one will attempt to do, namely, (1) to conduct an experimental remedial reading class among secondary school pupils, and (2) to measure the results of remedial reading instruction by progress shown in other secondary school subjects.

16. Ivans, Wilson H., The Relation of Achievement in Reading, Vocabulary, and English to Achievement in Other Subjects, Unpublished Master's Thesis, University of Arizona, 1937.

CHAPTER III

THE EXPERIMENT

Preliminary Testing

Intelligence: The California Test of Mental Maturity[17] was administered to one hundred ninth grade pupils. Owing to transfers, death, and quarantine at the end of the year which prevented several from writing the final test, there was a mortality of fifteen in the group which left eighty-five pupils on whom a final check could be made. This intelligence test was chosen because it gives both a language and a non-language intelligence quotient. This seemed desirable, inasmuch as a reading test was also to be administered to the group. This dual feature was of importance to the remedial teacher in dealing with the individual child. It was not a determining factor in conducting the experiment, however, as the median non-language intelligence quotient was 105 while that of the language intelligence quotient was 102 (Table II) neither of which differs appreciably from 103.5, the mean intelligence quotient derived from the total scores (Table I). This shows that the measure of intelligence of the group was not influenced to any extent by reading ability or by the lack of it.

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17. Sullivan, Elizabeth T., Clark, Willis W., and Tiegs, Ernest W. California Test of Mental Maturity. California Test Bureau, Los Angeles, California (1937).

Reading: Reading ability of the group was measured by the Iowa Silent Reading Test, New Edition.[18] The range in the total scores obtained was from 43 to 83. This, according to the authors' table of grade and age equivalents, showed that the group had a grade range in reading of from 4.7 to 12 and a reading age range of from 9 years, 11 months to 16 years. (The + indicates that these scores were higher than the highest scores indicated in the table.) The median reading score of the group was 62.79 which, interpreted by the same table, shows a median reading grade for the group of 7.7 and a median reading age of 12 years , 5 months (Table III). Table I shows the mean reading score of the group to have been 63.3.

Academic Status: Status in high school content subjects of the group was measured by Myers-Ruch Progress Test, Form A.[19] This test attempts to measure ability in four fields, namely, English, social studies, mathematics, and science. The four subtests are supposedly of equal difficulty and rank equally. The mean score of the group was 23.0 which the authors' table of percentile norms places at P_{33} for the ninth grade.

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18. Greene, H. A. and Kelley, V. H. Iowa Silent Reading Tests, New Edition, The World Book Company, Yonkers-on-Hudson, New York, (1939)
19. Myers, Charles Everett, Ruch, Giles M., and Loofbourow, Graham C. Myers-Ruch High School Progress Test, World Book Company, Yonkers-on-Hudson, New York, (1938).

TABLE I

SCORES MADE BY EACH INDIVIDUAL IN THE NINTH GRADE ON THE PRELIMINARY TESTS

Name	California Maturity	Iowa Reading	Myers-Ruch Progress-A
Albrecht, Kenneth	102	51	15
Alexander, Neil	90	56	5
Argue, John Henry	106	80	33
Arnold, Edward	98	62	17
Aselin, Shirley	110	75	26
Binder, Julius	93	75	30
Blake, Bob	89	60	19
Box, Billy	77	50	13
Brookman, Lyle	113	66	22
Bruce, William	109	68	28
Cindric, George	134	74	56
Compton, Leston	86	50	23
Collins, Thomas	93	66	22
Cook, Scott	105	62	21
Cronkright, Emery	99	60	24
Coyner, Hazel	104	64	10
Chapman, Ruth	100	68	20
Dewey, Elwood	103	56	26
Douglas, Donald	104	53	15
Downing, Glen	96	53	18
Dufour, Marilyn	105	75	29
Dunnevant, Florence	100	60	8
Edmonds, Kieth	124	75	28
Egner, Betty	97	57	5
Farah, George	97	58	16
Fetterly, Bertha	92	61	30
Fogelsonger, Dolores	118	73	22
Forkum, Leota	125	75	39
Foster, Ethel	90	56	10
Gibbs, Clifford	124	76	33
Gillette, Ruth	109	61	7
Goldsmith, Danny	110	72	32
Gordon, Don	100	62	32
Hadfield, Dorothy	92	48	17
Hallmark, DeWayne	107	55	35
Hammermaster, June	82	45	12
Hamp, Edna	97	57	8
Hays, Richard	96	43	5
Hecker, Juanita	99	62	18
Henson, J. T.	127	78	41

TABLE I (Continued)

Name	California Maturity	Iowa Reading	Myers-Ruch Progress-A
Hetzel, David	115	69	18
Hignite, Joy	117	80	34
Hohn, Naomi	112	58	34
Haughton, Bob	102	51	5
Hosler, Waunita	100	74	37
Johnson, Harriet	98	47	8
Johnson, Walter	108	73	38
Keene, Mason	101	47	22
Klouchock, Mildred	108	52	16
Lewis, Molly	105	75	15
Lillicrap, Margaret	116	82	42
Little, Merea	112	58	21
Mains, Robert	97	53	16
Markajovich, John	94	47	14
Martin, Doris	105	72	28
McElyea, Vada	104	72	22
McFarlane, John	86	50	16
Middelton, Robert	99	62	17
Nichols, Lloyd	87	69	20
Parish, Earl	116	73	32
Parrott, Kenneth	88	50	1
Perreault, Betty	113	74	35
Raison, Noreen	89	72	11
Reed, Donna	110	61	22
Reed, Doris	111	63	30
Rice, J. B.	110	63	21
Richards, Max	96	43	28
Rigdon, Robert	105	64	21
Ross, Earl	108	55	21
Rowland, A. L. C.	91	61	12
Ruff, George	117	71	48
Sibilsky, Betty	108	68	19
Skaggs, Mozelle	89	63	26
Slater, Martha	113	74	38
Smith, Keith	89	60	20
Stewart, Walter	86	58	22
Strickland, Willard	125	83	44
Tondu, Jerry	116	68	23
Trottier, George	124	77	38
Tucker, Dora	116	68	26

TABLE I (Continued)

Name	California Maturity	Iowa Reading	Myers-Ruch Progress-A
Vermette, Leon	104	53	27
Vliet, Jack	103	56	16
Whalen, Shirley	104	75	22
White, Bob	129	75	26
Young, Bernette	89	63	18
Mean	103.5	63.3	23.0
Standard Deviation	11.8	10.0	10.4
S. D. of Mean	1.26	1.08	1.12

TABLE II

A COMPARISON OF THE INTELLIGENCE QUOTIENTS OF THE ENTIRE GROUP BASED ON LANGUAGE AND NON-LANGUAGE FACTORS

Name	Language I.Q.	Non-Language I.Q.
Albrecht, Kenneth	110	98
Alexander, Neil	95	85
Argue, John	119	96
Arnold, Edward	100	181
Aselin, Shirley	103	116
Binder, Julius	96	91
Blake, Bob	91	87
Box, Billy	80	75
Brookman, Lyle	99	122
Bruce, William	107	111
Cindric, George	131	129
Compton, Leston	97	87
Collins, Thomas	97	90
Cook, Scott	109	101
Cronkright, Emery	101	93
Coyner, Hazel	104	103
Chapman, Ruth	106	98
Dewey, Elwood	111	98
Douglas, Donald	102	103
Downing, Glen	102	91
Dufour, Marilyn	103	101
Dunnevant, Florence	119	87
Edmonds, Keith	133	115
Egner, Betty	99	96
Farah, George	113	86
Fetterly, Bertha	106	91
Fogelsonger, Dolores	120	115
Forkum, Leota	114	133
Foster, Ethel	96	80
Gibbs, Clifford	124	122
Gillette, Ruth	108	107
Goldsmith, Danny	114	106
Gordon, Donald	93	109
Hadfield, Dorothy	95	91
Halmark, DeWayne	99	105
Hammermaster, June	83	82
Hamp, Edna	104	92
Hays, Richard	91	98

TABLE II (Continued)

Name	Language I.Q.	Non-Language I.Q.
Hocker, Juanita	96	99
Henson, J. T.	133	118
Hetzel, David	122	108
Hignite, Joy	129	104
Hohn, Naomi	121	109
Haughton, Bob	93	106
Hosler, Waunita	117	100
Johnson, Harriet	91	102
Johnson, Walter	112	104
Keene, Mason	98	103
Klouchek, Mildred	109	107
Lewis, Mollie	106	103
Lillicrap, Margaret	121	107
Little, Morea	117	107
Mains, Robert	99	97
Markajevich, John	81	106
Martin, Doris	109	102
McElyea, Vada	106	102
McFarlane, John	92	82
Middelton, Robert	101	97
Nichols, Lloyd	96	81
Parish, Earl	109	119
Parrott, Kenneth	91	86
Perrault, Betty	114	112
Raison, Moreene	91	88
Reed, Donna	116	104
Reed, Doris	111	109
Rice, J. B.	99	113
Richards, Max	83	107
Rigdon, Robert	107	104
Ross, Earl	110	108
Rowland, A. L. C.	89	92
Ruff, George	115	177
Sibilsky, Betty	106	110
Skaggs, Mozelle	98	84
Slater, Martha	117	111
Smith, Keith	87	91
Stewart, Walter	91	85
Strickland, Willard	122	124
Tondu, Jorry	105	116
Trottier, George	124	119
Tucker, Dora	113	123

TABLE II (Continued)

Name	Language I.Q.	Non-Language I.Q.
Vermette, Leon	106	103
Vliet, Jack	103	113
Whalen, Shirley	117	94
White, Bob	123	131
Young, Bernette	91	108
Median	105.3	102.3

TABLE III

A COMPARISON OF THE CHRONOLOGICAL, MENTAL, AND READING AGES OF THE ENTIRE GROUP

Names	C. A. Months	M. A. Months	R. A. Months
Albrecht, Kenneth	171	175	130
Alexander, Neil	183	163	139
Argue, John	175	186	189
Arnold, Edward	186	183	149
Aselin, Shirley	171	181	176
Binder, Julius	175	163	166
Blake, Bob	185	164	146
Box, Billy	183	141	129
Brookman, Lyle	166	187	158
Bruce, William	175	191	169
Cindric, George	177	237	174
Compton, Leston	192	164	129
Collins, Thomas	191	177	158
Cook, Scott	185	194	149
Cronkright, Emery	187	180	146
Coyner, Hazel	178	185	154
Chapman, Ruth	178	180	161
Dowey, Elwood	180	188	139
Douglas, Donald	171	176	133
Downing, Glen	172	164	133
Dufour, Marilyn	174	182	176
Dunnevant, Florence	180	181	146
Edmonds, Keith	164	204	176
Egner, Betty	182	177	140
Farah, George	168	163	145
Fetterly, Bertha	171	157	148
Fogelsonger, Dolores	172	203	172
Forkum, Leota	168	210	176
Foster, Ethel	181	163	139
Gibbs, Clifford	166	206	180
Gillette, Ruth	178	191	148
Goldsmith, Danny	179	198	171
Gordon, Don	184	184	149
Hadfield, Dorothy	171	158	127
Halmark, DeWayne	179	189	137
Hammermaster, June	185	152	121
Hamp, Edna	174	168	140
Hays, Richard	176	167	119
Hecher, Juanita	173	170	149
Henson, J. T.	168	214	185

TABLE III (Continued)

Names	C. A. Months	M. A. Months	R. A. Months
Hetzel, David	167	192	165
Higmite, Joy	177	208	189
Holm, Naomi	169	195	142
Haughton, Bob	177	178	130
Hosler, Wanita	180	198	174
Johnson, Harriet	168	165	125
Johnson, Walter	178	193	172
Keene, Mason	190	191	125
Klouchek, Mildred	164	177	132
Lewis, Molly	173	181	177
Lillicrap, Margaret	188	218	192
Little, Meren	164	183	142
Mains, Robert	182	179	133
Markajevich, John	180	171	125
Martin, Doris	191	202	171
McElyea, Vada	170	177	171
McFarlane, John	181	156	129
Middelton, Robert	192	190	149
Nichols, Lloyd	199	173	165
Parish, Earl	179	207	172
Parrott, Kenneth	192	168	129
Perreault, Betty	170	192	174
Raison, Norene	190	169	171
Reed, Donna	174	191	148
Reed, Doris	174	194	150
Rice, J. B.	177	189	150
Richards, Max	190	183	119
Rigdon, Robert	172	183	154
Ross, Earl	171	186	137
Rowland, A. L. C.	178	162	146
Ruff, George	177	208	168
Sibilsky, Betty	171	185	161
Skaggs, Mozelle	185	165	150
Slator, Martha	172	195	174
Smith, Keith	201	179	146
Stewart, Walter	190	164	142
Strickland, Willard	173	216	192
Tondu, Jerry	172	200	161
Trottier, George	180	223	182
Tucker, Dora	175	209	161
Vermette, Leon	174	181	133
Vliet, Jack	171	177	139

TABLE III (Continued)

Names	C. A. Months	M. A. Months	R. A. Months
Whalen, Shirley	180	188	176
White, Robert	173	223	176
Young, Bernette	191	186	150
Median	176.8	183.8	149.6

Grouping

Segregation: On the basis of their reading scores, the lower 60 percent of the ninth grade was selected for the experiment. These pupils were paired individual against individual, on the basis of their reading and intelligence scores. It was not possible to use the sixty, however, as some scores did not permit pairing, but a total of twenty-eight pairs was obtained at the start. This was later reduced to twenty-one pairs by the mortality previously mentioned. The two groups were designated as the remedial and the control groups, respectively. Table IV shows the scores of the pairs.

On the intelligence test, the mean score for the remedial group was 99.39 with a standard deviation of 8.3 and the standard deviation of the mean was 1.8. For the control group, the mean intelligence score was 99.85 with a standard deviation of 8.6 and the standard deviation of the mean was 1.8. The actual deviation between the two means was .46 and the standard deviation of this difference by the formula $\sigma_D = \sqrt{\sigma^2_{M_1} + \sigma^2_{M_2}}$ was 2.5.

On the reading test, the mean for the remedial group was 57.00 with a standard deviation of 5.25 and the standard deviation of the mean was 1.1. These figures are the same for the control group (Table II). The actual difference between these two means is therefore .00 and the standard deviation of this difference is 1.6. The median score in

each of the groups was 56.08 which the authors' age and grade equivalent interprets as a reading grade of 6.7 and a reading age of 11 years, 8 months.

Diagnosis: The reading difficulties of the experimental group were diagnosed by means of the Sangren-Woody Reading Test, Form A.[20] Table V shows that, in all of the seven reading skills which this test measures, the class median falls below the ninth grade median as given by the authors. The greatest deficiencies were in rate, while organization was a close second, and ability to follow directions was below the norm in all except two cases. Only two pupils were up to the norm in ability to get total meanings and only four scored above it on vocabulary.

Remedial Reading Instruction

Organization: The papers from the two reading tests were valuable to the teacher of the remedial group both in organizing the work and for subsequent guidance. The class met five times a week for a period of fifty-five minutes.

The number in the class precluded the possibility of individual instruction which would have been the ideal method. The nearest approach to this possible was to conduct the work on three levels. Children on each level were grouped together in the classroom, and, while the specific

20. Sangren, Paul V. and Woody, Clifford. Sangren-Woody Reading Test, Form A, The World Book Company, Yonker-on-Hudson, New York (1927).

TABLE IV

PUPILS PAIRED IN INTELLIGENCE QUOTIENT AND READING ACHIEVEMENT

No.	Name	Experimental Group		Control Group	
		California Maturity	Iowa Reading	California Maturity	Iowa Reading
1.	Tondu, Jerry	116	68		
1.	Tucker, Dora			116	68
2.	Coyner, Hazel	104	64		
2.	Rigdon, Robert			105	64
3.	Middelton, Robert	99	62		
3.	Arnold, Edward			98	62
4.	Reed, Doris	110	63		
4.	Rice, J. B.			110	63
5.	Skaggs, Mozelle	89	63		
5.	Young, Bernette			89	63
6.	Hecker, Juanita	99	62		
6.	Gordon, Donald			100	62
7.	Gillette, Ruth	109	61		
7.	Reed, Donna			110	61
8.	Tetterly, Bertha	90	61		
8.	Rowland, A. L. C.			90	61
9.	Smith, Keith	89	60		
9.	Blake, Bob			89	60
10.	Dunnevant, Florence	100	60		
10.	Cronkright, Emery			99	60
11.	Hohn, Naomi	112	58		
11.	Little, Merea			112	58
12.	Ross, Earl	108	55		
12.	Halmark, DeWayne			107	55
13.	Hamp, Edna	97	57		
13.	Egner, Betty			97	57
14.	Vliet, Jack	103	56		
14.	Dewey, Elwood			103	56
15.	Alexander, Neil	90	56		
15.	Foster, Ethel			90	56
16.	Douglas, Donald	104	53		
16.	Verrette, Leon			104	53
17.	Downing, Glen	96	53		
17.	Mains, Robert			97	53
18.	Albrecht, Kenneth	102	51		
18.	Haughton, Robert			102	51
19.	McFarlane, John	86	50		
19.	Compton, Leston			86	50
20.	Johnson, Harriet	93	47		
20.	Markajevich, John			94	47

TABLE IV (Continued)

No. Name	Experimental Group		Control Group	
	California Maturity	Iowa Reading	California Maturity	Iowa Reading
21. Richards, Max	96	43		
21. Hays, Richard			96	43
Mean	99.39	57.0	99.85	57.0
Standard Deviation	8.3	5.25	8.6	5.25
S.D. of Mean	1.8	1.1	1.8	1.1
S.D. of Difference	2.5			1.6

TABLE V

A DIAGNOSIS OF THE READING DIFFICULTIES OF THE EXPERIMENTAL GROUP BY MEANS OF THE SANGREN-WOODY TEST

Name	I	II	III	IV	V	VI	VII	Total Score
Albrecht	21	18	10	7	7	5	4	72
Alexander	23	18	7	5	3	6	8	70
Coyner	26	19	11	9	9	9	10	93
Douglas	24	18	9	5	4	4	8	72
Downing	27	19	9	6	10	7	8	86
Dunnevant	27	22	12	5	9	6	10	91
Fotterly	22	17	10	4	7	5	4	69
Gillette	29	19	17	10	6	9	8	98
Hamp	28	23	13	8	8	10	17	107
Hecker	30	22	17	8	10	10	10	107
Holm	27	15	16	9	8	5	8	88
Johnson	21	15	8	4	4	5	5	62
McFarlane	23	19	7	5	5	5	4	68
Middelton	24	19	10	6	9	8	9	85
Reed, Doris	34	22	8	7	9	8	8	96
Richards	18	18	4	3	5	3	4	55
Ross	24	19	10	6	4	6	4	73
Skaggs	25	20	8	7	5	7	8	80
Smith	26	19	12	7	9	9	10	90
Tondu	23	15	12	7	8	6	0	71
Vliet	23	15	9	5	4	7	5	69
Median (class)	24.3	18.5	10.3	5.5	7.2	6.2	7.8	
Median (Auth.)	27.2	23.6	11.8	9.3	7.4	9.2	11.3	
Difference	-2.9	-5.1	-1.5	-2.8	-.2	-3.0	-3.5	

Part I--Word Meaning
Part II--Rate
Part III--Fact Material
Part IV--Total Meaning
Part V--Central Thought
Part VI--Following Directions
Part VII--Organization

objectives and methods were the same for each group, the material was selected on three levels of difficulty.

Test Reading: Part of each period was used for test reading. Each child kept his individual record sheet on which he recorded his rate, his memory score, and his comprehension score. Each selection used had the number of words which it contained recorded at the end. While the test reading was going on, the teacher recorded the time on the blackboard every ten seconds, and, when he finished reading, each child worked out his own rate and recorded it on his record card. A set of questions in duplicate accompanied each selection. The child answered the first copy from memory and the duplicate by rereading the selection to test comprehension.

Reading Techniques Emphasised:

1. Ability to get word meanings from the context.
2. Ability to grasp the central thought.
3. Ability to get the total meaning.
4. Ability to organise the material.
5. Ability to recognise and relate details.
6. Ability to summarize.

Materials: The series of remedial reading lessons by McCall, Cook, and Norvall,[21] as well as the series by

21. McCall, William A., Cook, Luella B., and Norvall, George W. Experiments in Reading, Books One, Two, and Three.

Guiler and Coleman[22] were used. The pupils also prepared lessons by clipping a selection from a book or magazine, mounting it in a folder, counting and recording the number of words and writing questions based on the context to test memory and comprehension.

Free Reading: After the test reading lesson, the rest of the period was given over to free reading. The pupils read library books or magazines which they brought to class with them or which they selected from those kept in the classroom. A record of this was kept on the back of the test reading record sheet. Merely the name and location of the selection together with the reading date were recorded.

Teacher-Pupil Conference: During the free-reading portion of the period, the teacher held individual conference with pupils regarding their progress, their difficulties, their tastes, et cetera. Sometimes, the whole group joined in a discussion of some book or story.

The Results: Academic progress of the three groups as shown by comparison of the scores made on Myers-Ruch Progress Tests, Form A and Form B was used as a measure of the results of this experiment.

Table VI shows that for the entire group the actual increase in the mean of Test B over that of Test A was 3.05. The standard deviation of this difference found by

22. Guiler, W. S. and Coleman, J. H. Getting the Meaning, Books One, Two, and Three.

the formula $\sigma_D = \sqrt{\sigma^2_{M_1} + \sigma^2_{M_2} - 2r\sigma_{M_1}\sigma_{M_2}}$ was 1.63. The chances were, therefore, 68 in 100 that the true difference lay between 1.42 and 4.68. D/σ_D is 1.8 so, referring to Garrett's table,[23] the chances are 96 in 100 that the true difference was greater than zero, and that there was an actual gain in high school achievement.

Table VII shows the actual gains in the means of the experimental group on Tests A and B to be 1.81 and the standard deviation of this difference is 1.71. The chances are, therefore, 68 in 100 that the true difference in progress may differ from 1.81 by 1.71. D/σ_D is here 1.06 and the table by Garrett[24] shows that there are about 85 chances in 100 that this difference is really a positive gain rather than a loss.

Table VIII shows that the actual gain in the means of the control group was 1.3. The standard deviation of this difference is 2.07. The chances are, therefore, 68 in 100 that the true difference lies between 3.37 and -1.77. Since D/σ_D in this case is .6, there are 73 chances in 100 that the gain of this group is positive.

Table IX shows a comparison of the final scores made by the remedial and the control groups as shown by Myers-Ruch Progress Test, Form B. The actual gain measured by the

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23. Garrett, Henry E. Statistics in Psychology and Education, p. 213.
24. Ibid.

difference in mean was .8 in favor of the control group, but the control group made a higher average score in the beginning, so that the actual gain of the experimental group was greater than that of the control group, the gain in the experimental group being 1.81 points while that of the control group was 1.3 points. The standard deviation of this difference was 1.87 so the chances are 68 in 100 that the true difference lies between 2.67 and -1.07. Since D/σ_D 1.42 there are 67 chances in 100 that this gain is positive.

Table X shows the progress made by the members of the ninth grade who were not included in either the remedial or the control groups. The actual gain as shown by the difference in the means was 4.7 and the standard deviation of this difference was 2.38, so the chances are 68 in 100 that the true difference may be between 7.08 and 2.32. The significance is shown by D/σ_D which is 1.9 or about 97 chances in 100.

These estimations of reliability show that in each of the groups the progress was slight and the findings of very little statistical importance. The results are very slightly positive in so far as the effect of the remedial instruction on success in content subjects is concerned. Possible explanation for this will be considered in the final chapter under conclusions and recommendations.

TABLE VI

ACADEMIC PROGRESS OF THE ENTIRE GROUP
AS SHOWN BY THE MYERS-RUCH TESTS

Name	Myers-Ruch A	Myers-Ruch B
Albrecht, Kenneth	15	25
Alexander, Neil	5	18
Argue, John Henry	33	37
Arnold, Edward	17	16
Aselin, Shirley	26	30
Binder, Julius	30	40
Blake, Bob	19	21
Box, Billy	13	12
Brookman, Lyle	22	41
Bruce, William	28	30
Cindric, George	56	65
Compton, Leston	23	12
Collins, Thomas	22	35
Cook, Scott	21	22
Cronkright, Emery	24	20
Coyner, Hazel	10	15
Chapman, Ruth	20	42
Dewey, Elwood	26	19
Douglas, Don	15	23
Downing, Glen	18	21
Dufour, Marilyn	29	31
Dunnevant, Florence	8	11
Edmonds, Keith	28	31
Egner, Betty	5	9
Farah, George	16	25
Fetterly, Bertha	30	31
Fogelsonger, Dolores	22	24
Forkum, Leota	39	38
Foster, Ethel	10	15
Gibbs, Clifford	33	45
Gillette, Ruth	7	15
Goldsmith, Danny	32	36
Gordon, Don	32	21
Hadfield, Dorothy	17	9
Hallmark, DeWayne	35	20
Hammermaster, June	12	11
Hamp, Edna	8	11
Hays, Richard	5	20
Hecker, Juanita	18	16
Henson, J. T.	41	38
Hetzel, David	18	51

TABLE VI (Continued)

Name	Myers-Ruch A	Myers-Ruch B
Higuite, Joy	34	34
Hohn, Naomi	34	27
Haughton, Bob	5	22
Hosler, Wanita	37	38
Johnson, Harriet	8	13
Johnson, Walter	38	31
Keene, Mason	22	22
Klouchek, Mildred	16	27
Lewis, Molly	15	36
Lillicrap, Margaret	42	44
Little, Merea	21	31
Mains, Bob	16	22
Markajevich, John	14	20
Martin, Doris	28	18
McElyea, Vada	22	33
McFarlane, John	16	10
Middelton, Robert	17	15
Nichols, Lloyd	20	15
Parish, Earl	32	21
Parrott, Kenneth	1	14
Perreault, Betty	35	44
Raison, Morene	11	13
Reed, Donna	22	30
Reed, Doris	30	40
Rice, J. B.	21	19
Richards, Max	28	23
Rigdon, Bob	21	27
Ross, Earl	21	14
Rowland, A. L. C.	12	9
Ruff, George	48	30
Sibilsky, Betty	19	23
Skaggs, Mozelle	26	19
Slater, Martha	38	26
Smith, Keith	20	15
Stewart, Walter	22	27
Strickland, Willard	44	56
Tondu, Jerry	23	31
Trottier, George	38	46
Tucker, Dora	26	24
Vermette, Leon	27	18
Vliet, Jack	16	17

TABLE VI (Continued)

Name	Myers-Ruch A	Myers-Ruch B
Whalen, Shirley	22	29
White, Bob	26	39
Young, Dernette	18	29
Mean	23.0	26.05
Standard Deviation	10.4	11.6
S. D. of Mean	1.12	1.24
Actual Difference		3.05
S. D. of Difference		1.63
r	.01	
D/σ_D	1.8	

TABLE VII

ACADEMIC PROGRESS MADE BY THE EXPERIMENTAL GROUP AS SHOWN BY THE MYERS-RUCH TESTS

Name	Myers-Ruch A	Myers-Ruch B
Tondu, Jerry	23	31
Coyner, Hazel	10	15
Middelton, Robert	17	15
Reed, Doris	30	40
Skaggs, Mozelle	26	19
Hecker, Juanita	18	16
Gillette, Ruth	7	16
Fetterly, Bertha	30	31
Smith, Keith	20	15
Dunnevant, Florence	8	11
Hohn, Naomi	34	27
Ross, Earl	21	14
Hamp, Edna	8	11
Vliet, Jack	16	17
Alexander, Neil	5	18
Douglas, Don	15	23
Downing, Glen	18	21
Albrecht, Kenneth	15	25
McFarlane, John	16	10
Johnson, Harriet	8	13
Richards, Max	28	23
Mean	17.76	19.57
Standard Deviation	8.24	7.56
S. D. of Mean	1.80	1.65
Actual Difference		1.81
S. D. of Difference		1.71
r		.65
D/σ_D		1.06

TABLE VIII

ACADEMIC PROGRESS MADE BY THE CONTROL GROUP
AS SHOWN BY THE MYERS-RUCH TESTS

Name	Myers-Ruch A	Myers-Ruch B
Tucker, Dora	26	24
Rigdon, Robert	21	27
Arnold, Edward	17	16
Rice, J. B.	21	19
Young, Bernette	18	29
Gordon, Don	32	21
Reed, Donna	22	30
Rowland, A. L. C.	12	9
Blake, Bob	19	21
Cronkright, Emery	24	20
Little, Verea	21	31
Halmark, DeWayne	35	20
Egner, Betty	5	9
Dewey, Elwood	26	19
Foster, Ethel	10	15
Vermette, Leon	27	18
Mains, Robert	16	22
Haughton, Robert	5	22
Compton, Leaton	23	12
Markajevich, John	14	20
Hays, Richard	5	20
Mean	19	20.3
Standard Deviation	8.03	5.73
S. D. of Mean	1.75	1.25
Actual Difference		1.3
S. D. of Difference		2.07
r		.07
D/σ_D		.6

TABLE IX

COMPARISON OF FINAL SCORES MADE BY THE EXPERIMENTAL AND THE CONTROL GROUPS AS SHOWN BY THE MYERS-RUCH TEST B

Experimental		Control	
Name	Score	Name	Score
Tondu	31	Tucker	24
Coyner	15	Rigdon	27
Middelton	15	Arnold	16
Reed, Doris	40	Rice	19
Skaggs	19	Young	29
Hecker	16	Gordon	21
Gillette	15	Reed, Donna	30
Fetterly	31	Rowland	9
Smith	15	Blake	21
Dunnevant	11	Cronkright	20
Hohn	27	Little	31
Ross	14	Halmark	20
Hamp	11	Egner	9
Vliet	17	Dewey	19
Alexander	18	Foster	15
Douglas	23	Vermette	18
Downing	21	Maine	22
Albrecht	25	Haughton	22
McFarlane	10	Compton	12
Johnson	13	Markajevich	20
Richards	23	Hays	20
Mean	19.5		20.3
Standard Deviation	5.84		5.9
S. D. of Mean	1.28		1.29
Actual Difference			.8
S. D. of Difference			1.87
r	-.07		
D/σ_D	.42		

TABLE X

ACADEMIC PROGRESS MADE BY GROUP TESTS
AS SHOWN BY THE MYERS-RUCH TESTS

Name	Myers-Ruch A	Myers-Ruch B
Argue, John	33	37
Aselin, Shirley	26	30
Binder, Julius	30	40
Box, Billy	13	12
Brookman, Lyle	22	41
Bruce, William	28	30
Chapman, Ruth	20	42
Cindric, George	56	65
Collins, Thomas	22	35
Cook, Scott	21	22
Dufour, Marilyn	29	31
Edmonds, Keith	28	31
Fahar, George	16	25
Fogelsonger, Dolores	22	24
Forkum, Leota	39	38
Gibbs, Clifford	33	45
Goldsmith, Danny	32	36
Hadfield, Dorothy	17	9
Hammermaster, June	12	11
Henson, J. T.	41	38
Hetzel, David	18	51
Hignite, Joy	34	34
Hosler, Wanita	37	38
Johnson, Walter	38	31
Keene, Mason	22	22
Klouchek, Mildred	16	27
Lewis, Molly	15	36
Lillicrap, Margaret	42	44
Martin, Doris	28	18
McElyea, Vada	22	33
Nichols, Lloyd	20	15
Parish, Earl	32	21
Parrott, Kenneth	1	14
Perreault, Betty	35	44
Raison, Norene	11	13
Ruff, George	48	30
Sibilsky, Betty	19	23
Slater, Martha	38	26
Stewart, Walter	22	27

TABLE X (Continued)

Name	Myers-Ruch A	Myers-Ruch B
Strickland, Willard	44	56
Trottier, George	38	46
Whalen, Shirley	22	29
White, Robert	26	39
Mean	27.1	31.8
Standard Deviation	10.6	12.4
S. D. of Mean	1.6	1.8
Actual Difference		4.7
S. D. of Difference		2.38
r	.02	
D/σ_D	1.9	

CHAPTER IV

CONCLUSIONS AND RECOMMENDATIONS

The results of this study are of little value statistically. They do not give proof that instruction in a remedial reading class is a factor for success in the academic adjustment of secondary school pupils. These groups showed no significant difference in results as measured, and therefore, the indications are that remedial reading, as taught, does not perform the service indicated. Yet, since secondary school study involves much reading and every experienced teacher knows that better readers are more successful in their school work, it seems that reading ability must of necessity improve scholarship. Reasons for its failure to do so in this experiment may lie in the conditions of the remedial instructions, in the educational philosophy back of the instruction, or in the suitability of the instrument of measurement. A consideration of these possibilities may be worthwhile before drawing conclusions and making recommendations.

The Character of the Remedial Instruction

The remedial reading work is in the nature of a consultation between physician and patient. If it is to go to the root of the difficulty, it should be individual and private with perfect confidence and freedom from restraint on both

sides. The patient's symptoms must be known before a remedy can be advised. The ideal situation for individual diagnosis and instruction is not, as in this case, a classroom where twenty or thirty other "patients" are listening in. The serious nature of the task of the remedial reading teacher cannot be overestimated. In this regard, Gates says:

> "Effective diagnosis and remedial treatment depend upon the discovery of the special types of handicaps operating at the time of diagnosis and the development of a program designed to remove them or somehow to take them into account.
>
> "Emotional tensions and personal and social mal-adjustments of various sorts are likely to arise sooner or later, even in those children whose original equipment was no less staple than that of pupils who were successful in learning to read. Properly to reinstate the pupil as a normal member of his group, capable of taking a happy and constructive attitude toward the life of the school, requires effective management of his whole personality as well as of his specific difficulties in reading."[25]

Witty adds emphasis to the same idea when he says:

> "In working with retarded readers, teachers must sense differences in attitudes, interests, personal problems, background of experience, social orientation, physical development and home and school situations."[26]

Dr. V. H. Kelley[27] was convinced that remedial instruction should be individual and private when he wrote:

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25. Gates, Arthur I. "Treatment of Extreme Cases of Reading Disability," Thirty-Sixth Yearbook, National Educational Association, 1937, p. 393.
26. Witty, Paul. "Reading, Remedial Reading, and General Education," Educational Method Vol. XVIII, No. 8, pp. 425-431 (May 1939).
27. Kelley, V. H. "Reading as a Problem for the High School," The Clearing House Vol. 11, pp. 487-9 (April 1937).

> "Although most remedial reading can and should be done in the classroom, the larger high school should have available a place where extended analysis can be made and where individual corrective exercises can be administered for extreme cases."

Dr. Kelley also suggests in the same article that small schools which are not able to support this specialized service arrange with a neighboring large school to do the work for them.

The opinions of these experts and the results of this experiment coincide to produce the first conclusion which is that a class of the size of the one used in this study is too large to produce worthwhile improvement in reading in cases of serious deficiencies.

The Educational Philosophy on which the Instruction was Based

The existence of a remedial reading class in the program of studies of a secondary school can be defended in two ways, namely, (1) that reading is a subject suited for study there, or, (2) that the skills acquired in the class will be put to work in other secondary school situations.

The Subject of Reading

The tendency of modern education with its utilitarian viewpoint is to consider reading as having an almost purely functional value. This is particularly true for the type of pupils found in the remedial reading classes.

Leavell defends this evaluation of reading when he says:

> "Reading is universally recognized as one of the most important activities in the school program as well as in life activities. It is difficult to overemphasize the importance of reading in modern life. Educational leaders of the past rightly emphasized the necessity of ability in this skill process. Unfortunately, however, they failed to realize that such development could best take place in a program that took cognizance of the fact that reading has no subject matter of its own. Literature, history, geography, and other great fields of human interest all have a content of their own, but reading has no such content. The failure to recognize the implications of this fundamental truth led to the development of programs of reading focussed upon reading assignments and lesson techniques based on reading as an end in itself.
>
> "The organization of reading programs within the framework of reading as a subject, has tended to magnify the 'subject of reading' to the neglect of the functional point of view of reading instruction. Reading ability has functional value when it is used as a means to an end in relation to experience in the various fields of human endeavor and achievement. There is a growing conviction that the future development of the reading program can best be achieved through a utilization of the idea that reading is a tool. This point of view implies that objectives for reading should be stated in relation to the subject matter fields. The restricted interpretation of such oft-repeated objectives as 'the development of an interest in and a love for reading', 'comprehension of material read', or 'word-recognition', leaves much to be desired. Too often classroom practices set up to attain these objectives have failed at the point of transfer of abilities to functional reading situations."[28]

Unless the remedial reading class teaches reading "for reading's sake" as a content subject, it must be considered as a place to acquire training in skills for the

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28. Leavell, Ullin W. "Reading Instruction in the Educational Scheme," Education Sept. 1938, pp. 7-10.

mastery of the content subjects. This use of the period presupposes that the pupils will transfer this training to the various fields when and where it is needed. The idea of "transfer of training" is one that has long been the subject of controversy among experts, and the following brief quotations from recent writers show that the question has by no means been answered. Jordan says:

> "Recent investigations have shown that transfer effects are not nearly so great as the advocates of the disciplinary effect of school subjects once thought, on the contrary they show that sometimes instead of a hoped for gain there is a real loss."[29]

Griffith summarizes studies by Hoyt, Briggs, Starch, Judd, and others and concludes as follows:

> "In general it is not fair to say that either laboratory or practical experiments in the schoolroom have demonstrated the absence of transfer of training. On the contrary, some small measure of transfer is usually found, but by no means in so large a proportion as the traditional theory had argued for."[30]

Lehman[31] describes an experiment by which he tried to test the presence, or absence, or transfer and makes the statement:

> "It (the experiment) reveals clearly that the existence of identical elements is of itself no guarantee that transfer will take place. It should enable the student to understand why discrete teachers are more likely to employ the potential than the indicative mode when discussing the transfer of

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29. Jordan, A. M. Educational Psychology, p. 257.
30. Griffith, Coleman R. An Introduction to Educational Psychology, pp. 483-4.
31. Lehman, Harvey. "A Class Experiment in the Transfer of Training," Journal of Applied Psychology, Vol. 17, pp. 77-82 (1933)

training. It may (and it may not) occur."

Leary admits that transfer takes place under certain conditions but these conditions limit its value with pupils of the intelligence caliber usually found in a remedial class. He says:

> "The degree or amount of transfer depends on how one teaches a given piece of subject matter. It means that if and when a subject is taught in terms of its relation to other situations and other meanings, then transfer takes place in the only proper sense of the phrase....
>
> "Transfer and intelligence are, in effect, synonymous terms and denote similar behavior. The intelligent transfer more often and to a greater degree simply because they are intelligent; the stupid cannot even see the simplest of relationships and, hence, to them, everything is new and unique without their even realizing that much."[32]

This viewpoint regarding the relation between transfer and intelligence is shared by Garrison and Garrison who state:

> "The extent to which transfer can be attributed to any one or a combination of factors is not known. We do have an abundance of evidence, however, that the amount of transfer differs with individuals, and that it also tends to vary in accordance with the amount of intelligence present. It seems that the better insight or generalizing power belongs to the more intelligent individuals and that the transfer of training is definitely tied up with the ability to generalize. Thus, it would follow that the greater the amount of intelligence the greater the amount of transfer."[33]

Then if reading is not a subject but a means to an end and that end is success in the content subjects, and if the

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32. Leary, Daniel Bell. Educational Psychology, pp. 242-3.
33. Garrison, Sidney C. and Garrison, K.C. Fundamentals of Psychology in Secondary Education, pp. 188-9.

factor of transfer of skills from the reading class to that of the content subject is very uncertain, there is need for some more direct method of achievement of this success. Gray agrees with the writers previously quoted that transfer is slight and suggests a substitute for the remedial reading class. He says:

> "The traditional program of reading was obviously based on the assumption that the training given during the reading period was adequate to insure good interpretation in the various curriculum fields and in all reading activities carried on outside of school. Experience has demonstrated clearly that such was not the case. Indeed, the results of tests show that a pupil who reads well in one field or for a given purpose often reads poorly in another field or for a different purpose. Furthermore classroom experiments supply striking evidence of the fact that whereas the training provided in one area may transfer to some extent to other types or purposes of reading it is not sufficient to insure satisfactory habits. The implications of these findings are clear. Teachers of reading should determine carefully the types of progress which pupils should make in reading at given levels of development and should provide specific guidance if attainments are unsatisfactory. Furthermore, the needs of pupils in the various curriculum fields should be determined and appropriate help should be given. The value of this general procedure has been demonstrated repeatedly through classroom studies in both the elementary and secondary schools..... The rapidity of improvement and its permanency depend upon the amount of guidance provided in every subject in the pupils' programs of study." [34]

Kelley[35] agrees and shows why the reading instruction given by the teacher of the content subject is more effective than that given by the teacher of a reading class. He gives his findings thus:

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34. Gray, William S. op. cit., p. 4.
35. Kelley, V. H. op. cit., p. 42.

"This tendency to treat reading as a most important tool in learning has resulted in establishing a very close relation between reading and practically every school activity. As a means of gaining information and pleasure, it is essential in every content subject such as history, civics, science, and literature. In fact, there is reason to believe that rapid progress in these subjects depends in a large degree upon the ability of students to read rapidly and intelligently.

.....

"Research shows that there is no general silent reading ability, but that one who reads one kind of material well may read another kind poorly and that the ability to read well depends upon the nature of the passage read. Inasmuch as the studies of specific reading requirements for history, mathematics, science, and literature show the need for a variety of skills and abilities too diverse to be managed in the general course in reading, it will be necessary for the entire high-school faculty to be aware of the problem and to work toward its solution."

McCallister[36] gives much the same ideas but he may be quoted for the sake of emphasis:

"Guidance in reading may be effectively carried out by associating it closely with the regular study activities of a course. By employing this approach the regular classroom teacher may provide training in reading without making undue inroads into regular activities of a course. Such guidance may take the form of group instruction or, in extreme cases, of individual training. Either form results in noteworthy improvement in the effectiveness of instruction. Such guidance not only assists pupils with regular work of a course but also stimulates independent effort and self-confidence.

"Each content course provides opportunity for developing new habits and skills. Because of the varied character of the instructional materials assigned in different courses and of the varied

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36. McCallister, James M. "Guiding Pupils' Reading Activities in the Study of Content Subjects", The Elementary School Journal, Vol. 31, pp. 271-284 December 1930.

techniques of teaching employed, pupils encounter numerous types of reading activities. The performance of these activities leads to greater reading and to increased effectiveness of study habits. These activities should be guided carefully and purposefully in order that pupils may grow continually in power to study independently."

There are three conclusions which are evident from this survey of the educational philosophy of reading instruction. They are: (1) Seriously retarded reading cases should receive individual and private instruction. (2) There is no certainty that general reading skills acquired in a reading class will transfer to the study of content subjects in any appreciable degree. (3) Because of the diverse nature of the specific objectives for each content subject in the secondary school, the teachers in each field are better equipped to develop the reading skills necessary to that field than is the teacher of a general course in reading.

The Suitability of the Instrument of Measurement

The Manual of Directions accompanying the Myers-Ruch High School Progress Test contains this paragraph:

"These norms are based on approximately 9000 cases from a large number of communities in Maine, New Hampshire, Vermont, New York, Virginia, and California. In deriving these norms, the most striking characteristic of the separate distributions was the great variation in average achievement from one community to another. In one state where the tests were used with more than 10,000 children in approximately 100 communities at the end of the high school course, the difference between the lowest and the highest median score was 34 points. This is exactly twice the difference between the median scores for Grades 9 and 12 according to the norms

> given in Table 3. This same situation seemed to be typical of the other communities in which the test was used. This is mentioned because this wide spread difference from one community to another in the average level of achievement on the test indicates a striking lack of uniformity in the degree of mastery of average high school content, if this test may be considered to measure such average content."

After examining the papers written by this group, there arose a question in the mind of the writer as to whether the lack of uniformity may lie, not in degree of mastery of high school content, but, rather, in a lack of uniformity in the content itself. In these days of curricular reconstruction who can say just what constitutes "average high school content"?

The Myers-Ruch Test of High School Progress consists of thirty questions in each of the four fields, English, social studies, mathematics, and science. Table XI shows the total scores made by the members of the remedial group on Form B. They show a higher average score in English and social studies than in mathematics and science. This may be accounted for on the grounds that, in Bendle High School, English and social studies are curriculum constants while mathematics and science are curriculum variables. Pupils of lower intelligence are encouraged to take general mathematics instead of algebra, and, to them, even the simple algebraic forms contained in this test were difficult and confusing. Three of the group omitted nearly all of the science subtest, and a check revealed that they are not

TABLE XI

A COMPARISON OF THE RAW SCORES MADE BY GROUP ONE ON MYERS-RUCH SUBTESTS

Name	English	Social Studies	Mathematics	Science
Albrecht, Kenneth	10	7	8	12
Alexander, Neil	11	7	7	11
Coyner, Hazel	12	10	4	9
Douglas, Don	14	8	11	9
Downing, Glen	9	10	15	7
Dunnevant, Florence	11	4	8	8
Fetterly, Bertha	11	16	7	11
Gillette, Ruth	11	6	10	8
Hamp, Edna	7	13	5	8
Hecker, Juanita	9	12	5	5
Hohn, Naomi	14	10	8	11
Johnson, Harriet	13	5	8	8
McFarlane, John	11	6	6	6
Middelton, Robert	10	12	4	8
Reed, Doris	19	19	10	6
Richards, Max	10	12	11	4
Ross, Earl	8	8	9	9
Skaggs, Mozelle	11	10	9	9
Smith, Keith	9	10	9	8
Tondu, Jerry	19	12	6	10
Vliet, Jack	9	13	5	10
Total	238	210	165	177
Average	11.0	10.0	7.9	8.4

taking any form of science in high school but are taking Latin in order to carry out certain vocational plans which have been made for them.

This test makes no attempt to measure achievement in foreign languages, industrial work, or home economics which in many communities constitute a very important part of the program of studies.

This, then, leads to the last conclusion which is that standardized achievement tests should be selected to suit the content fields of the program of studies which they attempt to measure.

Recommendations

The author feels that this study has pointed out the fact that there is a definite need for improving the reading status of these pupils, and that in accordance with the foregoing conclusions, it should be met by a program administered as follows:

1. Cases showing serious reading deficiencies should receive individual and private instruction of a type and for a period of time in accordance with their need.

2. All pupils who are below the accepted grade standard as shown by a standardized reading test should receive special instruction in the reading of each content subject. This instruction should be given by the teacher of the class during the portion of the class period set aside for super-

vised study.

3. Measure of achievement should be by means of standardized achievement tests prepared for each subject which is to be measured.

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