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Differences in reading background brought to first grade.

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DIFFERENCES IN READING BACKGROUND BROUGHT TO FIRST GRADE

A THESIS

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INTRODUCTION

The purposes of this study were to discover among first grade children:

1. The range of abilities in certain skills which have been shown to be related to success in beginning reading.
2. The pre-school experience as reported through parent interviews.
3. The adjustment to the school situations in Grade 1 as evaluated by classroom teachers.

Children entering grade one differ in the types and amounts of pre-school training. Some children have a rich background of activities including cutting, coloring, attentive listening to radio, television, or records. Others lack such experiences.

Studies have shown various abilities are related to success in beginning reading. There appeared to be no real evidence of what skills a child may have when he enters school and how such skills may be related to school success.

Therefore, this study is an attempt to measure:

1. Knowledge of the letter names.
2. Knowledge of the sounds of the letters.
3. Ability in fine motor skills as folding, cutting, and writing.
4. Previous experience with toys and play.
5. The relationship of this knowledge to success in beginning reading among a group of 781 children in grade one.

CHAPTER I

RELATED RESEARCH

All children do not have equal success in learning to read. Studies have shown various factors which may contribute to the learning process. These studies include experimental background, mental age, kindergarten experience, knowledge of the letter names, auditory and visual discrimination and motor skills. This research will cover these areas.

Experience Background

Harrison[1] says,

> "In studying the maturing process of children as evidenced by their behavior, we find that readiness to do things appears at rather definite periods or within certain age limits and that to force a child to a particular type of activity before he is ready usually causes strain, may result in negativistic attitudes toward it and accomplishes little as far as the desired activity is concerned. For example, there is a stage at which children walk, preceded by adequate muscular and nervous development to make the process possible."

Informational background in relation to reading progress is most important. Hilliard[2] suggests,

> "Those children with a meager background are less likely to succeed in reading as compared to those with a rich background of experiences, and that one of the greatest difficulties met in learning to read is lack of understanding of words and ideas. Meanings show growth through experiences and contacts."

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[1]Harrison, M. Lucille, Reading Readiness. Boston: Houghton Mifflin Company, 1939. p. 2.

[2]Hilliard, George H. and Troxell, E. "Informational Background As A Factor In Reading Readiness and Reading Progress." Elementary School Journal 38: 255-63; December 1937.

Wright[1] too includes among important factors experience background.

Witty and Coomer[2] report that in the area of readiness instruction the significance of home and school cooperation is at once apparent, since the reading problem does not suddenly emerge when the child starts to school. Many important forces in shaping his attitude and determining his later success have already been in operation for several years. He may have encountered varied reading materials and discovered books as a source of enjoyment and information. Such children seldom have difficulty in learning to read.

In regard to experience as a basis for meaning, Betts[3] says:

> "Printed symbols have significance for the things they stand for, things within his experiences. It is through his experiences that the pupil is enabled to understand the stories and other materials he will read."

The individual nature of pre-reading experience is implied by Kopel:[4]

> "In our own culture most children take their first steps in reading during infancy. They learn to talk - exercising and giving expression to a biological function in the conventional forms

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[1]Wright, W. W., "The Nature and Measurement of Reading Readiness." The National Elementary Principal. Seventeenth Yearbook, Vol. XVII: No. 7, 248-249. July 1938.

[2]Witty, Paul and Coomer, Anne. "Fostering a Balanced Reading Program." The Elementary English Review 18: 241-46; 1946.

[3]Betts, E. A., Foundations of Reading Instruction, New York: American Book Company, 1946, p. 757.

[4]Kopel, David, "Reading Readiness: Its Determination and Use." Teachers College Journal (Indiana State Teachers College) 13:67 ; January 1942.

and patterns used by the social group to which they belong. Children appear to learn most efficiently if competent guidance is provided at the time when their explorations of the printed forms lead them to seek new skills for their manipulation and understanding. It would appear further that reading activities of the first grade should serve to extend rather than to interrupt the chain of experiences in the child's life at the time he enters school. He should learn new skills in reading naturally and functionally as they are needed to carry on and to share his individual and group enterprises."

In an earlier article written in collaboration with Witty[1], Kopel has indicated that the process of reading instruction should be delayed

--"until the children's background experience and mental growth enable them to find meaning in the tasks presented to them, and until this process of maturation has engendered a condition in which reversals are few and perception of words and other meaningful units is possible. This implies that most children would have their introduction to reading when they are about eight or nine years of chronological age. Some, however, will turn spontaneously, joyfully and successfully to reading in grade one or earlier. These children are really ready to read."

McCarthy[2], in summarizing the effect of various environmental factors says:

"There is considerable evidence in the literature to indicate that there exists a marked relationship between socio-economic status of the family and the child's linguistic development. Several investigators have reported that travel and events which broaden the child's experiences are accompanied or followed by increases in vocabulary."

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[1] Witty, Paul and Kopel, David. "Preventing Reading Disability." Educational Administration and Supervision 22: 401-418; September 1936.

[2] McCarthy, Dorothea. "Language Development in Children." Manual of Child Psychology, p. 557.

Mental Age

Considerable research has been done in attempting to find the mental age necessary for success in beginning reading. An early study of Morphett and Washburne[1], measuring the reading achievement of 141 Winnetka, Illinois first grade children in February in relation to their mental age showed correlation ratios of .59 when mental age was measured by Detroit First Grade Intelligence Test and .51 when measured by Stanford-Binet Tests. The greatest degree of progress was made by those having a mental age of 6 years and 5 months. The authors suggested postponement of reading until the child had reached a mental age of 6 years and 6 months.

Dean[2] found, studying the reading achievement of first grade children, that mental age was superior to score on reading readiness tests as an instrument for predicting reading achievement. The study indicated the necessary mental age for beginning reading as 6 - 6.

A study by Keister[3] indicates that reading skills acquired by children under 6 may carry them through the first grade at a normal rate but they lack permanance and disappear during the summer months between grades 1 and 2.

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[1] Morphett, M. V. and Washburne, Carleton. "When Should Children Begin to Read?" Elementary School Journal 31: 496-503; March, 1931.

[2] Dean, Charles D. "Predicting First Grade Reading Achievement." Elementary School Journal 39: 609-616; April 1939.

[3] Keister, B. V. "Reading Skills Acquired by Five-Year Old Children." Elementary School Journal 41: 587-596; April 1941.

In Norwood, Massachusetts, Middleton's[1] testing and evaluation of the children led him to suggest that a mental age of 6 - 6 was far from essential for satisfactory word recognition. Since reading of the first grade level centers around the recognition and identification of the printed form, visual and auditory memory may be powerful determinants.

Thompson[2], in a study of 334 children, reported big gains from postponed reading. In this instance reading was postponed until children had reached a chronological age of 6 years. The largest gains were not in success of reading but rather in liking for the activity.

In a study made by Gilliland and Guthrie[3], they recommend:

> "That in systems where kindergartens are an integral part of the elementary school, a child should be five by September 15 before entering school, that children entering first grade be six years of age by September 15 and that in systems where the services of a psychologist may be obtained, children whose birthdays fall later than September 15 be permitted to have the privilege of individual tests, so that children who show outstanding maturity, socially, physically, emotionally, and mentally shall not be deprived of school at a time when they are mature enough to compete with children older chronologically."

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[1] Middleton, Herbert R. "First Grade Reading, An Appraisal." Understanding the Child 7: No. 3, 11-15; 1938.

[2] Thompson, Jennie Lloyd. "Big Gains from Postponed Reading." Journal of Education 117: 445-446; October 1934.

[3] Gilliland, F. and Guthrie, E. S. "Point of View on School Entrance Age and Reading Readiness." Ohio Schools, 31:276; September 1953.

Roslow[1], reporting on a study of 159 children who were given a special program of reading readiness activities while in kindergarten and preventitive and remedial instruction in individual or small groups during the first year, concluded that children with a mental age below 6 can be taught to read in first grade.

Teegarden[2] found that

> --"the tendency to confuse symbols is characteristic of mental ages below six and is usually eliminated in mental ages above seven."

DeLoura[3] concluded in her study that

> --"an indication that a knowledge of a child's mental age was an aid in estimating his probable success or failure in reading as the correlation between mental age and reading achievement has a predictive value of ten percent better than chance."

Gates[4] reminds us

> --"that children of the same intelligence quotient or mental age will vary considerably in many other personal qualities upon which learning to read and the level of reading achievement depend. They may vary greatly in interest, in visual aptitude, and in some of the techniques of learning upon which acquisition of reading ability depends. The mental test score or intelligence quotient or mental age gives by no means a perfect indication of a child's success in reading. These scores are very useful in understanding children's limitations and needs.

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[1] Roslow, Sydney. "Reading Readiness and Reading Achievement in First Grade." Journal of Experimental Education 19: 154-159 ; 1940.

[2] Teegarden, L. "Clinical Identification of the Prospective Non-Reader." Child Development p. 358; December 1932.

[3] DeLoura, B. E. "A Study of the Predictive Value of Intelligence Tests to Reading Achievement". Unpublished Masters Thesis, Boston University, 1949.

[4] Gates, A. I. The Improvement of Reading, New York : The MacMillan Co., 1947 . pp. 80-81.

They should be used along with many other sources of information about the pupil's make-up. They should not be regarded as telling exactly what to expect of each child."

Bigelow[1] points out the fact that the later the entrance to first grade the better the adjustment to the entire school program. She states:

"1. If a child is chronologically between six years old and six years and four months old and has an intelligence quotient of 110 or over, he is practically certain to succeed in school.

2. A child less than six years old chronologically with an intelligence quotient of 120 or over will succeed, but personality factors should also be considered.

3. If a child is below six years old chronologically and has an intelligence quotient below 110, his chance of success is small. It would be much better for such children not to attempt the work of Grade I until later. The same is true of children chronologically between six years old and six years and four months old with intelligence quotients below 100.

4. Children below six years old chronologically with intelligence quotients of 110-119, inclusive, and children chronologically between six years old and six years and four months old with intelligence quotients of 100-109, inclusive, have a fair chance of success. Children in this group should be studied carefully, consideration being given to their social, emotional, and physical development, home conditions, etc. Children already seriously handicapped should not be allowed to enter Grade I until later.

5. If a child is below six years old chronologically and has a mental age of six years and ten months or above, he is practically certain to succeed in school. If his mental age is between six years and eight months and six years and nine months, inclusive, he has a good chance of success.

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[1] Bigelow, Elizabeth B. "School Progress of Under Age Children". Elementary School Journal XXXV: 186-92; November 1934.

6. A child chronologically between six years and six years and four months of age has a good chance of success if his mental age is six years and four months or above.

7. A child who is chronologically below six years and four months of age and whose mental age is below six years has practically no chance of success.

8. A child chronologically below six years of age with mental age between six years and six years and seven months, or a child chronologically between six years and six years and four months of age with mental age between six years and six years and three months, inclusive, has some chance of success if he is sufficiently mature physically, socially, and emotionally. These cases should receive careful consideration."

The sixth birthday is no longer considered the open door to reading. Some children are selected at that age for first grade entrance or even younger if their mental ages are well in advance of the normal six year old and provided they are well developed physically, socially, and emotionally. Postponement for others is better until a time at which they have sufficient mental maturity.

Chronological Age and Mental Age are closely associated in considering a child's readiness for entrance to first grade. Chronological Age has very little to do with reading readiness except as it is considered in determining the Mental Age of the first grade entrant. It is to a slight degree indicative of the amount of experience a child has had but in terms of time only. Until recently, it was the criterion of fitness for a first grade entrant.

Raybold[1] concludes that pupils with a mental age of seven years and six months made more rapid progress in learning to read than those who were less mature.

Gates[2], reporting on a study of four groups of children in different school systems says:

> "Statements concerning the necessary mental age at which a pupil can be instructed to learn to read are essentially meaningless. The age for learning to read under one program or with the method employed by one teacher may be entirely different from that required under other circumstances."

He further suggests that:

> "The magnitude of the correlation between mental age and reading achievement seems to vary directly with the effectiveness of the provision for individual differences."

Even if the evidence of relationship between mental age and successful beginning reading were less contradictory, the contribution of experience to success in reading need not be discounted. Jones's[3] comment on the differential environment handicaps which may operate on verbal test items seems pertinent here.

> "In a common environment, the acquisition of verbal skill may, by and large, be regarded as a good index of intelligence, but in widely different environments it may become predominantly a good index of the environment and the resulting intelligence quotients will then require interpretation."

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[1] Raybold, Emma. "Reading Readiness in Children Entering First Grade." Elementary School Journal 31: 531-546; 1931

[2] Gates, Arthur I. "The Necessary Age for Beginning Reading." Elementary School Journal 37: 497-508; March 1937.

[3] Jones, Harold E. "Environment Influences on Mental Development." Manual of Child Psychology; p. 598.

Wheeler[1] has found that learning to read, like learning to do anything else, has its limits set by inherent patterns of mental development. The close relationship existing between reading ability and intelligence probably warrants the general practice of testing reading ability as one of the factors in measuring intelligence. However, it does not follow that reading ability and intelligence are one and the same thing, a fact that is often overlooked in interpreting aptitude rating scales based on reading situations.

Kindergarten Experiences

Assuming that children who have been to kindergarten or nursery school have had richer experiences than those without such training, do they make better progress in reading? Goetch[2], appraising the reading progress of 1,936 public school children, half of whom had been to kindergarten, found the grade means of both reading scores and reading ages of children with kindergarten experiences significantly higher than those without such experience.

A study by Risser and Elder[3] of 293 children in the first five grades, 130 of whom had had kindergarten training likewise indicated superior ability in reading for the kindergarten group.

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[1] Wheeler, Lester R. "Relation of Reading to Intelligence." School and Society 70: 225-227; October 1949.

[2] Goetch, Edward W. "The Kindergarten as a Factor in Elementary School Achievement and Progress." University of Iowa Studies in Child Welfare 3: No. 4; April 1926.

[3] Risser, Faye and Elder, Harry E. "The Relation Between Kindergarten Training and Success in the Elementary Schools." Elementary School Journal 28: 286-289; December 1927.

Lee[1] found that the score on the Lee-Clark Reading Readiness Test of a child with kindergarten experience predicts the ability to learn to read than does the score of a child who has not had such experience.

The effect of nursery school attendance on five-year old children entering kindergarten was studied by Peterson[2]. Measures of reading readiness favored the non-pre-school group but the variability was so great as to make the difference negligible.

The study of methods of determining reading readiness by Gates, Bond, and Russell[3] which was carried out in four classes in New York City public schools, also pointed to the conclusion that, "The most useful tests for predicting achievement in the primary grades are measures of reading attainments at the time."

In a study conducted by Wilson, Fleming, Burke, and Garrison[4], at the Horace Mann School in New York City, it was found that:

1. Many of the kindergarten children knew many letters before words.

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[1] Lee, J. "Measuring Reading Readiness." Elementary School Journal 34: 656-666; May 1934.

[2] Peterson, Theresa J. "A Preliminary Study of the Effects of Previous Nursery School Attendance Upon the Five-Year-Old Children Entering Kindergarten." University of Iowa Studies in Child Welfare 14:199-245; 1937.

[3] Gates, Arthur I., Bond, Guy L., and Russell, D. H. Methods of Determining Reading Readiness; p. 26.

[4] Wilson, Frank T., Fleming, Cecile W., Burke, Agnes, and Garrison, Charlotte. "Reading Progress in Kindergarten and Primary Grades." Elementary School Journal 38: 442-449; November 1939.

2. The kindergarten and first grade children who knew the most letters, forms and sounds tended very definitely to be among the first to learn to read and to be the best readers.

3. The children who were ignorant of or much confused about letters, forms, and sounds tended very definitely to be poor readers.

Auditory and Visual Discrimination

According to Monroe[1], lack of precise auditory discrimination is found to impede the learning which involves auditory impression. Lack of discrimination of certain sounds may lead to a confusion of words which in turn affects the reading progress.

Murphy[2] expresses:

> "The lack of power to distinguish similarities and differences in the sounds of words appears to be one cause of confusion in beginning reading and auditory and visual discrimination are important abilities in beginning reading."

Hearing is important as a factor in reading readiness because the child first learns to attach meaning to printed symbols through the medium of spoken language.

Harrison[3] says that:

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[1] Monroe, M. Children Who Cannot Read. University of Chicago Press, 1932. p. 93-95.

[2] Murphy, H. A. "An Evaluation of Exercises for Developing Auditory Discrimination in Beginning Reading." Masters Thesis, Boston University, 1940.

[3] Harrison, M. Lucille. "Reading Readiness," Boston: Houghton Mifflin Company, 1936.

--"auditory training teaches pupils to recognize sound elements and their likenesses and differences in words they hear spoken."

She reports the following skills to be necessary in developing readiness for word recognition as follows:

1. "ability to hear and differentiate between sounds with which spoken words begin.

2. ability to hear rhyming endings and to differentiate between non-rhyming in words."

Barry[1] tried to discover the relationships between auditory discrimination as measured by the ability to identify word sounds and mental age, reading ability, accuracy of articulation, extent of vocabulary, auditory acuity, and singing ability of children in nine communities.

The author found that:

none of the factors studied showed a high correlation with auditory discrimination.

the highest correlation in grades one and two was with reading, .56 and .52 respectively.

Betts[2] states:

"Auditory discrimination is an ability to be developed during the pre-reading period as well as during the reading instruction. Accurate auditory discrimination contributes to good speech habits and to an awareness of speech sounds so essential in phonetic insight."

He[3] further emphasizes:

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[1] Barry, F. M. "Analysis of Auditory Functions in Grades One, Two and Three" Unpublished Thesis, Boston University, 1951.

[2] Betts, Emmett A. "Factors in Readiness for Reading" Education Administration and Supervision. XXIXL:199-230;April 1943.

[3] Betts, Emmett A. Foundations of Reading Instruction. New York: American Book Company, 1946. p. 331.

> "The ability to discriminate between the forms of words and between the sounds of words is a prerequisite to the development of word perception. This ability to note likenesses and differences among word forms is related to retention or memory. When the child is a poor observer of likenesses or differences among things, and among word forms, he is likely to have considerable difficulty in acquiring a stock of sight words during initial reading instruction."

In her experimental work with specific training in auditory and visual discrimination, Murphy[1] found that:

> "At every measuring period after the auditory and visual discrimination exercises had been given, experimental groups showed statistically significant superiority in reading achievement to the control group."

Bresnahan's[2] evaluation of the effectiveness of training on Auditory Discrimination with 383 children in controlled and experimental groups showed:

> "Recordings are as effective in ten minutes a day as are current, approved teaching techniques in twenty minutes a day.
>
> Both the control and experimental groups showed tremendous and significant gains in auditory scores."

Crossley's[3] evaluation of the effectiveness of lantern slides on auditory and visual discrimination for children from twenty first grades in nine communities were divided

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[1] Murphy, A. A. "An Evaluation of the Effect of Specific Training in Auditory and Visual Discrimination on Beginning Reading" Unpublished Thesis, Doctor of Education, Boston University, 1943.

[2] Bresnahan, M. Marie. "An Evaluation of Recordings for Teaching Auditory Discrimination of Word Elements for Beginning Reading" Unpublished Thesis, Doctor of Education, Boston University, 1952.

[3] Crossley, B. Alice. "An Evaluation of the Effect of Lantern Slides on Auditory and Visual Discrimination of Word Elements." Unpublished Thesis, Doctor of Education, Boston University, 1948.

heterogeneously into ten control and ten experimental groups. Her results showed:

1. "The experimental group was superior to the control group in all analysis of auditory discrimination.

2. From the results of this listing it can be assumed that it is possible to teach letters as beginnings and endings at the same time without causing confusion.

3. Children who are subject to auditory discrimination of vowel sounds profit by such training.

4. In general, children who had higher scores in auditory discrimination attained higher scores in reading, even though they were equal on the basis of mental age."

Letters

Gates[1] found in the Horace Mann School the test of ability to read letters of the alphabet one of the best indicators of ability to learn to read. He says that all these abilities may be readily improved by instruction.

In Wilson's[2] study of remedial reading and reading progress at the Horace Mann School he states:

> "One set of factors seemed to stand out as of pre-eminent effectiveness in contributing to reading progress, namely, mastery of letter symbols, both form and sound. The kindergarten and first grade children who knew the most letter forms and sounds tended to be among the first to learn to read and to be the best readers. Conversely, the children who were ignorant of, or

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[1] Gates, Arthur. "An Experimental Evaluation of Reading Readiness Tests." Elementary School Journal, 39: 497-507.

[2] Wilson, Frank T. "Reading Progress in Kindergarten and Primary Grades." Elementary School Journal, 38:443-45; February 1938.

much confused about letter forms and sounds tended to be very definitely the poor readers."

Hester[1] in a study of 194 children at the Reading Laboratory at University of Pittsburgh gave the children the Durrell Analysis of Reading Difficulty in which 58 percent of the group lacked wholly or partly the necessary knowledge of phonics for word attack. The rating of letters and sounds as Hester discovered them was:

"Capital Letters: Most difficult letters V and Y
Next B, H and S
Easiest X

Small Letters: Difficult q, l, b, p
Easiest a, h, s, x

Capital letters were recognized more easily than small ones.

Letter sounds: Hardest q
Next x
Next u, i, w, l
Easiest c, k, s, t

Letter sounds were not properly known."

Haskell[2] and others report on the study of 639 first grade children that there seems to be little relationship between the knowledge of letter names and reading achievement

1. The correlations range from .31 to .54.
2. The highest correlation was between association of upper and lower case letters and reading.

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[1] Hester, Kathleen B. "A Study of Phonetic Difficulties in Reading." Elementary School Journal 43: 171-173; November 1942.

[2] Haskell, Barbara, and others. "The Relationship of Knowledge of Letter Names and Reading Achievement in Grade One." Unpublished Masters Thesis, Boston University, 1952.

Wilson[1] has stressed that, "Reading Readiness is reading progress." The abilities which he found to be most strikingly related to reading progress, even more than age and I. Q. were naming the letters, giving phonic combinations, giving letter sounds, writing words.

Language

The importance of meaning in relation to reading is quite generally understood. Gibbons[2] states that "the ability to read means first of all the ability to understand what is read." This statement is corroborated by McKee[3] who says "there can be no reading without meaning."

Children at school present a wide variation of experimental background. That which is common to one child may be completely foreign to another. These variations in vocabulary present a definite problem in reading. Gibbons states further that:

> "the degree of understanding to be attained in reading depends first upon the number and quality of meanings which the children already possess."

and McKee makes it clear that "printed symbols do not give meaning to the readers, they merely stimulate him to recall familiar concepts."

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[1] Wilson, Frank T. and Burke, Agnes. "Reading Readiness in a Progressive School." Teachers College Record. 38: 565-580; April 1937.

[2] Gibbons, H. D. "Meaning Side of Reading." California Journal of Elementary Education IX : 224-228; May 1941.

[3] McKee, Paul. Reading and Literature in the Elementary Grades. Hoston : Houghton Mifflin Company, 1934. pp. 99-100.

In Hay's[1] study of vocabulary difficulties in pre-primary children's literature her results show that:

> "Types of errors which really fell under two main headings, narrow concepts and untrained auditory perception explain how definitely there is a need for wider experiences to increase and intensify meaning, also to give special ear training, to assure better success in the beginning reading. This has been and still is the concern of leading educators, the building of word power and vocabulary understanding. Most children with average intelligence are receptive to correct forms of instruction, which include wider experience, keener observation, and greater consideration of future needs, yet geared to their level of ability. It is apparent that children's stories and rhymes can increase the child's understanding vocabulary and enlarge concepts. More desirable patterns of speech may also be assured."

Bannon[2] also states that:

> "A program of word enrichment is needed by the Kindergarten child to increase and intensify word meaning and should be included in the Kindergarten program."

Jenkins[3], in her study of the relation of language to thought shows that the practical side of oral language is found only in a situation of real experiences.

Enright[4], in an analytical study of the speaking vocabulary of Kindergarten children in relation to beginning reading concluded that " a definite relationship exists between the

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[1] Hay, C. G. "Study of Vocabulary Difficulties in Pre-Primary Children's Literature." Unpublished Masters Thesis, Boston University, 1942.

[2] Bannon, M. E. "Some Common Problems in the Kindergarten." Unpublished Masters Thesis, Boston University, 1950.

[3] Jenkins, Frances. Language Development in the Elementary Grades. Thomas Nelson and Sons, 1936. p. 9.

[4] Enright, Elizabeth Lenora. "The Analysis of Kindergarten Children's Speaking Vocabulary in Relation to First Grade Reading Needs." Unpublished Masters Thesis, Boston University, 1943.

experiential background of the Kindergarten children tested and the minimum age requirements for admission to Kindergarten."

Gates[1], through his many studies and experiments shows that if a child has acquired ability of understanding word meanings,

> "--subsequently, every moment of experience is accompanied by language. If he is neither reading nor listening to spoken word, he is almost certainly talking to himself or "thinking" in verbal form. The knowledge that thinking is almost wholly verbal ... should induce us not to minimize the usefulness of language activities, but to realize they are of supreme importance in the life of insight, understanding, and reason."

Motor Control

The Child Development studies have shown differences among children in motor control. Monroe[2] says:

> "The difficulties in motor control which affect reading arise from many causes. Birth injuries and illness affecting the nervous system such as: meningitis, infantile paralysis, encephalitis, convulsions often affect the child's motor control. Glandular disorder sometimes result in a sluggish rate of reaction, and general clumsiness. Chorea results in jerky and spasmodic movements. Poor coordination through change of handedness or failure to develop a preference for one side of the body may also affect reading. Since reading is an act involving finely coordinated muscular control it should be investigated as a possible factor in reading disability. Poor motor control is often observed in children who show the following characteristics in reading.
>
> a. Excessive reversals and repetitions.

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[1] Gates, Arthur I. "Language Activities as Experience." Teachers College Record No. 54: 417-465;May 1953.p. 423.

[2] Monroe, Marion and Backus, Bertie. Remedial Reading. Boston: Houghton Mifflin Company, 1937. pp. 19-20.

b. Line skipping and losing place.
c. Eratic, impulsive behavior with frequent failure to attend to reading for more than brief periods.
d. Variations in the rate of reading, such as very slow rate or impulsively rapid, jerky, or spasmodic reading.
e. Stammering during oral reading.
f. Eratic, uncontrolled eye movements.

Gessell[1] states that:

> "A child of six years is almost in constant motion, sometimes clumsy, but his body may be in active balance as he swings, plays active games, or skips. He may successfully toss and bounce balls. He tries jumping rope, sliding, whirling around and hopping a certain distance. Speed and efficiency in dressing and undressing will depend upon general intelligence and the amount of practice."

In Gessell's[2] studies, motor skills emphasized the hand and eye coordinations. Under the motor development at the five year old level he included: Steadiness in the fish net; copying a square, a triangle, a diagonal and a hexagon; tracing a cross; and copying a diamond in ink. Other items which include motor functioning are listed under "personal-social" and "adaptive behavior."

Wellman[3] says:

> "Motor coordination may be studied from a number of angles, depending upon whether movements are voluntary or involuntary and upon the particular characteristic or character-

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[1] Gessell, A. and Ilg, F. L. The Child From Five to Ten. New York: Harper and Brothers Company, 1946.

[2] Gessell, A. Mental Growth of the Pre-School Child. New York: MacMillan Company, 1926.

[3] Wellman, Beth. "The Development of Motor Coordination in Young Children." Iowa Studies in Child Welfare. University of Iowa City, 1927. Vol. 3: 9.

istics of movements involved. When voluntary movements have been studied, the rate, accuracy, precision, force and extent of movement have been the subjects of investigation. When involuntary movements have been studied, the chief concern has been the extent of movement. Demands are being made on the child's ability to coordinate his movements in which fine coordination of the hand and arm are required in the following:

1. Stringing beads.
2. Building blocks.
3. Buttoning coat.
4. Lacing shoes.
5. Eating.
6. Scribbling.

Research has shown various factors contribute to success in beginning reading. Therefore, this study is an attempt to discover the abilities children have on entering grade one and the effect of this knowledge on learning to read.

Chapter II

Plan of Study

The testing program.

In carrying out this study it was first necessary to determine how best to measure the skills to be studied; to secure the cooperation of the school systems involved; to select suitable measures and to devise those in areas where none were available; to administer the tests and hold the interviews.

Motor skill tests included folding and cutting paper, drawing free hand and cutting a circle, copying from manuscript the sentence, "See the dog," and writing his name.

The directions may be found in the Appendix.

The knowledge of letters from dictation is taken from the thesis of Cazanove[1] and others.

> "The twenty-six letters of the alphabet were arranged for dictation in such a way as to prevent any possible reliance on an established pattern that may have been developed by the child. The auditory factor was of prime importance in the construction of this test. Care was taken in the dictation order to eliminate auditory confusion such as the sounds of the letters b and v, m and n, f and v."

A copy of the test and directions may be found in the Appendix.

[1] Cazanove, Frances S., Hill, Greta A., and Stevens, Freda E. "The Construction and Analysis of Tests to Measure the Knowledge of Letter Names in Grades One, Two, and Three." Unpublished Master Thesis, Boston University, 1953.

Identification of letters in groups from dictation.[1]

This test consisted of twenty-eight items with five letters in each item. The letter combinations were most carefully analyzed as to contiguity and likeness and difference in form. Letter names similar in sound and configuration were placed in the same item to test the knowledge of the specific letter name. For example: the knowledge of A was the letter name to be tested in the group, c x a t o and the knowledge of Z was the letter name to be tested in the group, t o C L z. These first two items were samples.

A copy of the test and directions may be found in the Appendix.

Identification of letters in groups from flash cards.[2]

The same sheet as the one used in test 3 was used for this test. There were four choices in each item. This was a test to determine the child's knowledge of the letter name through the association of the upper and lower case letters. A set of three-by-five inch oak tag flash cards in printed form, consisting of the upper and lower case letters of the alphabet, accompanied the test. When an upper case letter was flashed, the correct response was the lower case letter. When a lower case letter was flashed, the corresponding response was the upper case letter. For

[1] Cazanove, Frances S., Hill, Greta A. and Stevens, Freda E. "The Construction and Analysis of Tests to Measure the Knowledge of Letter Names in Grades One, Two, and Three." Unpublished Master Thesis, Boston University, 1953.

[2] Ibid

example: when H was flashed, the correct response was h. The first two were samples.
A copy of the test and directions may be found in the Appendix.
Auditory test of initial and final consonants. This test was taken from the Thesis of Goggin[1] and others.

> "Test 5 has two parts testing initial and final consonants. All the initial consonants except x and all the final consonants except b, j, x, and z are tested. The test consists of five rows of four pictures. The pictures were chosen to test two factors. Therefore, a picture's merit was determined by its usefulness in testing an initial and final consonant. The material was arranged so that the child couldn't follow a pattern in marking. Four consonants were placed below each picture. The letters were selected so that the initial and final consonant in each word appeared among the four letters. The words were pronounced by the examiner. Part two was continued in a similar way."

A copy of the test and directions may be found in the Appendix.

Visual memory

This test[2] consisted of thirty items, the first two of which were samples. Words to be used were presented by the teacher on an eleven inch by three inch flash card for five seconds. The letters were two inches high. A copy of the test and directions may be found in the Appendix.

Identification of letters and letter sounds

This test which was divided into four groups, was an individual test. On the upper half of a duplicated paper were the twenty-six capital letters in an unfamiliar order and on the lower half were the small letters in an unfamiliar order.
A copy of the test and directions may be found in the Appendix.

[1]Goggin, Dorothea, Hughes, Margaret and Wall, Rita Elizabeth. "Construction and Statistical Analysis of Group Auditory Tests for Grades One, Two and Three." Unpublished Master Thesis, Boston University, 1953.

[2]Durrell, Donald D. Visual Memory Test - Informal, Unpublished, Boston University.

Reading achievement was measured in October and February on different forms of the Detroit Word Recognition Test.[1]

Mental age was determined on the Otis Quick Scoring test.[2]

Teacher Observation:

A chart was devised for use in teacher observation to be used in the twelve classrooms of the people in the study. A copy of the chart follows:

I. Physical maturity
   A. Tie shoes
   B. Dress

II. Attention in group activities
   A. Ability to follow oral directions
   B. Ability to listen to a story

III. Social adjustment
   A. Attitude toward teacher
   B. Attitude toward classmates
      1. Work
      2. Play

IV. Emotional adjustment to school
   A. First day
   B. First week

V. Motor control
   A. Skipping
   B. Use of pencil, crayons, etc.

VI. Verbal fluency
   A. Ability to tell a spontaneous story

VII. Speech
   A. Articulation
   B. Stuttering
   C. Lisping
   D. Enunciation
   E. Baby talk

1. World Book Company, Yonkers, New York, 1925.

2. World Book Company, Yonkers, New York, 1936.

Parent Interview:

In the interview, questions dealt with the years prior to the first grade. In general the questions asked were an attempt to cover the child's early active play, quiet play, the kinds of toys he used, the kinds of books and stories that were read, the type of music and records he listened to, and whether he had the ability to entertain himself. The interview record follows:

I. Active Play (large muscles)

1. Jumping rope
2. Roller skating or Ice skating
3. Skipping
4. Swimming
5. Tricycle

II. Quiet Play

1. Playing school
   Playing doctor - nurse
   Playing house
2. Weaving
3. Sewing
4. Color books
5. Creative coloring
6. Dolls dresses
7. Finger painting
   . Other painting
8. Paper dolls

III. Toys

1. Building with blocks
2. Card games
3. Hammer - saw
4. Models
5. Peg board
6. Puzzles
7. Tinker toys
9. Pasting
10. Stenciling
11. Tracing

IV. Books and Stories

1. Bedtime stories
2. Creating stories
3. Nursery rhymes
4. Poetry
5. Retelling stories
6. Comics

V. Music and Records

1. Collecting records
2. Listening to records
3. Radio
4. Television

VI. Writing

1. Blackboard
2. Crayon
3. Pencil
4. Magic Slate

Ability to entertain self.

Population

Seven hundred eighty-one children in Grade I in ten different communities were included in this study. Large and medium sized city school systems and large

and small town school systems were represented. The group was extremely heterogenous, including children from low, middle and upper socio-economic communities.

The cooperation of all the participating school systems was readily given for this study to be conducted in their school systems. All of the teachers involved in this study were experienced teachers. With the exception of the reading test, parent interview and the teacher observation the data was collected by October 12, 1953. The observation extended over a six week period and the reading tests were given in November, 1953 and March, 1954.

All testing was done by the classroom teacher.

Scoring of the tests:

Test I Cutting and Folding

A. Folding

Scoring was from 1 to 3.

1. Edges met.
2. Edges slightly irregular.
3. Crooked fold - corners did not meet.

B. Cutting on a straight line

Scoring from 1 to 3.

1. Perfectly cut on the fold.
2. The cutting slightly deviated from the fold.
3. The cutting was jagged and slightly irregular.

C. Drawing a Circle

Scoring was from 1 to 3.

1. A well formed circle.
2. A slightly distorted circle tending toward the oval shape.
3. Indistinguishable circle.

D. Cutting on a Circle

Scoring was from 1 to 3.

1. The cutting followed the line.
2. The cutting deviated slightly from the drawn line.
3. The cutting did not follow the circle drawn.

Four of the writers marked the entire set of these tests in order that the judgment would be uniform.

E. Copying "See the dog."

Scoring was from 1 to 3.

1. Letters copied as in the sample and words spaced as in the sample.
2. Two out of three words spaced as in the sample.
3. Very little similarity with sample.

F. Writing Own Name

Scoring was from 1 to 3.

1. Writing first name correctly using either all capitals or initial capital and the remainder in small letters or correctly written in cursive writing.
2. More than half of the letters correctly formed.
3. Either the name was omitted or it was illegible.

Test 2 Knowledge of Letters from Dictation.

Scoring: Each correct letter received one point.

Test 3 Identification of Letters in Groups from Dictation.

Scoring: Each correct item received one point.

Test 4 Indentification of Letters in Groups from Flash Cards.

Scoring: One point for each correct item.

Test 5 Auditory Test of Initial and Final Consonants.

Scoring: One point for each correct item.

Test 6 Visual Memory

Scoring: One point for each correct item.

Test 7 Identification of Letters and Letter Sounds.

Scoring:

A. One point for each correct item.

B. One point for each correct item.

C. One point for each correct item.

D. One point for each correct item.

Teacher Observation

Areas I - VI scored 1, 2 or 3.

1. Superior
2. Average
3. Immature

Area VII Speech Scored:

5 points - no errors in speech
4 points - 1 error in speech
3 points - 2 errors in speech
2 points - 3 errors in speech
1 point - 4 errors in speech
o points - everything wrong

Parent Interview

Scoring: One point for each activity

I - maximum 5 points

II - maximum 11 points

III - maximum 7 points

IV - maximum 6 points

V - maximum 4 points

VI - maximum 4 points

Ability to entertain self was marked yes or no.

All tests were scored by the writers. The scores of the tests were analyzed and the results are presented in the next chapter.

Chapter III

Analysis of Data

Table I shows the distribution, mean, median, and standard deviation of Chronological Ages for the 780 children.

TABLE I

DISTRIBUTION OF CHRONOLOGICAL AGES

Ages	Frequencies
7.9-7.11	3
7.6-7.8	3
7.3-7.5	10
7.0-7.2	12
6.9-6.11	49
6.6-6.8	127
6.3-6.5	183
6.0-6.2	184
5.9-5.11	152
5.6-5.8	55
5.3-5.5	3

Mean 6-3 S.D. 4.72 months

Median 6-2

The Chronological Ages ranged from 5 years, 4 months to 7 years, 11 months with a median of 6 years, 2 months, a mean of 6 years, 3 months, and a standard deviation of 4.72 months.

Table II shows the distribution, mean, median, and standard deviation of Mental Ages for 776 children.

TABLE II

DISTRIBUTION OF MENTAL AGES

Ages	Frequencies
10.9-10.11	1
10.6-10.8	1
10.3-10.5	1
10.0-10.2	0
9.9-9.11	0
9.6-9.8	2
9.3-9.5	3
9.0-9.2	4
8.9-8.11	7
8.6-8.8	22
8.3-8.5	18
8.0-8.2	32
7.9-7.11	26
7.6-7.8	54
7.3-7.5	85
7.0-7.2	100
6.9-6.11	87
6.6-6.8	78
6.3-6.5	57
6.0-6.2	54
5.9-5.11	54
5.6-5.8	35

Ages	Frequencies
5.3-5.5	22
5.0-5.2	13
4.9-4.11	5
4.6-4.8	5
4.3-4.5	5
4.0-4.2	1
3.9-3.11	1
3.6-3.8	5

Mean 6-8 S.D. 11.85 months

Median 6-10

The Mental Ages ranged from 3 years, 6 months to 10 years, 11 months with a median of 6 years, 10 months, a mean of 6 years, 8 months, and a standard deviation of 11.85 months.

Table III shows the distribution, mean, median, and standard deviation of Intelligence Quotients for 776 children.

TABLE III

DISTRIBUTION OF INTELLIGENCE QUOTIENTS

Quotients	Frequencies
140-142	3
137-139	2
134-136	9

Quotients	Frequencies
131-133	11
128-130	16
125-127	31
122-124	26
119-121	55
116-118	42
113-115	71
110-112	66
107-109	81
104-106	82
101-103	63
98-100	65
95-97	37
92-94	31
89-91	22
86-88	17
83-85	10
80-82	8
77-79	6
74-76	6
71-73	3
68-70	5
65-67	0
62-64	1
59-61	7

Mean 107.03 S.D. 9.87

Median 107.36

The Intelligence Quotients ranged from 59 to 142 with a median of 107.36, a mean of 107.03 and a standard deviation of 9.87.

Table IV shows a distribution of the Reading Groups on October 6 for 781 children.

TABLE IV

DISTRIBUTION OF READING GROUPS ON OCTOBER 6

Groups	Frequencies
1	278
2	268
3	193
4	42

Of the 781 children 278 children were in the first group, 268 in the second group, 193 in the third group, and 42 children were in the fourth group on October 6.

Table V shows a distribution, mean, median, and standard deviation of scores on folding in Test 1 for 781 children.

TABLE V

DISTRIBUTION OF SCORES ON FOLDING IN TEST 1

Scores			Frequencies
1			292
2			415
3			74
Mean	2.26	S.D.	.62
Median	2.28		

The scores ranged from 3 to 1 with a median of 2.26, a mean of 2.28, and a standard deviation of .62.

Table VI shows a distribution, mean, median and standard deviation of scores for cutting on a straight line in Test 1 for 781 children.

TABLE VI

DISTRIBUTION OF SCORES FOR CUTTING ON A STRAIGHT LINE IN TEST 1

Scores			Frequencies
1			160
2			525
3			96
Mean	2.08	S.D.	.56
Median	2.06		

The scores ranged from 3 to 1 with a median of 2.06, a mean of 2.08, and a standard deviation of .56.

Table VII shows a distribution, mean, median, and standard deviation of scores on drawing a circle in Test 1 for 781 children.

TABLE VII

DISTRIBUTION OF SCORES ON DRAWING A CIRCLE IN TEST 1

Scores		Frequencies	
1		153	
2		502	
3		126	
Mean	2.03	S.D.	.59
Median	2.03		

The scores ranged from 3 to 1 with a median of 2.03, a mean of 2.03 and a standard deviation of .59.

Table VIII shows a distribution, mean, median and standard deviation of scores on cutting on a circle in Test 1 for 781 children.

TABLE VIII

DISTRIBUTION OF SCORES ON CUTTING ON A CIRCLE IN TEST 1

Scores		Frequencies	
1		145	
2		473	
3		163	
Mean	1.98	S.D.	.62
Median	1.98		

The scores ranged from 3 to 1 with a median of 1.98, a mean of 1.98, and a standard deviation of .62.

Table IX shows a distribution, mean, median, and standard deviation of scores on copying "See the dog" in Test 2 for 781 children.

TABLE IX

DISTRIBUTION OF SCORES IN COPYING "SEE THE DOG" IN TEST 2

Scores		Frequencies	
1		466	
2		252	
3		63	
Mean	2.52	S.D.	.63
Median	2.66		

The scores ranged from 3 to 1 with a median of 2.66, a mean of 2.52 and a standard deviation of .63.

Table X shows a distribution, mean, median, and standard deviation of scores on writing own name in Test 2 for 781 children.

TABLE X

DISTRIBUTION OF SCORES ON WRITING OWN NAME IN TEST 2

Scores	Frequencies
1	475
2	158
3	148

Mean 2.42 S.D. .78

Median 2.68

The scores ranged from 3 to 1 with a median of 2.68, a mean of 2.42, and a standard deviation of .78.

Table XI shows a distribution, mean, median, and standard deviation of scores on writing letters from dictation in Test 2 for 781 children.

TABLE XI

DISTRIBUTION OF SCORES ON WRITING LETTERS FROM DICTATION IN TEST 2

Scores	Frequencies
26	9
25	11
24	13
23	10
22	15
21	16
20	16
19	13
18	16
17	13
16	18
15	16
14	18
13	20

Scores		Frequencies
12		29
11		38
10		28
9		28
8		40
7		36
6		49
5		57
4		55
3		49
2		39
1		29
0		100
Mean	8.79	S.D. 7.09
Median	6.85	

The scores ranged from 0 to 26 with a median of 6.85, a mean of 8.79, and a standard deviation of 7.09.

Table XII shows a distribution, mean, median, and standard deviation of scores on identification of letters from dictation in test 3 for 781 children.

TABLE XII

DISTRIBUTION OF SCORES ON IDENTIFICATION OF LETTERS FROM DICTATION IN TEST 3

Scores	Frequencies
26	14
25	13
24	23
23	16
22	14
21	12
20	6
19	17
18	15
17	12
16	22
15	25
14	19
13	34
12	36
11	36
10	40
9	35
8	48
7	58
6	48
5	43

Scores		Frequencies	
4		55	
3		46	
2		33	
1		31	
0		30	
Mean	10.00	S.D.	6.91
Median	8.47		

The scores ranged from 0 to 26 with a median of 8.47, a mean of 10.00 and a standard deviation of 6.91.

Table XIII shows a distribution, mean, median, and standard deviation of scores on identification of letters from flashcards in Test 4 for 781 children.

TABLE XIII

DISTRIBUTION OF SCORES ON IDENTIFICATION OF LETTERS FROM FLASHCARDS IN TEST 4

Scores	Frequencies
26	6
25	16
24	13
23	11
22	12
21	12
20	15
19	13

Scores	Frequencies
18	12
17	15
16	27
15	38
14	32
13	43
12	43
11	46
10	53
9	51
8	40
7	54
6	48
5	42
4	45
3	24
2	28
1	18
0	24

Mean 10.50 S.D. 6.26

Median 9.81

The scores ranged from 0 to 26 with a median of 9.81, a mean of 10.50, and a standard deviation of 6.26.

Table XIV shows a distribution, mean, median, and standard deviation of scores on initial consonants in Test 5 for 781 children.

TABLE XIV

DISTRIBUTION OF SCORES ON INITIAL CONSONANTS IN TEST 5

Scores	Frequencies
20	3
19	3
18	8
17	7
16	9
15	13
14	50
13	37
12	25
11	21
10	31
9	29
8	39
7	62
6	63
5	62
4	65
3	72
2	51
1	46
0	85

Mean 6.48 S.D. 4.83

Median 5.65

The scores ranged from 0 to 20 with a median of 5.65, a mean of 6.48, and a standard deviation of 4.83.

Table XV shows a distribution, mean, median and standard deviation of scores on final consonants in Test 5 for 781 children.

TABLE XV

DISTRIBUTION OF SCORES ON FINAL CONSONANTS IN TEST 5

Scores	Frequencies
20	2
19	1
18	2
17	3
16	6
15	6
14	4
13	3
12	8
11	16
10	22
9	80
8	59
7	76
6	47

Scores	Frequencies
5	93
4	65
3	84
2	67
1	54
0	83

Mean 5.24 S.D. 3.71

Median 4.90

The scores ranged from 0 to 20 with a median of 4.90, a mean of 5.24, and a standard deviation of 3.71.

Table XVI shows a distribution, mean, median, and standard deviation of scores on visual memory in Test 6 for 781 children.

TABLE XVI

DISTRIBUTION OF SCORES ON VISUAL MEMORY IN TEST 6

Scores	Frequencies
21	1
20	0
19	1
18	4
17	8
16	8
15	17
14	25

Scores	Frequencies
13	33
12	47
11	55
10	56
9	79
8	73
7	66
6	50
5	70
4	57
3	53
2	36
1	25
0	17

Mean 7.72 S.D. 4.02

Median 7.73

The scores ranged from 0 to 21 with a median of 7.73, a mean of 7.72, and a standard deviation of 4.02. No child had a perfect score.

Table XVII shows a distribution, mean, median, and standard deviation of scores on identification of capital letters in Test 7 with 781 children.

TABLE XVII

DISTRIBUTION OF SCORES ON IDENTIFICATION OF CAPITAL LETTERS IN TEST 7

Scores	Frequencies
26	37
25	23
24	13
23	10
22	19
21	13
20	12
19	11
18	11
17	5
16	18
15	17
14	12
13	14
12	21
11	21

Scores	Frequencies
10	22
9	24
8	32
7	24
6	40
5	30
4	50
3	50
2	76
1	76
0	100

Mean 8.59 S.D. 8.25

Median 5.71

The scores ranged from 0 to 26 with a median of 5.71, a mean of 8.59, and a standard deviation of 8.25.

Table XVIII shows a distribution, mean, and standard deviation of scores on identification of sounds of capital letters in Test 7 with 781 children.

TABLE XVIII

DISTRIBUTION OF SCORES ON IDENTIFICATION OF SOUNDS OF CAPITAL LETTERS IN TEST 7

Scores	Frequencies
20	3
19	0

Scores	Frequencies
18	0
17	10
16	1
15	1
14	1
13	0
12	3
11	7
10	1
9	3
8	6
7	4
6	9
5	9
4	19
3	22
2	36
1	47
0	599

Mean 1.10 S.D. 3.04

The scores ranged from 0 to 20 with a mean of 1.10 and a standard deviation of 3.04.

Table XIX shows a distribution, mean, median, and standard deviation of scores on identification of small letters in Test 7 with 781 children.

TABLE XIX

DISTRIBUTION OF SCORES ON IDENTIFICATION OF SMALL LETTERS IN TEST 7

Scores	Frequencies
26	8
25	6
24	4
23	9
22	8
21	3
20	15
19	5
18	8
17	13
16	12
15	14
14	11
13	11
12	9
11	15
10	14
9	18
8	29
7	32
6	35

Scores	Frequencies
5	38
4	37
3	70
2	92
1	80
0	185

Mean 5.65 S.D. 6.61

Median 2.98

The scores ranged from 0 to 26 with a median of 2.98, a mean of 5.65, and a standard deviation of 6.61.

Table XX shows a distribution, mean, and standard deviation of scores on identification of sounds of small letters in Test 7 with 781 children.

TABLE XX

DISTRIBUTION OF SCORES ON IDENTIFICATION OF SOUNDS OF SMALL LETTERS IN TEST 7

Scores	Frequencies
20	1
19	0
18	0
17	7
16	1
15	1
14	1
13	0

Scores	Frequencies
12	1
11	0
10	1
9	6
8	2
7	1
6	7
5	4
4	12
3	9
2	23
1	38
0	666
Mean .64	S.D. 2.37

The scores ranged from 0 to 20 with a mean of .64 and a standard deviation of 2.37.

Table XXI summarizes the number of boys and girls, the handedness preference, and the kindergarten training of the total population.

TABLE XXI

SEX		HANDEDNESS		KINDERGARTEN	
Boys	435	Left	102	Yes	495
Girls	346	Right	677	No	286
		Ambidextrous	2		
Total:	781		781		781

Of the 781 children there were 435 boys and 346 girls; 102 children were left handed, 677 were right handed, while 2 were ambidextrous; 495 children had kindergarten training while 286 had not attended kindergarten.

ANALYSIS OF THE TEACHER RATING SCALE AND THE PARENT INTERVIEW

Table XXII shows a distribution of ratings of physical maturity from the Teacher Rating Scale for 238 children.

TABLE XXII

DISTRIBUTION OF RATINGS OF PHYSICAL MATURITY

Ratings	Frequencies
1	94
2	111
3	33

Of the 238 children 94 children were rated superior, 111 rated average, and 33 children were rated as immature in physical maturity.

Table XXIII shows a distribution of ratings of attention in group activities from the Teacher Rating Scale for 238 children.

TABLE XXIII

DISTRIBUTION OF RATINGS OF ATTENTION IN GROUP ACTIVITIES

Ratings	Frequencies
1	85
2	94
3	59

Of the 238 children 85 children were rated superior, 94 rated average, and 59 children were rated as immature in attention in group activities.

Table XXIV shows a distribution of ratings of social adjustment from the Teacher Rating Scale for 238 children.

TABLE XXIV

DISTRIBUTION OF RATINGS OF SOCIAL ADJUSTMENT

Ratings	Frequencies
1	80
2	109
3	49

Of the 238 children 80 children were rated superior, 109 rated average, and 49 children were rated as immature in social adjustment.

Table XXV shows a distribution of ratings of emotional adjustment from the Teacher Rating Scale for 238 children.

TABLE XXV

DISTRIBUTION OF RATINGS OF EMOTIONAL ADJUSTMENT

Ratings	Frequencies
1	87
2	104
3	47

Of the 238 children 87 children were rated superior, 104 rated average, and 47 children were rated as immature in emotional adjustment.

Table XXVI shows a distribution of ratings of motor control from the Teacher Rating Scale for 238 children.

TABLE XXVI

DISTRIBUTION OF RATINGS OF MOTOR CONTROL

Ratings	Frequencies
1	81
2	104
3	54

Of the 238 children 81 were rated superior, 104 rated average, and 54 children were rated as immature in motor control.

Table XXVII shows a distribution of ratings of verbal fluency from the Teacher Rating Scale for 238 children.

TABLE XXVII

DISTRIBUTION OF RATINGS OF VERBAL FLUENCY

Ratings	Frequencies
1	76
2	103
3	59

Of the 238 children 76 children were rated superior, 103 children rated average, and 59 were rated as immature in verbal fluency.

Table XXVIII shows a distribution of ratings of speech from the Teacher Rating Scale for 238 children.

TABLE XXVIII

DISTRIBUTION OF RATINGS OF SPEECH

Ratings	Frequencies
5	127
4	66
3	20
2	12
1	6
0	7

Of the 238 children 127 children were rated as having no errors in speech, 66 had one type of error, 20 had two types of errors, 12 had three types of errors, 6 had four types of errors, and 7 had five types of errors in speech.

Table XXIX shows a distribution of active play in the Parent Interview for 219 children.

TABLE XXIX

DISTRIBUTION OF ACTIVE PLAY

Number of types	Frequencies
5	23
4	36
3	37
2	47
1	47
0	29

Of the 219 children 23 took part in five types of active play, 36 in four types, 37 in three types, 47 in two types, again 47 in one type, and 29 took part in no types of active play mentioned.

Table XXX shows a distribution of quiet play in the Parent Interview for 219 children.

TABLE XXX

DISTRIBUTION OF QUIET PLAY

No. of types	Frequencies
11	8
10	7
9	7
8	15
7	27
6	31
5	32
4	29
3	28
2	20
1	9
0	6

Of the 219 children 8 took part in eleven types of quiet play, 7 in ten types, again 7 in nine types, 15 in eight types, 27 in seven types, 31 in six types,

32 in five types, 29 in four types, 28 in three types, 20 in two types, 9 in one type, and 6 took part in no types of quiet play mentioned.

Table XXXI shows a distribution of types of toys in the Parent Interview for 219 children.

TABLE XXXI

DISTRIBUTION OF TOYS

No. of types	Frequencies
7	19
6	24
5	35
4	45
3	30
2	38
1	20
0	7

Of the 219 children 19 used seven types of toys, 24 used six types, 35 used five types, 45 used 4 types, 30 used three types, 38 used two types, 20 used one type, and 7 children used no types of toys mentioned.

Table XXXII shows a distribution of books and stories in the Parent Interview for 219 children.

TABLE XXXII

DISTRIBUTION OF BOOKS AND STORIES

No. of types	Frequencies
6	37
5	48
4	50
3	45
2	23
1	14
0	2

Of the 219 children 37 enjoyed six types of books and stories, 48 enjoyed five types, 50 enjoyed four types, 45 enjoyed three types, 23 enjoyed two types, 14 enjoyed one type, and 2 enjoyed no types of books and stories mentioned.

Table XXXIII shows a distribution of music and records in the Parent Interview for 219 children.

TABLE XXXIII

DISTRIBUTION OF MUSIC AND RECORDS

No. of types	Frequencies
4	54
3	85
2	54
1	24
0	2

Of the 219 children 54 enjoyed four types of music and records, 85 enjoyed three types, 54 enjoyed two types, 24 enjoyed one type, and 2 enjoyed no types of music and records mentioned.

Table XXXIV shows a distribution of tools for writing in the Parent Interview for 219 children.

TABLE XXXIV

DISTRIBUTION OF TOOLS FOR WRITING

No. of types	Frequencies
4	98
3	53
2	38
1	29
0	1

Of the 219 children 98 had used four types of tools for writing, 53 had used three types, 38 had used two types, 29 had used one type, and 1 child had used none of the types of tools for writing mentioned.

Table XXXV shows ability to entertain oneself in the Parent Interview for 219 children.

TABLE XXXV

ABILITY TO ENTERTAIN ONESELF

	Yes	No	Total: 219
Number of responses:	160	59	

Of the 219 children 160 were able to entertain themselves while 59 were not able to entertain themselves.

Table XXXVI shows the number and per cent of correct responses from the easiest to the most difficult of the test items in Test III for 900 pupils.

Table XXXVI

Test III Identification of Letters in Groups from Dictation

Item Number	Item	Number Correct	Per Cent Correct	S.E.Diff.
17	O	539	59.88	.017
18	A	513	57.00	.017
3	S	492	54.66	.017
12	x	489	54.33	.017
15	c	421	46.77	.017
16	J	400	44.44	.017
25	I	363	40.77	.016
28	v	351	39.00	.016
19	Y	346	38.44	.016
14	n	345	38.33	.016
13	L	309	36.33	.016
4	w	297	33.00	.015
27	k	287	31.88	.015
8	P	284	31.55	.015
24	z	283	31.44	.015
6	m	267	29.66	.015
20	r	266	29.55	.015
26	u	252	28.00	.015
11	e	235	26.11	.015
23	t	231	25.66	.014
21	f	225	25.00	.014
10	h	225	25.00	.014
7	g	209	23.22	.014
5	d	187	20.77	.013
9	b	171	18.88	.011
22	q	119	13.22	.011

The percentages ranged from the easiest item, S, with 59.00% correct responses to the most difficult, q, with 13.22%.

This test showed that only four items, O, A, S, and X had better than 50% correct responses.

O, with 59.88% correct responses, caused less difficulty than any other letter.

A, with 57.00% correct responses, S, with 54.66% correct responses, and X, with 54.66% correct responses were the next three items in sequential order of relative difficulty.

g, with 23.22% correct responses, d, with 20.77% correct responses, b, with 18.88% correct responses, and q, with only 13.22% correct responses were the items causing the most difficulty, with q as the most difficult.

Table XXXVII shows the number and per cent of correct responses from the easiest to the most difficult test item in Test IV for 900 pupils.

Table XXXVII

Test IV Identification of Letters in Groups from Flash Cards

Item Number	Item	Number Correct	Per Cent Correct	S.E.Diff.
3	c	556	61.77	.016
15	x	523	58.11	.016
18	O	487	54.11	.016
7	V	437	48.55	.016
14	s	419	46.55	.016
12	W	414	46.00	.016
10	j	387	43.00	.016
27	P	359	39.88	.016
28	u	359	39.88	.016
23	z	350	37.77	.016
17	l	331	36.77	.015
26	K	331	36.77	.015
13	i	284	31.55	.015
19	f	276	30.66	.015
4	m	264	29.33	.015
24	Y	250	27.77	.015
20	T	220	24.44	.014
9	h	210	23.33	.014
16	E	184	20.44	.013
6	N	168	18.66	.013
8	b	162	18.00	.013
25	R	154	17.11	.013
11	d	152	16.77	.012
5	A	147	16.33	.012
21	Q	134	14.88	.012
22	g	132	14.66	.012

The percentages ranged from the easiest item, c, with 61.77% correct responses to the most difficult, g, with 14.66%.

This test showed that only three items, c, x, and O had better than 50% correct responses.

C with 61.77% correct responses caused less difficulty than any other letter.

x, with 58.11% correct responses and O, with 54.11% correct responses were the next items in sequential order of relative difficulty.

d with 16.77% correct responses, A, with 16.33% correct responses, and g, with 14.66% correct responses were the items causing the most difficulty, with g as the most difficult.

Table XXXVIII shows the number and per cent of correct responses from the easiest to the most difficult of the test items in Test V-a for 908 pupils.

Table XXXVIII

Test V-a Identification of Initial Consonant Sounds

Item Number	Item	Number Correct	Per Cent Correct	S.E.Diff.
16	z zipper	434	47	.017
10	m milk	398	43	.016
18	w wagon	354	38	.016
19	s sailboat	341	37	.016
11	f five	334	36	.016
2	c cup	324	35	.016
15	h house	305	33	.016
12	v valentine	305	33	.016
4	g girl	303	33	.016
17	y yarn	301	33	.016
3	d dog	276	30	.015
13	p pear	267	29	.015
20	q quilt	264	29	.015
5	r rubbers	262	28	.015
6	n nut	250	27	.015
8	b basket	245	26	.015
7	l leaf	238	26	.015
1	t top	200	22	.014
14	j jam	198	21	.014
9	b bed	142	14	.012

The percentages ranged from the easiest item in the test, initial consonant z in the word zipper with 47% correct responses, to the most difficult initial consonant b in the word bed with 14% correct.

In the test on initial consonants there were no test items where 50% of the children made the correct responses.

In the word zipper, z was the best known with 47% correct responses.

In the word milk, m was the next best known with 43% correct.

In the word wagon, w was the third highest with 38% correct.

In the words basket and bed, the initial consonant b was tested twice; in basket there were 26% correct responses; in bed there were only 14% correct.

In the words top, jam and bed, t, j, and b, were the least known items with 22%, 21%, and 14% respectively.

Table XXXIX shows the number and per cent of correct responses from the easiest to the most difficult of the test items in Test V-b for 908 pupils.

Table XXXIX

Test V-b Identification of Final Consonant Sounds

Item Number	Item	Number Correct	Per Cent Correct	S.E.Diff.
7	leaf f	363	39	.016
18	wagon n	354	38	.016
19	sailboat t	354	38	.016
6	nut t	339	37	.016
10	milk k	337	37	.016
5	rubbers s	328	36	.016
13	pear r	325	35	.016
16	zipper r	311	34	.016
4	girl l	238	26	.015
15	house s	201	22	.014
20	quilt t	191	21	.014
8	basket t	178	19	.013
12	valentine n	173	19	.013
3	dog g	163	17	.012
1	top p	149	16	.012
17	yarn n	147	16	.012
2	cup p	133	14	.012
14	jam m	120	13	.011
11	five v	117	12	.011
9	bed d	105	11	.010

The percentages ranged from the easiest item in the test, final consonant f in the word leaf, with 39% correct responses, to the most difficult final consonant d in the word, bed, with 11% correct.

Final consonant t was tested in four items.
In sailboat, the vowels oa preceded the t, 38% correct responses.
In nut, the vowel u preceded the t, 37% correct.
In quilt, the consonant l preceded the t, 21% correct.
In basket, the vowel e preceded the t, 19% correct.

Final consonant n was tested in three items.
In wagon, the vowel o preceded the n, 38% correct responses.
In valentine, the vowel i preceded and silent e followed, 19%.
In yarn, the consonant r preceded the n, 16% correct.

Final consonant s was tested in two items.
In house, the vowels ou preceded silent e followed, 22% correct.
In rubbers, the consonant r preceded the s, 36% correct.

Final consonant r was tested in two items.
In pear, the vowels ea preceded the r, 35% correct responses.
In zipper, the vowel e preceded the r, 34% correct.

Final consonant p was tested in two items.
In top, the vowel o preceded the p, 16% correct.
In cup, the vowel u preceded the p, 14% correct.

Table XL shows the number and per cent of correct responses from the easiest to the most difficult of the test items in Test VI for 916 pupils.

Table XL

Test VI Visual Memory of Words from Flash Cards

Item Number	Item	Number Correct	Per Cent Correct	S.E.Diff.
3	in	638	69.65	.016
4	go	545	59.50	.016
9	end	476	51.97	.016
8	now	434	47.38	.016
7	dog	405	44.21	.016
5	was	387	42.25	.016
13	last	331	36.14	.016
18	ought	296	32.31	.015
10	black	273	29.80	.015
27	probable	266	29.04	.015
28	contract	254	27.73	.015
23	practice	244	26.64	.014
12	some	241	26.31	.014
11	first	237	25.87	.014
16	clean	226	24.67	.014
6	top	220	24.02	.014
17	part	180	19.65	.013
26	secure	158	17.25	.012
21	different	151	16.48	.012
15	drop	144	15.72	.012
14	just	141	15.39	.012
25	advance	138	14.52	.011
24	weather	131	14.30	.011
29	meditate	130	14.19	.011
20	station	106	11.57	.010
19	quiet	104	11.35	.010
30	regulation	75	08.19	.010
22	mountain	62	06.77	.009

The percentages ranged from the easiest item in the test, in with 69.65% correct responses to the most difficult, mountain, with 06.77% correct.

There were three items in this test where the children made better than 50% correct responses.

In the test the first item in, a two letter word, had 69.65% correct responses. The other choices in this test item included no words of great similarity, and two of which were three letter words.

Item four, consisting of five words only, two of which were two letter words, had 59.50% correct.

The next greatest number of correct responses were the test items where a three letter word was the correct one, the scores ranging from 51.97% to 42.25% correct.

The fewest number of correct responses were the test items where a word of eight or more letters was the correct choice in a series of seven words.

Table XLI shows the number and per cent of correct responses of the names of uppercase letters from the easiest to the most difficult letters of the test items in Test VII-a for 850 pupils.

Table XLI

Test VII-a Identification of Upper Case Letter Names

Item Number	Item	Number Correct	Per Cent Correct	S.E. Diff.
6	O	518	60.94	.017
7	X	492	57.88	.017
15	A	435	51.18	.017
22	B	404	47.53	.017
25	T	317	37.29	.017
2	C	304	35.76	.016
18	L	291	34.24	.016
17	R	291	34.24	.016
5	I	269	31.64	.016
10	S	269	31.64	.016
12	P	268	31.53	.016
1	N	262	30.82	.016
14	F	260	30.59	.016
11	E	255	30.00	.016
20	H	249	29.29	.016
4	D	234	27.53	.015
24	M	221	26.00	.015
16	K	209	24.59	.015
19	Z	200	23.53	.015
3	J	192	22.59	.015
26	Y	189	22.24	.015
9	W	187	22.00	.015
21	G	164	19.29	.013
8	Q	144	16.94	.013
23	U	131	15.41	.012
13	V	119	14.00	.012

The percentages ranged from the easiest letter, O, with 60.94% correct responses to the most difficult letter, V, with 14.00% correct.

There were only three items--O, 60.94%; X, with 57.88%; and A, with 51.18% which had better than 50% correct responses. O was perhaps associated with a circle, X was used to mark items in other tests, and A was recognized as the first letter of the alphabet.

The test showed that O, with 60.94%, and X, with 57.88% were the least difficult letters.

The test indicated that Q, with 16.94%; U, with 15.41%; and V, with 14.00% were the most difficult letters. This may be due to a lack of use in the child's vocabulary.

The test showed that G, with 19.29% and Q, with 16.94% were difficult which was probably due to the similarity in form of the letters and the lack of the child's ability to distinguish them.

Table XLII shows the number and per cent of correct responses of the sounds of upper case letters from the easiest to the most difficult letters of the test items in Test VII-b for 850 pupils.

Table XLII

Test VII-b Identification of Upper Case Letter Sounds

Item Number	Item	Number Correct	Per Cent Correct	S.E.Diff.
10	S	89	10.47	.010
22	B	77	9.06	.010
25	T	69	8.12	.009
14	F	68	8.00	.009
2	C	52	6.12	.008
4	D	47	5.53	.007
6	O	46	5.41	.007
19	Z	45	5.29	.007
12	P	43	5.06	.007
20	H	38	4.47	.007
24	M	38	4.47	.007
1	N	36	4.24	.007
7	X	33	3.88	.006
3	J	32	3.76	.006
16	K	32	3.76	.006
15	A	29	3.41	.006
18	L	26	3.06	.006
17	R	25	2.94	.006
13	V	20	2.35	.006
21	G	18	2.12	.006
8	Q	16	1.88	.006
5	I	16	1.88	.006
11	E	14	1.65	.006
9	W	13	1.53	.006
23	U	8	.94	.006
26	Y	5	.59	.006

The percentages ranged from the easiest letter, S, with 10.47% correct responses to the most difficult letter, Y, with .59% correct.

This test had no item with more than 10% of the children had correct, which seemed to indicate that sounds of capital letters were more difficult than were the names of capital letters.

S, with 10.47% was the easiest letter and Y, with .59% was the most difficult. S was perhaps associated with the appearance and sound of a snake and the sound of Y was most difficult because of its limited use in the child's experience.

Table XLIII shows the number and per cent of correct responses of the names of lower case letters from the easiest to the most difficult letters of the test items in Test VII-c for 850 pupils.

Table XLIII

Test VII-c Identification of Lower Case Letter Names

Item Number	Item	Number Correct	Per Cent Correct	S.E.Diff.
16	o	479	56.35	.017
13	x	440	51.76	.017
8	s	337	39.65	.017
23	c	270	31.76	.016
17	i	233	27.41	.015
5	p	223	26.24	.015
3	t	210	24.71	.015
2	m	196	23.06	.014
26	k	191	22.47	.014
19	z	179	21.06	.014
10	e	176	20.71	.014
9	w	167	19.65	.013
20	r	137	16.12	.013
21	j	136	16.00	.013
1	y	135	15.88	.012
25	f	122	14.35	.012
24	n	120	14.12	.012
22	a	110	12.94	.011
14	h	104	12.24	.011
4	v	104	12.24	.011
6	u	102	12.00	.011
12	b	93	10.94	.010
18	d	77	9.06	.010
7	l	77	9.06	.007
11	g	47	5.53	.007
15	q	13	1.53	.006

The percentages ranged from the easiest letter, o, with 56.35% correct responses to the most difficult letter, q, with 1.53% correct.

This test showed that only two items, o and x, had better than 50% correct responses.

This test indicated that o with 56.35%, and x, with 51.76% were the least difficult letters.

In this test, b, with 10.94% and d, with 9.06% proved to be difficult probably due to the similarity in letter structure.

This test showed that l with 9.06% was perhaps difficult because of the confusion with the number 1.

The test indicated that g, with 5.53% and q, with 1.53% were least known by the children possibly because of the similarity in form of the letters.

Table XLIV shows the number and per cent of correct responses of the sounds of lower case letters from the easiest to the most difficult letters of the test items in test VII-d for 850 pupils.

Table XLIV

Test VII-d Identification of Lower Case Letter Sounds

Item Number	Item	Number Correct	Per Cent Correct	S.E.Diff.
8	s	58	6.82	.008
3	t	46	5.41	.007
25	f	40	4.71	.007
5	p	35	4.12	.007
2	m	33	3.88	.006
19	z	29	3.41	.006
26	k	26	3.06	.006
16	o	25	2.94	.006
13	x	25	2.94	.006
12	b	23	2.71	.006
23	c	23	2.71	.006
14	h	22	2.59	.006
21	j	19	2.24	.006
24	n	17	2.00	.006
20	r	17	2.00	.006
18	d	13	1.53	.006
9	w	13	1.53	.006
11	g	11	1.29	.006
22	a	10	1.18	.006
10	e	10	1.18	.006
7	l	10	1.18	.006
4	v	10	1.18	.006
17	i	7	.82	.006
15	q	6	.71	.006
6	u	5	.59	.006
1	y	3	.35	.006

The percentages ranged from the easiest letter, s, with 6.82% correct responses to the most difficult letter, y, with .35% correct.

The test indicated that no item received more than 10% correct responses.

The test indicated that t, with 5.41% and f, with 4.71% showed little difference in percentage although these letters themselves are often confused.

This test showedthat q, with .71%; u, with .59%; and y, with .35% were the most difficult letter sounds. This may have been due to lack of experience with the sounds in the child's vocabulary.

Relationship of Factors Studied to Reading Achievement

One hundred pairs of children were selected from the total population of the study who were matched for mental age, one of each pair having a high achievement in reading, and the other a low achievement according to the Detroit Word Recognition Test which was given in early November. A score of three or more was considered high achievement in reading. The groups have been designated by the titles high reading group and low reading group. Guilford's critical ratio of 2.576 was used to determine significance.

Table 45 shows the comparison of these pairs in the Detroit Word Recognition Test which was the basis of the selection.

TABLE 45

Comparison of Means on Detroit Word Recognition Test

H	N	Mean	S.D.	$S.E_m$	Diff.	$S.E_{diff}$	C.R.
High Reading	100	4.90	3.77	.37			
Low Reading	100	1.14	.81	.08	3.76	.37	9.95

The mean of the high reading group was 4.9 words compared with 1,14 words for the low reading group. The critical ratio was 9.95 which was significant in favor of the high reading group.

Table 46 shows the comparison of the scores on the Motor Tests for these 200 children in the matched pairs.

TABLE 46

Comparison of Mean Scores on Motor Tests

	N	Mean	S.D.	$S.E_m$	Diff.	$S.E_{diff}$	C.R.
High Reading	100	6.96	1.67	.16			
Low Reading	100	7.35	1.75	.17	.39	.24	1.60

In this test the low score indicated the best achievement. The mean of the high reading group was 6.96 compared with 7.35 for the low reading group. The critical ratio was 1.60 which was not significant but was in favor of the high reading group.

Table 47 shows the comparison of scores on the Writing Tests for the matched pairs.

TABLE 47

Comparison of Mean Scores on Writing Tests

Copying

	N.	Mean	S.D.	$S.E_m$	Diff.	$S.E_{diff}$	C.R.
High Reading	100	2.54	.09	.09			
Low Reading	100	3.03	1.07	.09	.49	.14	3.42

Dictation

High Reading	100	12.04	8.19	.81			
Low Reading	100	8.82	6.59	.65	3.22	1.05	3.06

In writing one's name and copying a sentence the low score indicated the best achievement. The mean of the high reading group was 2.54 compared with 3.03 for the low reading group. The critical ratio was 3.42 which was significant in favor of the high reading group.

In writing letters from dictation, the high score indicated the best achievement. The mean of the high reading group was 12.04 letters compared with 8.82 letters for the low reading group. The critical ratio was 3.06 which was significant in favor of the high reading group.

Table 48 shows the comparison of scores on identification of letters from dictation and flash cards for the matched pairs.

TABLE 48

Comparison of Mean Scores on Letter Names

Dictation

	N.	Mean	S.D.	$S.E_m$	Diff	$S.E._{diff}$	C.R.
High Reading	100	13.80	7.93	.79			
Low Reading	100	9.27	6.39	.63	4.53	1.01	4.44
			Flash Cards				
High Reading	100	13.93	7.26	.72			
Low Reading	100	11.39	6.21	.62	2.54	.95	2.66

The mean score of the high reading group in identification of letters from dictation was 13.80 letters compared with 9.27 letters for the low reading group. The critical ratio was 4.44 which was significant in favor of the high reading group.

The mean score of the high reading group in identification of letters from flash cards was 13.93 letters compared with 11.39 letters of the low reading group. The critical ratio was 2.66 which was significant in favor of the high reading group.

Table 49 shows the comparison of scores on initial and final sounds for the matched groups.

TABLE 49

Comparison of Mean Scores on Auditory Tests

Initial

	N	Mean	S.D.	$S.E_m$	Diff	$S.E_{diff}$	C.R.
High Reading	100	8.79	5.20	.52			
Low Reading	100	6.42	4.37	.43	2.37	.67	3.49

Final

	N	Mean	S.D.	$S.E_m$	Diff.	$S.E_{diff}$	C.R.
High Reading	100	7.31	4.64	.46			
Low Reading	100	5.04	3.06	.30	2.27	.54	4.13

The mean score of the high reading group in initial sounds was 8.79 sounds compared with 6.42 sounds for the lower reading group. The critical ratio was 3.49 which was significant in favor of the high reading group.

The mean score of the high reading group in final sounds was 7.31 sounds compared with 5.04 sounds for the low reading group. The critical ratio was 4.13 which was significant in favor of the high reading group.

Table 50 shows the comparison of the mean scores test for visual memory for the matched pairs.

TABLE 50

Comparison of Mean Scores on Visual Memory

	N.	Mean	S.D.	$S.E_m$	Diff.	$S.E_{diff}$	C.R.
High Reading	100	9.18	4.52	.45			
Low Reading	100	7.14	4.00	.40	2.04	.60	3.39

The mean of the high reading group was 9.18 compared with 7.14 for the low reading group. The critical ratio was 3.39 which was significant in favor of the high reading group.

Table 51 shows the comparison of mean scores on letter names and sounds for the matched pairs.

TABLE 51

Comparison of Mean Scores on Letter Names and Sounds

	N.	Mean	S.D.	$S.E_m$	Diff.	$S.E_{diff}$	C.R.
Capital Names							
High Reading	100	11.36	7.96	.79			
Low Reading	100	9.12	7.94	.79	2.24	1.12	1.12
Capital Sounds							
High Reading	100	2.78	5.49	.54			
Low Reading	100	.85	2.47	.24	1.93	.59	3.27
Lower Case Names							
High Reading	100	9.33	8.34	.83			
Low Reading	100	5.15	5.61	.56	4.18	1.00	4.17
Lower Case Sounds							
High Reading	100	1.71	4.80	.48			
Low Reading	100	.37	1.30	.13	1.34	.50	2.68

The mean score of the high reading group in the identification of names of capital letters was 11.36 letters compared with 9.12 letters for the low reading group. The critical ratio was 1.12 which was not significant but in favor of the high reading group.

The mean score of the high reading group in the identification of the sounds of capital letters was 2.78 sounds compared with .85 sounds for the low reading group. The critical ratio was 3.27 which was significant and in favor of the high reading group.

The mean score of the high reading group in the identification of lower case letters was 9.33 letters compared with 5.15 letters for the low reading group. The critical ratio was 4.17 which was significant in favor of the upper reading group.

The mean score of the high reading group in the identification of lower case sounds was 1.71 sounds compared with .37 for the low reading group. The critical ratio was 2.68 which was significant in favor of the upper reading group.

The entire population of 864 was divided into quartiles according to mental age as determined by the Otis Intelligence Test. The upper and lower quartiles were selected for comparison in Achievement. There were 216 cases in each quartile. The mean mental age of the upper quartile was 7 years 9 months and for the lower quartile 5 years 6 months. Guilford's critical ratio of 2.576 was used to determine significance.

Table 52 shows the comparison of scores on the Motor Tests for the children in the upper and lower quartiles.

TABLE 52

Comparison of Mean Scores on Motor Tests

	N	Mean	S.D.	$S.E_m$	Diff.	$S.E_{diff}$	C.R.
Upper Q.	216	6.73	1.55	.10			
Lower Q.	216	8.30	1.81	.12	1.57	.16	9.66

In this test the low score indicated the best achievement. The mean of the upper quartile was 6.73 compared with 8.30 for the lower quartile. The critical ratio was 9.66 which was significant in favor of the upper quartile.

Table 53 shows the comparison of mean scores on the Writing Tests for the upper and lower quartiles.

TABLE 53

Copy

	N	Mean	S.D.	$S.E_m$	Diff.	$S.E_{diff}$	C.R.
Upper Q.	216	2.52	.75	.05			
Lower Q.	216	3.76	1.28	.08	1.24	.10	12.11

Dictation

	N.	Mean	S.D.	$S.E._m$	Diff	$S.E._{diff}$	C.R.
Upper Q.	216	12.38	7.47	.50			
Lower Q.	216	4.75	4.78	.32	7.63	.60	12.57

In writing one's name and copying a sentence, the low score indicated high achievement. The mean of the upper quartile was 2.52 compared with 3.76 for the lower quartile. The critical ratio was 12.11 which was significant in favor of the upper quartile.

In writing letters from dictation, the high score indicated the best achievement. The mean of the upper quartile was 12.38 letters compared with 4.75 letters for the lower quartile. The critical ratio was 12.57 which was significant in favor of the upper quartile.

Table 54 shows a comparison of mean scores on identification of letters for the upper and lower quartiles.

TABLE 54

Comparison of Mean Scores on Identification

Dictation

	N.	Mean	S.D.	$S.E._m$	Diff.	$S.E._{diff}$	C.R.
Upper Q.	216	14.11	7.78	.52			
Lower Q.	216	6.21	4.85	.33	7.90	.62	12.64

Flash Cards

Upper Q.	216	14.57	6.52	.44			
Lower Q.	216	7.09	4.84	.32	7.48	.55	13.53

The mean score of the upper quartile on identification of letters from dictation was 14.11 letters compared with 6.21 letters for the lower quartile. The critical ratio was 12.64 which was significant in favor of the upper quartile.

The mean score of the upper quartile on identification of letters from flash cards was 14.57 letters compared with 7.09 letters for the lower quartile. The critical ratio was 13.53 which was significant in favor of the upper quartile.

Table 55 shows the comparison of mean scores on initial and final sounds for the upper and lower quartiles.

TABLE 55

	N.	Mean	S.D.	$S.E_m$	Diff.	$S.E_{Diff}$	C.R.
Initial							
Upper Q.	216	8.55	5.17	.35			
Lower Q.	216	5.14	4.66	.31	3.41	.47	7.41
Final							
Upper Q.	216	7.05	4.35	.29			
Lower Q.	216	3.85	3.23	.22	3.20	.36	8.65

The mean score of the upper quartile on initial sounds was 8.55 sounds compared with 5.14 sounds for the lower quartile. The critical ratio was 7.41 which was significant in favor of the upper quartile.

The mean score of the upper quartile on final sounds was 7.05 sounds compared with 3.85 sounds for the lower quartile. The critical ratio was 8.65 which was significant in favor of the upper quartile.

Table 56 shows the comparison of mean scores on Tests of Visual Memory for upper and lower quartiles.

TABLE 56

Comparison of Mean Scores on Visual Memory

	N	Mean	S.D.	$S.E_m$	Diff.	$S.E_{diff}$	C.R.
Upper Q.	216	9.90	4.27	.29			
Lower Q.	216	5.44	3.46	.23	4.46	.37	11.92

The mean of the upper quartile was 9.90 compared with 5.44 for the lower quartile. The critical ratio was 11.92 which was significant in favor of the upper quartile.

Table 57 shows the comparison of mean scores on names and sounds of letters for upper and lower quartiles.

TABLE 57

Comparison of Mean Scores on Names and Sounds of Letters

	N	Mean	S.D.	$S.E_m$	Diff.	$S.E_{diff}$	C.R.
Names of Capitals							
Upper Q.	216	12.62	8.84	.60			
Lower Q.	216	3.75	5.73	.39	8.87	.71	12.36
Sounds of Capitals							
Upper Q.	216	2.45	5.09	.34			
Lower Q.	216	.39	1.52	.10	2.06	.36	5.69
Names Lower Case							
Upper Q.	216	8.56	7.48	.50			
Lower Q.	216	1.89	4.00	.27	6.67	.57	11.55
Sounds Lower Case							
Upper Q.	216	1.32	4.08	.27			
Lower Q.	216	.10	.72	.04	1.22	.28	4.35

The mean score of the upper quartile in the identification of capital letters was 12.62 letters compared with 3.75 letters for the lower quartile. The critical ratio was 12.36 which was significant in favor of the upper quartile.

The mean score of the upper quartile on the identification of the sounds of capital letters was 2.45 letters compared with .39 letters for the lower quartile. The critical ratio was 5.69 which was significant in favor of the upper quartile.

The mean score of the upper quartile in the identification of lower case letters was 8.56 letters compared with 1.89 letters for the lower quartile. The critical ratio was 11.55 which was significant in favor of the upper quartile.

The mean score of the upper quartile on the identification of lower case sounds was 1.32 sounds compared with .10 sounds for the lower quartile. The critical ratio was 4.35 which was significant in favor of the upper quartile.

Table 58 shows the comparison of the scores for the upper and lower quartiles on the Detroit Word Recognition Test given in November.

TABLE 58

Detroit Word Recognition Test

	N	Mean	S.D.	$S.E_m$	Diff.	$S.E_{diff}$	C.R.
Upper Q.	216	4.05	1.41	.09			
Lower Q.	216	1.64	2.14	.14	2.41	.17	13.79

The mean of the upper quartile was 4.05 words compared with 1.64 words for the lower quartile. The critical ratio was 13.79 which was significant in favor of the upper quartile.

CHAPTER IV

Summary and Conclusions

The purpose of this study was to find the different backgrounds that children bring to the first grade and to determine how these backgrounds effect beginning reading. Seven hundred and eighty one children were given eight tests, seven of these group and one an individual. In addition two hundred and thirty of the children were observed by the teachers who noted the physical and emotional maturity, the social adjustment, attention, motor control, speech defects, and verbal fluency. Parents of these same children were interviewed to find the previous experiences concerning active and quiet play, toys, stories, music, amount of writing done, and ability to entertain themselves. The following conclusions were drawn.

Part I

Summary of test findings

Children in this study entering grade one ranged in C.A. from 5 years, 4 months to 7 years, 11 months, while they ranged in M.A. from 3 years, 6 months to 10 years, 11 months. Approximately two thirds had attended kindergarten and most were right handed.

On October 6 the greatest number of children were found in the first reading group.

Tests 1 through 7 indicated the following:

1. Children coming to school varied in motor skills with cutting on a circle being the most difficult.

2. Over half of the children entering first grade were able to copy a sentence and write their first name.
3. Identification of letters from flashcards and dictation showed little difference. The means being 10.50 and 10.00 respectively.
4. Identifying the initial consonant of a word was somewhat easier than identifying the final consonant. The means being 6.48 and 5.24 respectively.
5. Children coming to first grade varied in visual memory with a diminishing number of correct responses as the length of the words increased.
6. Identification of small letters was more difficult than identification of capital letters, the means being 5.65 and 8.59 respectively.
7. Identification of sounds of small letters was more difficult than identification of sounds of capital letters, the means being .64 and 1.10 respectively.

The results of the Teacher Rating Scale indicate a normal distribution in the following areas:

1. Physical maturity
2. Attention in group activities
3. Social adjustment
4. Emotional adjustment
5. Motor control
6. Verbal fluency

Most of the children came to school with no errors in speech.

The results of the parent interview indicate a normal distribution in all the areas as follows:

1. Active play
2. Quiet play
3. Using toys
4. Acquaintance with books and stories
5. Enjoyment of music and records

Most of the children were able to entertain themselves in a self-directed activity before coming to school.

Part II

Conclusions of test performance

Tests III and IV

Tests III and IV seemed to indicate that children do not bring to school the ability to identify many of the upper case letters and even fewer of the lower case letters.

1. Letters which were structurally alike in both the upper and lower cases, such as C, O, S, and X, tended to be less difficult.
2. Letters which were similar in structure, such as b and d, g and q, and f and t, caused confusion and therefore seemed to be difficult.
3. Letters which did not have the same structural form in both upper and lower case appeared difficult, and the association not too easily recognized. Upper case letter A had better than 50% correct responses when identified from dictation; lower case letter a, when flashed from a card, was identified by only 16.33% of the pupils as A, an upper case letter on the test.

Test V

The initial consonants were better known than the final consonants with one item, Z in the word zipper, having 47% correct responses as compared with the final consonant f in the word leaf having 39% correct.

1. It appeared likely that similarity of sounds in the same word, as b and d, increased the element of confusion in recognizing the sound of a letter, as evident that bed was the least known item in both tests.
2. It seemed likely that the letters, whether consonants or vowels, which immediately preceded a consonant, affected the recognition of the final consonant sound as shown in the test items.

Test VI

The results of Test VI seemed to indicate that visual memory has not been developed to any appreciable extent when the children enter first grade. Only three of the items in the test had better than 50% correct responses.

1. Similarity of configuration of two letters presented difficulty to a beginning pupil.
2. Similarity of word elements led to confusion.
3. Similarity of words beginning and ending with identical letters, which contained the same number of letters, led to confusion.
4. It appeared from the test that the shorter the mental picture, the greater the number of correct responses.
5. It appeared that the quicker the visual picture was matched to a word by the position of the word in the

test item, the less confusion and the greater the number of correct responses. This was shown by items 23 and 24, first in a series of seven words containing eight or more letters in each word which took precedence over three, four, and five letter words in test items where the correct response was third, fourth, or fifth, in a series of only five words.

6. It appeared that definite instruction is necessary to develop the left-to-right eye movement to eliminate reversal tendencies and to promote successful reading achievement.

Test VII

Test VII seemed to indicate that some children will need a longer period of readiness than others in order to develop visual and auditory discrimination of upper and lower case letters and their sounds.

1. Children entering first grade have more knowledge of upper case letters than of lower case letters. This is perhaps true because children have become more familiar with upper case letters in their pre-school and kindergarten experiences.
2. Letters which have the same structural form in both upper and lower cases, such as O, X, and S, tended to be less difficult.
3. The sounds of upper case letters seemed to be more difficult than the names of upper case letters.
4. Lower case letters, which were similar in structure, such as b and d, q and g, f and t, caused confusion and appeared difficult.

5. The sounds of lower case letters were not as familiar to the children as were the names of the lower case letters.

Part III

Relation of Readiness Factors to Reading Achievement

It appears that knowledge in all of the areas tested in September affect reading achievement. Children paired exactly for mental age but achieving differently in reading in November, one high and one low, showed differences on all the factors measured in September in favor of the high reading group. These differences were all significant except the motor.

1. In the Detroit Word Recognition Test the mean of the high reading group was 4.9 compared with 1.14 for the low reading group.
2. In the motor tests the low score indicated the best achievement. The mean of the high reading group in cutting and folding was 6.96 compared with 7.35 for the low reading group; in writing one's name and copying a sentence, the mean of the high reading group was 2.54 compared with 3.03 for the low reading group.
3. In writing letters from dictation, the mean of the high reading group was 12.04 compared with 8.82 for the low reading group.
4. The mean score of the high reading group in identification of letters from dictation was 13.80 compared with 9.27 for the low reading group; in identification of letters from flash cards, the mean score of the high reading group was 13.93 compared with 11.39 for the low reading group.

5. In the auditory tests, the mean score of the high reading group in initial sounds was 8.79 sounds compared with 6.42 sounds for the low reading group; the mean score of the high reading group in final sounds was 7.31 sounds compared with 5.04 sounds for the low reading group.
6. The mean score of the high reading group on visual memory was 9.18 compared with 7.14 for the low reading group.
7. The mean score of the high reading group in the identification of names of capital letters was 11.36 letters compared with 9.12 letters for the low reading group; the mean score of the high reading group in the identification of sounds of capital letters was 2.78 sounds compared with .85 for the low reading group. The mean score of the high reading group in the identification of lower case letters was 9.33 letters compared with 5.15 letters for the low reading group; the mean score of the high reading group in the identification of lower case sounds was 1.71 sounds compared with .37 for the low reading group.

A study of the comparison in achievement of upper and lower quartiles according to mental age showed significant differences on all of the tests given in September as well as the reading test in November in favor of the high mental age group.

1. The mean mental age of the upper quartile was 7 years 9 months and for the lower quartile 5 years 6 months.
2. In the motor tests the low score indicated the best achievement. The mean of the upper quartile in cutting and folding was 6.73 compared with 8.30 for the lower quartile; in writing one's name and copying a sentence, the mean of the upper quartile was 2.52 compared with 3.76 for the lower quartile.
3. In writing letters from dictation, the mean of the upper quartile was 12.38 letters compared with 4.75 letters for the lower quartile.
4. The mean of the upper quartile in identification of letters from dictation was 14.11 letters compared with 6.21 letters for the lower quartile; in identification of letters from flash cards, the mean of the upper quartile was 14.57 letters compared with 7.09 letters for the lower quartile.
5. In the auditory tests, the mean of the upper quartile in initial sounds was 8.55 sounds compared with 5.14 sounds for the lower quartile; the mean score of the upper quartile in final sounds was 7.05 sounds compared with 3.85 sounds for the lower quartile.
6. The mean of the upper quartile in visual memory was 9.90 compared with 5.44 for the lower quartile.

7. The mean of the upper quartile in the identification of names of capital letters was 12.62 letters compared with 3.75 letters for the lower quartile; the mean of the upper quartile on the identification of sounds of capital letters was 2.45 sounds compared with .39 for the lower quartile. The mean of the upper quartile in the identification of lower case letters was 8.56 letters compared with 1.89 letters for the lower quartile; the mean of the upper quartile in the identification of lower case sounds was 1.32 sounds compared with .10 for the lower quartile.
8. In the Detroit Word Recognition Test the mean of the upper quartile was 4.05 words compared with 1.64 for the lower quartile.

Bibliography

1 Bannon, M.E. "Some Common Problems in the Kindergarten. Unpublished Masters Thesis, Boston University, 1950.

2 Barry, F.M. "Analysis of Auditory Functions in Grades One, Two, and Three." Unpublished Masters Thesis, Boston University, 1951.

3 Betts, E.A. "Factors in Readiness for Reading." Education, Administration and Supervision. XXXIX: 199-230; April 1943.

4 _____ Foundations of Reading Instruction. New York: American Book Company, 1946. p.331.

5 Bigelow, Elizabeth B. "School Progress of Under-Age Children." Elementary School Journal XXXV: 186-192; November 1934.

6 Bresnahan, M. Marie. "An Evaluation of Recordings for Teaching Auditory Discrimination of Word Elements for Beginning Reading." Unpublished Thesis, Doctor of Education, Boston University, 1952.

7 Crossley, B.Alice. "An Evaluation of the Effect of Lantern Slides on Auditory and Visual Discrimination of Word Elements." Unpublished Thesis, Doctor of Education, Boston University, 1948.

8 Dean, Charles D. "Predicting First Grade Reading Achievement." Elementary School Journal 39:609-616;April 1939.

9 DeLoura, B.E. "A Study of the Predictive Value of Intelligence Tests to Reading Achievement." Unpublished Masters Thesis. Boston University, 1949.

10 Enright, Elizabeth Lenora. "The Analysis of Kindergarten Children's Speaking Vocabulary in Relation to First Grade Reading Needs." Unpublished Masters Thesis Boston University, 1943.

11 Gates, Arthur I. "An Experimental Evaluation of Reading Readiness Tests." Elementary School Journal 39; 497-507.

12 _____ The Improvement of Reading. New York: The Macmillan Company, 1947. pp. 80-81.

13 _____ "Language Arts as Experience." Teachers College Record 54: 417-465; May 1953. p. 423.

14 _____ "The Necessary Age For Beginning Reading." Elementary School Journal 37: 497-508; March 1938.

15 _____, Bond, Guy; and Russell, D.H. Methods of Determining Reading Readiness. p. 26.

16 Gesell, A. and Ilg, F.L. The Child From Five to Ten. New York: Harper and Brothers Publishing Company, 1946.

17 _____ Mental Growth of the Pre-School Child. New York: Macmillan Publishing Company, 1926.

18 Gibbons, H.D. "Meaning Side of Reading," California Journal of Elementary Education IX: 224-228; May 1941.

19 Gilliland, F. and Guthrie, E.S. "Point of View on School Entrance Age and Reading Readiness," Ohio Schools 31:276; September 1953.

20 Goetch, Edward W. "The Kindergarten as a Factor in Elementary School Achievement and Progress," University of Iowa Studies in Child Welfare 3: No.4; April 1926.

21 Harrison, M.Lucille. Reading Readiness. Boston: Houghton Mifflin Publishing Company, 1939. p.2.

22 _____ p. 26

23 Haskell, Barbara, and others. "The Relationship of the Knowledge of Letter Names and Reading Achievement in Grade One." Unpublished Masters Thesis, Boston University, 1952.

24 Hay, C. G. "Study of Vocabulary Difficulties in Pre-Primary Children's Literature." Unpublished Masters Thesis, Boston University, 1942.

25 Hester, Kathleen B. "A Study of Phonetic Difficulties in Reading." Elementary School Journal 43:171-173; November 1942.

26 Hilliard, George H. and Troxell, E. "Informational Background As A Factor in Reading Readiness and Reading Progress." Elementary School Journal 38: 255-263; December 1937.

27 Jenkins, Frances. Language Development in the Elementary Grades. Thomas Nelson and Sons, 1936. p.9.

28 Jones, Harold E. "Environmental Influences on Mental Development." Manual of Child Psychology; p. 598.

29 Keister, B.V. "Reading Skills Acquired By the Five-Year-Old Children." Elementary School Journal 41:587-596; April 1941.

30 Kopel, David. "Reading Readiness: Its Determination and Use," Teachers College Journal (Indiana State Teachers College) 13: 67; January 1942.

31 Lee, J. "Measuring Reading Readiness," Elementary School Journal 34: 656-666; May 1934.

32 McCarthy, Dorothea. "Language Development in Children," Manual of Child Psychology. p. 557.

33 McKee, Paul. Reading and Literature in the Elementary School. Boston: Houghton Mifflin Company, 1934. pp. 99-100.

34 _____ "Vocabulary Development." Thirty-Sixth Yearbook Part I National Society for the Study of Education, Bloomington, Public School Publishing Company, 1937. p. 278.

35 Middleton, Herbert R. "First Grade Reading, An Appraisal." Understanding the Child 7: No. 3, 11-15; 1938.

36 Monroe, M. Children Who Cannot Read. University of Chicago Press, 1932. p. 93-95.

37 _____ and Backus, Bertie. Remedial Reading. Boston: Houghton Mifflin Publishing Company, 1937. pp. 19-20.

38 Morphett, M.V. and Washburne, Carleton. "When Should Children Begin to Read?" Elementary School Journal 31: 496-503; March 1931.

39 Murphy, H.A. "An Evaluation of the Effect of Specific Training in Auditory and Visual Discrimination on Beginning Reading." Unpublished Thesis, Doctor of Education, Boston University, 1943.

40 _____ "An Evaluation of Exercises for Developing Auditory Discrimination in Beginning Reading." Unpublished Masters Thesis, Boston University, 1940.

41 Peterson, Theresa J. "A Preliminary Study of the Effects of Previous Nursery School Attendance Upon the Five-Year-Old Children Entering Kindergarten." University of Iowa Studies in Child Welfare 14: 199-245; 1937.

42 Raybold, Emma "Reading Readiness in Children Entering First Grade." Elementary School Journal 31: 531-546; 1931.

43 Risser, Faye and Elder, Harry E. "The Relation Between Kindergarten Training and Success in the Elementary Schools." Elementary School Journal 28: 286-289; December 1927.

44 Roslow, Sydney. "Reading Readiness and Reading Achievement in First Grade." Journal of Experimental Education 19: 154-159; 1940.

45 Teegarden, L. "Clinical Identification of the Prospective Non-Reader." Child Development p. 358; December 1932.

46 Thompson, Jennie Lloyd. "Big Gains From Postponed Reading." Journal of Education 117: 445-446; October 1934.

47 Wellman, Beth. "The Development of Motor Coordination in Young Children." Iowa Studies in Child Welfare. University of Iowa City, 1927. Vol. 3: 9.

48 Wheeler, Lester R. "Relation of Reading to Intelligence." School and Society 70: 225-227; October 1949.

49 Wilson, Frank T. and Burke, Agnes. "Reading Readiness in a Progressive School." Teachers College Record 38: 565-580; April 1937.

50 Wilson, Frank T. "Reading Progress in Kindergarten and Primary Grades." Elementary School Journal 38: 443-445; February 1938.

51 Witty, Paul and Kopel, David. "Preventing Reading Disability," Educational Administration and Supervision 22: 401-418; September 1936.

52 Witty, Paul and Coomer, Anne. "Fostering a Balanced Reading Program." The Elementary English Review 18: 241-246; 1946.

53 Wright, W.W. "The Nature and Measurement of Reading Readiness." The National Elementary Principal, Seventeenth Yearbook, XVII:No.7, pp. 248-249; July 1938.

Appendix

Test 1 Cutting and Folding

A. Folding

The children were given a piece of 9" by 12" manila drawing paper. The teacher demonstrated how the paper should look when folded, i.e. the corners would meet. The children were asked to fold their paper as the teacher had demonstrated.

B. Cutting on a straight line

After folding, the paper was opened and the teacher demonstrated by cutting on the fold running through the center of the paper. The children were then asked to do likewise.

C. Drawing a circle

Using the two halves that had been cut, the teacher took a crayon and drew a big ball on each piece of paper. The children were asked to draw one big ball on each piece of paper.

D. Cutting on a circle

The teacher demonstrated by cutting one of the circles. The children were then asked to cut one of their circles.

E. Copying "See the dog."

The children were given a piece of 8 1/2" by 11" paper with, "See the dog" duplicated on it. The capital letters were two inches high and the small letters were one inch high. The teacher read "See the dog." The children were then asked to copy it directly below the duplicated sentence without the benefit of lines.

F. Writing Own Name

The children were asked to turn over the paper they were using and write their names if they knew how.

Test 2 Knowledge of Letters from Dictation

The letters dictated were in the following order:

F K Q R L P H G M E X T Y N

C J D I O B A W S U Z V.

"I am going to say some letters. You will write the letters I say beside the number I tell you. We'll do some together. Write 'F' beside number 1. Write 'K' beside number 2." Move along as rapidly as possible. Time: 5 seconds.

Test 3 Identification of Letters in Groups from Dictation

Give each child test sheet 3.

Dictate the letters in this order: A Z S

W D M G P B H E X L N C J O A

Y R F Q T Z I U K V.

Say: "We'll use our lead pencil this time. Listen carefully. I am going to say a letter name. You will look at the letter names on your paper. Put a cross on the letter I say. We'll do some together. Find row 1. Put a cross on the letter 'A'." Check papers. "Find row 2. Put a cross on the letter 'Z'." Check papers. Move along as rapidly as possible but do not check. Time: 3 minutes.

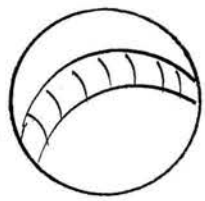
Test 4 Identification of Letters in Groups from Flash Cards

Children use the same test sheet as in test 3. Arrange and flash cards in the following order: (sample card 0 and sample card 1) C, M, a n, v, B, H, J, w, I, S, x, e, L, o F, t, q, G, Z, y, r, P, U.

Say: "We'll use a red crayon this time. Listen carefully. I am going to show you one card at a time with a letter on it. You will look at the card and find a letter with the same name on your paper. Put a cross on the letter you find. We'll do some together." Flash 'O'. Say: "Look at this letter. Find a letter with the same name in row 1 on your paper. Put a cross on the letter." Check papers. Repeat the direction for row 2 flashing small 'l'. Check the papers. Move along as rapidly as possible but do not check. Time: 3 minutes.

Test 5 Auditory Test of Initial and Final Consonants

Say: "Today we are going to play a game with some letters." (Draw a picture of a ball on the board. Put these letters under it - c b f l.)



c b f l

"I'll say the name of this picture and I want someone to come to the board and put an X on the first letter in the word. (The letter to be marked is 'b'.) Now let's look at the paper we have. There are some pictures with letters under each picture. I'll say the name of the first picture and you put an X on the first letter with your lead pencil."

Ready:

1. top	11. five
2. cup	12. valentine
3. dog	13. pear
4. girl	14. jam
5. rubbers	15. house
6. nut	16. zipper
7. leaf	17. yarn
8. basket	18. wagon
9. bed	19. sail
10. milk	20. quilt

When the first part of the test was completed, part two was continued in a similar way. The words were pronounced by the examiner. The children were instructed to find the correct boxes on their sheets and mark with an X using a red crayon, the final consonants in the words pronounced.

"Now we'll listen for the last letter in the words." (Draw a picture of a man on the board. Put these letters under it - d, h, n, t.)

d h n t

"I'll say the name of the picture, and I want someone to come and put an X on the last letter in the word. (The letter to be marked is 'n'.) Take your red crayon and let's go back to the first box on our paper. I'll say the name of the first picture again and you put an X on the last letter of the word with your red crayon."

Test 6 Visual Memory

Say: "Today we are going to play a game with some cards. I am going to show you a card with a word on it. You are to look at the words in row 1 and try to find one just like the one I showed you. (Flash 'f' and check papers) Put a cross on it. Find row 2. (Flash 'h') Put a cross on it." (Again check papers.)
Flash the cards in the following order:

f h in go was top dog now end black

first some last drop clean part

ought quiet station different mountain

practice weather advance secure probable

contact meditate regulation.

Move along as rapidly as possible but do not check - 5 seconds

Test 7 Identification of Letters and Letter Sounds

"Today we are going to take turns coming to my desk to tell the names of some letters and also to tell how they sound."

A. Identification of Capital Letters

"As I point to each letter you tell me the name of the letter." The teacher circled each letter the child knew the name of.

B. Identification of the Sounds of the Capital Letters

"As I point to the letter this time you tell me the sound of the letter." The teacher put a cross on each capital letter that the child identified the sound of.

C. Identification of the Small Letters

"As I point to the letter you tell me the name of the letter." The teacher circled each letter that the child knew the name of.

D. Identification of the Sounds of the Small Letters

"As I point to the letter this time you tell me the sound of the letter." The teacher put a cross on the letter that the child knew the sound of.

Sample sheet for Identification of Letters and Letter Sounds in Test 7

Capital Letters - one inch high

Small Letters - one half inch high

Capital Letters

N C J D I O X Q W S

E P V F A K R L Z H

G B U M T Y

Small Letters

y m t v p u l s w e

g b x h q o i d z r

j a c n f k

TEST III. DICTATION _____

TEST IV. FLASH _____

Name_____ Grade_____

1.	c	x	a	t	o	15.	c	h	t	q	x
2.	t	o	C	L	z	16.	E	g	J	Q	M
3.	f	v	d	c	S	17.	a	u	l	R	O
4.	B	m	t	w	R	18.	Q	t	d	A	O
5.	d	V	o	A	K	19.	d	y	z	f	b
6.	W	b	N	x	m	20.	B	T	r	L	Y
7.	V	T	g	Y	q	21.	Q	z	r	y	f
8.	G	i	p	K	b	22.	p	q	K	g	R
9.	J	d	E	h	b	23.	H	r	z	P	t
10.	h	j	z	U	p	24.	Y	d	V	z	U
11.	R	d	K	b	e	25.	P	U	I	s	R
12.	M	U	W	x	o	26.	I	K	l	u	H
13.	F	L	z	i	T	27.	k	H	j	p	R
14.	Z	s	n	P	e	28.	u	W	v	G	z

Test 6

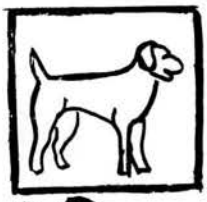
Name

1 

p b t n

2 

p c d t

3 

d f g v

4 

g k v l

5 

r b d s

6 

s n b t

7 

y l d f

8 

b f t j

9 

d s c b

10 

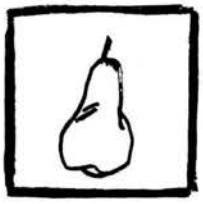
m c d k

11 

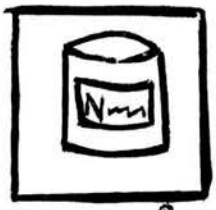
f v p h

12 

v l n t

13 

p s q r

14 

c m j p

15 

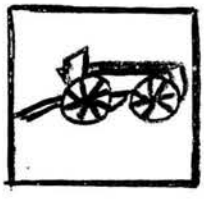
h m s e

16 

z m v r

17 

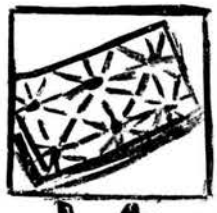
y n q h

18 

w q j n

19 

s j l t

20 

q l t g

1. y b d g f	16. clear clean close climb lean
2. m h n r t	17. par park trap party quart dark part
3. no on imp in nip	18. eight sought rough ought taught aught tough
4. goes do go ago dog	19. quite quick quack point quiet question quit
5. saw war as was waste	20. state elation tasted station stationed started skating
6. pot tab tap top pat	21. dinner differ difference deferent deferent different deference
7. girl dog boy dig day	22. nomination notion mention mountain mountains motion mentioned
8. won no now mow was	23. quarter portion bracelet particle practice practical poultice
9. and tend on ended end	24. other the weather wealth whether whither wealthier
10. lack clock black block dark	25. obscure advice above advise advances dance advance
11. frost first fast firm trust	26. sure obscure scare secure second server cure
12. same came name some somebody	27. portable possible probably probable problem practical desirable
13. slat last lost lot blast	28. contract contain contract contracts contacts capital convict
14. jump jest just jot must	29. immediate meditate mediate mistake meditates material meditative
15. drip prop drops rap drop	30. regular regulate regulation registration negotiation radiation recognition