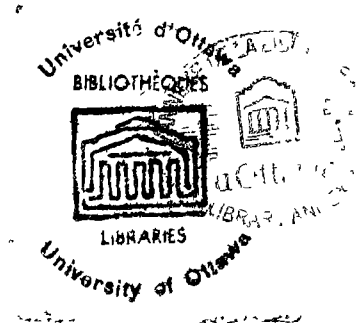


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THE RELATIVE EFFECTIVENESS OF A MULTI-LEVEL READING
PROGRAM AT THE INTERMEDIATE GRADE LEVEL

by (Sister Mary Madeleine)

Thesis presented to the School of
Psychology and Education of the
University of Ottawa as partial
fulfillment of the requirements
for the degree of Doctor of
Philosophy.



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CURRICULUM STUDIORUM

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INTRODUCTION

The search for the most effective plan to meet the reading needs of each child within a classroom and to encourage fullest development of the varied mental capacities of each child is a problem which has commanded attention in the past and which remains nevertheless a current vital issue. Vernon¹ classifies it as one of the most urgent and most controversial questions in education today.

Experiments relating to grouping show clearly, no matter how classes are organized, that the achievement and needs of each individual child must be studied carefully, and that grouping merely simplifies the problem of providing for individual differences; it does not eliminate it. This view has been expressed as early as 1925 by Gray.² Regardless of the type of classroom organization used to lessen the range of individual differences, enough differences remain to require some form of differentiated instruction in reading.

Although scores of investigations have been conducted, some emphasizing and others minimizing the role of the

¹ Philip E. Vernon, "The Psychology of Individual Differences", Harvard Educational Review, Vol. 28, No. 2, 1958, p. 91.

² William S. Gray, Summary of Investigations Relating To Reading, Chicago, University of Chicago Press, 1925, p. 97.

various kinds of administrative and classroom adjustments provided to meet the needs of pupils in all areas but especially in the field of reading, yet Durrell³ bluntly points out that we have not been very successful in translating into classroom practice our current knowledge of the need for providing for individual differences. He states that the largest frontiers for research in reading at the intermediate grade level are found precisely in the translation of findings of research into practice.

This report is concerned with extending the attempts to adjust schools to individual differences in that area of instruction which deals with improving reading comprehension and vocabulary growth of pupils in the intermediate grades. Improvement will be sought through greater individualization of instruction by the use of multi-level materials and techniques designed by Parker and published as the SRA Reading Laboratory.

The term "multi-level materials and techniques" as used in this report refers to reading selections at ten different grade levels of difficulty used in a relatively self-directed manner by pupils under the teacher's guidance. The term "one-level materials" is used to designate a single

³ Donald D. Durrell, "Some 'Musts' in Reading Research", in the Thirty-Fourth Yearbook of the National Elementary Principal, Reading for Today's Children, Bulletin of the Department of Elementary School Principal, Vol. 35, No. 1, 1955, p. 20.

book designed for use in a particular grade or group, usually ranging in difficulty between one and one-half and two grade levels from its beginning to its end.

The philosophy behind Parker's reading program is based on the principles of child development. He believes that growth in reading follows the general pattern of child development. Just as the developmental process is characterized by a progressive series of orderly, coherent changes, so too growth in reading progresses. If a child is to improve in reading, he must necessarily begin where he is and be guided through successive levels of achievement. In a classroom, then, there will be a wide range of reading abilities with each individual, moreover, progressing at his own rate of development.

Further, Parker reasons that, since the techniques used with the individual and small groups in remedial reading classes and in clinics have proved very effective, it is entirely possible that these same techniques may be made operative in the regular classroom, thereby bringing benefits in reading improvement to all pupils instead of to only a selected few. In remedial reading instruction, he claims, the function of the feed-back of right and wrong answers and of constant goal orientation is greatly facilitated by the teacher. She highlights successes, points out errors, proposes more adequate responses, and in general leads each

pupil toward greater self-sufficiency at the level of achievement of which he is capable. However, as group size approaches that of a regular classroom, the teacher will have less and less time per pupil for such stimulation to continued effort. This stimulation, therefore, will need to be a built-in part of the instructional technique used.

The SRA Reading Laboratory is the result of Parker's efforts to prepare such reading materials with a built-in instructional technique having a high motivational value. The reading laboratory is a series of reading selections gradually increasing in difficulty through ten grade levels. These materials are intended to provide pupils in regular classrooms of the elementary school in Grades Four, Five, and Six with an opportunity for improving their reading comprehension and vocabulary through greater individualization of instruction.

This investigator has undertaken to determine the relative effectiveness of Parker's multi-level reading program for the improvement of reading comprehension and vocabulary growth at the intermediate grade level as compared with a one-level reading materials approach. The present report aims at disclosing the results of this experiment.

The first portion of this thesis is concerned with a review of the literature of the various types of administrative as well as classroom organization for the purpose of

individualizing instruction in general, and the teaching of reading in particular. Emphasizing scientific evidence, this review shows few previous attempts to evaluate individualized procedures under controlled conditions. It likewise shows that no earlier attempt was made to test in a scientific study that part of Parker's program intended for the intermediate grades.

The formulation of the hypothesis is followed by a description of the research design of the project, emphasizing the controlled conditions. It describes the sample used, the principal and teacher preparation and follow-up, and the tools and special statistical operations employed.

The results obtained from the experiment are thereupon presented and discussed. Finally, the implications for subsequent research are indicated.

CHAPTER I

REVIEW OF THE LITERATURE

School administrators and teachers attach different meanings to the term "differentiated instruction" or, as it is sometimes referred to, "individualization of instruction". This fact will be seen in the various plans initiated to provide for individual differences presented in this chapter. The meanings usually given to these terms imply that differentiated instruction takes place when children are graded, that is, when they are placed in one of the grades for school work. Another implication is that differentiated instruction is achieved by means of dividing the pupils of any one grade into classes, or of grouping pupils within a single class for instructional purposes. Still another connotation of these terms refers to adapting instruction on an exclusively individualized basis.

The more recent concept is expressed by Betts thus:

A program of differentiated instruction involves more than small group and individual activities. It includes class planning and activities, group planning and activities, and individual planning and activities. Differentiated instruction is a way of evaluating and living with a group of individuals in a classroom that results in a maximum of development of each individual in terms of his interests, needs, and capacities.¹

¹ Emmett A. Betts, Foundations of Reading Instruction with Emphasis on Differentiated Guidance, New York, American Book, 1946, p. 3.

The question of how reading can be taught more effectively through school and class organization in order to reach every individual so that optimum well-rounded growth results has been a major concern of administrators and teachers for a long time. It began with the introduction of the concept of mass education in American schools by Horace Mann and Henry Barnard who sponsored the idea of the graded school in the 1830's and 40's. By 1870 even the one-room rural schools had been graded. Between this time and about 1920, when intelligence tests were first used for grouping, numerous plans have been tried for bringing all pupils up to a standard through uniform instruction by mass educational techniques and uniform textbooks. It was this lock step in education that became, and according to Betts² still is, a serious peril in education.

Plans for meeting individual abilities, needs, and interests have been initiated in an attempt to break the rigid traditional prescriptive curriculum with its correlative uniform mass standards. These plans have taken various forms from the individualizing of the entire curriculum in a whole school system to the individualizing of specific areas within the curriculum.

² Emmett A. Betts, "Developing Basic Reading Skills Through Effective Class Organization", in Education, Vol. 78, No. 9, 1958, p. 562.

Individualization of reading instruction has its roots in the early administrative approaches to individualizing the entire school curriculum. Hence it seems logical to trace the genesis of an individualized reading program to administrative plans conceived for the purpose of differentiating all subject areas including reading.

The literature relating to individualization of instruction will be reviewed under two headings: (1) administrative organization, and (2) classroom organization. Administrative organization usually involves the adjustment of an entire school system. Classroom organization refers to grouping within a self-contained classroom.

In considering the administrative organization the literature, which contains very little controlled experimentation, will be reviewed under these captions:

- i. Individualized Instruction,
- ii. Ability Grouping, and
- iii. Ungraded Elementary Classes.

All these factors have a direct bearing on reading instruction, since what teachers can do in teaching reading is governed and determined to a considerable extent by the administrative policies of a school with regard to promotion and pupil classification.

Differentiation of reading instruction within the classroom will be reviewed under the following headings and

then summarized:

- i. Small Group Organization, and
- ii. Individualized Reading Programs.

In this chapter certain trends in differentiating instruction will be noted. The various plans will be seen as falling somewhere on a continuum between two extremes. At one end there will be noted the rigidly set and regimented traditional curriculum used in American schools during the latter part of the nineteenth century and the early decades of the twentieth century. At the other end one will observe instruction exclusively on an individual basis. Between these two extremes there exists a variety of degrees of differentiated instruction. At the comparatively low level of differentiation there is stereotyped grouping, fixed ability grouping. Along a bit farther on this continuum grouping becomes more flexible at least in two areas, namely, reading and arithmetic. Finally, at a more advanced stage of differentiation, thorough flexibility is achieved within the framework of the class group through instruction in constantly changing small groups and through individual instruction.

1. Administrative Organization.

As early as 1862 a vigorous campaign began against the mechanized grade system or the lock step in education.³ From that time until the present, classroom organization has been a persistent and troublesome problem. Many and continuous attempts have been made throughout the years to meet this problem. Efforts to organize schools that would better provide for varying needs and capacities of pupils resulted in the advancement of several administrative innovations.

1. Individualized Instruction.

The Pueblo Plan originated by Search in 1888 was the first designed for individualizing instruction. Despite its short life span, it became the parent plan from which other programs were offshoots.⁴

Individual progress for each pupil was next championed by Burk in 1913 at San Francisco State Teachers College and

³ H. J. Otto, "Current Practices in the Organization of Elementary Schools", Northwestern University Contributions to Education, School of Education Series, No. 5, Evanston, Illinois, Northwestern University, 1932, p. 97.

⁴ -----, "Organization and Administration", in Encyclopedia of Educational Research, revised edition, edited by Walter S. Monroe, New York, Macmillan, 1950, p. 372.

became known under the nomenclature of "individualized instruction".⁵ Although born in California, Burk's idea of individual instruction was not given an opportunity to grow and flourish there. Its most extensive growth had taken place in Winnetka, Illinois, under the leadership of Washburne, and also in several elementary schools in Chicago under the direction of McDade.⁶ Briefly, the plan consists in devoting one half of each forenoon and afternoon to individual work in the common essentials and the other half of each session in group activities. By common essentials is meant those core curricular elements that all children are expected to master, for example, a certain speed and accuracy in arithmetic; the ability to use the common forms of punctuation and capitalization correctly; the ability to write legibly; the ability to read with comprehension; to spell most commonly used words; and to discuss intelligently the outstanding civic, social, and industrial problems confronting the American people.

The core curriculum is broken into units and each pupil works on a unit until he has achieved mastery.

⁵ W. W. Cox, "The Development of Public School Organization", in Review of Educational Research, Vol. 1, No. 3, 1931, p. 171.

⁶ C. W. Washburne, "Burk's Individual System as Developed at Winnetka", in the Twenty-Fourth Yearbook of the National Society for the Study of Education, Part II, Adapting the Schools to Individual Differences, Bloomington, Illinois, Public School Publishing Co., 1925, p. 79-82.

Group activity includes playground activities, appreciation of literature, music and art, assemblies, crafts, projects, dramatizations, and discussions.

Of all these subject areas, Washburne⁷ reported that reading is the most easily individualized above the first grade.

Washburne, Vogel, and Gray⁸ conducted a survey to determine the effectiveness of the training given under the individual instruction program at Winnetka. The items for study included age-grade census, academic achievement, time allotments, concentration of pupil attention, teacher load, financial aspects of the program, and the high school achievements of Winnetka graduates. Comparisons were made with three other school systems with similar items of data.

Washburne and Rath⁹ in another investigation studied the success in high school of Winnetka graduates. The general conclusion of both of these surveys has been that the students of Winnetka schools are doing work that is more efficient than

7 C. W. Washburne, Adjusting the School to the Child, New York, World Book, 1932, p. 110.

8 C. W. Washburne, M. Vogel, and W. S. Gray, A Survey of the Winnetka Public Schools; Results of Practical Experiments in Fitting Schools to Individuals, Bloomington, Illinois, Public School Publishing Co., 1926, p. vii-135.

9 C. W. Washburne and L. E. Rath, "The High-School Achievement of Children Trained Under the Individual Technique", Elementary School Journal, Vol. 28, No. 2, 1927, p. 223.

that done by comparable schools which use class methods of instruction.

The Winnetka Plan has been used most widely in the Winnetka schools. However, the extent to which it has been used elsewhere is reported by Otto.¹⁰ According to the results of a survey published in 1926 by the U.S. Bureau of Education, forty-three out of 280 superintendents indicated the use of the Winnetka Plan either in its entirety or some phase of it.

The Dalton Laboratory Plan, or Contract Plan, has been another adventure in school practice for individualizing and tailoring instruction to pupil needs.¹¹ This program, too, appears to be an offshoot of the Pueblo Plan mentioned earlier since individualization is its keynote.

In this plan there are no formal recitation periods. The classroom becomes a laboratory where contracts planned by each pupil with the teacher are worked out individually. The pupil is required to complete one unit of work or contract before he starts another.

10 H. J. Otto, "Organization and Administration", in Encyclopedia of Educational Research, Revised Edition, edited by Walter S. Monroe, New York, Macmillan, 1950, p. 375.

11 Helen Parkhurst, "The Dalton Laboratory Plan", in the Twenty-Fourth Yearbook of the National Society for the Study of Education, Part II, Adapting the Schools to Individual Differences, Bloomington, Public School Publishing Co., 1925, p. 83-94.

Included in the report by the U.S. Bureau of Education in 1926, and reported by Otto,¹² the survey showed that twenty-two systems in cities having a population of 10,000 or more were using the Dalton Plan or a modification of it.

Research has yet to provide a scientific evaluation of these administrative plans.

11. Ability Grouping.

By ability grouping is meant the division of pupils into class groups for instructional purposes either on the basis of general ability or on the basis of achievement in a particular subject area. Customarily pupils are divided according to the distribution of their intelligence quotients into three categories -- fast, average, and slow -- and an attempt is made to adapt instruction to the needs of each of these groups.

Teachers have always been aware of individual differences among school children, but the extent of these differences has been brought sharply into focus with the development and use of standardized tests. The testing movement brought about a change in educational policies and in the reorganization of the elementary school.

¹² H. J. Otto, "Organization and Administration", in Encyclopedia of Educational Research, Revised Edition, edited by Walter S. Monroe, New York, Macmillan, 1950, p. 375.

So much factual evidence has been accumulated that the principle of individual differences is no longer disputed.¹³ Cornell,¹⁴ for example, reported that a cross-section of seven-year-old school children ranged in educational grade from first to low sixth; ten-year-olds covered the entire range of elementary and high school years.

Studies of specific subject achievement have yielded similar results. Duffy and Durrell¹⁵ found achievement in reading to range from the first to the sixth grade in three third grade classes. Only thirty per cent of the group were reading at the third grade level, the grade in which they were actually placed.

Similar findings regarding wide differences in reading ability have been reported by Stone,¹⁶ Gray,¹⁷ Harris,¹⁸ Bond

¹³ Gertrude Hildreth, "Individual Differences", in the Encyclopedia of Educational Research, Revised Edition, edited by Walter S. Monroe, New York, Macmillan, 1950, p. 564-571.

¹⁴ E. L. Cornell, "The Variability of Children of Different Age and its Relation to School Classification and Grouping", Educational Research Studies, No. 1, Bulletin No. 1101, Albany, University of the State of New York, 1937, p. 67.

¹⁵ G. B. Duffy and D. D. Durrell, "Third Grade Difficulties in Oral Reading", Education, Vol. 56, No. 1, 1935, p. 37-40.

¹⁶ C. R. Stone, Better Advanced Reading, St. Louis, Webster, 1937, p. 20.

¹⁷ William S. Gray, "The Nature and Extent of the Reading Problem in American Education", Educational Record, Supplement No. 11, Vol. 19, 1938, p. 87-104.

¹⁸ Albert J. Harris, How to Increase Reading Ability, New York, Longmans, Green, 1940, p. 328-330.

and Handlan¹⁹ and others. All these investigators agreed unanimously that the average reading range in the intermediate grade classroom is five to seven years. Likewise, they concluded that the more effective the instruction, the more individual differences are provided for, the more heterogeneous instructional groups become. This range in reading ability, Bond and Handlan²⁰ stated, is not to be decried. The schools should serve to cultivate rather than to level these differences since society is enriched by the diversity of talents, interests, aptitudes, and skills of its people.

From these studies two generalizations can be stated: First, the higher the grade level, the greater the range of differences within a class. Second, the better the teaching-learning situation, the greater the range of individual differences becomes.

Ability grouping was the first major type of solution tried in order to reduce variability among pupils within the same grade. Rankin²¹ states that the practice of ability grouping was first widely used with the two extreme types of

19 Guy L. Bond and Bertha Handlan, Adapting Instruction in Reading to Individual Differences, No. 5, of the Series on Individualisation of Instruction, Minneapolis, University of Minnesota, 1948, p. 1-82.

20 Id., Ibid., p. 2.

21 P. T. Rankin, "Pupil Classification and Grouping", Review of Educational Research, Vol. 1, No. 3, 1931, p. 216.

pupils, namely, the lowest two per cent of the population and the top one or two per cent. No attempt will be made in this survey to review the literature concerning studies of the teaching of the mentally retarded in special classes or the gifted. Dealing with the range of intelligence between 70 and about 130, the first question raised is: To what extent is it possible to reduce the variability of instructional groups through grouping on the basis of some measure of general ability?

Hull²² reported an investigation which throws some light on this question. He found that the trait differences of the average pupil were approximately 80 per cent as great as the individual differences within the class. Considering the extent of trait differences within an individual, Hull concluded, that on the basis of general ability, grouping will only slightly reduce class variability.

Hollingshead²³ in his study of 425 pupils found similar results. In order to determine the extent to which variability of sixth-grade classes can be reduced by grouping on the basis of fifth-grade mental age, he classified these

22 C. L. Hull, "Variability in Amount of Different Traits Possessed by the Individual", Journal of Educational Psychology, Vol. 18, No. 2, 1927, p. 97-106.

23 A. D. Hollingshead, An Evaluation of the Use of Certain Educational and Mental Measurements for Purposes of Classification, Contributions to Education, No. 302, New York, Teachers College, Columbia University, 1928, p. vi-95.

pupils into X, Y, and Z groups, designating 20 per cent in the bright or X group, 60 per cent in the average or Y group, and 20 per cent in the slow or Z group. He found that the total range of 72 months in reading age was reduced to 40, 52, and 48 months for the X, Y, and Z groups respectively at the end of the fifth grade, and to 48, 64, and 60 months at the end of the sixth grade, or an average reduction of 20 per cent in the range of reading ability.

Burr²⁴ studied the test records of some 3400 pupils in fourth, fifth, and sixth grades grouped variously on the basis of mental age, educational age, and teacher judgment. The main purpose of his study was to determine to what extent X, Y, and Z grouping, on the basis of general ability, reduced the range of achievement in reading and arithmetic in instructional groups. He listed four significant findings and concluded that the problem of meeting the individual needs of children is only slightly reduced by ability grouping.

Since ability grouping has for its purpose the reduction of the range of abilities to facilitate adaptation of instruction, it seems logical to inquire into the effectiveness of such practice. Therefore, the second question that research has to answer relative to ability grouping is whether

²⁴ Marvin Y. Burr, A Study of Homogeneous Grouping, Contributions to Education, No. 457, New York, Teachers College, Columbia University, 1931, p. xii-119.

children achieve according to their abilities to a larger degree when they are thus grouped.

Much of the literature relating to this aspect of the problem limits itself to discussion on the relative advantages and disadvantages of ability grouping based on unscientific experimentation.

Keliher²⁵ has sharply challenged the assumptions underlying homogeneous grouping. She pointed out the dangers of such practice and emphasized strongly the specificity of children's abilities.

McGauphy²⁶ and Brink²⁷ have been severe critics of ability grouping and have presented strong arguments against it.

On the other hand, Otis,²⁸ Worlton²⁹ and Symonds³⁰ favored ability grouping. They claimed that there is ample

²⁵ Alice V. Keliher, "A Critical Study of Homogeneous Grouping", Teachers College Contributions to Education, No. 452, Teachers College, Columbia University, 1931, p. vi-165.

²⁶ J. R. McGauphy, "Homogeneous Grouping of Pupils", Childhood Education, Vol. 6, No. 6, 1930, p. 291-296.

²⁷ L. B. Brink, "The Fallacy of Ability Grouping", School and Society, Vol. 35, 1932, p. 427-429.

²⁸ A. S. Otis, "Fallacious Arguments Regarding Ability Grouping", Childhood Education, Vol. 8, No. 3, 1931, p. 171-180.

²⁹ J. T. Worlton, "The Why of Homogeneous Classification", Elementary School Journal, Vol. 27, No. 3, 1926, p. 265-274.

³⁰ P. M. Symonds, "Homogeneous Grouping", Teachers College Record, Vol. 32, No. 6, 1931, p. 501-517.

evidence that homogeneous grouping produce better learning results and that it does provide better for individual differences.

Turney³¹ in 1931 has summarized the findings of some sixty-six experimental studies on ability grouping and concluded that most of the studies have proved nothing regarding ability grouping, but have only added evidence with reference to the nature and extent of individual differences.

Rankin's conclusions of studies concerned with ability grouping reflect those of Turney. From the summaries of studies he concluded the following:

1. That the evidence slightly favors homogeneous grouping, as contrasted with heterogeneous grouping, particularly where adaptations of standards, materials, and methods are made.
2. That the evidence regarding the attitude of teachers toward homogeneous grouping is that most teachers prefer to work with homogeneous groups rather than with mixed groups.
3. That evidence regarding the relative merits of various bases of grouping is conflicting and inconclusive.
4. That the evidence regarding the relative merits of various types of adaptation of standards, materials, and methods is inadequate to form a judgment.
5. That the evidence indicates greatest relative effectiveness for dull children, next greatest for average children, and least (frequently harmful) for bright children.

31 A. H. Turney, "The Status of Ability Grouping", Educational Administration and Supervision, Vol. 17, Nos. 2 and 3, 1931, p. 21-42, 110-127.

6. That the evidence regarding the particular grade levels or subjects in which homogeneous grouping is particularly effective is inadequate to form a judgment.
7. That evidence regarding the effect of homogeneous grouping upon characteristics of pupils other than knowledges and skills is highly subjective and cannot be said to be conclusive.³²

In 1936 the National Society for the Study of Education published a report³³ in which a considerable amount of research evidence had been accumulated. The general conclusion reached in that yearbook was that ability grouping was not consistently superior to heterogeneous grouping, and that better methods of meeting the needs of individuals should be sought.

In summarizing the evidence on ability grouping up to 1950, Otto³⁴ commented on the conclusion drawn from the reports in the National Society for the Study of Education Yearbook. He pointed out that in most of the studies reported in that yearbook there had been difficulties in controlling important variables, and therefore it can hardly be said that ability

³² Paul T. Rankin, "Pupil Classification and Grouping", Review of Educational Research, Vol. 1, No. 3, 1931, p. 229.

³³ The National Society for the Study of Education, The Grouping of Pupils, the Thirty-Fifth Yearbook of the National Society for the Study of Education, Part I, Bloomington, Illinois, Public School Publishing Co., 1936, p. xii-378.

³⁴ H. J. Otto, "Organization and Administration", in Encyclopedia of Educational Research, Revised Edition, Edited by Walter S. Monroe, New York, Macmillan, 1950, p. 377-378.

grouping has been evaluated experimentally. He called attention to the fact that no data have been gathered during the past twenty years to show the extent to which ability grouping is practiced in elementary schools in America. No research studies on ability grouping have been reported during the past fifteen years.

As a result of these findings ability grouping declined in favor. Administrators and teachers directed their attention to another type of organization using reading test scores rather than I.Q., or mental age, as the basis for setting up classes within a school. Their effort found expression in mobility grouping, interclass grouping, or circling which suggests that the children of a school, or a particular segment of a school, move to classes on reading ability levels regardless of their grade placement. The plan calls for scheduling reading instruction within a school at the same hour. When the bell rings, each child goes to his reading teacher. At the end of the reading period he returns to his regular class. In such organization a poor reader in grade six might read with a fifth grade class, while a skilled fifth reader might move temporarily to join pupils in grade six or seven.

Cleveland Public Schools have experimented with this type of plan on a rather large scale. Favorable results in

terms of reading scores have been reported by white.³⁵ Certain limitations, however, were also indicated. Reading became somewhat sterile, a formal subject, and integration was lacking.

Carlson and Northrup's³⁶ findings verify those found in the Cleveland Schools. Barbe and Waterhouse³⁷ found corresponding results in a study with pupils of grades four, five, and six.

The findings of Russell,³⁸ on the other hand, are at variance with the above reports. Russell weighed this practice at the end of a two-year experiment in the intermediate grades in the San Francisco Public Schools and noted that standardized test results indicated no significant differences in terms of status or pupil achievement between "circling"

³⁵ M. L. White, "A Reading Program Organized by Reading Levels", in the Seventeenth Yearbook of the National Elementary School Principal, Newer Practices in Reading in the Elementary School, Bulletin of the Department of Elementary School Principal, Vol. 17, No. 7, 1938, p. 520-527.

³⁶ E. S. Carlson and J. Northrup, "An Experiment in Grouping Pupils for Instruction in Reading", in the Thirty-Fourth Yearbook of the National Elementary Principal, Reading for Today's Children, Bulletin of the Department of Elementary School Principal, Vol. 35, No. 1, 1955, p. 53-57.

³⁷ W. B. Barbe and T. S. Waterhouse, "An Experimental Program in Reading", Elementary English, Vol. 33, No. 5, 1956, p. 102-104.

³⁸ D. H. Russell, "Interclass Grouping for Reading in the Intermediate Grades", Journal of Educational Research, Vol. 39, No. 8, 1946, p. 462-470.

and "noncircling" groups. He further pointed out that such system of interclass grouping could not be defended on the grounds of improved achievement and that there were evident social and psychological disadvantages.

White's study³⁹ confirmed Russell's conclusions. Achievement scores in reading were somewhat above expected growth, but the disadvantages of the plan outnumbered the advantages.

The most recent study of interclass grouping for reading instruction has been reported by Bernard.⁴⁰ Pupils of grades six, seven, and eight were divided into nine reading groups with reading grades ranging from 1.7 to 2.4 in the lowest group of 25 pupils to 7.0 and up in the highest group of 40 pupils. After a three-year experimental program, the median reading score of eighth grade graduates has been raised from 6.3 to 8.3. This median reading score has remained relatively constant for the last two years. In evaluating the program nine advantages have been listed.

Conclusive evidence regarding the desirability of interclass grouping has yet to be discovered.

³⁹ Robert White, A Study in Ability Grouping in the Intermediate Grades for Instruction in Reading, Master's thesis, Berkeley, University of California, 1954, p. 77.

⁴⁰ Mary J. Bernard, "Homogeneous Grouping for Reading Instruction", Chicago Schools Journal, Vol. 40, No. 3, 1958, p. 135-139.

iii. Ungraded Elementary Classes.

Still another type of administrative plan designed with a view to meet the child where he is and allow for free and easy shifting from room to room, or from group to group, is the ungrading of the elementary school and promoting by reading levels. This plan is based on the assumption that individual pupils develop and learn at different rates.

The purpose of using levels instead of grades is to enable the teacher to fit more precisely both reading materials and reading instruction to the level at which children actually are. The course of study is ungraded and organized in such a way that any pupil or group of pupils can pass from one level to the next as soon as the required work has been completed.

Buckalew and Maxwell⁴¹ described the plan as it is used in the Fresno City Schools. The curriculum for the six grades has been divided into twenty-one reading levels. If a child's rate of progress is slow, he may spend an extra year in a particular classroom, but he moves on from one reading level to the next in a continuous manner regardless of his classroom placement.

⁴¹ H. L. Buckalew and M. B. Maxwell, "Reading Levels Promote Flexibility", in the Thirty-Fourth Yearbook of the National Elementary School Principal, Reading for Today's Children, Bulletin of the Department of Elementary School Principal, Vol. 35, No. 1, 1955, p. 63-66.

St. Louis Archdiocesan School System⁴² follows a similar plan, but only in the primary grades where children progress through eight levels.

DeLong⁴³ and his staff developed a flexible plan for promotion by reading levels in the first two grades. A somewhat similar program in the first three grades has been reported by Wheat.⁴⁴ Within each class three sub-groups have been organized to allow closer attention to individual needs.

Goodlad⁴⁵ in a two-part report accounts for sixteen schools which have an ungraded plan in the primary grades and Anderson⁴⁶ reported on ungraded classes in Park Forest, Illinois, and in Milwaukee schools.

The absence of satisfactory comparative research in this whole area makes it impossible to draw any conclusions as to the effectiveness of such plan.

⁴² J. E. Heflich, Primary Program Policies in Reading for the Primary School of the Archdiocese of Saint Louis, St. Louis, Parish School Office, 1956, p. vi-26.

⁴³ Vaughn R. DeLong, "Primary Promotion by Reading Levels", Elementary School Journal, Vol. 38, No. 9, 1938, p. 663-671.

⁴⁴ L. B. Wheat, "The Flexible Progress Group System", Elementary School Journal, Vol. 38, No. 2, 1937, p. 175-183.

⁴⁵ J. Goodlad, "Ungrading the Elementary Grades", National Education Association Journal, Vol. 44, No. 3 and 5, 1955, p. 170-171, 295-296.

⁴⁶ R. H. Anderson, "Ungraded Primary Classes", Understanding the Child, Vol. 24, No. 3, 1955, p. 65-72.

The three administrative organizational plans just discussed: individualized instruction, ability grouping, and ungraded elementary classes, are types of plans calling for the reorganization of the entire school.

From the foregoing studies and trends, it is evident that educators have not as yet by means of research been very effective in translating into classroom practice our current knowledge of the need for providing for individual differences. Although great efforts have been made, yet this field is still full of controversy, unanswered questions, and practice based on expert opinion and tradition rather than on objective studies.

Administrative policies have their place and must be established to make the differentiation of instruction possible, however, differentiated instruction is, in reality, put into effect by teachers in a variety of ways depending upon the individual pupils with varying capacities, needs, and interests. There apparently are no blueprints for grouping that can be applied to every classroom situation in exactly the same way. Melby⁴⁷, after studying the changes in organization, administration, and supervision occurring in the elementary school, concluded that the important decisions in education must be

⁴⁷ E. O. Melby, "Changes in Organization, Administration, and Supervision", The Application of Research Findings to Current Educational Practices, Official Report of 1935 Meeting, Washington, National Education Association, 1935, p. 162-164.

made in individual classrooms by individual teachers with reference to individual children from day to day.

Regardless of administrative efforts to lessen the range of individual differences in the classroom, the teacher is the keynote of any plan. Grouping pupils merely paves the way for a better adaptation of learning experiences to the needs of the pupils. How effective that adaptation becomes will depend to a great extent upon the teacher more than upon any other single factor. In this connection Bett states:

One of the 'secrets' of successful differentiated guidance is the teacher's administrative ability. . . . The administrator can make plans; the supervisors can conduct reading meetings, workshops, and demonstrations; the reading specialist can give his best lecture -- but the final test of theories and plans takes place in the classroom.⁴⁸

In the second part of this chapter, grouping within the classroom by the teacher will be considered.

2. Classroom Organization.

In the preceding section, attention was focused on school organization for greater efficiency in instruction. But it is apparent that even when efforts have been made to group together pupils of similar intelligence or reading ability to lessen the range of individual differences in a

⁴⁸ E. A. Betts, "Approaches to Differentiated Guidance in Reading", Education, Vol. 70, No. 9, p. 592.

classroom, there still remains the task for providing for each pupil the quantity and quality of reading instruction adapted to his abilities, needs, and interests. Literature is profuse with discussions about small group organization for the purpose of instruction, but little controlled experimentation has been conducted to discover the relative merits of the procedure.

Two aspects of classroom organization with respect to the teaching of reading will be explored: (1) small group organization; and (2) individualized reading programs in a self-contained classroom.

1. Small Group Organization.

In the section on ability grouping presented earlier, studies reviewed presupposed an entire class classified either as bright, average, or slow -- a practice possible only in large schools where there are several classes of the same grade. A modification of this procedure consists in the formation of ability groups within a single classroom, and these may vary from subject to subject.

Wilson,⁴⁹ Hildreth,⁵⁰ and Heyl⁵¹ describe variations of ability grouping within the regular instructional unit, the class.

Martin⁵² in a controlled experiment found that it is to the advantage of a superior child to be in an ability group with other superior children; to the average child to be in a non-ability group; and to the slow child to be in an ability group.

The undesirable feature of ability grouping within a classroom has been the tendency on the part of the teacher to keep the same children within the same groups for all activities. Such teachers fail to recognize the fact that there are irregularities in the degree to which an individual possesses various traits or abilities.

⁴⁹ Mary C. Wilson, "The Teacher's Problems in a Differentiated Reading Program", Elementary English, Vol. 24, No. 5, 1947, p. 77-85, 118.

⁵⁰ G. Hildreth, "Individualizing Reading Instruction", Teachers College Record, Vol. 42, No. 2, 1940, p. 123-137.

⁵¹ Helen H. Heyl, "Grouping Within the Classroom", in the Thirty-Fourth Yearbook of the National Elementary School Principal, Reading for Today's Children, Bulletin of the Department of Elementary School Principal, Vol. 35, No. 1, 1955, p. 83-86.

⁵² W. Martin, The Results of Homogeneous Grouping in the Junior High School, unpublished Doctor's thesis, Connecticut, Yale University, 1927, p. 129.

Kvaraceus and Wiles⁵³ designed an experiment to overcome such weakness. With the introduction of flexibility in grouping objective data indicated that more than the average amount of pupil growth was made during one school term in reading, English, and arithmetic. Because of the nine possible groups, the learner was more often met at his own ability and achievement level in each subject than by any other method known to the investigators.

A study of the literature reveals that rigid plans of ability grouping have given precedence to more flexible approaches. The basis of grouping depends upon the needs of the pupils within the class.

Shields⁵⁴ reported an evaluation of four ability groups in reading within one classroom as compared with unsegregated groups in another school. His findings favored the grouped class. Experimental subjects who were above average in I.Q. gained more than their controls. The same was true in the case of those below average in I.Q. and chronological age; but there was little difference between those of average I.Q. and chronological age.

⁵³ W. C. Kvaraceus and M. E. Wiles, "An Experiment in Grouping for Effective Learning", Elementary School Journal, Vol. 39, No. 4, 1938, p. 264-268.

⁵⁴ J. M. Shields, "Teaching Reading Through Ability Grouping", Journal of Educational Method, Vol. 7, No. 1, 1927, p. 7-10.

As yet there is little evidence from scientific experimentation that indicates the best approach to grouping within the classroom for instructional purposes. If the principle of individual differences is understood correctly, then in all probability there is no one best approach. Different situations require different solutions. Harris⁵⁵ drew attention to the fact that, in the search for better ways of providing for individual differences, we have learned that there is no magic cure-all. He based his conclusion on the comparison of the two yearbooks of the Department of Elementary School Principal of the National Education Association.^{56,57} Although published eighteen years apart, the chapters on school organization for better reading instruction are strikingly similar. In both volumes research has taken the same direction -- descriptions of homogeneous grouping, reclassification into homogeneous classes for reading only, ungraded elementary classes, subgrouping within the classroom, and highly individualized reading programs. Unfortunately, however, the recent

⁵⁵ Albert J. Harris, "Grouping and Promotion in Relation to Progress in Reading", Better Readers for Our Times, International Reading Association Conference Proceedings, Vol. 1, 1956, p. 72.

⁵⁶ Seventeenth Yearbook of the National Elementary School Principal, Newer Practices in Reading in the Elementary School, Bulletin of the Department of Elementary School Principal, Vol. 17, No. 7, 1938, p. 225-557.

⁵⁷ Thirty-Fourth Yearbook of the National Elementary School Principal, Reading for Today's Children, Bulletin of the Department of Elementary School Principal, Vol. 35, No. 1, 1955, p. x-278.

of the two yearbooks provides no evidence as to the relative merits of the various plans. There is considerable agreement that some type of grouping for reading instruction is necessary if each child is to reach optimum growth. Nevertheless, there is less agreement regarding the form grouping for reading instruction should take. From the literature one can discern a trend toward a combination of individualized, group, and whole-class instruction.

The conviction that schools must increasingly provide for differentiated instruction and progress in reading has been steadily strengthened as has been apparent throughout the past thirty-five years. The search for better reading procedures continues.

11. Individualized Reading Programs.

The age-old problem -- what patterns of grouping are most conducive to reading growth has been by no means solved. It still stands high on the roster of topics for consideration by educators. Throughout the years research studies, concerned with classroom organization for effective teaching, have indicated that grouping on the basis of reading needs merely simplifies the problem of providing for individual differences; it does not eliminate it. Therefore, even with small group instruction the differences in ability and achievement among children are still not met adequately. That teachers

are cognizant of this fact is demonstrated by the many reports of the teaching of reading on an individualized basis which have been appearing in professional publications especially during the past ten years.

Before reporting the experimentation in this particular area of reading, it seems advisable to clarify what is meant by the term "individualized reading" and present the underlying basic premises upon which the program has been developed.

The term "individualized reading", according to Lazar,⁵⁸ is not altogether satisfactory a term since it may be interpreted to mean that there is never opportunity for group or class teaching and sharing. She describes individualized reading as a way of thinking about reading which involves newer concepts concerned with class organization, materials, and the approach to the individual child. It is a type of program which provides the child with an environment which stimulates exploration, and which provides guidance which permits him to develop at his own rate.

The underlying basic premises of an individualized reading program advanced by its proponents are: (1) Reading is a matter individual to each child; (2) A child should have the opportunity to proceed at his own rate; (3) The reading

⁵⁸ M. Lazar, "Individualized Reading: A Dynamic Approach", The Reading Teacher, Vol. 11, No. 2, 1957, p. 75-83.

experiences should eliminate comparisons with others;

(4) The level of the reader or reading material should be subordinate to the act of enjoyment of reading itself;

(5) Allowing a child some freedom of choice in selection of his reading materials will develop real purpose for reading;

(6) Instruction in reading and reading itself are constantly interwoven.⁵⁹

One of the issues widely discussed today relates to the advisability of the sole use of an individualized reading program in place of the prevailing pattern of basal reading instruction. Gray,⁶⁰ in discussing this problem, stated that perhaps the conclusion reached by Wrightstone concerning the merits of using experience records or basal readers in teaching beginning reading is applicable here.

The evidence from research indicates that the real issue is not which of the two procedures. . . is the better, but rather what is the role of each in contributing to more effective pupil development in reading.⁶¹

⁵⁹ M. Lazar, "Individualized Reading", Education, Vol. 78, No. 5, 1958, p. 281-288.

⁶⁰ William S. Gray, "Role of Group and Individualized Teaching in a Sound Reading Program", The Reading Teacher, Vol. 11, No. 2, 1957, p. 99-104.

⁶¹ J. W. Wrightstone, "Research Related to Experience Records and Basal Readers", The Reading Teacher, Vol. 5, No. 1, 1951, p. 5-6.

This point of view is likewise held by Harris⁶² and also by Strang.⁶³

Many exponents of the individualized reading program accept Olson's⁶⁴ three concepts -- seeking, self-selection, and pacing -- growing out of his studies of the nature of growth, behavior, and achievement and tie them up with reading. Olson contends that the healthy child is continually exploring his environment and seeking experiences which fit in with his growth and needs. These seeking tendencies and self-selection of stimulating material in the environment are basic to learning. He states further that pacing is the teacher's responsibility for providing each child with the materials and experiences at a tempo that insures success at his stage of maturity.

62 A. J. Harris, "Grouping and Promotion in Relation to Progress in Reading", Better Readers for Our Times, International Reading Association Conference Proceedings, Vol. I, 1956, p. 69-73.

63 Ruth Strang, "Individualizing Instruction for the Able Learners", Education, Vol. 1, 1958, p. 53-56.

64 W. C. Olson, "Seeking, Self-Selection, and Pacing in the Use of Books by Children", The Packet, Vol. 7, No. 1, 1952, p. 3-10.

Lazar,⁶⁵ Veatch,⁶⁶ Garrettson,⁶⁷ Hester,⁶⁸ and many others agree that individual reading is the type of program which best fits these three concepts. They claim that such outlook on reading will help teachers provide the child with a lush environment which stimulates exploration, with opportunities for choosing materials which appeal to him, and with guidance which permits him to develop at his own rate. This is one of the basic viewpoints in reading today, namely, reading from child growth and development point of view.⁶⁹ It is based on the assumption that reading cannot be divorced from other fundamental aspects of growing up.

Some of the earlier studies related to the individualized reading program are those referred to generally as free reading program. These varied in the amount of time given to silent reading of self-selected books and group and class work. Examples of accounts of such experiments on the

⁶⁵ M. Lazar, "Individualizing Reading: A Dynamic Approach", The Reading Teacher, Vol. 11, No. 2, 1957, p. 76-83.

⁶⁶ J. Veatch, "Children's Interests and Individual Reading", The Reading Teacher, Vol. 10, No. 3, 1957, p. 160-165.

⁶⁷ G. Garrettson, "Through Self-Selection -- Progress Unlimited", Reading, Bulletin No. 98, Association for Childhood Education International, Washington, D.C., 1956, p. 23-27.

⁶⁸ Kathleen Hester, "Every Child Reads Successfully in a Multi-Level Program", Elementary School Journal, Vol. 53, No. 1, 1952, p. 86-89.

⁶⁹ Willard C. Olson, "Basic Views -- Child Growth and Development", Reading, Bulletin No. 98, Association for Childhood Education International, Washington, D.C., 1956, p. 2-5.

elementary school level are those of Dean,⁷⁰ Boney and Leman.⁷¹ Dean has shown that in the elementary school gains resulting from individual reading are comparable to those resulting from class instruction. Boney observed that children who read from related texts, such as preprimers and primers of a single series, do not grow into better readers than those who gained their beginning reading experience from a variety of easy books that had a greater number of new words.

During the past ten years individualized reading programs have been receiving increasingly popular approval. Professional journals are replete with descriptions of class experiments and benefits accruing therefrom, but most of these reports do not meet the requirements of acceptable experimental research. A great bulk of the literature is an expression of opinion rather than validated facts. Attempts to evaluate the program under carefully controlled conditions have been few.

Karr⁷² reported the results of an experiment in which third grade classes in one California school system were exposed to individual reading. At the end of a six month

⁷⁰ R. Dean, "A Plan for Individualized Reading in the Intermediate Grades", National Elementary School Principal, Vol. 17, No. 7, 1938, p. 557-563.

⁷¹ C. DeW. Boney and E. Leman, "Individuality in Beginning Reading", Education, Vol. 59, No. 1, 1938, p. 17-20.

⁷² Harold Karr, "An Experiment with an Individualized Method of Teaching Reading", The Reading Teacher, Vol. 7, No. 3, 1954, p. 174-177.

period these children were compared with another group in a different California community. Testing results showed slightly greater gains in vocabulary and comprehension in favor of the children who participated in group procedures.

Walker⁷³ reported an experiment in which two groups of children matched for reading ability, I.Q., and socio-economic status were taught by student teachers under the supervision of critic teachers. The basal-reader approach was followed by one group while the other engaged in individualized reading. There were no significant differences found between the two groups in reading gains. However, it was reported that children in the individualized reading group showed greater interest in reading and read more books than the children in the basal-reader group.

Anderson⁷⁴ compared the results of an individualized reading program carried out at the University of Michigan demonstration school over a period of six years with a basal-reader approach program used in Ann Arbor Public Schools. At the end of the primary grades the basal-reader group scored significantly better despite an I.Q. averaging ten points

73 Clare Walker, An Evaluation of Two Programs of Reading in Grades Four, Five, and Six of the Elementary School, unpublished doctoral thesis, New York, School of Education, New York University, 1957.

74 I. Anderson, "The Relationship Between Reading Achievement and the Method of Teaching Reading", School of Education Bulletin, University of Michigan, Vol. 27, April 1956, p. 104-108.

lower than the average I.Q. of the pupils in the demonstration school. At the end of grade 6, the group following the individualized reading program seemed to show some superiority over the basal-reader group. The same test, however, was not used for both groups.

It is obvious that no real conclusions may be drawn from the above three studies since all three suffer from a lack of controls over important variables which can influence outcomes.

During the school year September 1956 - June 1957, a survey⁷⁵ was conducted in the New York City Schools to study individualized reading in action and to gather information concerning the understanding of the approach on the part of the school personnel participating, the problems encountered, and the reactions to it. The seventy classes visited represented a rough sampling of the city schools and population. Of these, forty-six were studied intensively. According to the tentative report, the findings favor the program. It has been well understood; values of the approach were well recognized and appreciated; basic reading skills were developed with greater insight than before; interest in reading has been greater; children were showing definite growth in reading as judged by discussions in sharing sessions, and finally there

⁷⁵ M. Lazar, "What a Special Survey in New York City Revealed About Individualized Reading", The Reading Teacher, Vol. 11, No. 2, 1957, p. 79-81.

was definitely more integration of the curriculum. For the purpose of evaluating the program various methods, both formal and informal, were used but none were described definitely.

The reports of Jenkins⁷⁶ on the individualized reading programs, conducted in three California schools, appear to be in harmony with those of the New York survey. The results given in terms of standardized reading test scores indicate that there is enough merit in the program to warrant further study and experimentation.

Another study conducted in California and reported by Sharpe⁷⁷ showed unusually great gains made during a three-month period by two second grade classes, a total of sixty-five children, in reading comprehension and vocabulary as measured by Gates Reading Test. The program consisted of a combination of the basal-reader approach and individualized reading. Two days per week were devoted to basal readers; on the other three days, during the reading period, the children read library books and supplementary readers. In reading comprehension the median increase for the best readers was six months in a three-month period; the poorest readers made an average gain of four months; the middle group made

⁷⁶ Marian Jenkins, "Self-Selection in Reading", The Reading Teacher, Vol. 11, No. 2, p. 84-90.

⁷⁷ Maida W. Sharpe, "An Individualized Reading Program", Elementary English, Vol. 35, No. 8, p. 507-512.

a gain of ten months. In vocabulary the best readers made an average gain of fourteen months; the poorest readers one month, and the middle group an average gain of eight months. There were no control groups in this experiment.

The greatest difficulty encountered in the carrying out of an individualized reading program has been the procurement of appropriate reading materials. In the experiments reported above although classes were supplied with forty to fifty books at a time from public libraries, yet the situation posed a problem since for a well functioning individualized reading program there is need not only of a wide range of reading materials, but also well graded materials which will provide carefully planned learning experiences. A certain continuity and sequence are essential in instructional materials so that each experience not only builds on, but goes beyond previous experiences in order to require higher levels of skill or a broader and deeper understanding.

Parker,⁷⁸ basing his assumptions on what is known of intelligence, child development, learning theory, and reading instruction, designed multi-level reading materials for individualized instruction in the regular classroom for use with slow, average, superior, and gifted students in junior and

⁷⁸ Donald H. Parker, Improving Reading and Study Skills in Secondary Schools Through Greater Individuation of Instruction by the Use of Multi-level Materials, Doctoral thesis, Teachers College, Columbia University, 1957, p. viii-172.

senior high school. This type of instruction is intended to enable each student to begin at a level on which he can experience success and progress through successive levels as fast and as far as his learning rate and capacity allow him.

Encouraged by Strang who became his adviser, Parker put these reading materials to a test in a carefully controlled experiment with fifteen teachers and 415 seventh grade students in five schools. One hundred thirty students whose instruction in reading and study skills improvement was individualized by the multi-level method made statistically significant gains over a matched group instructed with a single level of materials. One-level students gained no more than a matched group whose program included no special emphasis on reading improvement.

At the termination of the eleven week experiment California Reading Achievement test results showed bright students averaging a gain of ten months; slower students gained eighteen months.

Another collection of carefully graded reading materials intended to provide individualized reading instruction for pupils in grades four, five, and six, and ranging in difficulty from grades two through nine has been devised by Parker and his collaborators⁷⁹ and published by Science

⁷⁹ D. H. Parker, et al., SRA Reading Laboratory Elementary Edition Teacher's Handbook, Chicago, Science Research Associates, 1958, p. vii-70.

Research Associates in September, 1958. There remains the need for experimental evidence relating to the effect of a multi-level reading approach utilizing Parker's individualized reading materials and laboratory technique with pupils on the intermediate grade level.

The question whether pupils receiving a similar amount of attention to reading improvement, but using the multi-level laboratory approach rather than the conventional one-level approach, make similar gains in reading is one for which an answer had been sought. Another question to be answered was whether or not the two approaches to reading have the same relative effects at three grade levels, four, five, and six. A third question was, what effect does each of these approaches have on pupils of three levels of intelligence, namely, the upper third, the middle third, and the lower third at each of the intermediate grade levels. This experiment has been an attempt to find answers to these questions.

The hypotheses to be tested have been stated in negative form, thus:

1. In Grades Four, Five, and Six there is no significant difference in total reading performance as measured by a standardized reading achievement test between pupils using the multi-level instructional materials and the laboratory approach and the pupils using the conventional one-level instructional materials approach.
2. In Grades Four, Five, and Six there is no significant difference in comprehension as measured by a standardized reading achievement test between pupils using the multi-level instructional materials and the laboratory approach and the pupils using the conventional one-level instructional materials approach.
3. In Grades Four, Five, and Six there is no significant difference in vocabulary growth as measured by a standardized reading achievement test between pupils using the multi-level instructional materials and the laboratory approach and the pupils using the conventional one-level instructional materials approach.
4. The relative effectiveness of the multi-level approach to reading does not depend upon the grade level at which it is used.
5. The relative effectiveness of the multi-level approach to reading does not depend upon the level of intelligence of pupils in the Fourth Grade.
6. The relative effectiveness of the multi-level approach to reading does not depend upon the level of intelligence of pupils in the Fifth Grade.
7. The relative effectiveness of the multi-level approach to reading does not depend upon the level of intelligence of pupils in the Sixth Grade.

It will be the purpose of the following chapter to describe the experimental procedure used in testing the hypotheses set forth.

Summary.

The first section of this chapter dealt with administrative plans for individualization of instruction. It had been pointed out that to trace the genesis of an individualized reading program it was necessary to look back to the various policies and practices set up by administrative bodies for the purpose of individualizing education in general, since these had a definite bearing on the teacher's approach to differentiating instruction in particular areas especially reading.

When classroom teachers began to find wide variations among pupils in spite of the fact that they had been administratively grouped into grades according to chronological age, administrators were forced to turn their attention toward refining still further their procedures for meeting individual differences in the needs of pupils. Approaches varied with schools of thought influenced by rapid advances in the field of psychology.

Three types of plans utilized by administrators in their attempt to meet individual differences were: individualization of instruction, ability grouping, and ungraded elementary classrooms.

Individualization of instruction through laboratory methods were set up by Search in Colorado as early as 1888,

followed by Burk in San Francisco in 1913, then by Washburne in Winnetka in 1919, and by Parkhurst in Dalton in 1920.

Homogeneous ability grouping by classrooms was another approach used by administrators to classify pupils into different groups to reduce variability and in this way facilitate adaptation of instruction. This arrangement of classes swept the country in the early 1920's through the 1930's.

Homogeneous grouping by reading achievement, referred to as mobility grouping, was next put into practice especially by the larger schools.

A third type of administrative plan discussed was the ungraded elementary school where pupils are promoted by reading levels. An evaluation of all these plans has been presented in terms of research findings.

The second section treated of structural organization within a self-contained classroom for meeting the needs of individuals. It had been noted that the theory of individual differences to which lip service has been paid for such long time has been accepted in practice as evidenced at least in one area - reading.

In this section, the discussion was centered on two ways of meeting the needs of the child in reading through small group organization and individualized reading programs. Again it was reported that the most common way of grouping

pupils for instruction in the various subjects, among them reading, was on the basis of achievement only. Later, however, flexibility in grouping was recognized. Grouping depended upon several different factors, such as, needs, interests, and attitudes.

Dissatisfaction with the outcomes of reading instruction has led some teachers to look for other approaches to the teaching of reading. One solution seemed to be the individualized reading program. Much of the literature available on this topic, however, was reported as an expression of opinion rather than validated facts. Attempts to evaluate the program scientifically have been few.

The third part of the chapter dealt with the problem of appropriate material necessary for an individualized reading program. From this discussion there evolved the propositions for this experimental study.

There now remains the need for describing the experimental procedures relating to this proposed experiment. This information is outlined in Chapter II.

CHAPTER II

THE RESEARCH DESIGN

The broad purpose of this study as stated in the previous chapter has been to evaluate experimentally the relative effectiveness of a multi-level approach to reading in Grades Four, Five, and Six, using the elementary edition of the SRA Reading Laboratory materials and technique as compared with a one-level basal reading approach. The more specific questions which the investigation had sought to answer have been:

- (1) Would the pupils exposed to the multi-level reading program make similar gains in reading as those exposed to a one-level reading program?
- (2) At which intermediate grade is the multi-level reading program most effective?
- (3) Is the multi-level reading approach equally effective for pupils at all levels of intelligence in the fourth grade?
- (4) Is the multi-level reading approach equally effective for pupils at all levels of intelligence in the Fifth grade?
- (5) Is the multi-level reading approach equally effective for pupils at all levels of intelligence in the Sixth grade?

In this experiment a "treatments by levels" design was employed such as that described by Lindquist.¹ The treatments were the two methods of teaching reading: one group, designated as the control group, pursued the conventional one-

¹ E. F. Lindquist, Design and Analysis of Experiments in Psychology and Education, Boston, Houghton Mifflin, 1953, p. 13-16.

level reading approach; the other group, designated as the experimental group, followed the multi-level reading approach. Both of these approaches are described in Chapter III. The levels were the three intermediate grades: Four, Five, and Six, within each of which were three types of pupils, those of the upper, middle, and lower thirds of mental ability, as determined by the Otis Quick-Scoring Mental Ability Beta Test.²

1. Sample Selection and Description.

In seeking answers to the questions proposed for this study, the experimenter enlisted the cooperation of the following people: the Superintendent of the Chicago Archdiocesan Schools, the Archdiocesan Reading Consultant, the Community Reading Consultant, two general subject supervisors, twelve building principals, and seventy-two teachers.

The subjects for this experiment were approximately 3600 pupils of seventy-two classes -- twenty-four each of Grades Four, Five, and Six -- from twelve schools of the Parochial School System in the Chicago area.

Selection of schools depended upon several factors:

- (1) necessary cooperation of principals and teachers,
- (2) parallel grades at each intermediate grade level in order to have a control and experimental class in each school, and

² Arthur S. Otis, Otis Quick-Scoring Mental Ability Beta Test, Form Em, Yonkers-on-Hudson, World Book, 1954.

(3) the purchasing of the rather expensive SRA Reading Laboratory materials for each of the three experimental classes in each school.

Nineteen schools satisfying these conditions were accessible to the experimenter. They have been assumed to be approximately representative of the Parochial Schools of the Chicago area with reference to administrative, organizational, and supervisory policies. None of these schools were characterized by marked differences in environmental and cultural patterns. From the list of these nineteen schools, twelve were selected at random.

Representativeness of the sample was of major concern since the derivations of the formulae and statistical techniques to be used involve the assumption of random selection. In order to reduce the variance in mean ability from experimental to control class in each school at each grade level, some reorganization of classes was deemed necessary. Lindquist³ states that the most effective way to reduce the variance between classes is by matching the classes in each school separately on the basis of some initial measure of ability. Therefore, in this study, the classes were matched with reference to mental ability.

³ E. F. Lindquist, Statistical Analysis in Educational Research, Boston, Houghton Mifflin, 1940, p. 128.

In September 1958, during the first week of school, the Otis Quick-Scoring Mental Ability, Beta Test, Form Em,⁴ which will be described later in this chapter, was administered to all the pupils in the Fourth, Fifth, and Sixth grades in all the twelve schools. On the basis of the results of this test within each grade, the pupils were divided into three groups, the upper, middle, and lower thirds. By means of a table of random numbers, 20 pupils were randomly selected from each of these thirds, and from these 20 pupils two groups of 10 pupils were formed in each third. The matching was not done on a pupil-to-pupil basis, but rather pupils were so matched as to make the means within each group at each level as nearly alike as possible. Each class participating in this experiment then consisted of 30 pupils, ten in the upper third, ten in the middle third, and ten in the lower third with reference to intelligence. The other pupils, not randomly selected but yet a part of the grade, were evenly divided between the two classes at each grade level.

The next step was to randomize the two classes within each grade as to treatments. To further eliminate any possibility of bias, teachers were randomized with reference to class assignments. The reorganization of pupils and teachers was complete by the third Monday of September 1958, and the

⁴ Arthur S. Otis, Otis Quick-Scoring Mental Ability, Beta Test, Form Em, Yonkers-on-Hudson, World Book, 1954.

experiment was launched a week later. Obviously, the co-operation of every participating principal and teacher was most necessary in this project.

The above procedure, resulting in a controlled sample involving random selection, made the control and experimental classes within each school more nearly alike in mean ability than simple randomized classes would be. Such procedure was deemed necessary in order to determine the effect the methods might have on the three types of pupils within each class.

As a result of randomizing pupils in such fashion, the number of experimental subjects had been reduced to 2160, that is 30 pupils in 72 classes. No teacher, however, was aware that only 30 pupils' test results were to be considered in this experiment, nor was any teacher informed about the particular design used. Every child in the class was exposed to the randomly assigned method for his class and to the initial and final testing program. The groupings were only the investigator's stencil for the sampling.

The mean IQ for the upper, the middle, and the lower thirds of each experimental and control group in Grade Four, as well as the mean IQ for each entire class are given in Table I. The same data for Grades Five and Six respectively are given in the two subsequent Tables, II and III.

Table I.-

Mean IQ's^a of Groups and Subgroups of 12 Fourth Grades of
Chicago Parochial Schools, September 1958.

Schools	Experimental Group				Control Group			
	Upper N:10	Middle N:10	Lower N:10	Total N:30	Upper N:10	Middle N:10	Lower N:10	Total N:30
1	116.3	106.2	94.7	105.7	115.5	105.6	95.9	105.7
2	116.3	106.7	94.5	105.8	118.2	105.1	94.7	106.0
3	115.3	104.4	95.8	105.2	116.4	105.8	94.4	105.5
4	115.8	106.9	95.9	106.2	116.2	106.2	97.4	106.6
5	114.3	104.0	92.8	103.7	116.0	107.0	96.8	106.6
6	114.9	105.7	93.4	104.7	117.0	105.9	99.0	107.3
7	116.5	106.9	97.1	106.8	116.8	105.3	97.4	106.5
8	116.1	105.1	95.3	105.5	116.2	106.0	96.5	106.2
9	119.2	105.3	92.3	105.6	119.7	107.6	96.9	108.1
10	118.7	105.7	96.6	107.0	116.1	107.3	96.9	106.8
11	117.7	108.4	95.3	107.1	118.3	107.4	94.6	106.8
12	113.8	107.3	97.2	106.1	115.7	107.1	95.7	106.2

^a With Otis Quick-Scoring Mental Ability, Beta Test.

Table II.-

Mean IQ's of Groups and Subgroups of 12 Fifth Grades of
Chicago Parochial Schools, September 1958.

Schools	Experimental Group				Control Group			
	Upper N:10	Middle N:10	Lower N:10	Total N:30	Upper N:10	Middle N:10	Lower N:10	Total N:30
1	117.9	108.1	96.9	107.6	118.7	106.3	93.6	106.2
2	116.5	107.8	93.7	106.0	117.4	106.2	97.0	106.9
3	114.7	105.6	94.7	105.0	115.7	105.5	95.0	105.4
4	115.5	105.6	94.6	105.2	116.0	105.3	95.5	105.6
5	115.7	108.2	99.5	107.8	115.7	104.6	94.6	105.0
6	118.4	107.0	97.9	107.8	118.5	107.9	94.4	106.9
7	117.1	106.7	94.2	106.0	117.2	106.7	97.2	107.0
8	117.7	105.1	96.8	106.5	118.9	107.9	97.7	108.2
9	117.1	107.1	99.2	107.8	117.2	107.2	97.1	107.2
10	117.5	105.8	98.5	107.3	118.9	107.1	94.9	107.0
11	118.6	108.4	98.3	108.4	117.1	105.9	95.3	106.1
12	118.8	104.2	94.0	105.7	118.4	108.6	98.8	108.6

Table III.-

Mean IQ's of Groups and Subgroups of 12 Sixth Grades of
Chicago Parochial Schools, September 1958.

Schools	Experimental Group				Control Group			
	Upper N:10	Middle N:10	Lower N:10	Total N:30	Upper N:10	Middle N:10	Lower N:10	Total N:30
1	117.7	107.1	96.5	107.1	117.5	104.7	96.3	106.2
2	115.2	106.2	93.5	105.0	114.3	106.4	94.9	105.2
3	114.9	104.8	94.1	104.6	115.9	104.5	94.3	104.9
4	118.4	106.1	95.3	106.6	117.1	105.2	95.0	105.8
5	117.9	106.1	94.7	106.2	118.0	104.5	93.8	105.5
6	116.5	107.8	95.5	106.6	118.1	107.8	95.9	107.3
7	117.2	107.6	97.5	107.4	117.0	106.3	96.8	106.7
8	118.8	106.9	96.4	107.4	117.5	106.4	96.5	106.8
9	117.5	107.0	95.1	106.5	118.0	107.6	98.3	108.0
10	116.6	106.9	95.0	107.5	118.0	108.1	96.9	107.7
11	118.7	106.9	94.6	106.7	117.2	107.5	95.0	106.6
12	116.1	105.8	95.0	105.6	116.9	104.5	94.5	105.3

As a whole, the data presented in these tables reveal but slight differences between the mean scores of the experimental and control groups within the twelve schools in each of the three grades. Inspection of these tables will not reveal the differences, but will furnish the reader with means from which the differences are computed. The greatest difference between any of the experimental and control groups within a school is 2.9 points. The greatest difference between any of the thirty-six experimental groups is 4.7 points, and the greatest difference between any of the thirty-six control groups is 3.7 points. The greatest difference between any of the thirty-six experimental and the thirty-six control groups is 4.9 points. Between the entire experimental and control group within this study there is a slight difference of .2 points.

When each grade is considered separately, one finds but a few variations. Table I, carrying the mean scores of the experimental and control groups within each of the Fourth Grades of this experiment, and likewise the mean scores of the three subgroups within each group, namely, the upper third, the middle third, and the lower third, shows no marked differences. The greatest difference between any of the experimental and control groups (2.9 points) is found in School No. 5. The greatest difference between any of the twelve experimental groups is 3.4 points found in comparing

School No. 5 and School No. 11. The greatest difference between any of the twelve control groups (2.6 points) is found between School No. 3 and School No. 9. The greatest difference between any of the twelve experimental and the twelve control groups is 4.4 points. There is a negligible difference of .1 points between all the experimental and the control groups of the Fourth Grades.

It will also be noted that the differences between the subgroups are similar to those of the groups just described. The greatest difference (2.6 points) is noted between the upper thirds of the experimental and the control groups within School No. 10. A comparison of the middle thirds of both groups shows the greatest difference to be 3.0 points within School No. 5. The greatest difference between the mean scores of the lower thirds is 5.6 points within School No. 6. This happens to be the greatest difference between any of the groups within the entire experimental population of this study.

The comparisons of the mean scores of the experimental and control groups of Grade Five, as shown in Table II, indicate no striking differences. The greatest difference between the experimental and control groups (2.9) is noted within School No. 12. The greatest difference between any of the twelve experimental groups 3.4 points between School No. 3 and School No. 11. The greatest

difference between any of the control groups is 3.6 points between School No. 5 and School No. 12. When one considers the greatest difference between any of the twelve experimental and the twelve control groups, one finds only 3.6 points. In contrasting the total experimental group with the total control group for Grade Five, one notes a very slight difference of .1 points. When the subgroups are considered, it is evident that the upper thirds of both the experimental and control groups are very similar. The greatest difference is 1.5 points. In the middle third subgroups School No. 12 has the greatest difference, that of 4.4 points. In the lower thirds subgroups the greatest difference is found in School No. 5 with 4.9 points.

As presented in Table III for Grade Six, the mean scores of the experimental and control groups vary slightly. The greatest difference between the experimental and control groups is 1.5 within School No. 9. The greatest difference between any of the twelve experimental groups is 2.9 points between School No. 3 and School No. 10. The greatest difference between any of the control groups is 3.1 points between School No. 3 and School No. 9. The greatest difference between any of the twelve experimental and the twelve control groups in Grade Six is 3.4 points. With reference to the subgroups, the upper thirds of the experimental and control groups are very similar. The greatest difference is 1.6 points within

School No. 6. The middle thirds present the same greatest difference, namely, 1.6 points within School No. 5. As to the lower thirds the greatest difference is found within School No. 9, being 3.2 points.

On the basis of the information obtained pertaining to the experimental and control groups, the investigator assumed that the two groups were drawn from the same population and that there were no observable differences that could influence the results of the experiment.

2. Preparation and Follow-up of Participants.

To insure a smooth running program and secure the professional interest and cooperation of all participating in this experiment, a two-week study conference was held during the last two weeks of August 1958, prior to the opening of school in September. In attendance were seventy-two teachers, twelve principals, and the reading consultant.

The primary purpose of this meeting was threefold: (1) to acquaint the participants with the nature and purpose of scientific research; (2) to outline the testing program and each participant's part in it; and (3) to orient each group with the reading materials and techniques to be used throughout the school year September 1958-June 1959.

In an attempt to realize these objectives the following time schedule was planned and adhered to:

First week

Monday - General Orientation.

Tuesday through Friday - Teachers of the Control Group and Principals.

Second Week

Monday - Principals.

Tuesday through Friday - Teachers of the Experimental Group and Principals.

The first day of the study conference was a day of general orientation given over to the discussion of problems affecting the entire group. Every effort was made to guarantee a wholesome outlook on the experiment by all the principals and teachers. It was desired that the experiment be carried out in such a manner that every participant would feel the study to be meaningful to her as an individual.

After acquainting the group with the highlights of scientific research with emphasis on objectivity in the search for facts, the investigator presented the exact nature of this reading experiment.

It was at this time that the teachers were randomly assigned to the multi-level reading program and the one-level reading program. Such action at the time was advisable since the two groups were to convene at different times with a program designed to meet their specific needs.

The group was informed about the reorganization of classes which would of necessity be postponed to the third week of September, since the assignment of pupils to classes would depend upon the results of the intelligence test which was to be administered the first week of September.

Concerning the testing program, the group was informed that all tests would be administered by the principal of each school with teachers proctoring the classes. Intelligence tests would be scored independently by two persons, the teacher who proctored the class and the teacher of the parallel grade. The reading tests would be machine scored by the SRA Scoring and Statistical Center at McHenry, Illinois.

In order to make justifiable comparisons between the groups, the experiment was so designed as to control, as nearly as was possible, variables other than the experimental ones that might affect reading improvement. Therefore, time schedules and time allotments for the reading period were outlined. Each participating class in this experiment was to have the reading period at the same hour of the day and for the same length of time, namely, from 1:05 to 2:05 P.M., five days a week for twenty-one weeks beginning September 28, 1958, and terminating February 27, 1959.

Before initiating instruction in reading at any level, the teacher must know the reading attainment of every pupil in her class if the individual needs of each are to be

considered. The teachers using the multi-level reading approach would need this information as a guide to help place each child on his independent reading level. The teachers using the one-level reading approach would likewise need such information to group effectively the children in order to insure success and growth in reading. Therefore, a reading test was planned to be administered the second week of September to all 3600 experimental subjects. Table IV shows the reading range of Grade Four in twenty-four classes participating in this experiment. Tables V and VI give the same information about Grade Five and Six pupils respectively.

These tables show the variability in reading scores from class to class in the three grades, namely, Four, Five, and Six. They portray two things rather plainly, firstly, there is a wide spread of scores within each class at each grade level for pupils who had spent the same amount of time in school; secondly, there is a large amount of overlapping between grades.

The success of a reading program is in part dependent also upon information pertaining to each pupil's personal and social adjustment. To enable the teachers to obtain such data, an interest inventory was suggested which would include inquiries concerning play activities, hobbies, preferences, friends, likes and dislikes in and out of school. The use

Table IV.-

Reading Range^a and Distribution of 720 Fourth Grade Readers.

School	Group	Reading Range		Number of Pupils Reading at Each Grade Level ^b					
		Limits	Spread	2	3	4	5	6	7
1	E	6.0-2.7	= 3.3	5	12	4	8	1	0
	C	7.5-2.7	= 4.8	5	14	4	3	3	1
2	E	5.8-2.1	= 3.7	5	14	5	6	0	0
	C	6.8-2.3	= 4.5	6	14	7	0	3	0
3	E	5.9-2.9	= 3.0	2	13	12	3	0	0
	C	5.6-2.1	= 3.5	10	16	2	2	0	0
4	E	7.6-2.6	= 5.0	3	11	8	4	2	1
	C	6.6-2.3	= 4.3	6	17	4	1	2	0
5	E	6.3-2.1	= 4.2	10	15	4	0	1	0
	C	5.6-2.5	= 3.1	7	10	9	4	0	0
6	E	6.0-2.1	= 3.9	10	11	7	1	1	0
	C	6.8-3.1	= 3.7	1	16	8	3	2	0
7	E	6.3-2.4	= 3.9	5	16	5	3	1	0
	C	6.0-2.0	= 4.0	5	14	8	2	1	0
8	E	6.0-2.2	= 3.8	7	13	5	4	1	0
	C	7.0-2.3	= 4.7	7	8	11	2	1	1
9	E	6.3-2.1	= 4.2	9	13	5	2	1	0
	C	6.1-2.3	= 3.8	4	10	14	1	1	0
10	E	7.0-2.1	= 4.9	2	15	7	4	1	1
	C	6.8-2.4	= 4.4	5	9	10	5	1	0
11	E	7.2-2.1	= 5.1	9	13	4	2	1	1
	C	6.9-2.5	= 4.4	2	16	6	4	2	0
12	E	5.9-2.5	= 3.4	4	10	15	1	0	0
	C	7.0-2.3	= 4.7	3	12	11	1	2	1

^a With SRA Achievement Series Reading, Form A.^b Grade 2 level includes all scores from 2.0 to 2.9; grade 3 from 3.0 to 3.9, and so on.

Table V.-
Reading Range and Distribution of 720 Fifth Grade Readers.

School	Group	Reading Range		Number of Pupils Reading at Each Grade Level						
		Limits	Spread	3	4	5	6	7	8	9
1	E	6.5-3.0	= 3.5	4	14	9	3	0	0	0
	C	7.4-3.0	= 4.4	9	12	6	1	2	0	0
2	E	8.1-3.2	= 4.9	7	7	7	3	5	1	0
	C	8.9-3.3	= 5.6	10	7	5	5	2	1	0
3	E	7.7-3.3	= 4.4	6	9	10	4	1	0	0
	C	8.3-3.1	= 5.2	9	10	5	3	2	1	0
4	E	7.6-3.0	= 4.6	9	8	8	2	3	0	0
	C	7.5-3.2	= 4.3	8	8	7	4	3	0	0
5	E	9.2-3.0	= 6.2	8	6	9	3	2	1	1
	C	8.5-3.0	= 5.5	6	8	12	1	1	2	0
6	E	9.3-3.2	= 6.1	4	10	6	4	2	3	1
	C	9.2-3.0	= 6.2	10	5	4	4	4	2	1
7	E	9.0-3.0	= 6.0	8	5	9	5	2	0	1
	C	9.7-3.0	= 6.7	9	8	9	3	0	0	1
8	E	8.3-3.0	= 5.3	14	6	4	4	1	0	1
	C	9.0-3.1	= 5.9	6	12	5	4	2	0	1
9	E	8.2-3.2	= 5.0	6	9	9	2	3	1	0
	C	8.8-3.0	= 5.8	8	11	5	3	1	2	0
10	E	8.7-3.1	= 5.6	9	5	5	5	4	2	0
	C	8.7-3.0	= 5.7	10	9	5	5	0	1	0
11	E	8.3-3.2	= 5.1	5	10	10	4	0	0	1
	C	8.5-3.0	= 5.5	8	12	5	1	3	1	0
12	E	8.0-3.2	= 4.8	9	8	4	7	1	1	0
	C	6.9-3.0	= 3.9	6	8	12	4	0	0	0

Table VI.-
Reading Range and Distribution of 720 Sixth Grade Readers.

School	Group	Reading Range		Number of Pupils Reading at Each Grade Level						
		Limits	Spread	3	4	5	6	7	8	9
1	E	8.0-3.2	= 4.8	3	11	7	5	3	1	
	C	9.2-3.1	= 6.1	5	5	4	8	4	3	1
2	E	9.6-3.6	= 6.0	6	6	5	2	5	5	1
	C	9.1-3.3	= 5.8	2	8	8	6	5	0	1
3	E	8.8-4.1	= 4.7	0	6	9	5	6	4	0
	C	8.1-4.1	= 4.0	0	4	12	7	6	1	0
4	E	9.5-3.5	= 6.0	2	8	4	8	3	4	1
	C	9.3-3.8	= 5.5	3	6	4	7	5	4	1
5	E	9.0-4.1	= 4.9	0	9	8	4	4	4	1
	C	8.9-3.3	= 5.6	2	5	10	6	5	2	0
6	E	9.3-3.9	= 5.4	1	6	6	7	4	5	1
	C	9.9-4.4	= 5.5	0	5	6	8	3	2	5
7	E	9.9-4.0	= 5.9	0	5	7	8	3	4	3
	C	9.9-4.4	= 5.5	0	6	10	5	3	1	5
8	E	8.9-4.1	= 4.8	0	7	9	9	2	3	0
	C	9.9-3.9	= 6.0	1	6	4	8	7	3	1
9	E	8.8-3.5	= 5.3	3	7	5	7	5	3	0
	C	9.7-3.2	= 6.5	3	4	7	10	3	2	1
10	E	9.9-3.8	= 6.1	1	8	11	4	4	1	1
	C	9.9-4.3	= 5.6	0	7	6	7	7	1	2
11	E	9.7-4.2	= 5.5	0	11	6	5	2	4	2
	C	9.6-4.0	= 5.6	0	11	5	7	2	2	3
12	E	9.4-4.0	= 5.4	0	8	8	6	4	2	2
	C	9.4-4.0	= 5.4	0	6	9	9	4	1	1

of such tool would yield, it was hoped, clues of value in understanding pupils' attitudes, problems, and needs, all of which are intimately linked with the learning to read.

It was felt that the same instrument be used by all teachers of both the experimental and control groups in obtaining this pertinent information. A committee of six teachers, three from each group, volunteered to devise a questionnaire on pupil concerns, likes and dislikes, and information that would serve the teachers in understanding, guiding, and directing each child in his growth, not only in reading but likewise in an all-round development. This action research reflected the cooperation and involvement of the group in the study ahead. A copy of the questionnaire entitled "Let's Get Acquainted" appears in Appendix A.

The amount of reading done by pupils is one measure of the efficiency of a method of teaching reading. Consequently, it was decided that a record of the number of books read independently during the extent of the experiment be kept for each child. It seemed necessary, too, to provide the same motivational device to further help control variables which might affect the results of the experiment. See Appendix B for a sample of this record.

Motivated by purpose and fortified by an understanding of the discipline of research and the need for finding ways

of meeting the individual needs of children, the teachers found themselves immersed in a task which to them was both absorbing and interesting.

Every effort was exerted to make the first day of the study conference appealing and worthwhile since the rapport established would set the pace for the remaining two weeks of study and eventually would influence the entire experiment. It was the investigator's aim to get the principals and teachers deeply and personally involved in the experiment.

During the sessions held with the control group, the manuals for the basal readers were carefully studied. Methods of procedure for teaching had been discussed and several lessons were demonstrated. It was decided that each teacher, depending upon the needs of her pupils, would have no less than two groups in reading.

The teachers of the experimental group had opportunity to become acquainted with the SRA Reading Laboratory, the teacher's handbook and the student record book. In order that the teachers see the laboratory technique in action, demonstrations were given by a teacher who used this approach to reading with a class of Eighth Grade pupils.

During the principals' meeting the test manuals of both the intelligence test and reading test were carefully studied, since both of these tests would be administered by the principal in each school to all classes in the experiment.

The testing program was outlined and discussed. Great care was observed to adapt plans which would secure reliable results and which could be duplicated in March, 1959, when retesting would take place. The following testing schedule was planned:

September 5 and 6 -- Administration of Otis Quick-Scoring Mental Ability Beta Test, Form Bm.

September 10 and 11 -- Administration of SRA Achievement Series Reading, Form A.

March 3 and 4 -- Administration of SRA Achievement Series Reading, Form A.

The question of supervision of classes participating in the experiment was the final consideration at the principals' meeting.

The principals played an important role in the experiment. To give the teachers a feeling of support and likewise to make certain that scheduled time and procedures were being followed as planned, the principal visited each teacher in her building once every two weeks for a full hour.

Further supervision was provided by the reading consultant who visited each teacher in this experimental study once every month.

Two general meetings were held during the course of the experiment, -- one on November 11, 1958, and the other on December 30, 1958. Both groups, the control and experimental, met on the same day but in two different schools. At the

meeting in November, the two principals of the schools in which the meetings were held took over the responsibility of chairmanship and likewise appointed one of the teachers to act as secretary for the group. The investigator met both groups in December, one group met in the morning, the other in the afternoon of the same day. The purpose of these gatherings was threefold: (1) to clarify any doubts pertaining to the experiment; (2) to share ideas; and (3) to report on the progress of the experiment in terms of pupil reaction and growth as evidenced by observation of progress charts and student record books.

3. Tools of Measurement.

The selection of the tests for the two-fold purpose of equating the groups and evaluating the results of the study was given careful consideration. In an attempt to select the tests, the experimenter was guided by these four criteria: (1) validity, (2) reliability, (3) objectivity and ease of administration and scoring, and (4) adequate standardization. Both the intelligence test and the reading test will be discussed in the following paragraphs in the light of these criteria.

Since the experimenter was interested in finding how effective the methods were with reference to different levels

of intelligence, the brightness index was used in equating the experimental and control groups. The experimental subjects were equated on the basis of the Otis Quick-Scoring Mental Ability Beta Test, Form Em.⁵ Appendix C contains a copy of this test.

This test, which gives a simple over-all I.Q., consists of eighty items which measure spatial relationship, logical reasoning, numerical reasoning, and verbal concepts. In making the test it has been the aim of the author "to choose that kind of question which depends as little as possible on schooling and as much as possible on thinking".⁶

The purpose of the test as stated by the author⁷ is that of finding the degree of brightness of a pupil, that is, of obtaining some measure that indicates the probable rate of progress the pupil will make in school work. Since the test has been designed mainly for the prediction of scholastic success, statistical evidence of validity had been established by correlating the Otis score with scores on the subtests of

⁵ Arthur S. Otis, Otis Quick-Scoring Mental Ability Beta Test, Form Em, Yonkers-on-Hudson, World Book, 1954.

⁶ -----, Manual of Directions for Beta Test Forms Cm and Dm and New Edition: Forms Em and Fm, Yonkers-on-Hudson, World Book, 1954, p. 1.

⁷ -----, Manual of Directions for Beta Test Forms Cm and Dm and New Edition: Forms Em and Fm, Yonkers-on-Hudson, World Book, 1954, p. 8.

the Stanford Achievement Test, Form J⁸ for single grade ranges. The manual⁹ listed the correlations between these two tests as follows:

<u>Otis Score</u> and	<u>Grade 5</u> N:396	<u>Grade 8</u> N:398
1. Paragraph Meaning	.770	.770
2. Word Meaning	.827	.819
3. Spelling	.748	.623
4. Language	.698	.731
5. Arithmetic Reasoning	.673	.723
6. Arithmetic Computation	.564	.685
7. Social Studies	.779	.742
8. Science	.761	.765
9. Study Skills	.716	.760

The norms for the Beta Test, Form Ea were established on a sampling of 3107 pupils in Grades 5 to 9 representative of the country as a whole.¹⁰

The reliability of the Beta Test, Form Ea was determined by the split-half technique and corrected by the Spearman-Brown Formula. The average of the corrected coefficients for grades 4 to 9 is .91 as reported in the Manual of directions.¹¹

The author used another measure of reliability, namely, the standard error of measurement. In the case of 465 pupils in Grades 4 to 9, the standard error of measurement was 4.0 points, that is, a pupil's score will be in error not more than 4.0 points in 66 2/3% of cases.

⁸ T. L. Kelley, R. Madden, E. F. Gardner, L. M. Terman, and G. M. Ruch, Stanford Achievement Test, Form J, Yonkers-on-Hudson, World Book, 1953.

⁹ Arthur S. Otis, Ibid., p. 8.

¹⁰ Arthur S. Otis, Ibid., p. 5.

¹¹ Arthur S. Otis, Ibid., p. 7.

The test is easily administered. There is a single time limit. The method of stencil scoring makes for objectivity.

It was on the basis of these features, plus the reported satisfactory validity and reliability coefficients, that the experimenter felt justified in using the Otis Quick-Scoring Mental Ability Beta Test, Form Bm to equate the experimental and control groups for this study.

The SRA Achievement Series Reading Test, Form A¹² was administered twice: (1) in September, to determine the starting level for children in the experimental group, and the proper reading group for the children in the control group; and (2) in March, to evaluate the effectiveness of the two methods used in this experimental study.

The complete series of this test is intended to measure the educational development of pupils in Grades Two to Nine in the following broad curricular areas: reading, arithmetic, language arts, and work-study skills. Each of these four tests in the series is obtainable in separate booklets and may be used independently of the complete series. The tests are divided into three separate but overlapping batteries, Elementary for Grades Two to Four, Intermediate for Grades Four to Six, and Junior High School battery for Grades Six to Nine.

¹² Louis P. Thorpe, D. W. Lefever, and R. A. Naslund, SRA Achievement Series Reading, Form A, Chicago, Science Research Associates, 1955.

In presenting the test material, the authors utilize the situational or holistic approach. Such approach emphasizes the embedding of test items in a background or the arranging of groups of items, so that each member of the group is functionally related to the others. Precisely in this way it differs from the more traditional method of presenting achievement test content.

The reading test consists of five stories varying from eight to twenty-two paragraphs in length. The story is to be read in its entirety before any questions are answered. Each story is followed by a twenty item check: ten questions on comprehension and ten on vocabulary, making a total of fifty comprehension items and as many vocabulary items. The vocabulary items are presented in context in preference to the older method of requiring the pupil to select antonyms or synonyms for key words presented in isolation. Appendix D contains a copy of this test.

In investigating the validity of this reading test, the experimenter was guided by Lennon's definition of the term "validity". He states:

The validity of an achievement test is the extent to which the content of the test represents a balanced and adequate sampling of the outcomes (knowledge, skills, etc.) of the course or instructional program it is intended to cover (content, face, or curricular validity). It is best evidenced by a comparison of the test content

with courses of study, instructional materials and statements of instructional goals, and by critical analyses of the processes required in responding to the items.¹³

This concept of validity depends (1) on how thoroughly educational objectives have been analyzed and defined, and (2) on how closely these objectives have been reflected in the test items.

In designing the SRA series of tests, the authors have guided themselves with the above two criteria. To arrive at acceptable educational objectives three sources were examined: (1) important statements on the over-all purposes of education of leading professional associations, (2) publications of authoritative groups and specialists in the various subject-matter areas of the school curriculum, and (3) actual courses of study, curriculum outlines and teacher's guides in use in schools throughout the country. Consequently, as a guide to the development of the series the authors adopted the widely accepted objectives set forth by the Educational Policies Commission¹⁴ but with modifications, since some of the objectives outlined by the Commission are relatively intangible and therefore difficult to measure with paper-and-

¹³ Roger T. Lennon, A Glossary of 100 Measurement Terms, Yonkers-on-Hudson, World Book, 1955, p. 15.

¹⁴ Educational Policies Commission, The Purposes of Education in American Democracy, Washington, D.C., Educational Policies Commission of the National Education Association and the American Association of School Administrators, 1938, p. 90.

pencil techniques. There was need to translate these objectives into terms of pupil behavior.

No numerical data in terms of coefficients of correlation representing content validity of this test are given in the manual. To help the reviewer estimate the validity of this test, the authors heartily subscribe to a proposal made by Lindquist:

There is no better way to judge the validity of (achievement) tests than to put yourself in the student's place and to take the tests yourself. In this way, decide for yourself what the tests really measure and what abilities are required from the student. Then make up your mind whether or not these abilities represent the desirable outcomes. . . . There is no adequate statistical substitute for a common-sense evaluation of this kind.¹⁵

In addition to content validity, the authors likewise presented construct validity. It was necessary to determine the intercorrelations among items in order to use the Kuder-Richardson formula in determining the reliability coefficients. The Pearson product-moment correlations between scores for comprehension and vocabulary based on two hundred cases at each grade level were given as .808 for Grade Four, .771 for Grade Five, and .815 for Grade Six.¹⁶

¹⁵ E. F. Lindquist, Manual for the School Administrator for the Iowa Tests of Educational Development, September, 1956, p. 29-30.

¹⁶ Louis P. Thorpe, et al., SRA Achievement Series Technical Supplement, Second Edition, December, 1957, p. 22.

The norms for the test are limited to United States children of school age. The national sample has been stratified by geographical region, socio-economic level, rural-urban location, sex, and intelligence level to provide norms that are representative of American children. The normative sample for the Intermediate battery of the test consisted of 4167 pupils from Grades Four , Five, and Six within fifty-one school systems. The norms have been expressed in both grade equivalents and percentiles.

The reliability coefficients for the series of tests were based on the Kuder-Richardson formula (Case IV), using two hundred cases at each grade level. The reliability coefficients for Grade Four were given as .876 for comprehension, and .886 for vocabulary. For Grade Five, the following reliability coefficients were reported: .885 for comprehension, and .875 for vocabulary. The findings for Grade Six were these: .893 for comprehension, and .885 for vocabulary.¹⁷ Because the Kuder-Richardson reliabilities yield lower coefficients than the split-halves technique, the authors felt that these test scores yield split-halves reliabilities in the high .80's and low .90's.

To increase precision, the machine scored edition of the test was used in both the September and March testing.

¹⁷ Ibid., p. 18.

4. Statistical Technique.

The present investigation was so designed that an application of the technique of the analysis of variance might be used in testing the hypotheses. The mathematical model appropriate for the analyses to be made was one in which both systematic and random variation are considered, since methods, grade levels, and intelligence levels were sources of systematic variation and variation assignable to schools a source of random variation. Thus, the mixed model 'aBC' was used.

In the choice of the error term for the 'aBC' model, the investigator was guided by the chart containing the composition of the estimates of variation as found in Dayhaw's text.¹⁸

In all analyses the one per cent level of significance was used for the rejection of the hypotheses proposed.

The conclusions were drawn from an analysis of six separate groups of data. The first three analyses were used to test hypotheses one to four inclusive. The other three tests of significance were used to test hypotheses five, six, and seven.

Before the F-Test could be applied to the collected data three conditions had to be satisfied: (1) classes had to

¹⁸ Lawrence T. Dayhaw, Manuel de Statistique, Ottawa, Editions de l'Université d'Ottawa, 1958, p. 461.

be randomly assigned to the methods, (2) the variance in class means had to be fundamentally constant from method to method, and (3) the distribution of class means had to be fundamentally normal in form.

As concerns the first condition, it was possible to draw the experimental subjects strictly at random from those subjects that have been accessible to the experimenter within each, and then match them as closely as possible into two classes. Then, by use of a table of random numbers, it was left strictly to chance which class was to constitute each method group. Therefore, under these conditions, the first assumption was considered satisfied.

Tests for normality and homogeneity of variance have not been made, since by inspection of the data it was readily apparent that the effect of heterogeneity of either form or variance upon the F-distribution would probably be negligible. The findings of Norton's study, as summarized by Lindquist,¹⁹ revealed the fact that the heterogeneity either in form or variance or in both must be quite extreme to be of any serious consequences. Therefore, with the three assumptions accounted for, the experimenter felt justified in using this statistical technique.

¹⁹ E. F. Lindquist, Design and Analysis of Experiments in Psychology and Education, Boston, Houghton Mifflin, 1953, p. 78-86.

Summary.

At the outset of this chapter, the general purpose of the study was reiterated and the more specific questions for which answers had been sought were likewise listed.

In presenting the research design, the experimenter discussed the following: (1) sample selection and description, (2) preparation and follow-up of participants, (3) tools of measurement, and (4) the statistical technique used in analyzing the data.

Under sample selection and description, a detailed account was given of the manner in which the schools, classes, and experimental subjects were selected.

The second section of the chapter dealt with the program outlined and carried out in a two-week study conference planned for the preparation of the principals and teachers participating in the experimental study and the guidance and supervision of the work of the teachers in the seventy-two classes within the twelve schools during the twenty-one week experiment.

The third part of the chapter treated of the tools of measurement used in the experimental study. The choice of the intelligence test used to equate the pupils and the reading achievement test used to measure the criterion variable was dictated by these criteria: validity, reliability, objectivity and ease of administration and scoring, and standardization.

Each of these criteria was discussed with reference to the two tests selected.

The last part of the chapter dealt with the statistical technique used in analyzing the data collected. The analysis of variance with the corresponding F-Test of significance was used.

Chapter III will give a description of and the rationale for the two experimental variables: the basal reader or one-level approach to reading, and the SRA laboratory material and technique or the multi-level approach to reading.

CHAPTER III

THE EXPERIMENTAL VARIABLES

The general steps outlined in the preceding chapter constituted the experimental procedure of this study. A few words on the specific methods and the reading materials used with the two groups of readers are now in order. Should we recall that we are seeking an answer to the question: What is the difference if any, between the progress in reading comprehension and vocabulary growth of children at the intermediate grade level using the multi-level reading materials and the laboratory approach, and that of children taught in groups from the basal reader, a one-level reading approach?

In contrasting these two methods of teaching reading, the investigator had taken precautions against emphasizing different aspects of reading within each method. Buswell,¹ who followed for a year the progress of pupils taught by different methods, indicated clearly the striking example of uncertainty which can be attached to the findings of experiments when contrasting methods emphasize different aspects of reading. The present study has sought to avoid such shortcomings. Both the one-level and the multi-level approaches

¹ G. T. Buswell, Fundamental Reading Habits: A Study of Their Development, Supplementary Educational Monographs, No. 21, University of Chicago, 1922, p. 37.

stressed improvement of comprehension and aimed at the extension and the enrichment of vocabulary. The one major difference between the two groups was the use of the one-level and multi-level materials and approach.

1. The One-level Materials and Approach.

A basal reader and the accompanying workbook constituted the one-level reading materials. The basal reader is a systematic, carefully prepared text with controlled vocabulary at each grade level, with emphasis on intensive reading and guidance.

The main principles underlying a basal reading series are fourfold: gradation, variety, organization, and content.² An elucidation of each of these concepts follows.

A gradual increase in difficulty is attempted in the reading selections in a basal reader. This gradation is true of the entire series of readers as well as of the selections within each reader.

A wide variety of reading activities is provided for in basal readers. These books are written on the assumption that children have to read many different kinds of materials for many different purposes.

² David H. Russell, The Basic Reading Program in the Modern School, Contributions to Reading, No. 1, Chicago, Ginn, 1947, p. 1-6.

A systematic, coordinated program of reading instruction is needed, since learning to read is a developmental process in which children build upon certain knowledge and skill in developing new knowledge and skills. A good basal reading series avoids gaps in learning experiences and provides in an organized way for the different reading skills children acquire.

Content that appeals to children is provided in a basal reading program, material that is intended to develop desirable thoughts, inspire proper attitudes and appreciations, fulfill worthwhile purposes, and stimulate intelligent interests. Basal readers must embody the nucleus for the teaching of skills in reading as well as stimulate associations for personal-life experiences.

The method of procedure for teaching the one-level materials consisted of four definite steps.³ To begin with there was a teacher-directed discussion to build readiness and to set the stage for the particular selection to be read. New vocabulary was developed by methods that seemed most suitable -- context, analogy, structural or phonetic analysis, and reference to the glossary or dictionary.

³ Sister M. Margaret Michael, Manual for the New Edition of This Is Our Land Fourth Reader, Chicago, Ginn, 1955, p. 15-19.

Secondly, guided reading under the supervision of the teacher developed comprehension of the content. A variety of reading techniques was used in developing comprehension, such as silent reading with discussion, oral-sight reading with discussion, reading silently guided by a study sheet, oral re-reading to prove a point or statement, or re-reading the exact words from the text to give information.

Application of concepts gained from reading constituted the third part of the lesson. Enrichment through expression and the development of critical thinking were the main purposes of the third step in this method.

The fourth step consisted in working out related reading activities from the accompanying workbook for the purpose of extending and maintaining the skills and abilities developed in the lesson. In following the above outlined steps of this approach, the teachers managed to complete approximately two selections a week depending upon the length of the selection.

Results of the reading achievement test administered in September and the findings on the interest inventory indicated a wide range of reading ability and interests in each class. Obviously, the teacher of such class could not expect all children to be able to cope with the same reader. To overlook these individual differences would create serious problems. Therefore, to implement the principle of "beginning

where the learner is" the children were classified into two or more groups depending upon the range of reading variability within the class. A basal reader best suited to the needs and interests of the pupils was then chosen for each group. The teacher, in this way, kept all groups challenged at their approximate level of achievement, and the problem of differences was at least partially solved.

Individual graphs for recording reading progress, based on workbook exercises and records of independent reading done outside of class were kept by each child. These were kept especially for their motivational value. They played an important part in individual conferences with the child and his parents every six weeks.

In summary then, the pupils of the one-level approach read the same story within a group, discussed the content and shared ideas, and corrected their written work as a group under the direction of the teacher.

2. The Multi-level Materials and Approach.

The teachers assigned to the multi-level reading approach used the developmental reading improvement program designed by Parker and his staff and referred to as the SRA Reading Laboratory. The term "laboratory" is used because the classroom set-up in this program is equivalent to a workshop with the reading materials and the charting devices

serving as tools. Then, too, the procedure is largely self-operating giving the pupil a feeling of responsibility for his own progress. The program is aimed at meeting individual differences and developing each pupil's highest academic potential.

The basic premises underlying Parker's program are these:

1. Nearly every student can improve his present reading performance both in rate and comprehension.
2. Little improvement takes place when students are reading in materials that are either too hard or too easy for them.
3. In the typical classroom, reading abilities range across six, eight, or, even, ten grade levels.
4. Each student needs the opportunity to advance in reading skills as fast and as far as his learning rate and his learning capacity will permit.
5. To be fully effective, a program in reading improvement must provide any class with a full range of reading materials covering many grade levels.⁴

The SRA Reading Laboratory is a collection of one hundred fifty reading units, called power builders, gradually increasing in difficulty through Grades, 2, 2 1/2, 3, 3 1/2, 4, 5, 6, 7, 8, and 9, a range of ten grade levels, each level designated by a different color. There are fifteen

⁴ Don H. Parker, SRA Reading Laboratory Elementary Edition Teacher's Handbook, Chicago, Science Research Associates, 1958, p. 1.

units at each grade level. Each of the one hundred fifty selections is accompanied by exercises in comprehension and vocabulary.

To help pupils increase their habits of concentration in relation to faster reading, one hundred fifty additional units, called rate builders, are included in this collection, again fifteen at each reading level with comprehension checks. These reading exercises are intended to give the pupils an opportunity to get used to reading under pressure.

There are, in addition, a series of ten listening exercises, termed listening skill builders, planned to help develop the ability to evaluate and retain what is listened to, and to comprehend what is heard. A comprehension check follows each listening exercise.

Although listening is considered an important facet in the language arts program as evidenced in the various elementary and secondary school English textbooks as well as curriculum guides, yet very little has been done in the direct teaching of this skill in a systematic way in the past.⁵ Parker felt a definite need for such training and has made provisions for the systematic teaching of listening skills in the SRA Reading Program.

⁵ Guy Wagner, "What School Are Doing in Developing Listening Power", Education, Vol. 78, No. 4, 1957, p. 247.

The power builder and the rate builder reading units are arranged in a kit along with a key card for each power builder, and forty key booklets for rate builders, each booklet containing all the answers for the one hundred rate builder comprehension checks. The listening skill builder exercises appear in the teacher's handbook since they are read by her to the entire class.

For efficient functioning of this program, each child needs a student record book which contains (1) four power builder stories used with the entire class for purposes of induction into procedures and techniques of the program, (2) record blank pages on which the pupil records all of his work, (3) graphs and charts for recording both daily work and progress from day to day, and (4) ten listening skill builder comprehension checks. A sample of the record blank page and the three types of progress charts are included in Appendix E.

It is obvious that motivational factors become an important part of a relatively self-directed reading program. Therefore, immediate achievement indicators in the form of graphs and charts are necessary as stimulating devices.

To arouse and sustain interest in reading and to insure a systematic approach to the development of comprehension skills, the SQ3R study technique used in work-type reading has been introduced into the SRA Reading Program.

The SQR study technique is similar to the SQ3R formula used in high schools and colleges throughout the country, but abbreviated and simplified for use by elementary school pupils. The five sequential steps of the formula are as follows:

- | | |
|---------------|--|
| S -- Survey | It consists in glancing through the entire selection, noting the headings, the general content, the sequence of ideas, and pictorial aids. This brings the pupil logically to the next step. . . |
| Q -- Question | As the pupil is glancing through the material to be read, questions come to his mind. What does the picture portray? What does the title mean? What do the picture and title have to do with each other? What new information am I likely to find? |
| R -- Read | The pupil reads to get the main idea and the details that are given to develop the idea. He notes important terms; notes what is said about them; tries to understand them; uses a dictionary. |
| R -- Review | This is the time to organize ideas and information. Review is getting ideas in the right order. This is the stage at which there is a tie up of cause and effect relationships. |
| R -- Recite | This is the time when the learner puts the ideas of the author into his own words. He takes inventory of his knowledge. |

Specific reference to these last two R's is omitted for elementary school pupils, although their use is implied in the actual use of the reading units.

These, then, constitute the materials of the SRA Reading Program. How these materials were used in the experiment will be explained in the following paragraphs.

Basic to the success of an individualized reading program is the philosophy that children should learn to assume considerable self-direction and self-control as they mature. However, to give expression to these two concepts, there was need to establish some type of classroom methodology. This called for a period of induction. The following procedure was adhered to in all classes using the SRA reading program.

The starting level was determined for each child in order to meet his present reading ability level with materials of suitable difficulty and not too far removed from his present chronological age and interest level.

It seemed advisable to discuss with the pupils the idea of individual differences before beginning the reading program. These discussions began with a recognition of such obvious and acceptable individual differences among pupils as speed of running, height of jumping, ability in drawing, singing, sewing, playing the piano, and other common activities. It followed that equally wide differences could exist in reading ability among pupils.

There emerged from these discussions the facts that one must start where he is, and have systematic practice of

the right kind. Further, there is need to feel some degree of success along the way -- some proof that gains are made. It was logically concluded that if this is true in physical activity, it is reasonable to expect the same thing to work in improving reading ability.

Time was then devoted to an explanation of the pupil's record book which is considered in this program the basic device through which the pupil contacts all the SRA reading activities. As the pupils were examining the record book, the teacher availed herself of the opportunity and introduced the SQ3R study formula.

Next in order the pupils learned to use the power builders. To simplify matters for the teacher, four power builder stories all of one level are printed in the pupil's record book which are intended for use during the induction period. The teacher may need to work with the children through several such lessons to insure correct understanding of the mechanics of the procedure before individualized work begins. During this time the children, under the direction of the teacher, went through the surveying, questioning, and reading the stories, completing the comprehension and vocabulary exercises, correcting these exercises, circling mistakes and writing the correct answers on lines provided for these, and charting and graphing the results. Finally, the pupils were taught how to evaluate their work. Class discussion helped

start each individual thinking about what he would say about his work. Children were encouraged to look back over their work, re-read the parts in the story or in the exercises where their mistakes occurred, and then state what they could do to refrain from making the same type of errors.

The importance of understanding the value of self-correction was stressed. Marking mistakes and entering the right responses were emphasized as an integral part of learning to read better.

The rate builders and listening skill builders were introduced in the same way in a group with discussion to make sure that all children understood what was to be done with these exercises once they began working independently.

It took approximately two to three weeks for the pupils to grasp the idea of working independently following the procedures just outlined and assuming the responsibility for understanding what they read and correcting their written comprehension work. On the Fourth grade level particularly, the induction proved to be a rather difficult and slightly frustrating experience.

Once under way, the major activity of each class period in the multi-level program was individualized silent reading. Class discussion was involved only connection with instruction in the use of materials and procedures and was done mainly during the first two or three weeks of the

program. The only phase of the program that called for discussion was the listening comprehension work which occurred about once every two weeks. At this time the teacher read a selection to the pupils. When she finished, they completed the comprehension checks in the pupil record book provided for these listening exercises. The correction of these was done orally accompanied by discussion whenever pupils disagreed as to responses given.

The question which may arise in the reader's mind is: What does the teacher do in this self-operative reading program? Her role is still a very important one that of motivating, directing, guiding, and controlling the entire learning situation. Her main task is to set the program in operation, making sure that all pupils understand what they are to do. Hers is the responsibility to encourage the pupils to analyze and to learn from their mistakes in learning to perform the reading-thinking process more efficiently.

When the children achieved a certain degree of independence in their work, the teacher was free to have an individual conference with each child lasting on the average of five to ten minutes about once every two weeks. While the children worked at their reading units, the teacher conferred with one child at her desk or at a library table in some corner of the room. In these conferences the following were accomplished: (1) the teacher and pupil together studied the

latter's record book noting how well he had read each exercise, the kind of mistakes made, how corrections were made, how he evaluated each day's work, and what progress he had thus far made, (2) the pupil was encouraged to tell the story he happened to be reading and perhaps to read orally a section with which he particularly had some difficulty, (3) help with word analysis or any other skills was given, (4) a check on outside reading was made by studying the child's record of leisure reading, and (5) the teacher guided the child into the selections of books for independent reading suitable to his own level and interest and likewise recommended books that would help widen his interests.

For convenience in handling materials, it was helpful to appoint five or six pupils to act as work-group leaders. It was their responsibility to get materials out to the pupils in their rows or tables and to get them back into the reading kit at the close of the period. The ablest pupils were inducted for this work at the outset of the program, giving the less able a turn at leadership and responsibility-taking after procedures were thoroughly established.

Summary.

The chief purpose of this chapter has been to describe the two experimental variables, namely the two approaches to reading--the one-level or basal reader approach, and the multi-level or SRA laboratory approach. By one-level materials is meant a single book designed for use in a particular grade or in a particular group, usually ranging in difficulty between one and one-half and two grade levels from its beginning to its end. The multi-level materials consist in a wide variety of reading selections offering instruction and drill at ten different reading grade levels.

The assumption underlying this chapter is that exact and detailed information about the experimental variables is necessary in order to show that the two approaches emphasize the same aspects of reading, the only difference between the two approaches being the fact that one group uses a single book and group discussion, while the other is exposed to a wide variety of graded reading selections in a relatively self-operating program.

In the first part of the chapter, there were presented the rationale and the description of the reading content of the one-level approach to reading. Then followed the presentation of the four steps in the teaching procedure of this approach. In addition, the teacher's role was described along with the guidance techniques used in motivating the pupils.

The second part of the chapter treated of the basic premises underlying the SRA multi-level reading program and a description of the SRA Reading Laboratory materials. Motivating devices, such as tests, graphs, charts, and individual conferences used in an effort toward personalizing the education of each child, were likewise presented. The duties of both pupil and teacher were outlined in this self-administrative reading program.

The findings of this experiment and the analysis and interpretation of the data will constitute the material of the subsequent chapter.

CHAPTER IV

PRESENTATION AND EVALUATION OF RESULTS

The statistical analyses in this study are based on grade equivalent scores obtained from the administration of the SRA Achievement Series Reading Test, Form A.

To test the hypotheses set forth at the beginning of the experiment, six analyses were made of the variance (1) according to a Total or composite Reading Score, that is, a combination of two scores, namely, the Comprehension Score and the Vocabulary Score for Grades Four, Five and Six; (2) according to the Comprehension Score for Grades Four, Five and Six; (3) according to the Vocabulary Score for Grades Four, Five and Six; (4) according to a Total Reading Score for the Fourth Grade divided into ability subgroups; (5) according to a Total Reading Score for the Fifth Grade divided into ability subgroups; and (6) according to a Total Reading Score for the Sixth Grade divided into ability subgroups.

In the presentation of the findings of Analyses 1, 2 and 3 the following procedure will be adhered to: (1) tests for significance of double interactions; (2) tests for main effects - methods and grades; (3) t-tests for differences between the experimental and control groups for methods

within each grade; and (4) t-tests for the experimental group between the grades.

Analyses 4, 5 and 6 are based on the Total or composite Reading Score. For each grade the variables considered have been Methods and three Ability subgroups. The results will be presented for each grade separately in this manner: (1) tests for significance of double interactions; (2) tests for main effects - Methods and Ability subgroups; (3) t-tests for differences between Methods at each subgroup level; and (4) t-tests for the experimental group between the subgroups.

1. Analysis of Data on Total Reading Scores
for Grades Four, Five, and Six.

When tests for significance of double interactions were made, the error term used was $M \times G \times S$ (Methods x Grades x Schools). No significant interactions were found.

Since the F for none of these double interactions was significant, the next step was to test for the main effects - Methods and Grades. For Methods, when the F is not significant, the appropriate error term to be used is the combination of the SS of $M \times S$ and the SS of $M \times G \times S$, or in this case $41.36 + 55.26$ divided by the combined degree of freedom, $11 + 22$. Then $(41.36 + 55.26) / (11 + 22)$ is 2.93 with 33 degrees of freedom. When the F for Grades is not significant, then the appropriate error term is the combination of the SS of $G \times S$ and the SS of $M \times G \times S$, or $69.91 + 55.26$ divided by the combined degrees of

freedom $22 + 22$. Then, $(69.91 + 55.26) / (22 + 22)$ is 2.84 with 44 degrees of freedom. Table VII shows that the F-test for both Methods and Grades was found to be significant at the 1% level of confidence.

Since the F for Methods and the F for Grades have been found to be significant, t-tests were applied to find where the differences occurred, first with reference to Methods and then with reference to Grades. Table VIII shows an evaluation of the differences of means on total reading scores of the experimental and control groups within each of the grades. The formula used for the t-tests was

$$\text{Significant Difference} \geq t (P = .01) \times \sigma_{\text{Diff.}}$$

The formula used for the $\sigma_{\text{Diff.}}$ was $\sigma_D = \sqrt{\frac{2 \times \sigma^2}{nn}}$

The σ^2 of this formula was the variance which served as an error term in the F-test for Methods. The value t (P = .01) was read in the Table of t for a number of degrees of freedom equal to that of the error term. In this case it was 33 df which was equal to 2.7362. Therefore, the significant difference $\geq 2.7362 \times .127$ or .347. As shown in Table VIII, the experimental group at each grade level is significantly superior to the control group in total reading achievement.

Table VII.-
Tests of Significance for the Main Effects on
Total Reading Scores

Source of Variation	S ²	Error Term	F	F .01
M (Methods)	128.23 (1)	2.93 (33) ^a	43.76	7.49
G (Grades)	904.83 (2)	2.84 (44) ^b	318.60	5.14

a Since the F for the double interactions was not significant, the formula for the error term is

$$\left(\frac{SS}{M \times S} + \frac{SS}{M \times G \times S} \right) / \left(\frac{df}{M \times S} + \frac{df}{M \times G \times S} \right)$$

b Since the F for the double interactions was not significant, the formula for the error term is

$$\left(\frac{SS}{G \times S} + \frac{SS}{M \times G \times S} \right) / \left(\frac{df}{G \times S} + \frac{df}{M \times G \times S} \right)$$

Table VIII.-

Evaluation of the Differences of Means on Total Reading Scores of the Experimental and Control Groups Within Each of the Grades by the t-Test, where $\sigma_p = .127$ and the Smallest Significant Difference at $P = .01$ is 2.7362.

Groups Within Grade Levels	Means Compared	Difference	Significant Difference
Grade 4 E - C	5.35 - 4.85	.50	Yes
Grade 5 E - C	6.72 - 6.10	.62	Yes
Grade 6 E - C	7.50 - 7.16	.34	Yes

In Table IX, the t-tests of the differences in total reading achievement between the experimental groups of Grades Four, Five and Six are given. The formula used for the t-tests was: Significant Difference $\geq t (P = .01) \times \sigma_D$. The formula used for the σ_D was $\sigma_D = \sqrt{\frac{2 \times \sigma^2}{n_D}}$. The σ^2 of this formula was the variance which served as an error term in the F-test for Grades. The value t (P = .01) was read in the Table of t for 44 df which was equal to 2.6952. Therefore, the significant difference $\geq 2.6952 \times .1253$ or .338. From these t-tests one observes that Grade Six is significantly superior to Grades Five and Four, and that Grade Five is significantly superior to Grade Four.

In summary, then, with reference to Total Reading achievement, the Method used by the experimental group, namely, the multi-level, was found significantly superior to the Method used by the control group, namely, the one-level, within each grade. Likewise, a significant difference was found between the grades compared successively.

Table IX.-

Evaluation of the Differences of Means on Total Reading Scores of Grades Four, Five, and Six for the Experimental Group by the t-Test where $\sigma_p^2 = .1253$ and the Smallest Significant Difference at $P = .01$ is 2.6952.

Grades	Means Compared	Difference	Significant Difference
5 - 4	6.72 - 5.35	1.37	Yes
6 - 4	7.50 - 5.35	2.15	Yes
6 - 5	7.50 - 6.72	.78	Yes

2. Analysis of Data on Comprehension Scores for Grades Four, Five, and Six.

When tests for significance of double interactions were made, MxGxS (Methods x Grades x Schools) was used as the error term. No significant interactions were found.

To determine whether the differences in the comprehension scores were significant, variances of these scores were analyzed and the F-test made. The error term used for Methods was the combination of the SS of MxS and the SS of MxGxS, or $53.99 + 79.87$ divided by the combined degrees of freedom, $11 + 22$. Then $(53.99 + 79.87) / (11 + 22)$ is 4.06 with 33 degrees of freedom. The error term used for the Grades was the combination of the SS of GxS and the SS of MxGxS, or $78.64 + 79.87$ divided by the combined degrees of freedom, $22 + 22$. Then $(53.99 + 79.87) / (22 + 22)$ is 3.60 with 44 degrees of freedom. Results of the F-test for Methods and Grades are given in Table X. The F was found to be significant at the 1% level of confidence for the Methods and for the Grades.

Table X.-
Tests of Significance for the Main Effects on
Comprehension Scores.

Source of Variation	S ²	Error Term	F	F .01
M (Methods)	171.87 (1)	4.06 (33) ^a	42.33	7.49
G (Grades)	842.61 (2)	3.60 (44) ^b	234.06	5.14

a Since the F for the double interactions was not significant, the formula for the error term is

$$\left(\frac{SS}{M \times S} + \frac{SS}{M \times G \times S} \right) / \left(\frac{df}{M \times S} + \frac{df}{M \times G \times S} \right)$$

b Since the F for the double interactions was not significant, the formula for the error term is

$$\left(\frac{SS}{G \times S} + \frac{SS}{M \times G \times S} \right) / \left(\frac{df}{G \times S} + \frac{df}{M \times G \times S} \right)$$

Since the F-test was found to be significant, the t-test was applied to determine the significance of the difference between pairs of means. Results of the t-test on differences in the means on comprehension scores for Methods are given in Table XI. The same formula was used for the t-test as was used in the first analysis for Total Reading achievement. In this case, the significant difference $\geq 2.7362 \times .15$ or $.41$. It will be noted in Table XI that the experimental group within each grade is significantly superior to the control group with reference to reading Comprehension.

Table XII presents the t-test of the differences in Comprehension between the experimental group of Grades Four, Five, and Six. The formula for the t-test and the formula for σ_p are the same as were used for finding the differences for the experimental groups on Total Reading achievement. In this t-test, therefore, the significant difference $\geq 2.6952 \times .141$ or $.38$. It will be noted in Table XII that Grade Six is significantly superior to Grade Five and Four, and that Grade Five is significantly superior to Grade Four.

When the analysis of data on reading Comprehension is summarized, it will be noted that the method used by the experimental group, namely, the multi-level, was found significantly superior to the method used by the control group, namely, the one-level, within each grade. Again, a significant difference was found between the grades compared successively.

Table XI.-

Evaluation of the Differences of Means on Comprehension Scores of the Experimental and Control Groups Within Each of the Grades by the t-Test, Where $\sigma_D = .15$ and the Smallest Significant Difference at $P = .01$ is 2.7362.

Groups Within Grade Levels	Means Compared	Difference	Significant Difference
Grade 4 E - C	5.43 - 4.89	.54	Yes
Grade 5 E - C	6.86 - 6.11	.75	Yes
Grade 6 E - C	7.51 - 7.10	.41	Yes

Table XII.-

Evaluation of the Differences of Means on Comprehension Scores of Grades Four, Five, and Six for the Experimental Group by the t-Test Where $\sigma_D = .141$ and the Smallest Significant Difference at $P = .01$ is 2.6952.

Grades	Means Compared	Difference	Significant Difference
5 - 4	6.86 - 5.43	1.43	Yes
6 - 4	7.51 - 5.43	2.08	Yes
6 - 5	7.51 - 6.86	.65	Yes

3. Analysis of Data on Vocabulary Scores for Grades Four, Five, and Six.

The test for significance of double interactions using the error term $MxGxS$ (Methods x Grades x Schools) resulted in no significant interactions.

The error term for the F-test for Methods was the combination of the SS of MxS and the SS of $MxGxS$, or $24.51 + 53.87$ divided by the combined degrees of freedom, $11 + 22$. Then $(24.51 + 53.87) / (11 + 22)$ is 2.38 with 33 degrees of freedom. The error term for the F-test for Grades was the combination of the SS of GxS and the SS of $MxGxS$, or $77.91 + 53.87$ divided by the combined degrees of freedom, $22 + 22$. Then $(77.91 + 53.87) / (22 + 22)$ is 3.00 with 44 degrees of freedom. The F-test for both Methods and Grades yielded significant differences at the 1% level of confidence as shown in Table XIII.

Table XIII.-
Tests of Significance for the Main Effects on
Vocabulary Scores.

Source of Variation	S ²	Error Term	F	F .01
M (Methods)	103.18 (1)	2.38 (33) ^a	43.35	7.49
G (Grades)	974.48 (2)	3.00 (44) ^b	324.83	5.14

a Since the F for the double interactions was not significant, the formula for the error term is

$$\left(\frac{SS}{M \times S} + \frac{SS}{M \times G \times S} \right) / \left(\frac{df}{M \times S} + \frac{df}{M \times G \times S} \right)$$

b Since the F for the double interactions was not significant, the formula for the error term is

$$\left(\frac{SS}{G \times S} + \frac{SS}{M \times G \times S} \right) / \left(\frac{df}{G \times S} + \frac{df}{M \times G \times S} \right)$$

The t-test for differences in Vocabulary between the experimental and control groups in Grades Four, Five, and Six was made. Again the same formula was used for the t-test as was used in the first analysis for Total Reading achievement. Therefore, in this test, the significant difference was

$$\text{Significant difference} \geq 2.7362 \times .115 \text{ or } .315.$$

Table XIV shows an evaluation of the differences. Within each of the grades the experimental group is significantly superior to the control group in Vocabulary achievement.

Table XV presents the t-test of the differences in Vocabulary between the experimental groups of Grades Four, Five, and Six. Here the significant difference was

$$\text{Significant difference} \geq 2.6952 \times .129 \text{ or } .348.$$

From this table it may be noted that Grade Six is significantly superior to Grade Five and Four, and that Grade Five is significantly superior to Grade Four.

To summarize, the significant differences found in analyzing the data on Vocabulary scores for both methods and differences between successive grades are identical with those of the preceding two analyses.

Table XIV.-

Evaluation of the Differences of Means on Vocabulary Scores of the Experimental and Control Groups Within Each of the Grades by the t-Test, Where $\sigma_D = .115$ and the Smallest Significant Difference at $P = .01$ is 2.7362.

Groups Within Grade Levels	Means Compared	Difference	Significant Difference
Grade 4 E - C	5.22 - 4.76	.46	Yes
Grade 5 E - C	6.54 - 6.04	.50	Yes
Grade 6 E - C	7.49 - 7.14	.35	Yes

Table IV.-

Evaluation of the Differences of Means on Vocabulary Scores of Grades Four, Five, and Six for the Experimental Group by the t-Test where $\sigma_p = .129$ and the Smallest Significant Difference at $P = .01$ is 2.6952.

Grades	Means Compared	Difference	Significant Difference
5 - 4	6.54 - 5.22	1.32	Yes
6 - 4	7.49 - 5.22	2.27	Yes
6 - 5	7.49 - 6.54	.95	Yes

4. Analysis of Data on Total Reading Scores for the Fourth Grade Divided into Ability Subgroups.

Tests for significance of double interactions, using the error term $MxSxSc$ (Methods x Subgroups x Schools), resulted in no significant interactions.

To determine whether the differences in the Total Reading Scores for Methods and Ability subgroups were significant, the F-test was made. The error term for the F-test on the Total Reading for the Fourth Grade for Methods was the combined SS of $MxSc$ and the SS of $MxSxSc$, or $47.80 + 26.95$ divided by the combined degrees of freedom, $11 + 22$. Then, $(47.80 + 26.95) / (11 + 22)$ is 2.27 with 33 degrees of freedom. The error term for the F-test for Ability subgroups was the combination of the SS of $SxSc$ and the SS of $MxSxSc$, or $31.07 + 26.95$ divided by the combined degrees of freedom, $22 + 22$. Then $(31.07 + 26.95) / (22 + 22)$ is 1.32 with 44 degrees of freedom. Results are shown in Table XVI. For both Methods and Ability subgroups, the F was found significant at the 1% level of confidence.

The t-test to determine the significance of the difference between the means of the experimental and control groups on Total Reading Scores was made. In this test, the significant difference $\geq 2.7362 \times .194$ or .53. Results are shown in Table XVII. The experimental group is significantly superior to the control group within Ability subgroups I and II. No significant difference exists within the third Ability subgroups.

Table XVI.-
Tests of Significance for the Main Effects
for Fourth Grade Total Reading Scores.

Source of Variation	S^2	Error Term	F	F .01
M (Methods)	44.40 (1)	2.27 (33) ^a	19.56	7.49
S (Subgroups)	273.81 (2)	1.32 (44) ^b	207.43	5.14

a Since the F for the double interactions was not significant, the formula for the error term is

$$\left(\frac{SS}{MxSc} + \frac{SS}{MxSxSc} \right) / \left(\frac{df}{MxSc} + \frac{df}{MxSxSc} \right)$$

b Since the F for the double interactions was not significant, the formula for the error term is

$$\left(\frac{SS}{SxSc} + \frac{SS}{MxSxSc} \right) / \left(\frac{df}{SxSc} + \frac{df}{MxSxSc} \right)$$

Table XVII.-

Evaluation of the Fourth Grade Mean Differences on Total
 Reading Scores of the Experimental and Control Groups
 Within Each of the Ability Subgroups by the t-Test
 Where $\sigma_D = .53$ and the Smallest Significant
 Difference at $P = .01$ is 2.7362.

Groups Within Subgroups		Means Compared	Difference	Significant Difference
Subgroup I	E - C	6.58 - 5.91	.67	Yes
Subgroup II	E - C	5.18 - 4.65	.53	Yes
Subgroup III	E - C	4.28 - 3.99	.29	No

The t-test to determine the significance of the difference between the experimental groups within each of the Ability subgroups was made. In this instance the significant difference $\geq 2.6952 \times .148$ or .399. From Table XVIII, it may be noted that Subgroup I is significantly superior to Subgroups II and III, and that Subgroup II is significantly superior to Subgroup III.

In summary, the analysis of the Fourth Grade reading scores revealed a significant difference in mean achievement between the experimental and control groups with reference to Methods. The experimental group of the ability Subgroups I and II was found significantly superior as compared with the control group. No significant difference was found within Subgroup III. A significant difference was found between the experimental subgroups compared successively.

Table XVIII.-

Evaluation of the Fourth Grade Mean Differences on Total Reading Scores of the Experimental Groups Within Each of the Ability Subgroups by the t-Test, Where $\sigma_D = .148$ and the Smallest Significant Difference at $P = .01$ is 2.6952.

Subgroups	Means Compared	Difference	Significant Difference
I - II	6.58 - 5.18	1.40	Yes
I - III	6.58 - 4.28	2.30	Yes
II - III	5.18 - 4.28	.90	Yes

5. Analysis of Data on Total Reading Scores for the Fifth Grade Divided into Ability Subgroups.

Tests for significance of double interactions, using the error term $MxSxSc$ (Methods x Subgroups x Schools), resulted in no significant interactions.

The error term for the F-test for Methods was the combination of the SS of $MxSc$ and the SS of $MxSxSc$, or $27.80 + 33.99$ divided by the combined degrees of freedom, $11 + 22$. Then $(27.80 + 33.99) / (11 + 22)$ is 2.09 with 33 degrees of freedom. The error term for the F-test for ability subgroups was the combination of the SS of $SxSc$ and the SS of $MxSxSc$, or $23.65 + 33.99$ divided by the combined degrees of freedom, $22 + 22$. Then $(23.65 + 33.99) / (22 + 22)$ is 1.31 with 44 degrees of freedom. The F-test for both Methods and Ability Subgroups yielded significant differences at the 1% level of confidence, as shown in Table XIX.

The t-test for differences in Total Reading achievement for the Fifth Grade for Methods was made with the significant difference $\geq 2.7362 \times .187$ or .512. Table XX shows an evaluation of the differences. The experimental group is significantly superior to the control group within each of the Ability Subgroups.

Table XIX.-
Tests of Significance for the Main Effects
for Fifth Grade Total Reading Scores.

Source of Variation	S^2	Error Term	F	F .01
M (Methods)	69.07 (1)	2.09 (33) ^a	33.05	7.49
S (Subgroups)	570.59 (2)	1.31 (44) ^b	435.56	5.14

a Since the F for the double interactions was not significant, the formula for the error term is

$$\left(\frac{SS}{MxSc} + \frac{SS}{MxSxSc} \right) / \left(\frac{df}{MxSc} + \frac{df}{MxSxSc} \right)$$

b Since the F for the double interactions was not significant, the formula for the error term is

$$\left(\frac{SS}{SxSc} + \frac{SS}{MxSxSc} \right) / \left(\frac{df}{SxSc} + \frac{df}{MxSxSc} \right)$$

Table IX.-

Evaluation of the Fifth Grade Mean Differences on Total Reading Scores of the Experimental and Control Groups Within Each of the Ability Subgroups by the t-Test
Where $\sigma_D = .187$ and the Smallest Significant Difference at $P = .01$ is 2.7362.

Groups Within Subgroups		Means Compared	Difference	Significant Difference
Subgroup I	E - C	8.27 - 7.72	.55	Yes
Subgroup II	E - C	6.68 - 5.97	.71	Yes
Subgroup III	E - C	5.21 - 4.62	.59	Yes

Table XXI presents the t-test of the mean differences in Total Reading achievement of the experimental group within the three Ability Subgroups. The significant difference $\geq 2.6952 \times .148$ or .399. The table indicates that ability Subgroup I is significantly superior to Subgroups II and III, and that Subgroup II is significantly superior to Subgroup III.

In summary, the analysis of the Fifth Grade reading scores revealed a significant difference in mean achievement between the experimental and control groups with reference to Methods and Ability Subgroups. The experimental group was significantly superior to the control group within each Ability subgroup. A significant difference was found between the experimental subgroups compared successively.

Table XXI.-

Evaluation of the Fifth Grade Mean Differences on Total Reading Scores of the Experimental Groups Within Each of the Ability Subgroups by the t-Test, Where $\sigma_D = .148$ and the Smallest Significant Difference at $P = .01$ is 2.6952.

Subgroups	Means Compared	Difference	Significant Difference
I - II	8.27 - 6.68	1.59	Yes
I - III	8.27 - 5.21	3.06	Yes
II - III	6.68 - 5.21	1.47	Yes

6. Analysis of Data on Total Reading Scores for the Sixth Grade Divided into Ability Subgroups.

Tests for significance of double interactions, using the error term $MxSxSc$ (Methods $\times$ Subgroups $\times$ Schools), resulted in no significant interactions.

The error term for the F-test for Methods was the combination of the SS of $MxSc$ and the SS of $MxSxSc$, or $21.04 + 22.60$ divided by the combined degrees of freedom, $11 + 22$. Then $(21.04 + 22.60) / (11 + 22)$ is 1.32 with 33 degrees of freedom. The error term for the F-test for Ability Subgroups was the combination of the SS of $SxSc$ and the SS of $MxSxSc$, or $14.77 + 22.60$ divided by the combined degrees of freedom, $22 + 22$. Then $(14.77 + 22.60) / (22 + 22)$ is .85 with 44 degrees of freedom. The F-test for both Methods and Ability Subgroups yielded significant differences at the 1% level of confidence as shown in Table XXII.

The t-test for differences in Total Reading achievement for the Sixth Grade for Methods was made with the significant difference $\geq 2.7362 \times .148$ or .41. Table XXIII shows an evaluation of the differences. No significant differences were found between the experimental and control groups within Subgroups I and II. However, in Subgroup III the experimental group was significantly superior to the control group.

Table XIII.-

Tests of Significance for the Main Effects
for Fifth Grade Total Reading Scores.

Source of Variation	S ²	Error Term	F	F .01
M (Methods)	21.53 (1)	1.32 (33) ^a	16.31	7.49
S (Subgroups)	487.73 (2)	.85 (44) ^b	573.80	5.14

a Since the F for the double interactions was not significant, the formula for the error term is

$$\left(\frac{SS}{MxSc} + \frac{SS}{MxSxSc} \right) / \left(\frac{df}{MxSc} + \frac{df}{MxSxSc} \right)$$

b Since the F for the double interactions was not significant, the formula for the error term is

$$\left(\frac{SS}{SxSc} + \frac{SS}{MxSxSc} \right) / \left(\frac{df}{SxSc} + \frac{df}{MxSxSc} \right)$$

Table XXIII.-

Evaluation of the Sixth Grade Mean Differences on Total Reading Scores of the Experimental and Control Groups Within Each of the Ability Subgroups by the t-Test Where $\sigma_p = .148$ and the Smallest Significant Difference at $P = .01$ is 2.7362.

Groups Within Subgroups		Means Compared	Difference	Significant Difference
Subgroup I	E - C	8.93 - 8.61	.32	No
Subgroup II	E - C	7.40 - 7.21	.19	No
Subgroup III	E - C	6.18 - 5.65	.53	Yes

Table XXIV shows the t-test of the mean differences in Total Reading Achievement of the experimental group within the three Ability Subgroups. The significant difference $\geq 2.6952 \times .118$ or .318. As shown in this table, Ability Subgroup I is significantly superior to Subgroups II and III, and Subgroup II is significantly superior to Subgroup III.

In summary, the analysis of the Sixth Grade reading scores indicated a significant difference in mean achievement between the experimental and control groups with reference to Methods and Ability Subgroups. No significant differences were found in Methods within Subgroups I and II. In Subgroup III a significant difference was found between the experimental and control groups. Significant differences were found between the experimental subgroups compared successively.

Table XXIV.-

Evaluation of the Sixth Grade Mean Differences on Total Reading Scores of the Experimental Groups Within Each of the Ability Subgroups by the t-Test, where $\sigma_D = .118$ and the Smallest Significant Difference at $P = .01$ is 2.6952.

Subgroups	Means Compared	Difference	Significant Difference
I - II	8.93 - 7.40	1.53	Yes
I - III	8.93 - 6.18	2.75	Yes
II - III	7.40 - 6.18	1.22	Yes

Summary.

The general purpose of this chapter was to present and evaluate the results of the experimental study. Six analyses of variance were made to test the hypotheses set forth at the beginning of this investigation. The first three were concerned with the Total Reading Score, the Comprehension Score, and the Vocabulary Score respectively of the entire sample, namely, Grades Four, Five, and Six. The remaining three analyses were made of each grade separately on the Total Reading Score only. After each analysis a summary of the findings was given.

SUMMARY AND CONCLUSIONS

The primary purpose of this study has been to evaluate experimentally the relative effectiveness of the multi-level or SRA laboratory approach to reading as compared with the conventional one-level reading approach in Grades Four, Five, and Six. More specifically, the study was undertaken to determine the difference, if any, between the progress in Total Reading achievement, in Comprehension, and in Vocabulary growth of children exposed to two different reading programs.

The multi-level reading approach is regarded as a developmental reading program wherein improvement is sought through greater individualization of instruction by the use of a variety of graded reading selections in a relatively self-directed manner. In this program, under the guidance of the teacher, each child works independently, assuming the responsibility for understanding what he reads, correcting his own written comprehension work, charting and graphing his own progress, and finally evaluating his own work. Furthermore, each child works at his own reading level and at his own rate of speed. The program is aimed at meeting individual differences and developing each pupil's academic potential.

The conventional one-level reading approach is a basal reading program wherein improvement in reading comprehension and vocabulary growth is sought through small group instruction and with the use of a basal reader and the accompanying workbook, usually ranging in difficulty between one and one-half and two grade levels from its beginning to its end. In such program the teacher directs the discussions to build readiness and to set the stage for the particular selection to be read, develops new vocabulary, directs the silent reading and the discussion following it. The pupils read the same story within a group, discuss the content and share experiences, and correct their written work in the workbooks as a group under the direction of the teacher.

The experiment was designed to test the following hypotheses:

1. In Grades Four, Five, and Six there is no significant difference in Total Reading performance as measured by a standardized reading achievement test between pupils using the multi-level instructional materials and the laboratory approach and the pupils using the conventional one-level instructional materials approach.
2. In Grades Four, Five, and Six there is no significant difference in Comprehension as measured by a standardized reading achievement test between pupils using the multi-level instructional materials and the laboratory approach and the pupils using the conventional one-level instructional materials approach.
3. In Grades Four, Five, and Six there is no significant difference in Vocabulary growth as measured by a standardized reading achievement test between pupils using the multi-level instructional materials and the laboratory approach and the pupils

- using the conventional one-level instructional materials approach.
4. The relative effectiveness of the multi-level approach to reading depends upon the grade level at which it is used.
 5. The relative effectiveness of the multi-level approach to reading does not depend upon the level of intelligence of pupils in the Fourth Grade.
 6. The relative effectiveness of the multi-level approach to reading does not depend upon the level of intelligence of pupils in the Fifth Grade.
 7. The relative effectiveness of the multi-level approach to reading does not depend upon the level of intelligence of pupils in the Sixth Grade.

A treatment-by-levels design was set up. The treatments were the two methods of teaching reading, namely, the multi-level approach which was followed by the experimental group, and the conventional one-level approach followed by the control group. Grades Four, Five, and Six constituted the levels within each of which were three types of pupils, those of the upper, middle, and lower thirds formed on the basis of mental ability.

The subjects for this experiment were approximately 3600 pupils of seventy-two classes, twenty-four each of Grades Four, Five, and Six, from twelve schools of the Parochial School System in the Chicago area. All twelve schools were such that had parallel Fourth, Fifth, and Sixth Grades, making it possible to have an experimental and control group at each grade level within each school.

On the basis of the results of the Otis Quick-Scoring Mental Ability, Beta Test, Form Em within each grade the pupils were divided into three ability subgroups, the upper, middle, and lower thirds. Twenty pupils were randomly selected from each of these thirds and from these twenty pupils two groups of ten pupils were formed in each third. Each class participating in this experiment then consisted of thirty pupils, ten in each third. The other pupils, not randomly selected but yet a part of the grade, were evenly divided between the two classes at each grade level. As a result of this random selection the number of experimental subjects had been reduced to 2160, that is, thirty pupils in seventy-two classes. The classes and teachers were randomly assigned to the treatments.

The SRA Achievement Series Reading Test, Form A was administered to all pupils after twenty-one weeks experience was completed and the results of this test in terms of grade equivalents were used to measure achievement.

The experiment was so designed that an application of the technique of the analysis of variance with its corresponding *F*-test of significance might be used in testing the hypotheses. Six analyses were made:

1. On the Total Reading Score for Grades Four, Five, and Six;
2. On the Comprehension Score for Grades Four, Five, and Six;
3. On the Vocabulary Growth Score for Grades Four, Five, and Six;
4. On the Total Reading Score for the Fourth Grade;
5. On the Total Reading Score for the Fifth Grade;
6. On the Total Reading Score for the Sixth Grade.

In all six analyses the 1% level of significance was used for the rejection of the hypotheses proposed.

From the results of the analyses of variance, certain conclusions are warranted relative to the multi-level instructional materials and laboratory approach to reading and the conventional one-level instructional materials approach.

1. A significant difference in Total Reading means was found between the Experimental and Control groups of Grades Four, Five, and Six as measured by the SRA Achievement Series Reading Test, Form A. The hypothesis that the pupils using the multi-level instructional materials and laboratory approach and the pupils using the conventional one-level instructional materials approach do not differ in their Total Reading means is therefore rejected.

2. A significant difference was found between the Experimental and Control groups of Grades Four, Five, and Six in terms of Comprehension, as measured by the SRA Achievement Series Reading Test, Form A. The hypothesis that the two groups do not differ in Comprehension means is therefore rejected.

3. A significant difference was found between the Experimental and Control groups of Grades Four, Five, and Six in terms of Vocabulary Growth as measured by the SRA Achievement Series Reading Test, Form A. The hypothesis that the two groups do not differ in Vocabulary Growth means is therefore rejected.

4. A significant difference at the Fourth, Fifth, and Sixth Grade levels was found between the Experimental groups compared successively. The hypothesis that the relative effectiveness of the SRA multi-level approach to reading does not depend upon the grade level at which it is used is therefore rejected.

5. A significant difference at the Fourth Grade level was found between the three Ability subgroups compared successively. The hypothesis that the relative effectiveness of the SRA multi-level approach to reading does not depend upon the level of intelligence of pupils is therefore rejected. The multi-level reading approach is not equally effective for pupils at all levels of intelligence at the Fourth Grade level.

6. A significant difference at the Fifth Grade level was found between the three Ability subgroups compared successively. The hypothesis that the relative effectiveness of the SRA multi-level approach to reading does not depend upon the level of intelligence of pupils is therefore rejected.

The multi-level reading approach is not equally effective for pupils at all levels of intelligence on the Fifth Grade level.

7. A significant difference at the Sixth Grade level was found between the three Ability subgroups compared successively. The hypothesis that the relative effectiveness of the SRA multi-level approach to reading does not depend upon the level of intelligence of pupils is therefore rejected. The multi-level reading approach is not equally effective for pupils at all levels of intelligence on the Sixth Grade level.

In the light of these findings, it seems justifiable to state that children of Grades Four, Five, and Six who are taught in classrooms where the SRA multi-level instructional materials and laboratory techniques are used will achieve greater competence in reading Comprehension and Vocabulary Growth than children whose program of reading is limited to the conventional one-level reader with the accompanying workbook. If a child is to improve in reading, he must necessarily begin where he is and be guided through successive levels of achievement at his own rate of growth.

It appears, likewise, that the relative effectiveness of the SRA multi-level instructional materials and laboratory techniques depend upon the grade level at which they are used. The higher the grade level, the more effective is the program.

Furthermore, the relative effectiveness of the SRA multi-level approach to reading depends upon the level of

intelligence of the pupils. The more intelligent pupils at each of the Intermediate Grade levels made greater gains in reading Comprehension and Vocabulary Growth than the less intelligent. This is understandable since children are capable of assuming considerable self-direction and self-control as they mature.

All results of this investigation may be said to relate to the Parochial Schools within the Chicago area, where there exist the same administrative, organizational, and supervisory policies. Findings for other types of localities and other school systems are needed to support those of this study.

In further studies of the SRA multi-level instructional materials and laboratory techniques, it would seem profitable to explore the relative effectiveness of the SQR study technique built into this program on other areas of the curriculum.

Finally, a longitudinal study of at least three or four years made of pupils following the SRA multi-level instructional materials and laboratory techniques would seem desirable for the purpose of obtaining information concerning their growth in reading Comprehension and Vocabulary with this relatively self-directed program.

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APPENDIX A

A COPY OF THE QUESTIONNAIRE ENTITLED
"LET'S GET ACQUAINTED"

LET'S GET ACQUAINTED QUESTIONNAIRE

NAME Age

1. When you have an hour or two that you can spend just as you please, what do you like best to do?

2. What are the names and ages of your close friends?

3. Who is your best friend in this classroom?
What do you like best about your friend?
4. What would you like to be when you are grown?
What would your father and mother like you to be?

5. Do you have a pet? What?
6. Are you making any collections? Of what?
7. Do you have a hobby? What?
8. What TV programs do you look at regularly? At what time?

9. How often do you get to the movies?
10. What kind of movies do you like best?
First choice
Second choice
Third choice
11. Have you been to a farm? to a zoo?
Have you been to the Museum of Science and Industry?
Have you been to the Adler Planetarium?
Have you been to the Shedd Aquarium?
Have you been to the Public Library?

12. Do your parents encourage you to read at home?
Besides the books you use in school, what kind of books do
you have at home?
.
Do you have your own library card?
What kind of stories do you like best?
First choice
Second choice
Third choice
13. What are your favorite sports?
14. What do you fear most?
15. If you were asked to make three wishes what would they be?
.
.
.
16. What club do you belong to?
What good things does your club do?
.
17. What are some of the things you like about school?
.
.
18. What are some of the things you do not like about school?
.
.

APPENDIX B

RECORD OF LEISURE READING

RECORD OF LEISURE READING

Author	Title	Date Begun	Date Ended	Where I Got It	Why I Read It	How I Like It

APPENDIX C

OTIS QUICK-SCORING MENTAL ABILITY BETA TEST,
FORM Em

Otis Quick-Scoring Mental Ability Tests: New Edition

BETA TEST: FORM EM

BETA
EM

by Arthur S. Otis

Do not open this booklet, or turn it over, until you are told to do so.

Fill these blanks, giving your name, age, birthday, etc. Write plainly.

Name _____ Grade _____ Boy _____ Girl _____
First name Initial Last name
Date of birth . . . Month . Day . Year . How old are you now?
Date . 19 . School City and state

Read these directions. Do what they tell you to do

This is a test to see how well you can think. It contains questions of different kinds. Under each question there are four or five possible answers. You are to read each question and decide which of the answers below it is the right answer. Do not spend too much time on any one question. Here are three sample questions.

Sample a: Which one of the five things below is soft?

(1) glass (2) stone (3) cotton (4) iron (5) ice

The right answer, of course, is *cotton*. The word *cotton* is No 3. Now look at the "Answer Spaces for Samples" at the right. In the five spaces after the Sample "a," a heavy mark has been made, filling the space under the 3. This is the way to answer the questions.

Try the next sample question yourself. Do not write the answer; just put a heavy mark in the space under the number corresponding to the right answer.

Sample b: A robin is a kind of —

(6) plant (7) bird (8) worm (9) fish (10) flower

The answer is *bird*, which is answer 7; so you should answer Sample "b" by putting a heavy mark in the space under the 7. Try the Sample "c."

Sample c: Which one of the five numbers below is larger than 55?

(11) 53 (12) 48 (13) 29 (14) 57 (15) 16

The correct answer for Sample "c" is 57, which is No. 14; so you would answer Sample "c" by making a heavy black mark that fills the space under the number 14. Do this now.

Read each question carefully and decide which one of the answers is best. Notice what number your choice is. Then, on the answer sheet, make a heavy black mark in the space under that number. In marking your answers, always be sure that the question number on the answer sheet is the same as the question number in the test booklet. Erase completely any answer you wish to change, and be careful not to make stray marks of any kind on your answer sheet or on your test booklet. When you finish a page, go on to the next page. If you finish the entire test before the time is up, go back and check your answers. Work as rapidly and as accurately as you can.

The test contains 80 questions. You are not supposed to be able to answer all of them, but do the best you can. You will be allowed half an hour after the examiner tells you to start. Try to get as many questions right as possible. Be careful not to go so fast that you make mistakes. Do not spend too much time on any one question. No questions about the test will be answered by the examiner after the test begins. Lay your pencil down.

Do not turn this booklet until you are told to begin.

ANSWER SPACES FOR SAMPLES				
1	2	3	4	5
a		■		
6	7	8	9	10
b				
11	12	13	14	15
c				

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Page **4**

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Page **3**

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15	71	72	73	74
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IQ _____

SCORE _____

AGE _____
Years Months

- 1 The opposite of weak is —
 (1) poor (2) sick (3) tall (4) strong (5) young
- 2 Which of the five words below comes first in the dictionary?
 (6) brown (7) black (8) blown (9) break (10) blend
- 3 Which answer tells best what a teakettle is?
 (11) a tool (12) a weapon (13) a utensil (14) a thing (15) a machine
- 4 An eggshell is to an egg the same as an orange skin is to —
 (16) a lemon skin (17) an orange (18) an orange seed (19) a hen (20) a clamshell
- 5 Ruth is prettier than Sadie but not so pretty as Mabel. Therefore, Mabel is (?) Sadie.
 (21) not so pretty as (22) just as pretty as (23) cannot say which (24) prettier than
- 6 The mayor is to a city as the governor is to —
 (26) a nation (27) a president (28) a state (29) a council (30) an office
- 7 A stove is to heat as a refrigerator is to —
 (31) a kitchen (32) cold (33) electricity (34) gas (35) food
- 8 Three of the four designs at the right are alike in some way.
 Which one is not like the other three? (36)  (37)  (38)  (39)  →
- 9 Northwest is to southeast as up is to —
 (41) north (42) higher (43) northeast (44) down (45) under
- 10 The opposite of clockwise is —
 (46) backward (47) counterclockwise (48) right (49) left (50) round
- 11 Which of the five words below comes first in the dictionary?
 (51) times (52) stand (53) ruled (54) grand (55) quill
- 12 Which of the five persons below is most like a carpenter, a plumber, and a bricklayer?
 (56) a postman (57) a lawyer (58) a truck driver (59) a doctor (60) a painter
- 13 Which of the following sentences tells best what an arm is? →
 (61) It goes in the coat sleeve. (62) You can put it around something.
 (63) It carries the hand. (64) It is the part of the body attached to the shoulder.
 (65) We have two of them.
- 14 Four of the following things are alike. Which one is different from the other four?
 (66) a beet (67) a peach (68) a radish (69) an onion (70) a potato.
- 15 What is to hearing as an eye is to sight?
 (71) glasses (72) voices (73) a sound (74) an ear (75) an earphone
- 16 Three of the four designs at the right are alike in some way.
 Which one is not like the other three? (76)  (77)  (78)  (79) 
- 17 Which of the five things below is most like the moon, a balloon, and a ball?
 (81) sky (82) a cloud (83) a marble (84) an airplane (85) a toy
- 18 Fur is to a rabbit as feathers are to —
 (86) a pillow (87) a bird (88) a hair (89) an animal (90) a nest
- 19 What is the most important reason for using screens at windows? →
 (91) They are easy to paint. (92) They improve the looks of the windows.
 (93) They keep out flies but let in the breeze. (94) They keep out burglars.
 (95) They are easier to keep clean than windows are.
- 20 Which of the five words below comes last in the dictionary?
 (1) front (2) local (3) lemon (4) floor (5) knoll.
- 21 The moon (?) around the earth. (Which of the following words completes the sentence best?)
 (6) turns (7) goes (8) moves (9) revolves (10) spins
- 22 Printing is to a book as writing is to —
 (11) talking (12) a letter (13) a pen (14) a friend (15) reading
- 23 Which of the five things below is most like a chimney, a roof, and a door?
 (16) a chair (17) a bed (18) a stove (19) a window (20) a desk
- 24 The ground is to an automobile as water is to —
 (21) a train (22) gasoline (23) the engine (24) a ship (25) a river

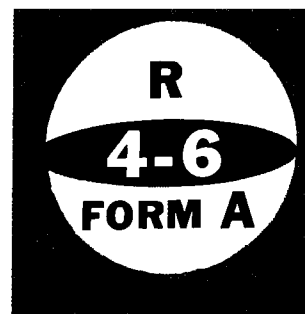
- 25 If grapefruit are 4 for a quarter, how much will two dozen cost?
(26) 23¢ (27) 60¢ (28) 96¢ (29) \$1.50 (30) \$1.00.....
- 26 The author is to a book as the inventor is to a —
(31) machine (32) bookmark (33) discoverer (34) writer (35) magazine....
- 27 Which of the following tells best what a kitchen is?
(36) a room in which to cook (37) a place to keep knives and forks
(38) a part of a house (39) a room with a table and chairs
(40) a room next to the dining room.....
- 28 If the following words were rearranged to make the best sentence, with what letter would the last word of the sentence begin? →
wood made often of are floors
(41) a (42) m (43) w (44) f (45) o.....
- 29 Which of the five things below is most like tea, milk, and lemonade?
(46) water (47) vinegar (48) coffee (49) olive oil (50) mustard.....
- 30 Three of the four designs at the right are alike in some way. Which one is not like the other three?
(51)  (52)  (53)  (54) 
- 31 Which of the sentences below tells best what a kitten is?
(56) It has whiskers. (57) It is a small animal that drinks milk.
(58) It is a playful animal. (59) It is afraid of dogs. (60) It is a young cat....
- 32 If the following were arranged in order, which one would be in the middle?
(61) pint (62) barrel (63) cup (64) quart (65) gallon.....
- 33 If Tom is brighter than Dick and Dick is just as bright as Harry, then Harry is (?) Tom.
(66) brighter than (67) not so bright as (68) just as bright as (69) cannot say which
- 34 Count each 4 that has a 2 next after it in this row. →
2 4 1 4 2 3 5 4 6 2 4 7 5 2 4 4 2 3 9 4 3 2 8 7 8 4 2 2 4 5 5 2 2 4 2
How many are there?
(71) 1 (72) 2 (73) 3 (74) 4 (75) 5.....
- 35 The opposite of ignorance is —
(76) beauty (77) knowledge (78) goodness (79) honesty (80) truth.....
- 36 Four of the following words have something in common. Which one is not like the other four?
(81) cowardly (82) dishonest (83) poor (84) stingy (85) rude.....
- 37 A photograph is 3 inches wide and 5 inches long. If it is enlarged to be 12 inches wide, how long will it be?
(1) 8 in. (2) 20 in. (3) 14 in. (4) 15 in. (5) 60 in.....
- 38 The opposite of spend is —
(6) give (7) earn (8) money (9) take (10) use.....
- 39 Which of the following sentences tells best what an airplane is? →
(11) It flies. (12) It is something to travel in. (13) It is a flying conveyance.
(14) It has wings and a tail. (15) It is a mechanical bird.....
- 40 A man drove 9 miles east from his home, and then drove 4 miles west. He was then (?) of his home.
(16) 5 miles east (17) 5 miles west (18) 13 miles east (19) 13 miles west.....
- 41 If the following words were rearranged to make the best sentence, with what letter would the last word of the sentence begin?
men deep the a trench dug long
(21) d (22) l (23) t (24) s (25) m.....
- 42 A pitcher is to cream as a bowl is to —
(26) baseball (27) a saucer (28) coffee (29) sugar (30) a dish.....
- 43 If the following words were rearranged to make the best sentence, the last word of the sentence would begin with what letter?
cook the pie a made apple deep
(31) c (32) p (33) a (34) d (35) m.....
- 44 A very strong feeling of affection is called —
(36) sympathy (37) pity (38) admiration (39) love (40) esteem.....

- 45 A chair is most likely to have —
 (41) rockers (42) upholstery (43) legs (44) a seat (45) arms.
- 46 A boy has three dogs. Their names are Rover, Spot, and Fido. Rover is larger than Spot and Spot is larger than Fido. Therefore, Rover is (?) Fido.
 (46) smaller than (47) larger than (48) the same size as (49) cannot say which
- 47 Wood is to box as wire is to —
 (51) iron (52) electricity (53) doorbell (54) screen (55) fire
- 48 There is a saying, "It is a long road that has no turning." It means —
 (56) Most long roads are straight. (57) Things are bound to change sooner or later.
 (58) Most short roads have turns. (59) It is a bad idea to turn around on the road...
- 49 Which of the five things below is most like a sheet, a towel, and a handkerchief?
 (61) a blanket (62) a coat (63) a napkin (64) a carpet (65) a mattress. . .
- 50 Three of the four designs at the right are alike in some way.
 Which one is not like the other three? (66)  (67)  (68)  (69)  
- 51 If the following were arranged in order, which one would be in the middle?
 (71) foundation (72) walls (73) ceiling (74) roof (75) floor ...
- 52 Which one of these series contains a wrong number?
 (1) 2-4-6-8-10 (2) 1-3-5-7-9 (3) 3-6-9-12-15 (4) 1-4-7-10-12
 (5) 2-5-8-11-14 ...
- 53 A pair of trousers always has —
 (6) a belt (7) cuffs (8) pockets (9) a crease (10) seams .
- 54 One number is wrong in the following series. What should that number be?
 8 1 8 2 8 3 8 4 8 5 8 6 8 7 8 9 
 (11) 9 (12) 7 (13) 6 (14) 8 (15) 5 ...
- 55 A machine that works rapidly and well is said to be —
 (16) fluent (17) revolutionary (18) novel (19) automatic (20) efficient ..
- 56 What letter in the following series appears a third time nearest the beginning?
 A C E B D D E A B C B E C A D A B C D E
 (21) A (22) C (23) D (24) E (25) B ..
- 57 The stomach is to food as the heart is to —
 (26) a man (27) the lungs (28) blood (29) a pump (30) beating ..
- 58 In the alphabet, which letter follows the letter that comes next after Q?
 (31) O (32) S (33) P (34) T (35) R
- 59 Most persons prefer automobiles to buses because — 
 (36) it is always cheaper to use an automobile. (37) the bus carries too many persons.
 (38) an automobile gets you where you want to go when you want to go.
 (39) automobiles are easier to park. .
- 60 The opposite of contract is —
 (41) explode (42) detract (43) expend (44) die (45) expand .
- 61 In a certain row of trees one tree is the fifth one from either end of the row. How many trees are there in the row?
 (46) 5 (47) 8 (48) 10 (49) 9 (50) 11
- 62 There is a saying, "Honesty is the best policy." It means —
 (51) Honesty is more important than generosity.
 (52) In the long run it pays to be honest. (53) Honest people become wealthy.
 (54) You can never tell what a dishonest person will do. .
- 63 Three of the four designs at the right are alike in some way.
 Which one is not like the other three? (56)  (57)  (58)  (59) 
 (Go on to the next page)

- 64 The one of two objects that is not so good as the other is said to be --
(61) **unsuitable** (62) **lesser** (63) **single** (64) **inferior** (65) **unnecessary**
- 65 If the following words were rearranged to make the best sentence, the *last* word of the sentence would begin with what letter?
fall clouds from the raindrops dark
(66) **f** (67) **d** (68) **t** (69) **c** (70) **r**..
- 66 An object or institution that is not likely to move or change is said to be --
(71) **fundamental** (72) **stable** (73) **temporary** (74) **solid** (75) **basic**
- 67 Worst is to bad as (?) is to good.
(1) **more** (2) **better** (3) **best** (4) **very good** (5) **excellent**
- 68 If the following persons were arranged in order, which one would be in the middle?
(6) **grandfather** (7) **grandson** (8) **brother** (9) **uncle** (10) **nephew**
- 69 A man who buys and sells when there is considerable danger of loss is said to --
(11) **transact** (12) **stipulate** (13) **contract** (14) **speculate** (15) **bargain**
- 70 Which tells best what a refrigerator is?
(16) **a piece of kitchen furniture** (17) **a place to store food**
(18) **an electrical device for the kitchen** (19) **a large white box**
(20) **a cabinet for keeping food cold**
- 71 There is a saying, "A bird in the hand is worth two in the bush." It means -- (21) **Two birds are worth more than**
(22) **Something you are sure of is twice as good as something doubtful.**
(23) **Your own bird is worth two that belong to others.**
(24) **It is hard to catch birds that are in bushes.**
- 72 When the time by a clock was 14 minutes past 9, the hands were interchanged. The clock then said about --
(26) **14 minutes past 3** (27) **14 minutes of 10** (28) **14 minutes past 2**
(29) **14 minutes of 3**
- 73 One number is wrong in the following series. What should that number be?
1 9 2 8 3 9 4 8 5 9 6 8 7 9 8 9
(31) **9** (32) **7** (33) **8** (34) **6** (35) **5**
- 74 The boy deserves (?) for his effort and perseverance.
(36) **condemnation** (37) **censure** (38) **scholarship** (39) **commendation**
(40) **a medal**
- 75 One number is wrong in the following series. What should that number be?
1 2 4 8 16 32 48 128
(41) **96** (42) **6** (43) **64** (44) **12** (45) **24**
- 76 If I have a large box with 4 smaller boxes in it and 3 very small boxes in each small box, how many boxes do I have in all?
(46) **7** (47) **12** (48) **13** (49) **16** (50) **17**
- 77 If each 3 in the following series were changed to a 2 and if each 1 were dropped out, the seventh 2 would be followed by what number? (Do not mark the paper.)
1 2 5 2 3 1 5 2 3 4 2 3 1 3 4 2 2 2 5
(51) **1** (52) **3** (53) **2** (54) **4** (55) **5**
- 78 There is a saying, "An ounce of prevention is worth a pound of cure." It means --
(56) **Prevention is a good cure.** (57) **Prevention and cure can be purchased by weight.**
(58) **It is much better to prevent something than to cure it.**
(59) **It is much better to cure something than to prevent it.**
- 79 Which of the five words below is most like heavy, blue, and nice?
(61) **weight** (62) **round** (63) **sky** (64) **color** (65) **weather**
- 80 In a foreign language, *boli deta kipo* means *very good weather*; *boli cora* means *bad weather*; and *deta sedu* means *very*. What word means *good*?
(66) **boli** (67) **deta** (68) **cora** (69) **kipo** (70) **sedu**

APPENDIX D

SRA ACHIEVEMENT SERIES READING TEST.
FORM A



CP A Achievement Series

prepared by

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READING

SCIENCE RESEARCH ASSOCIATES

57 WEST GRAND AVENUE
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CODE NUMBER 7-3101

WHAT IS THIS ABOUT?

DIRECTIONS: This test has stories in it. It is a test to see how well you can read. Each story has some questions for you to answer after you have read the whole story.

Here is a sample story.

A DOG HERO

Barbara and Henry have a big, brown dog named Jack. They think he is a smart dog. One day their baby sister, Sally, was playing near the river which flows back of their house. Barbara and Henry had

been told by their mother to watch their little sister. However, they were soon playing so hard they forgot all about Sally.

Suddenly they heard a cry and a splash. Sally had fallen into the river. Before they could call for help, Jack jumped into the river and pulled Sally to the bank. Their mother came running and soon

held her baby safely in her arms.

Now let's look at a sample question.

SAMPLE 1. This story is about

- a. a boat ride on the river.
 - b. a beautiful dog.
 - c. a brave dog.
 - d. a child who was afraid of the water.
-
-

The story is about a brave dog; he might have been a beautiful dog, but the story does not say that. Answer c, "a brave dog," is the right answer, so the space for answer c has been marked on the answer sheet under sample question 1.

Now look at the second sample question.

SAMPLE 2. After Jack saved little Sally from the river, Barbara and Henry

- a. were proud of their big, brown dog.
 - b. were afraid to go near the river.
 - c. wouldn't play with Sally any more.
 - d. wouldn't let Jack out of their yard again.
-
-

This question is about what you think happened after the story ended. Which do you think is the right answer? Answer a, "Barbara and Henry were proud of their big, brown dog" is the best answer. It is the only one that we can be sure is true.

These questions are about the underlined words in the story.

SAMPLE 3. In the story, the word
flows most nearly means

- ☐ **a.** runs.
☐ **b.** threads.
☐ **c.** winds.
☐ **d.** plays.
-
-

We could say “the river which runs back of their house” instead of “the river which flows back of their house.” In the story, flows most nearly means runs. Runs is answer **a**, so the box for answer **a** has been marked.

Now try this one:

SAMPLE 4. In the story, the word
bank most nearly means

- ☐ **a.** a place to keep money.
☐ **b.** shore.
☐ **c.** water.
☐ **d.** river.
-
-

What is the right answer? Answer **b**, “shore,” is correct. Sometimes bank might mean a place to keep money, but in the story it most nearly means shore. Your teacher will tell you how to mark answer **b**.

You are to answer the questions in the test the same way you did in this sample story. Read the story first, and then answer the questions. Choose the *one* answer to each question which is most correct, and mark the box for that answer.

Sometimes you will find several answers that are nearly right. Remember that you are to select the answer which is most right and most closely agrees with the events of the story.

You may look back in the story to help you decide on the answer if you need to. The first section has three stories. When you are told to begin, go right ahead until your teacher tells you to stop, or until you come to the words, STOP HERE. DO NOT GO ON.

Read the whole story first, and then answer the questions.

I. THE ANIMAL WORLD SERIES

Billy and Sue, the Roberts twins, were tucked in their sleeping bags after a busy day in camp. This was the first night of the Roberts' family vacation trip. On Friday evening, Mom and Dad had packed a big tent to sleep in, sleeping bags for everyone, lots of food, dishes, fishing poles, and old clothes in a small trailer. Bright and early on Saturday morning, the whole family had climbed into the car and driven away for two whole weeks of fun camping.

Billy and Sue laughed as they talked over the many things they planned to do in the morning. After a while the twins became sleepy and their eyes began to close. The sounds of the forest filled the night and, as he fell asleep, Billy was thinking how calm and peaceful everything was. It almost seemed as if he could understand the animals and birds.

Then to his surprise, he heard his name called out.

"Bill-e-e-e-e," echoed through the night in a soft, silvery tone. "Bill-e-e-e."

"Here I am," said Billy, as he looked around to see who could be calling him. As he spoke, Billy heard a soft sound of wings, and a beautiful black and white bird with a red hat perched on a nearby log.

"Would you like to meet some of your forest friends?" asked the bird.

"Of course I would," said Billy with a smile. "May I bring my sister, Sue?"

Mr. Woodpecker, for that was the bird's name, nodded his head so fast that it seemed to disappear before Billy's eyes, and a sharp rapping sound filled the air.

"Come on, Sue," called Billy. "Let's follow Mr. Woodpecker and meet some of the other animals who live in the woods."

"Oh, that will be lots of fun," answered Sue. "Show us the way, Mr. Woodpecker, and we'll follow you."

Mr. Woodpecker flew off through the trees. Billy and Sue joined hands and followed him as fast as they could. Soon they heard voices ahead of them. There were loud voices and soft voices, voices that sounded high like their mother's and some that sounded deep like Dad's. Some of the voices sounded low and seemed to growl, Sue thought, and some sounded sweet. Billy and Sue could tell that the animals were playing some kind of game, so they hurried as fast as their legs would carry them.

Just as the twins were almost bursting with wanting to know what was happening, they reached an open place in the forest. Such a noise they heard! Everyone seemed to be talking at once and at the top of his voice. The loudest screeching and growling seemed to be in the center of the open space, where some of the birds and animals were. Everyone was waving his wings or his paws in the air

before a wise-looking owl who was shaking his head and looking slowly from one animal to another.

As Billy and Sue and their friend drew closer, they heard the owl say, "Hoooooos the umpire in this game?"

Everyone shouted at once, "You are."

"Well then," said the owl, "I say that Jack Rabbit was out, He ran very fast, but Freddy Bear tagged him out."

By this time, Sue had noticed that most of the animals were sitting or lying on the ground around the open space or were sitting in the trees. "Billy," said Sue, "I'll bet this is a ball game just like we play at school."

"Yes, it is," answered Billy. "See, there are the bases." As he said this, Billy pointed to some stones he had just seen.

Mr. Woodpecker again began to nod his head very fast. "Yes, you're right," he said. "This game is to see who is the best in the forest. The Ground Runners are playing the Tree Climbers. This is the last inning and the score is tied."

The loud talking which they had heard seemed to be over now and the teams went back to their places. "Red" Squirrel, who was pitcher for the Tree Climbers, threw very fast to "Slim" Woodchuck, the batter for the Ground Runners. There was a sharp crack as "Slim" swung hard at the ball. "Flyer" Squirrel, who was playing left field for the Tree Climbers, took one look at the ball and quickly climbed a tree at the edge of the field.

Then, as Billy and Sue watched, "Flyer" gave a great leap from the tree. But "Slim" Woodchuck had hit the ball so hard that it sailed right over the tree for a home-run.

As "Slim" waddled slowly around the bases, the crowd cheered loudly. As he touched home plate, the rest of the Ground Runners slapped him on the back so hard that Billy and Sue were afraid he might be hurt. The animals and birds who had been cheering for his team ran out on the field and put "Slim" on their backs. They sang and barked and growled even louder than before as they carried "Slim" around the ball field.

The noise was so loud that Billy could hardly hear as someone called, "Bill-e-e-e-e, Bill-e-e-e-e." Besides, Billy was too interested in watching the animals. Once more he heard "Bill-e-e-e-e" in his ear and felt a soft touch on his face. As he reached out to see what it was, Billy felt someone take his arm and shake it gently. To his surprise, there was his mother laughing down at him and calling him sleepyhead. Suddenly Billy began to laugh too, because the ball game had been a dream.

Mom and Dad and Sue had a good laugh at breakfast as they listened to Billy's dream story about his animal friends.

- | | |
|---|--|
| 1. This story is about | <ul style="list-style-type: none"> a. a fishing trip. b. a dream that Sue had. c. a dream that Billy had. d. playing in the forest. |
| 2. In this story, we are told that | <ul style="list-style-type: none"> a. Jack Rabbit tagged Freddy Bear out. b. "Slim" Woodchuck hit a home run. c. the Tree Climbers won the game. d. Mr. Woodpecker was the umpire. |
| 3. This story is mostly about | <ul style="list-style-type: none"> a. a camping trip. b. an animal baseball game. c. a quarrel among the animals. d. fun at breakfast. |
| 4. The pitcher for the Tree Climbers was | <ul style="list-style-type: none"> a. Freddy Bear. b. "Flyer" Squirrel. c. Jack Rabbit. d. "Red" Squirrel. |
| 5. The story is mostly about what happened | <ul style="list-style-type: none"> a. the first night in camp. b. at supper time. c. at breakfast time. d. to the animals after the game. |
| 6. At breakfast, Mother and Dad | <ul style="list-style-type: none"> a. made fun of Billy. b. laughed with Billy as he told his story. c. told Billy that animals never play ball. d. told Billy his dream was silly. |
| 7. From the story, we know that | <ul style="list-style-type: none"> a. Billy and Sue were afraid of the dark. b. Mother thought animals played ball. c. Billy and Sue liked to fish. d. the Roberts family liked to go camping. |
| 8. In the story, we are told that Jack Rabbit | <ul style="list-style-type: none"> a. was a good hitter. b. caught a fly ball. c. was tagged out. d. ran faster than Freddy Bear. |
| 9. In this story, we are told that | <ul style="list-style-type: none"> a. two squirrels played on the same team. b. animals really can play baseball. c. squirrels can play baseball better than bears can. d. animals can pitch better than they can bat. |
| 10. The owl probably was chosen as umpire because | <ul style="list-style-type: none"> a. he was the slowest runner. b. he knew all the animals. c. all the players thought he was fair and wise. d. he didn't know any of the players. |

These questions are about the underlined words in the story. Mark your answers in the same way.

- | | |
|---|---|
| 11. In this story, <u>trailer</u> most nearly means | <ul style="list-style-type: none"> a. cart. b. follower. c. car. d. pathfinder. |
| 12. In this story, <u>whole</u> most nearly means | <ul style="list-style-type: none"> a. all. b. most. c. fine. d. entire. |

13. In this story, <u>perched</u> most nearly means	a. alighted. b. scratched. c. pecked. d. scrambled.
14. In this story, <u>nodded</u> most nearly means	a. scratched his head. b. moved his head up and down. c. moved his head from side to side. d. rapped his head.
15. In this story, <u>joined</u> most nearly means	a. clasped. b. fitted together. c. united. d. matched.
16. In this story, <u>drew</u> most nearly means	a. pulled. b. pushed. c. moved. d. stretched.
17. In this story, <u>umpire</u> most nearly means	a. captain. b. king. c. leader. d. judge.
18. In this story, <u>edge</u> most nearly means	a. border. b. bottom. c. top. d. end.
19. In this story, <u>gently</u> most nearly means	a. tenderly. b. easily. c. slowly. d. smoothly.
20. In this story, <u>surprise</u> most nearly means	a. pleasure. b. astonishment. c. delight. d. fright.

Read the whole story first, and then answer the questions.

II. A TRIP TO THE MOON

Bob and Alice had just seen a motion picture called "Rocket Ship X" in which the hero¹¹ visited the moon in a space ship. On the way home from the theater Alice said, "I don't believe people will ever really visit the moon. My daddy says such a journey¹² is impossible."

"Oh, no, it isn't!" replied Bob, very much excited. "My Uncle Frank told me all about rocket ships. In a few years, a lot of people will be going to the moon just the way they go to the mountains for a vacation."

Alice was not sure, so she said, "Let's talk to your uncle tomorrow morning. I want to hear for myself just what he has to say."

"OK," agreed Bob, and they both went home.

The next morning, Alice and Bob found Uncle Frank trying out a new kind of radio in the workshop back of his house.

"Good morning, Uncle Frank," called Bob as they came up the driveway. "Alice and I saw a movie about a rocket ship that traveled to the moon and back. Alice doesn't believe that's possible now or any other time. Please tell her how people are going to travel around out there in space."

"Well, well, children, that's a really big order,"¹³

laughed Bob's uncle. "You know, Bob, I didn't say we could make space ships now, and I am not sure we will ever be able to make a machine that will go very far from the earth. Men who study the stars can tell us some important things about the moon,"¹⁴

and those who make rockets know a lot about the way a rocket ship would have to be built.¹⁵ Nobody

knows how to make one now that can go fast enough or far enough to reach the moon, but I think someday someone will."

"See, Bob," cried Alice, "we were both right. Please, Uncle Frank, how do you think a space ship would work?" she went on.

"First of all," said the uncle, "before a ship could ever reach the moon it would have to get away from the ¹⁶pull of the earth. Any object that is thrown or shot ¹⁶into the air will fall back to the ground, unless it can travel fast enough to leave the pull of the earth. ¹⁷Scientists have figured that a rocket would have to move upward faster than 25,000 miles an hour in order to keep from crashing back onto the earth. To my knowledge, the rockets we have made so far can travel only about 3,000 miles an hour. We will have to learn how to make them go a great deal faster, how to build them large enough for people to ride in, and how to make them land on the moon without being smashed to bits."

"What is it like on the moon?" asked Alice.

"How long would a space ship take to get there?" Bob wanted to know.

"About ten hours," replied Uncle Frank, "if they travel just fast enough to get away from the earth.

"Since no air, food, or water is to be found on the moon, visitors would have to bring their own air for breathing in a tank strapped on their backs.

Each person would need to wear a ¹⁸helmet, like the ones used by divers, over his head all the time.

"Besides, since the moon is much smaller than the earth, it is very hard to make things stay on the ground there. Because it has such a weak pull, if people ever walk on the moon, they will go bounding into space higher than a house at every

²⁰step. There are many high mountains on the moon, but it would be easy to climb them because one could jump twenty feet up without really trying. In addition to all this, if people are to travel to the moon, they will have to wear very special clothing. In the daytime, it is as hot on the moon as the inside of your mother's oven when she bakes cookies, and at night, it is much colder than at the North Pole."

"I am not so sure I want to go to the moon," said Bob.

"I'm not either," cried Alice, "but thanks for telling us all about it."

People would need to wear special clothing on the moon because	a. the heat is so very great during the day. b. the air pressure is high. c. people walking on the moon would go bounding into space and need protection. d. it is necessary to travel so rapidly to get to the moon.
The story tells us that Bob and Alice talked to Uncle Frank about	a. some rocket ships that had already gone to the moon. b. the difficulty of making a rocket ship that would reach the moon. c. getting back to the earth from the moon. d. riding in a rocket ship.
A space ship that can travel to the moon would have to	a. travel at least 3,000 miles per hour. b. be made of very light stuff, so that it would not fall back on the earth. c. start out fast enough to get away from the earth's pull. d. get there in ten hours.
In this story, we are told that	a. it is difficult to live on the moon. b. it is hard to keep warm on the moon. c. people travel much faster on the moon. d. the moon is just 25,000 miles from the earth.
Uncle Frank explained to Bob and Alice that	a. there is some air on the moon. b. a helmet would need to be worn only in the daytime. c. mountain climbing on the moon would not be difficult. d. on the moon, a man could not jump more than five feet off the ground.
This story is about	a. how to build a rocket ship. b. a journey many thousands of miles from the earth. c. the importance of motion pictures about the moon. d. how fast a rocket could be made to go.
Space ships have not yet been built because	a. they might start wars with other planets. b. no one knows how far it is from the earth to the moon. c. no human being could live in one for more than five hours. d. no way is known to make them start out fast enough to get past the earth's pull.

8. If a space ship is to reach the moon, it will need to	a. go more than 25,000 miles an hour. b. travel about 3,000 miles an hour. c. be made light enough that it will not fall back on the earth. d. have fuel enough to travel for ten days.
9. From the things Uncle Frank told Bob and Alice about the moon, we can figure out that	a. a person who jumped twenty feet into space would land with an awful bump b. even though a person on the moon had plenty of air with him, he would not dare take off his helmet. c. a visitor would be very likely to find lots of green grass on the moon. d. forests would probably be found on the moon.
10. Because the moon is so much smaller than the earth,	a. its mountains are smaller than those on the earth. b. it is easy to make things stay on the ground. c. the air is a little thinner than on the earth. d. it is easier to lift things on the moon.
11. In this story, <u>hero</u> most nearly means	a. brave man. b. space ship builder. c. main actor. d. fearless explorer.
12. In this story, <u>journey</u> most nearly means	a. trip. b. travel. c. adventure. d. journal.
13. In this story, <u>order</u> most nearly means	a. demand. b. command. c. instruction. d. request.
14. In this story, <u>important</u> most nearly means	a. valuable. b. strange. c. unknown. d. unusual.
15. In this story, <u>built</u> most nearly means	a. welded. b. constructed. c. raised. d. managed.
16. In this story, <u>pull</u> most nearly means	a. hauling. b. dragging. c. holding. d. attraction.
17. In this story, <u>scientists</u> most nearly means men who	a. study how things work. b. write books. c. try to invent machines. d. build airplanes.
18. In this story, <u>strapped</u> most nearly means	a. held. b. lifted. c. fastened. d. carried.
19. In this story, <u>divers</u> most nearly means men who	a. go swimming. b. work under water. c. work in a space ship. d. work on ships.

20. In this story, bounding most nearly means

- a. climbing.
- b. running.
- c. jumping.
- d. bouncing.

Read the whole story first, and then answer the questions.

III. A VISIT TO PARIS

Captain John Craig, an American army officer, had been stationed for more than a year in a country across the Atlantic Ocean occupied by British and American soldiers. When told that he could go on leave wherever he liked for two weeks, Captain Craig decided to take his wife and children, Bill and Joan, on a trip to the colorful city of Paris, France.

The family drove all the way in their shiny, new light-blue car. They stayed at a small hotel with green shutters, a red tile roof, and tables and chairs ¹¹ on the sidewalk where people liked to sit and eat or drink. This kind of gathering place is called a sidewalk café. Bill noticed that French people came ¹² to the sidewalk café often but that Americans were not used to them and didn't feel at home there.

Both Bill and Joan went right to work on their plans for seeing the places in Paris they had heard so much about. These sights included the Eiffel Tower, the Arch of Triumph, the Seine River, some of the wide streets with monuments on them, and ¹³ store windows where they could see strange-looking bicycles, motor scooters, and small automobiles.

Bill and Joan learned from their parents that some of the places they wanted to see most were on the same side of the River Seine as the Arch of Triumph. This famous river winds ¹⁴ its way through the heart ¹⁵ of the city and can be crossed on many wide bridges. Bill and Joan also found that the Eiffel Tower, a big railroad station, and several other places they had picked out are on the other side of the river. They discovered, too, that the part of Paris called the Latin Section is on that side of the river. Here they would be able to see the old part of Paris with its quaint ¹⁶ stone and mortar houses, shops which are hundreds of years old, and buildings in which some of the most famous Frenchmen of history are buried. They wanted to see this section ¹⁷ even more than the great church, the Notre Dame Cathedral. They were surprised to learn that this old church and the French Palace of Justice are on an island in a wide place in the Seine River.

On their first day, Bill, Joan, and their folks went up in the Eiffel Tower, which rises a thousand feet above the ground. As the different elevators, which the French people call lifts, went higher and higher, Bill and Joan felt more and more excited.

Finally, they were at the top of the great tower. Joan was afraid to look down at first, but soon joined Bill in gazing over the city. Both of the children remarked ¹⁸ that the people on the streets looked tiny. The automobiles seemed like bugs crawling on ribbons stretched among doll houses. Even the big buildings and monuments looked like toys.

Bill and Joan could see that the Eiffel Tower was on the opposite side of the river from their hotel, which was on the same side as the Arch of Triumph. The next day, the children were going with their parents to the museum, ¹⁹ called the Louvre, and to the French Opera House. They could see that, since both of these places were on the same side of the river as their hotel, they wouldn't have to cross the river that day.

On the third day, the whole family was going shopping for presents for each other. These errands made it necessary for them to be on one side of the river in the morning and on the other side in the afternoon.

One rainy afternoon a few days later, Bill and Joan decided to take a short walk in the neighborhood of their hotel. Since they didn't plan to go far, they said nothing about it to their parents. They believed that it would be easy to walk down the street a couple of blocks, turn on a cross-street, and then find the right direction to go home. So they started out. However, Bill and Joan didn't know that some of the streets in Paris are narrow and winding and that it is hard to find the way from one street to another. When they turned to the left on a winding street two blocks from the hotel, they couldn't find their way back. They didn't realize that they were only a little more than a block from their hotel. Finally, ²⁰ they saw a candy store which they knew was only a few doors from where they were staying.

When their trip was over, Bill and Joan had learned a lot about the sights of Paris. They could hardly wait to get home to tell their friends about the things they had enjoyed most.

Although the car had a flat tire before the family got out of France, the rest of the trip was fun. Bill and Joan say they will never forget the good times they had on their father's vacation in Paris.

1. This story tells about	a. how well brothers and sisters get along. b. what boys and girls do in France. c. a city in France. d. how to behave in a strange city.
2. In this story, we are told	a. how many people live in Paris. b. that the streets of Paris are narrow and winding. c. what the Seine river is used for. d. what Paris looks like.
3. This story is mainly about	a. the quaint houses in Paris. b. a vacation in Paris. c. going places on trains. d. the sidewalk cafés in Paris.
4. Bill and Joan's hotel is on the same side of the Seine River as the	a. Arch of Triumph. b. Eiffel Tower. c. Notre Dame Cathedral. d. Latin Section.
5. On the opposite side of the river from Bill and Joan's hotel is the	a. Opera House. b. Eiffel Tower. c. Museum. d. Arch of Triumph.
6. Located on an island in a wide place in the River Seine is	a. Bill and Joan's hotel. b. the Latin Section. c. a big railroad station. d. the Notre Dame Cathedral.
7. If Bill and Joan traveled from their hotel to the Eiffel Tower, then to the Arch of Triumph, from there to the Opera House, and back to their hotel, how many times did they cross the Seine River?	a. One time. b. Two times. c. Four times. d. No times.
8. If Bill and Joan visited the Museum and the Opera House only, how many times did they have to cross the River Seine if they started from their hotel?	a. Four times. b. One time. c. Two times. d. No times.
9. When Bill and Joan took a walk near their hotel, they lost their way because	a. they turned the corner on a crooked street. b. some of the streets were not lighted. c. they could not read the names of the streets. d. they could not speak French.
10. How do you think Bill and Joan found their way back to the hotel?	a. By following the shadows made by the sun. b. By looking for a familiar sight. c. By asking a man they met on the street. d. By walking toward the Eiffel Tower and crossing the river.
11. In this story, <u>shutters</u> most nearly means	a. window curtains which can be pulled. b. window shades which can be lowered. c. window covers which can be closed. d. window frames which can be opened.
12. In this story, <u>café</u> most nearly means a place	a. to talk to people. b. to see the sights. c. to lunch. d. to rest.

13. In this story, <u>monuments</u> most nearly means	a. beautiful carvings. c. large stones. d. tombstones.
14. In this story, <u>winds</u> most nearly means	a. roams. b. twists. c. flows. d. blows.
15. In this story, <u>heart</u> most nearly means	a. the central part of the city. b. where most of the stores are. c. where the railroad is. d. where most of the people live.
16. In this story, <u>quaint</u> most nearly means	a. unknown. b. disliked. c. decayed. d. unusual.
17. In this story, <u>section</u> most nearly means	a. part. b. piece. c. half. d. cemetery.
18. In this story, <u>remarked</u> most nearly means	a. guessed. b. saw. c. observed. d. wondered.
19. In this story, <u>museum</u> most nearly means a place where	a. valuable old things are kept. b. people go to read and study. c. new inventions are kept. d. old things are packed away.
20. In this story, <u>finally</u> most nearly means	a. at once. b. soon. c. near the end. d. at last.

STOP HERE. DO NOT GO ON.

IV. A DAY AT THE ZOO

Bob and Norma hadn't been to a zoo ¹¹since they started school. They had seen many pictures of wild animals in books and movies, but only in a circus, about a year before, had they been near real animals from the jungles of Asia and Africa. They were delighted one Fourth of July when their father asked them whether they wanted to go to the zoo in the ¹²big park on the other side of town. He promised to get them some popcorn and ice cream too. Their mother said she would stay home and visit with some neighbors while they were away.

Both Bob and Norma liked to ride ponies, so they begged ¹³their father to stop at one of the places ¹⁴on the way to the zoo where ponies could be rented for rides. Norma wasn't as old as Bob, but she could

ride as well as he could, so she asked for a pony that would trot fast. Both of the children had so much fun they almost forgot about the animals they were going to see. They each had five rides.

When Bob and Norma arrived at the zoo, they were surprised to find so many kinds of wild animals, birds, and even a few seals and sea lions. Bob became so interested in watching the seals dive after the food thrown toward them in the water by the keeper ¹⁵that he didn't see Norma and his father walk away in the direction of the cages where the monkeys were kept. When he found them, Bob told his father how glad he was that they had come in time for the three o'clock feeding of the seals. He had even counted the seals and said that there were six.

As the two children and their father walked along the row of cages, they counted twelve monkeys, two camels, six deer, four buffalo, five lions, but only one elephant. Norma liked them all but had most fun watching the monkeys jump around in their cages, making strange noises as they begged

for food. She had enjoyed watching monkeys ever since she had seen some at a park near her house. That was six years ago.

Both Bob and Norma stood for a long time in front of the lion cage. One of the lions with a bushy mane looked at them in such a friendly way that they laughed and said he must be a big cat. Bob had heard about the tame lion a young man in a nearby city had raised as a pet. The lion was so friendly that he slept in the same room with his master. There had been a story in the newspaper telling how the young man had to find a home in a circus for his big pet when he was drafted into the army. Bob wondered whether that tame lion, which was called Fearless Fagan, looked like the big lion now staring at him.

Norma was a little afraid when they came to the place where the bears were kept. There was no cage around them, only a deep cement-covered ditch between the bears and the people who came to see them. Norma's father explained that a bear could

neither jump across the ditch nor climb out of it if he fell. That made Norma feel better. Bob boasted that he wasn't afraid, but Norma could see him watching the bears and the ditch as if he were ready to run if anything happened.

The last animals the children saw were the crocodiles, lizards, and turtles. It was a sunny day, and the big lizards lay perfectly quiet without moving a muscle. Both Bob and Norma thought they must be asleep. But their father warned them that the lizards would move fast if they felt any danger, and that they might attack anyone they thought was an enemy. The crocodiles just blinked their eyes as though they were winking at each other.

When someone announced over a loud-speaker that the zoo would be closed in fifteen minutes, the children's father realized that it was nearly five o'clock and time they were starting for home. Bob and Norma hurried to get the popcorn and ice cream that had been promised them and took a last look at the animals. As they walked out the gate of the zoo and got into their car, both of the children thanked their father for showing them such a good time. They were glad when he stopped on the way home and bought their mother a box of her favorite candy. They knew they would get some of it, too!

1. This story is partly about	a. animals in a circus. b. a pony at the zoo. c. animals and birds. d. a lion who roared.
2. In the story, the circus animals which Bob and Norma had once seen came from	a. Asia and South America. b. the jungles of Brazil and Mexico. c. Asia and Africa. d. Arabia and Africa.
3. On the way to the zoo, the children and their father stopped where	a. ponies for children were for rent. b. some children were riding horses. c. Norma and Bob had six rides each. d. they rode ponies that would not trot.
4. If Bob and Norma had come to the zoo at 4 o'clock, they would have	a. missed seeing the keeper throw food to the seals. b. come in time to watch the seals being fed. c. seen the monkeys being fed. d. come too late to buy ice cream.
5. At the zoo Bob counted	a. more lions than monkeys. b. more than one elephant. c. more lizards than crocodiles. d. more seals than lions.
6. In the story, we are told that Norma enjoyed watching the monkeys	a. making faces at the people. b. begging for food. c. catching peanuts in their hands. d. climbing up and down the wire cage.

7. In this story, we are told the names of several kinds of	a. tame animals. b. wild animals. c. monkeys. d. circus animals.
8. The story tells us	a. how lions are fed. b. how bears are kept from running away. c. how seals are taught to catch food. d. how crocodiles guard themselves.
9. After a man told everyone over the loud-speaker that the zoo would be closed in 15 minutes, Bob and Norma remembered that they would have to hurry in order to	a. see the rest of the animals. b. find the way to the gate. c. buy the popcorn and ice cream their father had promised them. d. keep from being locked in.
10. If a bear tried to jump over the ditch in front of his cage and fell into it, he would	a. have to stay there until the keepers helped him out. b. climb out at the shallow end of the ditch. c. have to be fed where he was. d. have to stay in it until he was hungry enough to climb out.
11. In this story, <u>since</u> most nearly means	a. after. b. before. c. because. d. until.
12. In this story, <u>whether</u> most nearly means	a. because. b. if. c. when. d. where.
13. In this story, <u>neighbors</u> most nearly means people who	a. are related to each other. b. know each other. c. visit with each other. d. live near each other.
14. In this story, <u>begged</u> most nearly means	a. urged. b. demanded. c. cried. d. commanded.
15. In this story, <u>keeper</u> most nearly means a person who	a. watches the animals. b. grows food for the animals. c. buys the animals for the zoo. d. takes care of the animals.
16. In this story, <u>strange</u> most nearly means	a. unusual. b. frightening. c. unknown. d. different.
17. In this story, <u>staring</u> most nearly means	a. starting. b. gazing. c. blinking. d. snarling.
18. In this story, <u>ditch</u> most nearly means	a. drain. b. hole. c. trench. d. gully.

-
19. In this story, boasted most nearly means
- a. bragged.
b. spoke loudly.
c. was proud.
d. lied.
-
20. In this story, favorite most nearly means
- a. best-liked.
b. most expensive.
c. sweetest.
d. most attractive.
-

Read the whole story first, and then answer the questions.

V. A MAN FOR THE AGES

"Hi there, Jim," shouted Ann to the boy who hurried briskly toward her in the gathering dusk of a late November afternoon. "Where have you been the past three days? You haven't been out to watch football practice."

"In the library, Ann," said Jim, as they walked along the leaf-strewn sidewalk. "Miss Jones asked us to write the life story of some American we think will still be remembered one hundred years from now. I thought that was a pretty dull assignment,¹¹ until I started reading about the man I chose, Teddy Roosevelt."

"He must be quite somebody if he has kept you from watching football practice," laughed Ann.

"Stop here a minute under this street light, Ann, and listen to what I have written."

"Okay, Jim, but don't make it too long. I have to be home by five-thirty."

"Well, here goes." Jim began reading:

"Theodore Roosevelt, affectionately known to his millions of admirers as 'Teddy'¹²

Roosevelt, was born in 1858 and became the twenty-sixth President of the United States. His father and uncle were prosperous businessmen who enjoyed taking an active part in the politics of the city and state of New York.

"As a boy, Teddy was fortunate in many ways but unfortunate in one. He frequently suffered from poor health. But Teddy soon proved that he had the grit and determination to overcome this handicap. He exercised continually and became a skillful boxer and wrestler.

"After graduating from Harvard College and Columbia University Law School, Teddy lived several months each year on a cattle ranch in the Bad Lands of North Dakota. The rough men of the West soon acknowledged that Roosevelt could do his share of the work and endure hardships with the best of them. They soon forgot that he had been a tenderfoot from the city.

"In a few short years, Teddy Roosevelt returned to the politics of New York City.

He became a candidate for mayor but was defeated. Later he was appointed president of the police board for the city. He worked hard to build a police department that would be honest, efficient, and fair to rich and poor alike.¹³

"Early in 1898, the United States found itself at war with Spain. Teddy Roosevelt quickly brought together many of his old friends, the cowboys of the West, to form a regiment of cavalry, nicknamed the 'Rough Riders.' Teddy's regiment wrote a shining page in history with their famous charge up San Juan Hill in the face of murderous enemy gunfire.

"Fortunately, the Spanish-American War was a short one. Colonel Roosevelt received a hero's welcome from the people of New York. They soon rewarded him by electing him governor of their state. As governor, he was so honest and sincere that he made enemies of certain powerful but selfish men. These influential men decided that Roosevelt would interfere less with their plans if he were Vice-President of the United States. When McKinley was nominated for President in 1900, Teddy Roosevelt was selected as the candidate for Vice-President. McKin-¹⁴

ley and Roosevelt won the election and were inaugurated in March, 1901. Six months¹⁵ later, President McKinley's career was brought to an end by an assassin's bullet, and at forty-three Roosevelt became the youngest President in American history.

"As the 'Man in the White House,' Roosevelt did many fine things for his country. He enlarged and reorganized the Army and the Navy. He favored laws which required that meat be inspected and that only pure food be sold in the stores. He arranged for the building of the Panama Canal so that our Navy could protect both the Atlantic and Pacific coast lines. Teddy Roosevelt acquired world fame as a peacemaker by helping to bring to a conclusion the Russo-

Japanese War in 1905.

"Teddy's second term as President ended in March, 1909, when he was just fifty years of age. He retired from public life while still younger than most men are when they first begin to be recognized as national leaders. Such a dynamic man could not sit idly by,

¹⁶ watching others work. He soon organized an expedition to hunt big game in Africa. The expedition returned with fine specimens¹⁷ for the Smithsonian Institution in Washington. Roosevelt had always been interested in nature, so he wrote several books about animals and hunting.

"In 1912, Roosevelt again became a candidate for President of the United States, but was defeated because his political party was not united. Teddy's next adventure involved the exploration of a vast wilderness¹⁸ in Brazil. Here he discovered an important

river not on the maps, later named in his honor, Rio Theodore, the 'River of Theodore.'

¹⁹ "The remaining years of Roosevelt's active life were devoted largely to public speaking, to preparing articles on social and political problems for magazines, and to writ-

²⁰ ing historical books on American life. He passed away in his sleep in January, 1919. Theodore Roosevelt will never be forgotten. His personality represents so much of what our country stands for—honesty, sincerity, a concern for the welfare of others, a strong sense of patriotism, and boundless energy—that Teddy Roosevelt will live forever in the memory of Americans."

"That's it, Ann," said Jim, a little out of breath.

"What do you think of it?"

"Not bad, Jimmy, not bad! I think Miss Jones is going to like your paper very much. Now, I'll have to run along home. So long, Jim."

"So long, Ann."

1. This story is about	a. one of America's greatest Army officers. b. an outstanding political figure. c. a famous Western storyteller. d. an honest police chief.
2. In this story, we are told	a. how a physical handicap was conquered. b. how a poor boy became President of the United States. c. how a young man became champion wrestler of Harvard College. d. how a young man from the West became mayor of New York.
3. The story tells us	a. what Roosevelt did when he was mayor of New York City. b. some of Teddy Roosevelt's experiences in World War I. c. some of the achievements of the twenty-sixth President of the United States. d. that Roosevelt was the engineer who built the Panama Canal.
4. Check the statement about Theodore Roosevelt that is NOT true.	a. He was graduated from law school. b. He became Vice-President of the United States. c. He was governor of New York. d. He is remembered as a war-like President.
5. Theodore Roosevelt is remembered chiefly because of his	a. skill as a cowboy. b. leadership as a general in the Spanish-American War. c. ability as an author. d. unusual persistence, determination, and energy.
6. From this story, we have learned that Theodore Roosevelt	a. disagreed with some influential men. b. disliked most school work. c. was of Scotch origin. d. was a cousin of Franklin D. Roosevelt.
7. This story makes it clear that Theodore Roosevelt	a. made a mistake by not becoming a star athlete. b. was a statesman as well as a politician. c. was more rugged and sincere than honest. d. could have become a five-star general.
8. It can be seen from the story of Theodore Roosevelt that he	a. never really believed in the political party which elected him. b. would rather have been a brilliant soldier than President. c. believed in using force in running the government. d. regarded a strong Army and Navy as being essential to peace.

9. This story brought out the fact that	a. Teddy Roosevelt failed to win a second election as President. b. most politicians become well-known before they are forty years of age. c. Teddy Roosevelt spent his boyhood on the Western plains of the United States. d. it is difficult for a successful President to secure the cooperation of his party.
10. The life of Theodore Roosevelt makes it evident that	a. Presidents are seldom successful in many kinds of activities. b. Presidents cannot be both successful and popular. c. Presidents can come from wealthy families and still be accepted by the people. d. Presidents can be elected without the support of their political parties.
11. In this story, <u>assignment</u> most nearly means	a. a job to be done. b. signing your name. c. writing a story for the school paper. d. appointment to a committee.
12. In this story, <u>admirers</u> most nearly means people who	a. voted for Teddy Roosevelt. b. respected and approved of Roosevelt. c. longed for the adventures Roosevelt had. d. belonged to the same political party as Roosevelt.
13. In this story, <u>efficient</u> most nearly means	a. the ability to do work well. b. hard-working. c. large. d. careful.
14. In this story, <u>candidate</u> most nearly means one who	a. is selected as Vice-President. b. is elected as Vice-President. c. aspires to be Vice-President. d. is named by his party for Vice-President.
15. In this story, <u>inaugurated</u> most nearly means	a. sworn into office. b. began his work. c. introduced to the people. d. made acquainted with the duties of office.
16. In this story, <u>dynamic</u> most nearly means	a. energetic. b. explosive. c. powerful. d. nervous.
17. In this story, <u>specimens</u> most nearly means	a. skeletons of big game. b. unusual kinds of big game. c. skins of big game. d. examples of kinds of big game.
18. In this story, <u>involved</u> most nearly means	a. was concerned with. b. had difficulties with. c. was affected by. d. was complicated by.
19. In this story, <u>in his honor</u> most nearly means	a. because of his fame. b. because of his high office. c. because of his high ideals. d. because of respect for him.
20. In this story, <u>political</u> most nearly means	a. problems of the Army and Navy. b. problems of government. c. problems of business. d. problems of the courts.

APPENDIX E

**A SAMPLE OF THE RECORD BLANK PAGE AND
THE THREE TYPES OF PROGRESS CHARTS**

RECORD BLANK COLOR _____

NUMBER _____ DATE _____

WORKING TIME: Hr. Min.
Finishing time _____
Starting time _____
My time _____

HOW WELL DID YOU READ?

1 _____ 2 _____ 3 _____ 4 _____ 5 _____

6 _____ 7 _____ 8 _____ 9 _____ 10 _____

Possible rights	_____	→
Number wrong	_____	
Total rights	_____	_____ %
	↓	

LEARN ABOUT WORDS

1 _____	14 _____	27 _____
2 _____	15 _____	28 _____
3 _____	16 _____	29 _____
4 _____	17 _____	30 _____
5 _____	18 _____	31 _____
6 _____	19 _____	32 _____
7 _____	20 _____	33 _____
8 _____	21 _____	
9 _____	22 _____	
10 _____	23 _____	
11 _____	24 _____	
12 _____	25 _____	
13 _____	26 _____	

Possible rights	_____	→
Number wrong	_____	
Total rights	_____	_____ %
	↓	

My corrections _____

I believe my work on this Power
Builder was:
☐ poor ☐ fair ☐ good ☐ excellent

I could do better next time by _____

GRADE

DATE _____

TEACHER

No.

Dary

Yr.

Date →

PB No. →

**HOW WELL
DID YOU
READ?**

% Right

**LEARN
ABOUT
WORDS**

% Right

TIME

Minutes

NAME _____ GRADE _____

DATE _____ TEACHER _____

Date →

RB No.

% Right

COMPREHENSION CHECKS

[illegible]

NAME	GRADE
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
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16	
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99	
100	

DIRECTIONS: As with your Power Builder Progress Charts, use the Conversion Table on page 81 to figure your % Right. Then put a heavy black dot opposite the number that shows your % Right. Draw a heavy black line with your regular pencil from the zero base line up to the dot.

[illegible]

DID I

1. let my eyes wander all over the room—or did I keep my eyes on the speaker (the teacher)?
2. play with things on my desk or draw pictures—or did I keep my hands still so I could watch the speaker?
3. think about what I was going to do next Saturday—or did I think about what the speaker was saying to me?
4. say, "Oh, I never was interested in that!"—or did I keep my ears TUNED IN for something that *could* interest me?

APPENDIX F

ABSTRACT OF

The Relative Effectiveness of a Multi-level
Reading Program at the Intermediate Grade Level

APPENDIX F

ABSTRACT OF

The Relative Effectiveness of a Multi-level Reading Program at the Intermediate Grade Level¹

The primary purpose of this study has been to evaluate experimentally the relative effectiveness of Don Parker's multi-level or SRA laboratory approach to reading as compared with the conventional one-level reading approach in Grades Four, Five, and Six. More specifically, the study was undertaken to determine the difference, if any, between the progress in Total Reading achievement, in Comprehension, and in Vocabulary growth of children exposed to two different reading programs.

The investigation was conducted in twelve Parochial Schools within the Chicago area. Approximately 3600 children of Grades Four, Five, and Six within seventy-two classes participated.

To measure the learning at the close of a twenty-one weeks experiment, pupils achievement was evaluated in terms of grade equivalents, in March 1959, by the SRA Achievement Series Reading Test, Form A.

The findings, submitted to the analysis of variance, confirmed the hypothesis that children, who are taught in

¹ Sister Mary Madeleine, doctoral thesis presented to the School of Psychology and Education of the University of Ottawa, Ontario, 1959, xiii-158 p.

classrooms where there is a wide variety and range of well-graded materials and where children are guided to assume responsibility for their accomplishments, will achieve greater competence in reading comprehension and vocabulary growth than children whose program of reading is limited to the conventional one-level reader with the accompanying workbook and where the teacher assumes the greater part of responsibility for the child's accomplishments.