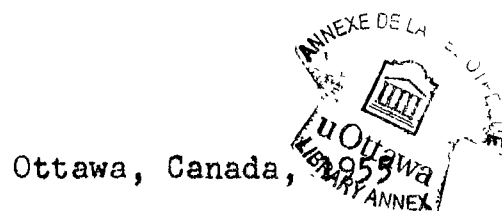


THE INFLUENCE OF FORMAL TRAINING IN NAMES AND SOUNDS  
OF SINGLE LETTERS ON MEASURABLE READING READINESS  
OF KINDERGARTEN-PRIMARY PUPILS

by Doris Sutherland de Merlis

Thesis presented to the Institute of Psychology  
of the University of Ottawa in partial ful-  
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of Master of Arts.



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CURRICULUM STUDIORUM

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## INTRODUCTION

Since 1930 there has been concern with reading readiness which is that part of reading training which is the preparation for the training itself. Sometimes reading readiness is defined as a stage or level in the child's development. Sometimes it is considered as the training which helps the child attain this level. The published work of M. Lucille Harrison in 1936 brought this concept into great importance in the field of Kindergarten work and it has remained equally important since that time.

Another point of equally great importance which has raised many questions in the minds of both parents and educators, especially in the last decade, is the methodology of teaching reading. One of the most serious conflicts has been that between part methods and whole methods, or in other words, between letter methods and word methods.

This investigator has undertaken to discover whether the letter method can be incorporated in preparation for reading. The present report aims at disclosing the results of an experiment in which the investigator attempted to measure the effect of training in the names and sounds of single letters as part of reading readiness instruction. It intends to indicate whether there existed any significant difference in measurable reading readiness level at the end of the Kindergarten-Primary year, between those children who had received the training and those who had not.

The First Chapter of the report presents the background of the problem of reading readiness training in Kindergarten-Primary classes. It furnishes a survey of the literature and a definition of the terms.

Chapter II is concerned with a description of the experimental procedure. The contents and methods of training in the two groups are discussed and the tools of measurement are stated. Chapter III is the presentation of the selection and description of the control and experimental groups.

The Fourth Chapter states in table form the results of the experiment and the investigator attempts to make adequate interpretation of these results.

Finally a summary of the conclusions is made and a statement of the importance of the research is suggested.

## CHAPTER I

### THE BACKGROUND OF THE PROBLEM OF READING READINESS TRAINING IN KINDERGARTEN-PRIMARY CLASSES

Before proceeding with this report it is necessary to state the problem precisely, describe the background of the topic, define the terms, and make a survey of the literature pertaining to the problem.

The goal of the present research was to find whether there existed a significant and measurable influence of the formal training and drill in the names and sounds of single letters on reading readiness as it is currently examined in the schools of Ontario.

First it should be explained why the term "Kindergarten-Primary", rather than the usual term "Kindergarten", is used to name the classes described in this report. According to the Ontario Department of Education<sup>1</sup> a Kindergarten-Primary class is comprised of children with mental ages of five plus to six. In a Kindergarten-Primary Grade provision is made for instruction in the elements of reading, writing, and arithmetic, for those children who have attained the mental age of five years six months. Usually the Senior Kindergarten becomes the Kindergarten-Primary class in the January-to-June term.

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<sup>1</sup> Minister of Education for Ontario, Programme for Junior and Senior Kindergarten and Kindergarten-Primary Classes of the Public and Separate Schools, Toronto, Department of Education, 1944, p. 7 and p. 60.

On this continent English-speaking Kindergartens and Kindergarten-Primary classes have followed the methods of Froebel for the most part. It is not the purpose of this study to examine his methods nor the gradual development of the North American Kindergarten, but it suffices to point out that the use of gifts and occupations and the methods which have grown out of his type of instruction have possibly given rise to the popular conception of the play Kindergarten.

Added to this notion of what is a suitable type of programme for the child from five to six years of age is the concept of reading readiness which has developed since the early nineteen-thirties. Lucille Harrison<sup>2</sup>, one of the early accepted authorities on this subject, outlined the intellectual, physical, and personal development, which she felt was necessary for a successful initiation into reading. She said that the level of development in these areas at which the child would have the best chance of successful initiation into a reading programme was normally reached at the age of six and a half. Since that time a great mass of descriptive literature has been written on the subject of reading readiness as a stage in the development of the child and most of the frequently quoted writers have agreed with Miss Harrison. It is proposed to define fully the term "reading

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<sup>2</sup> M. Lucille Harrison, Reading Readiness, Cambridge, Riverside Press, 1936, 128 p.

readiness" by examining the writings of some authorities in this field.

Considering the intellectual maturity that is part of reading readiness, one author, Marion Monroe, says of the child:

He must develop an appreciation of the spoken word as a unit of the oral language and of the printed word as a unit of the printed language. He must have an awareness of the point-by-point correspondance between oral and printed language and become accustomed to the left-to-right sequence of the printing. Moreover, he must attain sufficient stability to sustain and direct his attention while forming the correct association between oral and printed symbols.<sup>3</sup>

Miss Monroe does not stop with this one-sided picture of reading readiness but goes on to describe in detail not only the intellectual but also the emotional, physical, and personal factors which constitute readiness to read.

After giving a summary of the child's earliest experiences with books and reading during the period from eighteen months on, she devotes the major part of her work to the preparatory period between the age of five or five and a half years to six or six and a half years. To her, this is the period of planned reading readiness training. Miss Monroe describes in detail the stage of readiness which the child must reach in various areas.

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<sup>3</sup> Marion Monroe, Growing into Reading, Chicago, Scott, Foresman, 1951, p. 19.

Emotionally<sup>4</sup>, the pleasant transition from home to school must be complete and the child must have found security in his classroom. There must be no hidden tension. The desire to read must be real, natural, and intense.

In dealing with physical readiness<sup>5</sup>, great importance is placed on the eyesight which must be developed to the point where printed symbols in books and on the blackboard can be seen clearly. Recent specialists in remedial reading have expressed a fear that too early reading, even at six and a half years, may have a serious effect on the eyesight due to lack of control and focus and to the child's natural tendency to be far-sighted.

In addition to eyes; hearing, motor control, and speech development must be adequate. It is needless to say that the brain must not be damaged by injury or illness in the associational areas whereby sensory impressions are linked with each other. The child must be in good health and be able to pay attention for at least five minutes at a time.

The child's language ability<sup>6</sup> must be sufficient in vocabulary, meaning, sentence structure, and pronunciation.

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<sup>4</sup> *ibid.*, p. 22-24.

<sup>5</sup> *ibid.*, p. 47-65.

<sup>6</sup> *ibid.*, p. 68-108 and 110-136.

He must also be able to hear differences in intensity, pitch, timbre, duration, and sequence in the speech of others and in the sounds around him.

Besides the physical maturation of the eyes the child must be able to use his eyes in mastering certain visual skills<sup>7</sup>. He must be able to follow a line, make gross and fine visual discriminations, and use a left-to-right eye movement.

The heart of reading according to Miss Monroe is interpretation<sup>8</sup>, a five-step process including word perception, comprehension, reaction, integration, and finally, interpretation itself. Interpreting new ideas involves mental ability and maturity. However part of reading readiness training includes developing experiential background, developing habits that facilitate attention, verbal thinking, vivid memory and mental images, promoting growth in the skills of identifying characters and actions, inferring motives, feelings and conversation, and strengthening the ability to remember by observing and associating ideas, by classifying and outlining, and by associating events in sequence.

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<sup>7</sup> *ibid.*, p. 141-168.

<sup>8</sup> *ibid.*, p. 170-198.

Frances L. Ilg and Louise Bates Ames have produced a gradient of data within a developmental framework regarding reading readiness<sup>9</sup> which closely compares with the work of Miss Monroe. They believe that " (...) any given child is ready to read when he has reached a certain stage on a reading gradient and not before (...)"<sup>10</sup>. The data in this reading gradient, at the stage when the child is ready to read, has been summed up by them in a questionnaire applicable to each child:

1. Does the child know nursery rhymes and poems and can he repeat them?
2. Can he tell a short story from memory?
3. Does he enjoy listening to stories?
4. Does he give good attention during the story period?
5. Can he use four or more words in sequence when talking about pictures?
6. Can he relate an experience that he has had?
7. Can he repeat a sentence of six to eight words?
8. Can he discover the missing word in a familiar rhyme if he is told that one has been left out?
9. Can he detect small differences in objects that look almost alike?
10. Can he classify pictures or objects?
11. Can he select words that sound alike in a rhyme?
12. Does he speak without infantile mispronunciations?
13. Does he enjoy looking at picture books?
14. Does he handle books carefully with reasonable respect?

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<sup>9</sup> Frances L. Ilg and Louise Bates Ames, Developmental Trends in Reading Behaviour in Journal of Genetic Psychology, Vol. 76, No. 2, issue of June, 1950, p. 291-312.

<sup>10</sup> *ibid.*, p. 312.

15. Can he print or write his own name?
16. Does he ask what printed symbols mean?
17. Does he enter into games with other children?
18. Is he as self-reliant as others in the group?
19. Does he watch printed words?
20. Does he have good motor control in skipping, hopping and drawing?
21. Does he work with a group easily?<sup>11</sup>

Guy L. Bond and Eva Bond<sup>12</sup> argue that a mental age of six years and six months is not always necessary because there are many children who start with lower mental ages and are successful. They agree with the above-mentioned authors about the physical, personal and emotional factors necessary, but they list educational factors which would correspond to the intellectual readiness described by Monroe. A child who is ready to read should have a background of understanding, a fairly extensive vocabulary, accuracy of speech patterns, good oral English, ability to attend and to follow directions, ability to sense a sequence in ideas, ability to handle equipment, and the desire to read.

The desirability of a mental age of six years and six months has often been mentioned as a prerequisite for a successful initiation into reading. In a very early study

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<sup>11</sup> *ibid.*, p. 304.

<sup>12</sup> Guy L. Bond and Eva Bond, Teaching the Child to Read, New York, MacMillan, 1945, p. ix-345.

Morphett and Washburne<sup>13</sup> found the correlation between mental age and learning to read to be fairly high, from .50 to .65, and suggested that a mental age of six years and six months was necessary for satisfactory progress in learning to read. Similar studies since that time have produced the same estimate.

The stage of reading readiness which the child must reach before he begins to read has been described. The training which seems to promote this readiness is now considered. Louella Cole<sup>14</sup> defines reading readiness training by considering the possible handicaps which the child may have. She says that the child needs a mental age of from six and a half to seven years to be able to read. Because he read only within his speaking vocabulary for the first years, his reading will be immature if his vocabulary is immature. He will not read satisfactorily if his speech is infantile or defective. He also needs the right kind of experience to achieve social and emotional maturity, to extend his span of attention and to give him a background of knowledge for reading at a sufficient level.

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<sup>13</sup> Mabel Vogett Morphett and Carleton Washburne, When Should Children Begin to Read in Elementary School Journal, Vol. 31, No. 7, issue of March, 1931, p. 496-503.

<sup>14</sup> Louella Cole, The Improvement of Reading, New York, Farrar and Rhinehart, 1938, p. 281-293.

That reading readiness instruction is part of the training which should be received in Kindergarten-Primary has been stated by Harrison<sup>15</sup>, who says that one of the most important contributions to the child in the Kindergarten, when it is seen in its true importance and relationship to the rest of the elementary school, is this training in readiness to read. She further states that this should not be a haphazard, accidental type of training, but well planned and integrated into the entire Kindergarten programme. Seven important instructional tasks are outlined which she feels must be carried out for the child in the pre-reading period.

Her idea of integrating reading readiness training into the whole programme is considered first in the following discussion of what constitutes preparation for reading as it may be carried on in the classroom. Harrison advocates the use of first hand experiences to be had in excursions, social experiences, construction activities, and games, and of vicarious experiences to be obtained through stories, pictures, poems, songs and the discussion and relation of experiences. Problematic thinking may be taught through simple classroom situations particularly those relating to the care of pets. Training in the use of simple English sentences may be had through free and spontaneous conversation, dramatization, imitative play, and telling stories.

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<sup>15</sup> M. Lucille Harrison, Reading Readiness, 128 p.

Because inaccurate articulation may directly affect reading by presenting a confusion in the sounds to be associated with the printed symbols, Harrison advocates the good example of the teacher and individual attention, where necessary, to correct this difficulty in some children.

She considers developing a desire to read as the most important instructional task and feels that this can be taught by the manifestation of the teacher's pleasure and satisfaction in reading, her manner of using books, and the presence of attractive books and pictures in the classroom. Appropriate bulletins, signs, labels, stop and go signs, picture and text cards, letters and notes, movies, scrap-books, and listening to reading by children from other grades are all listed as devices for promoting interest.

Training in keeping a series of events in mind may come through story-telling, sequential picture pasting, and carrying out a series of requests in proper order.

It seems fairly evident that Miss Harrison wishes to apply the ordinary activities of the play-type Kindergarten to preparation for reading. In other words reading readiness training must be indirect and informal. There is no presentation of letters or words such as was the child's initiation into reading earlier in this century.

This indirectness and informality seems to characterize the suggested programme of all authors on the

subject, although Monroe<sup>16</sup> does suggest a transitional period of learning the relation between oral and written language that involves the direct presentation of books, charts and experience vocabulary. However she calls this the pre-reading programme and considers it part of Grade One. As will be seen in Chapter II, in this province the pre-reading programme is part of the reading readiness programme.

Even the physical skills closely linked with reading such as the proper handling of books, left-to-right sequence, transition from large to small type, and the mental skill of common letter recognition are to be taught informally.

This deliberate attempt at informality and complete integration in the year's programme may have caused some confusion in the teacher as she attempts to distinguish between that which is the kindergarten programme as a whole and that which is the part contributing to reading readiness.

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<sup>16</sup> Marion Monroe, Growing into Reading, p. 224.

Teachers writing in magazines which are widely read by primary teachers frequently exhibit this confusion<sup>17</sup>.

The danger of misinterpretation and its results are suggested by Emmett Albert Betts when he argues in his summary of developmental reading readiness activities<sup>18</sup>, that the current literature on the topic and the ready-made materials at hand have done much to sensitize the teachers to the need of the gradual induction of the child into a reading programme, but that their misuses have also resulted in further regimentation, sterile reading activities, and the extension of what is commonly called busy work.

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<sup>17</sup> Bess Rodgers Clement, Before Children Read, The Instructor, issue of September, 1952, p. 7, is an example of this confusion. She tells the teacher that she has been successful in preparing the child to read if, -

1. You have used play as your socializing experience.
2. You have incorporated the psychological principle which accepts physical activity.
3. You have taken the child where he is in knowledge, skill and attainments, and expanded his interests so that he reaches out into various experiences.
4. His vocabulary has been increased; his body rhythm has been developed unhampered by self-consciousness; he has increased his ability to participate and share.
5. You have laid the corner-stone for his reading by giving him things to play with and to think about.

<sup>18</sup> Emmett Albert Betts, Foundations of Reading Instruction, New York, American Book Company, 1946, p. 103-247.

Many tests have been devised within the last twenty years to aid the teacher in deciding when the child is at a sufficient stage of reading readiness to make a successful beginning in reading. Monroe<sup>19</sup> lists the best of these as the Metropolitan Readiness Tests<sup>20</sup>, measuring reading, writing and arithmetic, the Stevens Reading Readiness Test<sup>21</sup> which contains a check-list for the teacher's observations, the Lee-Clark Reading Readiness Test<sup>22</sup> which is limited to items requiring visual discrimination of words and the following of verbal instructions, the Gates Reading Readiness Tests<sup>23</sup> which cover the field of intellectual development needed for beginning reading, and the Monroe Tests<sup>24</sup> which are primarily designed for diagnostic purposes.

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<sup>19</sup> Marion Monroe, Growing into Reading, p. 237-239.

<sup>20</sup> Gertrude Hildreth and Nellie I. Griffiths, Metropolitan Readiness Tests, Yonkers, World Book Company, 1939.

<sup>21</sup> Avis Coultas Stevens, Stevens Reading Readiness Test, Yonkers, World Book Company, 1939.

<sup>22</sup> J. Murray Lee and Willis W. Clark, Lee-Clark Reading Readiness Test, Los Angeles, California Test Bureau, 1943.

<sup>23</sup> Arthur I. Gates, Gates Reading Readiness Tests, New York, Bureau of Publications Teachers College, Columbia University, 1939.

<sup>24</sup> Marion Monroe, Reading Aptitude Tests, First Grade Entrants, Boston, Houghton-Mifflin, 1935.

This report does not propose to examine these or the several other commercial tests available. Indeed, there is some question as to whether tests at this level are the most valid basis for the teacher's judgment. As Ilg states:

(...) any given child is ready to read when he or she has reached a certain stage on a reading gradient and not before, regardless of his chronological age or grade placement. It is probable that the reading readiness tests which merely test specific functions and not the whole response to the reading situation are only partially satisfactory on determining actual readiness for reading, unless used in conjunction with such a gradient.<sup>25</sup>

Cole<sup>26</sup> suggests the use of several tests for mental ability, visual maturation, auditory maturation, speech maturation, emotional and social maturation, this latter based on teacher observation.

While it is admitted that the use of the reading readiness test alone has some limitations in judging the placement of a child, the reading readiness test does seek to more or less cover the field of intellectual development. If one example from the above list, the Gates test, is considered, it is found to contain five separate tests. As Gates<sup>27</sup> points out, these tests were selected after extensive

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<sup>25</sup> Frances L. Ilg and Louise Bates Ames, Developmental Trends in Reading Readiness, p. 312.

<sup>26</sup> Louella Cole, The Improvement of Reading, p.281-293.

<sup>27</sup> Arthur I. Gates, Guy L. Bond and David H. Russel, Methods of Determining Reading Readiness, New York, Bureau of Publications, Teachers College, Columbia University, 1939, 55p.

study including the use of nearly one hundred different tests, examinations, and ratings, until those found to be most reliable were selected.

The first test, on picture directions, is designed to measure ability to listen to what the examiner is saying, to understand what is said and to remember it, and to grasp and to make use of various every-day words and concepts<sup>28</sup>. There are two different tests of word perception, word matching and word-card matching. While these two are concerned with the visual word forms, the fourth test, which is on rhyming, is designed to test the child's familiarity with the sound or phonic characteristics of words as they are heard, not as they are read. It is admitted to have in some groups the lowest correlation with actual reading readiness<sup>29</sup>. The fifth test measures the child's knowledge of, and familiarity with, the letters of the alphabet and the numerals.

This list of abilities tested would appear to consist of the results of specific trainings. If the reading readiness programme which most authors have considered suitable has been followed, these abilities must have been acquired informally and indirectly.

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<sup>28</sup> Arthur I. Gates, Manual of Directions for Gates Reading Readiness Tests, New York, Bureau of Publications, Teachers College, Columbia University, 1942, p. 3-5.

<sup>29</sup> *ibid.*, p. 24.

This research is primarily concerned with the ability measured by the last test. According to Gates<sup>30</sup>, ability in this test is the result of a whole variety of experiences with printed materials of various types in the home and in the school and should not be the result of drills on the names and sound of isolated letters.

Other authors have studied the child's ability to name, and in some cases to sound the letters. Ilg and Ames<sup>31</sup> state that the average child at five knows all or at least most of the capital letters and can underline certain letters on request. At five and a half years he usually knows the entire alphabet and can recognize letters on a page in a familiar book. At six years there is an interest in small as well as capital letters. The child may be able to sound the initial letter in an unfamiliar word.

That the average child knows all or at least most of the letters in their capital form at five years seems optimistic unless he has received considerable drill at home as a result of his apparent curiosity. In an earlier book Gesell and Ilg<sup>32</sup> stated that at five years the child may know a few capitals.

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<sup>30</sup> *ibid.*, p. 23.

<sup>31</sup> Frances L. Ilg and Louise Bates Ames, Developmental Trends in Reading Behaviour, p. 291-312.

<sup>32</sup> Arnold Gesell and Frances L. Ilg, The Child from One to Ten, New York, Harper, 1946, p. 84.

In a study made by F. T. Wilson and C. W. Fleming<sup>33</sup> at the Horace Mann School, a high correlation was reported as existing between the abilities to give letter sounds and to name small letters in the Kindergarten, and success in Primary reading. A slightly lesser correlation existed between the ability to write capitals and reading success. Among their conclusions was the statement that the beginning steps in mastering reading seem to be concerned mainly with the form, name, and sound of letters, and that ability in these begins before the Kindergarten for many and before Grade One for most of the others.

It is presumed that the ability to read and deal with letters described in these reports, was considered by those doing the research to have come from the informal contact of the children with printed materials.

While in earlier times children who were actually beginning to read began with the letters and their combinations and later advanced to words, very little attempt has been made, as far as is known, to formally drill Kindergarten children on letter sounds and names as part of the reading readiness programme. Maria Montessori did teach the forms of letters in connection with writing before reading was taught

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<sup>33</sup> Frank T. Wilson and Cecile White Fleming, Grade Trends in Reading Progress in Kindergarten and Primary Grades in Journal of Educational Psychology, Vol. 31, No. 1, issue of June, 1940, p. 1-13.

to very young children, probably between five and six<sup>34</sup>. However this was an intrinsic part of her method of teaching reading, not of preparing the children to be taught reading.

In summing up the literature in the field, it may be said that in the last twenty-five years reading readiness instruction has become an integral part of the Kindergarten programme, and that many tests have been devised to measure the sufficiency of the child's pre-reading development and instruction in his home and in the Kindergarten classroom. One of the factors often described is the child's ability to read and sound letters but only the first of these is measured in any known test. It is presumed that the familiarity with letters being described has been informally and indirectly learned by the child. Insofar as is known no research has been done to determine whether formal teaching of letter names and sounds benefits all or some children being prepared for the reading programme of Grade One. It is not the purpose of this report to prove that such formal training is desirable but rather to find whether the measurable reading readiness of children at a specific ability level may be affected by formal training and drill in letter names and sounds.

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<sup>34</sup> Maria Montessori, The Montessori Method, New York, Frederick A. Stokes Company, 1912, xiii-377 p.

## CHAPTER II

### THE DESCRIPTION OF THE EXPERIMENT IN TRAINING KINDERGARTEN-PRIMARY PUPILS IN LETTER NAMES AND SOUNDS

In order to find whether the reading readiness of Kindergarten-Primary children, as it can be measured, is affected by formal training and drill in letter names and sounds, an experiment was set up. This chapter will endeavour to describe the experiment. The training received by the two groups in the experiment and measures used for determining reading readiness levels will be discussed. The statistical analysis which was found necessary will be stated. The method of selecting the two groups and the description of the groups is left to be discussed in Chapter III.

#### 1.-The Contents and Methods of Training in the Two Groups

Because the classes used were in one of the Separate Schools of the city of Ottawa, the curriculum was basically that prescribed by the Ontario Department of Education in its Programme<sup>1</sup> of studies. The aim of this curriculum was slightly modified by an English-speaking Separate School Curriculum Committee in 1951, but the same outline of matter, the same presentation of skills, and the same standards remained. No change in methods occurred from those

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<sup>1</sup> Minister of Education for Ontario, Programme for Junior and Senior Kindergarten and Kindergarten-Primary Classes of the Public and Separate Schools, Toronto, Department of Education, 1944, p. 60-83.

recommended by the Department.

It is proposed to outline briefly the contents and methods of instruction common to both groups in the experiment. From September to December in the year of the study, 1954 to 1955, the schooling of the two groups was nearly identical.

In the first full week of school in January both the control and experimental groups were given the Dominion Group Test of Reading Readiness, Kindergarten and Grade One<sup>2</sup>, Form A, to ascertain the initial stage of reading readiness, as it could be measured, before any differentiation in the programme took place. This test is described.

Because the differentiation in programme which was to follow was based on the instruction given to the experimental group in the names and sounds of letters, it was necessary at that point to test also in both groups, the preliminary knowledge of names and sounds of letters gained informally in the home and school environments. Test five, on letters, in the Gates Reading Readiness Tests<sup>3</sup> was used for this purpose. A description of how this sub-test was adapted to obtain the desired information is given.

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<sup>2</sup> Department of Educational Research, The Dominion Tests, Group Test of Reading Readiness, Kindergarten and Grade I, Toronto, Ontario College of Education, 1949.

<sup>3</sup> Arthur I. Gates, Gates Reading Readiness Tests, New York, Bureau of Publications, Teachers College, Columbia University, 1939.

During the remainder of the school year the control group continued reading readiness training under the methods of the prescribed course. The experimental group received the same training coupled with one extra area of training. This additional factor was the formal teaching of, and drill in, the names and sounds of single letters in the alphabet. The order of letters taught, the description of typical lessons and drills, and the amount of time devoted to this training is discussed in detail.

As near as possible to the end of the school year, during the first week in June, when both classes of children were being promoted to Grade One where they would begin formal reading, the two groups were re-tested on Form B of the Dominion Group Test of Reading Readiness. The scores in this second test were compared in order to ascertain whether there was any significant difference in the improvement in reading readiness, as measured by the test, between children in the two groups.

As a source of additional information, two other small supplementary tests were given. These were, first, a re-test in both groups on the Gates letters test and second, a reading vocabulary test of all words in the pre-primer used by both the groups. Since these last tests were only supplementary, their precise purposes as well as their descriptions will be given.

The first topic to be considered is the course of study of the two Kindergarten-Primary classes. The areas of the curriculum are health and safety, English, reading readiness, social studies, natural science, arithmetic, music and arts, and crafts. Each of these is described in the Programme<sup>4</sup> so, with the exception of the section on reading readiness, there is little need to examine them in detail. Two comments will suffice. First, all areas of study are carefully correlated and integrated into an informal living pattern in the classroom. Secondly, the content of each area contributes to the growth of the child in knowledge and experience while at the same time the informal methods aid in the child's social development. Growth in both experience and socialization are considered to be important in the development of reading readiness as has been stated in Chapter I.

Proceeding to a more detailed consideration of instruction in preparation for reading, as it was carried out in the control and experimental groups, the description will be broken into three parts. The first section deals with the programme in reading readiness as outlined in the Programme<sup>5</sup>. The second section presents the programme as it is

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<sup>4</sup> Minister of Education for Ontario, Programme for Junior and Senior Kindergarten and Kindergarten-Primary Classes, p. 63-83.

<sup>5</sup> *ibid.*, p. 67-73.

interpreted and as it is actually used in the Ottawa Separate Schools. These two sections will describe the instruction in reading readiness common to both the control and experimental groups. The third section presents the variable, the training in letters, and a description of its application to the rest of reading readiness training in the experimental group.

Two factors are stressed. The letter training was not introduced in the experimental group until the second school term. Therefore the instruction given to both groups is identical in the September-to-December term. The other point to be kept in mind is that the letter training was not substituted for any other training carried out in the control group but rather was added to a programme otherwise similar to that of the control group. Time was found for the short lessons three times a week by slightly shortening the lessons in the other reading readiness instruction given to the experimental group.

The course of study recommended in the Programme<sup>6</sup> is as follows. During the first four months of the school year training in visual discrimination is given. The materials and methods to be used are not specifically laid down.

The second part of the prescribed programme to be followed after the Christmas holiday is the introduction of

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<sup>6</sup> *ibid.*, p. 67-73.

up to one hundred sight words, in order first, to increase the child's visually discriminative powers and secondly, to aid the child to understand that the printed word has meaning. This list of sight words is not considered by the Department as formal reading but as part of reading readiness training. This second part of the reading readiness programme is more clearly described in the programme of studies and is summarized in the following paragraphs.

The most important feature is the almost complete reliance on visual skills and on what is called *activitive* reading. This latter is described as reading for meaning by the performance of physical acts as directed by the reading.

Picture-producing words, that is words with a strong concrete significance in the child's experience, are gradually introduced. But these words in their printed form must be different in shape and appearance so that the child will not be called upon to make too fine discriminations in form. The teacher begins with name tags pinned to the children's clothing and proceeds to the labelling of objects in the classroom. Later on names of other objects of high interest rating with the children, verbs of action, descriptive sentences, and adjectives of size and colour are introduced, each with a picture. Blackboard stories containing the sight vocabulary, already learned, plus the necessary connecting words are used at the end of the term.

Three aspects of the method are stressed. All words for reading must be concretely meaningful. Words must be presented two or three at a time so that the children can see the difference between them. The picture and the words or sentence must be presented together so that word and object are clearly associated by the child.

In summing up the prescribed programme of reading readiness which was common to the two groups it can be restated that there is a complete reliance on the child's developing powers of visual discrimination and visual memory. Nowhere is there any provision for isolating the letters which make up the words, much less for learning their names and sounds. In his preparation for formal training in reading in Grade One the child is invited to be unaware of the parts of the word and to see only its total configuration.

The interpretation and use of this prescribed course by the teacher of the two groups follows. It is to be remembered that both groups received this visual training. The materials and devices used by the teacher of the groups were those fairly common to all such classes. Lessons and practise in picture analysis, use of picture clues, likenesses and differences of objects, pictures and symbols, matching of pictures, completion of pictures, and the use of left-to-right sequence were given. During September these lessons were scattered and informal, presented as games.

In November and December these activities appeared almost every day but were still in game form.

At the same time the teacher tried to aid in the development of interest in books by allowing the groups access to many attractively illustrated children's books and by encouraging the children to look at them. The teacher read the stories contained in these books trying to encourage the children's desire to read for themselves.

Since the differentiation in programme occurred only in the second half of the school year both classes received the same early training in visual discrimination.

In the second term the above training continued with the addition of the presentation of the sight vocabulary. Both classes of children were taught their names, objects in the classroom, and the words contained in the pre-primer<sup>7</sup> used by both classes. Both groups of children completed the pre-primer by the end of the second term. Even though twenty words had been presented in the pre-primer, and many more were added to this list, and the children had read sentences and

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<sup>7</sup> Sister M. Marguerite, Here We Come, first pre-primer in the Faith and Freedom series, Toronto, Ginn and Company, 1942, 42p.

The word list, in order of presentation, is as follows:

- |           |         |          |             |
|-----------|---------|----------|-------------|
| 1. David  | 6. see  | 11. you  | 16. Blessed |
| 2. Ann    | 7. come | 12. here | 17. loves   |
| 3. Mother | 8. oh   | 13. find | 18. and     |
| 4. Father | 9. help | 14. is   | 19. the     |
| 5. go     | 10. can | 15. I    | 20. it      |

phrases using these words, it was not considered that the children had begun formal reading according to the general interpretation. Rather they had completed their readiness training for the formal teaching of reading in Grade One.

The description of the variable, the phonic approach or the teaching of the names and sounds of letters, that was added to the instruction given to the experimental group and that was applied as a second approach to the reading list already mentioned is described in the following paragraphs.

The single letters, s, a, t, e, m, i, c, p, u, f, k, h, b, w, v, d, z, j, g, n, l, r, y. in the small and capital forms were presented, two a week, in that order, in lessons on Wednesdays and Fridays. On Mondays of each week a third period was used for the review of the letters already taught. An average time of seven minutes was used for each lesson. No combinations of letters were taught as sound units. Pupils meeting these combinations in their sight words were simply told that certain letters, hand-in-hand, made a different sound.

As each letter was presented on a flash card and on the blackboard the children were told and asked to repeat several times its name and its most common sound. An example is given. The letter "a" was presented and the children were taught that its name was "ā" and that it said "ă".

The letter was pointed out on a chart where each letter was printed accompanied by a picture of an object the name of which began with the letter. As an example, the letter "b" was accompanied by a picture of a boat. The children were asked to name words beginning with the letter being taught. They suggested for example that "s" came at the first of "see", "sun", "swing", "sister", and so on.

Using sight words already known the children picked out the letter being taught. For example by the time the children learned "h" they were able to pick it out in "help" and "here".

By the time that the children had learned several letter sounds their knowledge was applied in the teaching of the reading vocabulary. The words were still presented accompanied by their appropriate pictures as in the control group but the children were asked not only to recognize the word by the shape of it but by the sounds of the letters in it. Words appearing in the last half of the list such as "Blessed", "and", and "it", were presented in this way. Words in which the common sound of the letter was modified because of combinations or the silent "e" or other more complex phonetic rules and exceptions to these rules, were treated phonetically only partially insofar as the children's knowledge had proceeded.

The letters were written as part of the regular writing of words done in connection with reading by the pupils of both groups. In the experimental group the letters known at the time of writing were pointed out by the teacher during the writing period.

This completes the description of the introduction to phonics given to the experimental group as part of their preparation for formal reading. The children, as observed, appeared to enjoy these lessons just as keenly as they enjoyed the games in visual discrimination described earlier. However they appeared to have difficulty in remembering the sounds from day to day. Further comment on these observations appears in Chapter IV. The presentation of the twenty-four letters to be taught was completed by the end of May.

## 2. - The Tools of Measurement

The second part of this chapter is concerned with a description of the tools of measurement already mentioned in the introductory paragraphs of the chapter.

The Group Test of Reading Readiness<sup>8</sup>, belonging to the Dominion Test series, was used for two purposes. The first purpose was to establish the comparative initial ability of both groups before the letter training was

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<sup>8</sup> Department of Educational Research, The Dominion Tests, Group Test of Reading Readiness, Kindergarten and Grade One.

introduced in the experimental group. In this way its results formed part of the criteria of the selection of the two groups and, as such, the results are given in Chapter III.

However the other and equally important purpose was to show the comparative improvement in reading readiness from the January level, as measured by Form A, to the June level, as measured by Form B. Therefore results of the use of these two forms of the test are analysed in Chapter IV.

In the description of the test no attempt is made to argue that it was more reliable or valid than any other test for the measurement of the universal reading readiness. It was considered that among the tests available this was the most suitable because it had been standardized in the province of Ontario.

The Dominion Group Test of Reading Readiness contains five sub-tests<sup>9</sup>. The first sub-test, it is stated, measures the ability to discriminate visually, objects, symbols, and words. It contains twelve series of pictures, letters and words, in which the one to be marked is the different one in each case. The second test deals with the ability to listen, remember, and observe. This test has eight rows of pictures in which the child is asked to mark the picture told

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<sup>9</sup> Department of Educational Research, Manual of Directions, Dominion Group Test of Reading Readiness, Toronto, College of Education, University of Toronto, 1951, p. 1.

about in the story read by the examiner. The third measures discrimination between words and familiarity with word forms. There are ten boxes each containing four words. The two like words are to be joined in each box. The fourth is said to measure the ability to observe and remember word forms and to discriminate these forms from memory. For this test flash cards are used. The child has in his booklet eight pictures of common objects each accompanied by six words. The examiner shows the flash card on which the word represented by the picture is written. When the flash card is removed the child must mark the correct word in his booklet. The last test measures the ability to observe and reproduce details of simple drawings.

The test was constructed in the Ontario College of Education<sup>10</sup> over a three-year period. The population for standardization of the test was 1315 pupils in Ontario urban schools. There were 787 boys and 745 girls in thirty-eight schools in thirteen cities. Eighty-five per cent were in Kindergarten and fifteen per cent were in Grade One. About eight hundred children were over six and about six hundred were under six years old.

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<sup>10</sup> *ibid.*, p. 1-2 and 25-39.

It was found that the girls' scores were uniformly higher than the boys' scores<sup>11</sup> and therefore two comparative sets of tables were drawn up. Scores were also divided for those under six and those over six years. However for reasons appearing in Chapter III it was not found necessary to divide the scores for boys and girls for the purposes of this present research.

Since all tables are standardized for test performance in the last month of the Kindergarten year or the first month of the Grade One year, no attempt was made in this study to compare the January scores made by either group with the scores for the rest of the province. However the scores made at the end of the experiment were compared with the results shown by the province although this comparison was subject to the limitations caused by the non-division of the sample groups according to sex.

It is not intended to quote the statistical data given in the manual<sup>12</sup> of reliability, correlation, internal consistency or probable error because an evaluation of these is outside the purpose of the present study.

There is no insistence that this test measured all aspects of reading readiness. Certainly it did not measure

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<sup>11</sup> *ibid.*, p. 25-39.

<sup>12</sup> *ibid.*, p. 25-39.

physical or social readiness for the Grade One reading class except in a secondary way. Insofar as intellectual factors are concerned it measured visual readiness almost exclusively. In other words it measured what the training in visual discrimination was supposed to train. Therefore it could not be said to measure phonic relation to reading readiness except inasmuch as the knowledge of letters aids in the powers of visual discrimination.

However since training in names and sounds of letters is not admitted in the usual conception of reading readiness training just as it is not too widely accepted in early formal reading training, and since this knowledge is measured in only a few readiness tests, it was decided to measure only the effect of this training on reading readiness as it is currently defined and measured. As far as is known a test does not exist in which the weight of the phonic factor in relation to the visual factor has been worked out. In the experiment the children's levels of readiness were measured by the same test in its two forms. For these reasons it appeared to be adequate for the measurement of the improvement in reading readiness as that factor is defined by the measurement made by the test.

While it is admitted that there is at present a difficulty due to the lack of a sub-test in phonic readiness and the lack of knowledge of its weight in comparison to

visual readiness, it was hoped to see more clearly the relation of letter knowledge to readiness by the detailed examination of sub-tests three and four. These deal with the discrimination of word forms and it was felt that the greatest influence measurable in the test of letter knowledge would be seen in these two sub-tests.

In addition to this main instrument of measurement two other supplementary tests were used to give additional information. The first of these, a test in naming and sounding letters, had two purposes. Because it allowed an appraisal of the initial knowledge of letters and sounds by pupils of both groups it was a criterion in the selection of the two groups. Secondly, re-testing at the end of the experiment showed the degree to which the letters taught in the experimental group had been learned and the degree to which the knowledge of children in the control group, receiving no formal training in letters, had increased. As was noted in the survey of the literature some authors feel that the child will learn informally these letter names and perhaps sounds, without special training, during the year from five to six.

For the purpose of this test the first two sections of sub-test five in the Gates Reading Readiness Tests<sup>13</sup> were used. These two sections contain lists of all the letters,

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<sup>13</sup> Arthur I. Gates, Gates Reading Readiness Tests.

first in capitals, then in small letters. In the directions for administration of the Gates Tests the children are asked to give the names of the letters only. In this study the children were asked to give first, the names, and second, the sounds of all the letters.

The second supplementary test was administered to both groups at the end of the experiment. It consisted of a complete list of words learned in connection with the pre-primer used by the groups. The examiner pointed to one word after another and the children were scored on their first responses.

This test was used to give some information as to whether the children were aided in their learning and recall of words by their knowledge of letters.

However it was clearly intended that the results of these two supplementary tests should not be considered as scientific data but merely as additional material to aid in the explanation of the experimental results.

In order to facilitate comparison certain statistical data was compiled and derived. Following the January tests mean scores, ranges, standard deviations, and standard errors of the means were found for mental age, intelligence quotient and reading readiness in each group and these statistics were compared. At the end of the experiment the procedure was repeated for final reading readiness scores. The means of

the final scores were compared for significant difference. The amount of increase in each group was scored and treated in the same way and the significance of the mean increase was noted in each group as well as between groups.

The t-test formula used for testing the significance of the difference when different results obtained by the same group were compared was  $\frac{D}{\sigma_D} = \frac{D}{\sqrt{\frac{\sigma_1^2}{N_1-1} + \frac{\sigma_2^2}{N_2-1} - 2r_{12}\sigma_{N_1}\sigma_{N_2}}}$ , while

the formula,  $\frac{D}{\sigma_D} = \frac{D}{\sqrt{\frac{\sigma_1^2}{N_1-1} + \frac{\sigma_2^2}{N_2-1}}}$  was used when the

difference between results obtained by two different groups was being tested for significance.

The details of the experiment have been presented. The investigator has attempted to describe and to discuss the contents and methods of instruction in the control and experimental groups, to describe the instruments of measurement, and to state the statistical method used. The selection and description of the two groups must now follow.

### CHAPTER III

#### THE SELECTION AND DESCRIPTION OF THE GROUPS USED IN THE EXPERIMENT

The method of selection of the two groups used in this study is explained and the description of these two Kindergarten-Primary classes is stated in this chapter.

In an experiment with school children of the age group, five to six years, it would seem that the factor of the relationship between the teacher and her pupils should receive careful attention. Because this teacher-pupil relationship during the child's first school year appears to be so important, it could have considerable effect on the child's progress in any given reading readiness method. Therefore the first consideration in the selection of groups was that both Kindergarten-Primary classes should be taught by the same teacher. By using two classes in the same school it was also fairly well assured that they would come from similar home backgrounds.

All the Kindergarten-Primary classes in the Ottawa Separate Schools are half-day classes. One group of children is taught in the morning while a different group is taught in the afternoon by the same teacher. Among the classrooms available the one with the largest enrollment had twenty-five children in the morning group and twenty-two children in the afternoon group. Among these a few children could not be included in the experiment. Two children with language

handicaps, four children with intelligence quotients at one or the other extremes of the scale, and three children with repeated lengthy absences were omitted. The remaining groups of nineteen in the morning and nineteen in the afternoon were considered to provide two average classroom groups. No child of the remaining groups had any detected visual, auditory, or any other physical disability.

The method of dividing the children into two classes was that of chance order of registration.

It was realized that these two groups constituted very small groups for such a study but the other alternative, that of using different teachers, was considered a more serious threat to the validity of the experiment.

Because many children prior to school entrance had been accustomed to an afternoon nap and the necessitated curtailment of this extra sleeping period might hinder the work of the afternoon group especially, it was decided to make the morning class the control group A and the afternoon class the experimental group B.

Because the samples were incidental the investigator had to examine every aspect of the groups to determine whether they could be used as samples of the normal Kindergarten-Primary population. In addition, when drawing conclusions based on the results of testing in these samples, reference had to be made again to the incidental nature of the sampling.

Both groups were a little above the average in the status of their social and economic backgrounds. In the control group no children came from homes of day-labourers, two came from homes of unskilled workers, three from homes of skilled workers, twelve from clerical and semi-professional backgrounds, and two from professional and business owners' homes. In the experimental group none came from homes of day-labourers, three had fathers who were unskilled workers, five had fathers who were skilled workers, ten came from clerical and semi-intellectual backgrounds, and one from a business owner's home. Thus both groups were fairly characteristic of an urban residential area and quite characteristic of the children who are sent to the non-obligatory Kindergartens.

In order to ascertain whether the two groups were suitable for experimental purposes they were compared, as has been described in the preceding chapter, on intelligence quotient, mental age and reading readiness level at the beginning of the period of experimental instruction. The statistical details of this comparison appear in Table I.

An intelligence test was administered to each child using Form E of the 1937 Terman and Merrill Revised Stanford-Binet Scale<sup>1</sup>. In the control group the mean intelligence

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<sup>1</sup> Lewis M. Terman and Laud A. Merrill, Revised Stanford-Binet Scale, Form E, New York, Houghton Mifflin, 1937.

Table I. - Statistical Description of the Distributions of Three Variables: Intelligence Quotient<sup>a</sup> (I.Q.), Mental Age<sup>b</sup> (M.A.) and Reading Readiness<sup>c</sup> (R.R.) in Two Groups of Ottawa Kindergarten-Primary Children, in January, 1955.

Variable	Group	M	Range	SD	SE	$\sigma_D$	$t^d$
I.Q.	Control	105.1	88-118	7.57	1.78	2.69	.119
	Exper.	104.8	88-118	8.55	2.01		
M.A.	Control	69.7	56-78	5.27	1.24	1.66	.825
	Exper.	68.4	57-77	4.70	1.11		
R.R.	Control	15.6	7-28	4.97	1.17	1.98	1.646
	Exper.	18.8	8-30	6.76	1.59		

<sup>a</sup> Intelligence quotient obtained using the 1937 Terman and Merrill Revised Stanford-Binet Scale, Form M.

<sup>b</sup> Mental age in months.

<sup>c</sup> Total reading readiness score obtained using the Dominion Tests, Group Test of Reading Readiness, Form A. Total possible score is 45.

$$d \quad t = \frac{D}{\sigma_D} = \frac{D}{\sqrt{\frac{\sigma_1^2}{N_1-1} + \frac{\sigma_2^2}{N_2-1}}} \quad \text{required for significance}$$

with eighteen degrees of freedom is 2.101 at the five per cent level, and 2.878 at the one per cent level.

quotient at the beginning of the second term of school, when the experimental training was started, was 105.1 with a range of from 88 to 118. The mean mental age was close to five years ten months and the range was from four years eight months to six years six months.

In the experimental group the mean intelligence quotient was 104.8, ranging from 88 to 118. The mean mental age was over five years eight months and the range was from four years nine months to six years five months.

The first question was whether these children were truly representative of the normal population in intelligence. The standard deviations 7.57 and 8.55 seemed reasonable but the means seems to be too much above one hundred which is considered as the mean intelligence quotient of the population. The standard errors of the mean indicated that the chances were about two to one that the mean of the first would not deviate more than 1.78 points from the normal population mean in either direction and the mean of the second would not deviate more than 2.01 points. However in order to have more assurance that the obtained means were not too high, because the samples were incidental rather than random, it was necessary to examine the normal population of Kindergarten-Primary classes. The extreme lower limits of the intelligence scale are not represented in ordinary Primary Schools and the borderline cases are either one year late in entering

school or if they are enrolled in the Kindergarten at five years they are usually quite correctly judged by the teacher as being ineligible for Kindergarten-Primary training.

Therefore the mean intelligence quotient of the Kindergarten-Primary population may be closer to 105 than 100. In this experiment the two classes were considered as probably being representative of normal Kindergarten-Primary children although a further comment on this point is made in Chapter IV following the presentation of the results of the research.

When the  $D/\sigma_D$  was computed using the mean intelligence quotients it was found to be .119 which allowed the investigator to be reasonably confident that the samples probably did not represent different populations and therefore were representative of the same population.

The  $D/\sigma_D$  showing the significance of the difference between the means of the mental ages of the two groups equalled .825 which again led the investigator to believe that the two samples probably came from the same population.

When Form A of the Dominion Reading Readiness Test<sup>2</sup> was administered in early January just before the training in letter names and sounds was introduced to the experimental group, neither groups had more than two children who appeared

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<sup>2</sup> Department of Educational Research, The Dominion Tests, Group Test of Reading Readiness, Kindergarten and Grade One.

ready for the actual beginning of reading using twenty-five as the cut-off score as is fairly common practise. The means of the total reading readiness scores in the control and experimental groups were 15.6 and 18.8 respectively out of a possible forty-five. The standard deviations were 4.97 and 6.76. The standard errors of the means were 1.17 and 1.59. Therefore computation of  $D/\sigma_D$  gave 1.646 which for eighteen degrees of freedom does not show significant difference. Therefore it was presumed that the two samples probably came from the same population as far as initial reading readiness level was concerned.

A few slightly higher individual scores in the experimental groups served to raise the mean of that group slightly higher than that of the control group but not significantly so. It seems possible that some children in this group had, at the time of the first testing, more casual experience with books or written words or drawings than had members of the control group. However since both groups had received the same school training in the first term this experience, if it existed, must have been an informal one in the home and therefore could not be predicted nor even known. Since there was a similar likelihood that children from both groups coming as they did from similar homes would have this experience at some time during the year it was decided that for the purposes of this study the two groups were reasonably

alike in preliminary reading readiness ability. As has already been mentioned in the analysis of the results the amount of increase as well as the final score was considered.

The Manual of Directions<sup>3</sup> accompanying the reading readiness test used divides the girls' scores from the boys' scores stating that the girls' scores were found to be consistently higher. Not all reading readiness tests do this but it is expected that one which makes this division is taking into account the generally accepted idea that girls mature at a faster rate than do boys and that girls may be anywhere up to a year in advance by the time that the sixth birthday is reached. Some authors consider that this estimation may include some aspects of apparent intellectual maturation<sup>4</sup> or what might be called scholastic development.

In the study the mental age scores of boys and of girls were separated in order to discover whether a difference existed in favour of girls in the two samples. Tables II and III show the statistical comparison. The girls appeared to be actually lower in the experimental group although a test for the significance of the difference between the means of the girls and of the boys in that group revealed that the

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<sup>3</sup> Department of Educational Research, Manual of Directions, Dominion Group Test of Reading Readiness, Toronto, College of Education, University of Toronto, 1951, p. 25-39.

<sup>4</sup> Anne Anastasi and John P. Foley, Jr., Differential Psychology, Individual and Group Differences in Behaviour, New York, Macmillan, 1949, p. 612-688.

Table II. - Comparative Mental Ages of Girls and of Boys between the Control and Experimental Groups<sup>a</sup> in January, 1955.

Sex	Group	M	SD	SE	$\sigma_D$	D	$t^b$
Girls	Control	70.28	5.90	2.41	2.67	3.65	1.367
	Exper.	66.63	3.08	1.16			
Boys	Control	69.42	4.77	1.44	2.19	.22	.101
	Exper.	69.64	5.24	1.66			

<sup>a</sup> The control group was composed of seven girls and twelve boys; the experimental group was composed of eight girls and eleven boys.

$$b \quad t = \frac{D}{\sigma_D} = \frac{D}{\sqrt{\frac{\sigma_1^2}{N_1-1} + \frac{\sigma_2^2}{N_2-1}}} \quad \text{refers to the significance}$$

of the difference between means of the two groups of girls and of the two groups of boys.

Table III. - Comparative Mental Ages of Girls and Boys in Each Group.

Group	Sex	M	SD	SE	$\sigma_p$	D	$t^a$
Control	Girls	70.28	5.90	2.41	2.81	.86	.306
	Boys	69.42	4.77	1.44			
Exper.	Girls	66.63	3.08	1.16	2.02	3.01	1.490
	Boys	69.64	5.24	1.66			

$$^a t = \frac{D}{\sigma_p} = \frac{D}{\sqrt{\frac{\sigma_1^2}{N_1-1} + \frac{\sigma_2^2}{N_2-1}}} \text{ refers to the significance}$$

of the difference between the means of girls and boys in the same group.

difference was probably not significant. The means of the girls and of the boys were separated by only .86 in the control group and there was even more confidence that the difference was probably not significant. Therefore the girls and boys in each group probably came from the same population. Furthermore tests for significance showed that the means of the girls probably did not differ significantly from one group to another and neither did the means of the boys.

Because it could be very well argued that the Binet test would not indicate this difference in apparent intellectual maturity if such a difference did exist, the January reading readiness scores of girls and of boys in both groups were also examined. The mean score in reading readiness of the girls in the control group was 15.57 and of the boys 15.58. In the experimental group the mean readiness score of the girls was 18.75 and of the boys 18.91. If the sex difference stated was considered as scholastic maturity then it appeared unlikely that the difference existed in both groups.

These probabilities of sameness of population regarding intellectual or scholastic age made it rather unlikely that large differences in reading readiness levels would appear. This, coupled with the fact that the investigation was interested in the effect of the letter training on the group as a whole rather than on sex differences in reading

readiness, prompted the investigator not to carry the differentiation between the two sexes into this research. Therefore comparison with the norms for the province of Ontario which would have been interesting, although unnecessary, was hindered. However some speculation is possible about what would have happened if the apparent intellectual maturation or scholastic maturity of some of the girls had been somewhat higher than the boys. This is discussed following the analysis of the results of the experiment in Chapter IV.

When the test on letter sounds and names was administered at the beginning of the experimental period no child in either group knew any sounds and only four knew some letter names. In the control group one child knew the names of fourteen capitals and three small letters. In the experimental group one child knew fourteen capitals and five small letters, another knew twenty-four capitals and nine small letters and a third knew all the capitals and eight small letters. None of the four were the highest scorers in their groups but each was above the mean for his group in reading readiness. This knowledge of the names of letters was a second factor in home training which could not be controlled. It is probable, as the literature points out, that these four children had shown some curiosity at home and had been taught their alphabets at home by their mothers or older siblings. The re-testing on names and sounds of letters at the end of the experiment

showed that in the second term of the school year the control group may have had similar informal experience at home and this home factor in reading readiness is treated in Chapter IV. However this research was primarily concerned with the effect of formal school training in both letter names and sounds.

This completes the discussion of the selection and description of the two groups. They were shown to have come probably from the same population and that population was probably a sample representative of the normal Kindergarten-Primary population. This appeared likely not only in intelligence, mental age, social and economic factors, but in the pre-experimental level of reading readiness. Moreover the two groups were attending the same school, were being taught by the same teacher, and had received the same schooling during the first term. After the experimental training, described in Chapter II, was given the experimental group, the final scores in reading readiness and the amounts of increase were compared with the final scores and amounts of increase in the control group and these scores and the significance of the comparison is presented in the following chapter.

## CHAPTER IV

### THE RESULTS OF THE EXPERIMENT IN TRAINING KINDERGARTEN- PRIMARY CHILDREN IN THE NAMES AND SOUNDS OF LETTERS

The experimental thrice-weekly drill in names and sounds of letters which was begun in January was completed at the end of May. Immediately following the end of the training the two classes were re-tested on reading readiness using Form B of the Dominion Reading Readiness Tests<sup>1</sup>. This testing was done in the first full week of school in June. It is the purpose of this chapter to state the testing results and to endeavour to interpret these results.

#### 1. - The Testing Results

The scores of the re-test were divided into five sub-test scores and these were examined along with the total scores. It was felt that the result of the experimental training might show up more clearly in one of the sub-test scores particularly in sub-tests three and four. These sub-tests dealt with word discrimination. If the children who had received training in recognition of letter names and sounds were able to use this training to advantage in the test, their total reading readiness scores and those particular sub-test scores would probably show a significant difference

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<sup>1</sup> Department of Educational Research, The Dominion Tests, Group Test of Reading Readiness, Kindergarten and Grade One, Toronto, Ontario College of Education, 1949.

from the scores of those children who had not received the training.

Table IV presents a description of the final scores in the control group while Table V presents a similar description of the final scores in the experimental group.

The means of the final scores of the two groups were quite close with the mean of the experimental group slightly higher. The scores ranged higher in this group too but they also ranged lower so that the standard deviation and the standard error of the mean were larger.

The experimental group appeared to score higher in sub-tests two, three, and four, but the ranges of the scores were exactly the same as those of the control group in two of these sub-tests and in each of the three the standard deviations and the standard errors of the means were slightly higher in the experimental group. In sub-test one and five the control group appeared to score higher with standard deviations and standard errors of the means remaining greater in the experimental group.

All differences in means of sub-test scores and of total test scores between the two groups were tested for significance as shown in Table VI, but all of the differences failed to meet the 2.101 results for "t" required for significance at the five per cent level with eighteen degrees of freedom. This was true even in sub-test three where the

Table IV. - Statistical Description of Final Scores<sup>a</sup>  
in Reading Readiness<sup>b</sup> Made by the Control Group in June, 1955.

Test	M	Range	SD	SE
Sub-test				
1	8.00	5-11	1.89	.45
2	5.16	2-8	1.66	.39
3	5.21	2-10	2.21	.52
4	3.11	0-5	1.17	.28
5	2.52	0-5	1.46	.35
Total test	24.05	17-33	5.15	1.21

<sup>a</sup> Possible scores in the sub-tests were 12, 8, 10, 8 and 7, in sub-tests 1 to 5 respectively. The total possible score was 45.

<sup>b</sup> Scores were obtained using Dominion Reading Readiness Test, Form B.

Table V. - Statistical Description of Final Scores in<sup>a</sup>  
Reading Readiness<sup>b</sup> Made by the Experimental Group in June,  
1955.

Test	M	Range	SD	SE
Sub-test				
1	7.63	3-12	2.82	.66
2	5.21	2-8	1.99	.48
3	6.68	2-10	2.99	.71
4	3.63	1-8	2.06	.49
5	2.32	0-5	1.62	.39
Total test	25.84	15-38	7.39	1.74

<sup>a</sup> Possible scores on the sub-tests were 12, 8, 10, 8, and 7, on sub-tests 1 to 5 respectively.

<sup>b</sup> Scores were obtained using Dominion Reading Readiness Test, Form B.

Table VI. - Significance<sup>a</sup> of Differences between Means in the Control and Experimental Groups, of Final Scores on Test and Sub-tests in Reading Readiness in June, 1955.

Test	M		D	$\sigma_D$	t
	Control	Exper.			
Sub-test					
1	8.00	7.63	.37	.80	.463
2	5.16	5.21	.05	.60	.083
3	5.21	6.68	1.47	.88	1.670
4	3.11	3.63	.52	.57	.912
5	2.52	2.32	.20	.52	.385
Total test	24.05	25.84	1.79	2.13	.840

<sup>a</sup> Significance of difference between means was tested using formula  $t = \frac{D}{\sigma_D} = \frac{D}{\sqrt{\frac{\sigma_1^2}{N_1-1} + \frac{\sigma_2^2}{N_2-1}}}$ .

largest difference in sub-test means occurred.

The next step was to compute the correlation between test and re-test in each group. The coefficient of correlation for each sub-test and for the total test are shown in Tables VII and VIII along with the differences between means of tests and re-tests and the significances of those differences.

In the control group, described in Table VII, the coefficient of correlation met the .456 level required for a correlation significant for seventeen degrees of freedom and two variables in the total test and in sub-tests two and five. In the experimental group, described in Table VIII, this requirement was met in the total test and in sub-tests two, three and five.

The amount of improvement or the differences between means of scores on Form A and on Form B proved to be very significant on the total test and on sub-test three in both groups with a considerably significant amount of improvement on sub-test one and four by the control group only.

It appeared therefore that the experimental group having received the special training in letters had actually improved to a slightly lesser degree, except in sub-test three, than the control group who had not had this training. In sub-test three the correlation between test and re-test was much higher than in the control group indicating that

Table VII. - Significances of Increases<sup>a</sup> between Test and Re-test in Reading Readiness for the Control Group.

Test	D <sup>b</sup>	r <sup>c</sup>	t <sup>d</sup>
Sub-test			
1	1.95	.30	4.149
2	.63	.46	1.750
3	3.37	.25	6.018
4	1.06	.06	2.524
5	1.47	.47	1.470
Total test	8.47	.68	8.821

<sup>a</sup> Increase was the difference between the mean in January on Form A and the mean score in June on Form B.

<sup>b</sup> D was the difference between the means of scores on Form A and on Form B.

<sup>c</sup> r was the Pearson product-moment coefficient of correlation between the scores on Form A and on Form B.

<sup>d</sup> t was obtained from the formula,  $t = \frac{D}{\sigma_D}$

$$= \frac{D}{\sqrt{\frac{\sigma_1^2}{N_1-1} + \frac{\sigma_2^2}{N_2-1} - 2r_{12} \frac{\sigma_{M_1} \sigma_{M_2}}{12}}}$$

Table VIII. - Significances of Increases<sup>a</sup> between Test and Re-test in Reading Readiness for the Experimental Group.

Test	D <sup>b</sup>	r <sup>c</sup>	t <sup>d</sup>
Sub-test			
1	1.42	.34	2.029
2	.21	.46	.553
3	3.62	.71	7.098
4	.95	.11	1.696
5	.79	.61	.790
Total test	7.00	.74	5.738

<sup>a</sup> Increase was the difference between the mean in January on Form A and the mean in June on Form B.

<sup>b</sup> D was the difference between the means of scores on Form A and Form B.

<sup>c</sup> r was the Pearson product-moment coefficient of correlation between the scores on Form A and on Form B.

<sup>d</sup> t was obtained from the formula,  $t = \frac{D}{\sigma_D}$

$$= \frac{D}{\sqrt{\frac{\sigma_1^2}{N_1-1} + \frac{\sigma_2^2}{N_2-1} - 2r_{12}\sigma_{M_1}\sigma_{M_2}}}$$

the improvement was more general and more even. The significance of the amount of improvement appeared slightly higher, although both "t's" were so high as to be extremely significant.

Was this possible difference in amount of improvement on sub-test three significant? Tests for significance of differences in amounts of increase shown in Table IX indicated that none of the differences were significant at the five per cent level.

Therefore it had to be concluded that there were probably no significant differences in final scores or amounts of increase between the control and experimental groups.

## 2. - The Interpretation of the Results

It appeared therefore since there was probably no significant difference in final scores or amounts of improvement between the group of Kindergarten-Primary children receiving the training in names and sounds of letters and the group not receiving the training that this training did not improve measurable reading readiness. And since the two groups appeared to be representative of the Kindergarten-Primary population, it was concluded that such letter training as had been used in the experiment probably would not improve measurable reading readiness in normal Kindergarten-Primary classes.

Table IX. - Significances of Differences in Amounts of Increase in Scores in Reading Readiness Obtained by the Control and Experimental Groups.

Test	D <sup>a</sup>	$\sigma_D$ <sup>b</sup>	t <sup>c</sup>
Sub-test			
1	.53	.90	.589
2	.42	.57	.737
3	.25	.71	.352
4	.11	.70	.157
5	.68	.46	1.478
Total test	1.47	1.54	.955

<sup>a</sup> D was the difference between the mean of the increase from January to June in the control group and the mean of the increase from January to June in the experimental group.

<sup>b</sup>  $\sigma_D$  was the standard error of the difference between the means of the amounts of increase in the two groups.

<sup>c</sup> t was derived from the formula,  $t = \frac{D}{\sigma_D}$

$$= \frac{D}{\sqrt{\frac{\sigma_1^2}{N_1 - 1} + \frac{\sigma_2^2}{N_2 - 1}}}$$

Possibly part of the reason for this became apparent when the two groups were re-tested for knowledge of letter names and sounds. These results are shown in Table X. It was recalled that at the beginning of the experiment four children in the two groups combined had recognized the names of several capitals and a few small letters and no children had known any letter sounds. At the end of the experiment the mean number of names of capitals recognized by the group receiving the training was only 6.9, the mean number of names of small letters known was 6.8 and the mean number of sounds of letters known was 6.4. The training had resulted in actual learning of only a fraction of the letters and sounds.

At the same time in the control group the mean number of capital letters named was 5.6, the mean number of small letters named was 1.6, and three children were able to recognize from two to eight sounds of letters. In addition, although they could not name the letter as they were being tested, several of the children in the control group stated that the letter was at the beginning of a child's name or of another word learned in the Kindergarten-Primary class. Although this did not constitute knowing the name of a letter it did demonstrate that the child had isolated the picture of that letter in his visual memory.

These children had presumably learned their letters at home through curiosity as some authorities have stated

Table X. - Number of Names of Capital Letters, Names of Small Letters and Common Sounds of Individual Letters<sup>a</sup> Known by Children in the Control and Experimental Groups in June, 1955.

Group	Capitals	Small letters	Sounds
Control	5.6	1.6	.68
Exper.	6.9	6.8	6.4

<sup>a</sup> Scores were obtained using sub-test five of the Gates Reading Readiness Tests.

they will normally do.<sup>2</sup>

However the estimate by Ilg and Ames<sup>2</sup> that at five and a half years of age the average child knows many or all the letters in the alphabet was not demonstrated to be true in either group. Even those children who had received approximately five months training in letters could not recognize, on the average, more than about a quarter of the letters. The reasons for the marked failure of both groups of children to meet the estimate of Ilg and Ames could only be guessed. If the estimate was correct then the lesser knowledge of the control group could have been explained perhaps by the fact that parents, in recent years, usually hesitate to help children learn their letters before starting to school because they are afraid of interfering with the school reading instruction methods. But this did not explain the case of the experimental group except that five months of thrice-weekly seven-minute formal drills could not be called similar to the repeated questions and answers of the child and his mother over a period of two years or so.

It appeared that learning the names of letters depended on maturation and environment during the first six years and could not be significantly speeded up by formal

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<sup>2</sup> Frances L. Ilg and Louise Bates Ames, Developmental Trends in Reading Behaviour in Journal of Genetic Psychology, Vol. 76, No. 2, issue of June, 1950, p. 291-312.

drill in the Kindergarten-Primary classroom.

Some smaller questions still remained unanswered in the investigator's mind. The first question was this. It had been demonstrated that the training given in names and sounds of letters probably did not influence final scores in reading readiness nor affect increases in scores but could it influence the learning and recall of the first few words in the reading vocabulary as distinct from the readiness to learn and recall these words? Since part of the experimental training in letter names and sounds involved the examination of new words for known letters there was a possibility of this influence.

When the two groups were tested using a list of all the twenty words which had been contained in the pre-primer used by both groups the mean number of words correctly recalled by the control group was 18.40 and by the experimental group 18.37. The evidence was by no means conclusive due to the small number of words and to the informality of the test but nothing indicated that the letter training had given the experimental group any advantage. However this presented an interesting avenue for possible further research. For example, with a larger number of words being added to the reading vocabulary in the first few months of Grade One which is the transitional period, would training in names and sounds of letters aid in learning and recall of these words?

A second question requiring some discussion concerned the method which had been used in teaching the letter names and sounds especially because the method had resulted in such a relatively small average amount of learning by the pupils. It had been observed that the children appeared to enjoy the lessons. If the lessons had been increased in length from seven minutes each to twelve or fifteen minutes or if they had been daily instead of thrice weekly, would the amount of learning have been greater and would there have been a more significant influence on measurable reading readiness? The short span of attention in children of Kindergarten-Primary age and their tendency to tire of too frequently repeated experiences had to be taken into account in determining the length of the lessons and the interval between them.

Had the type of lesson which was a more or less formal type, hindered learning? If the lessons had been informal and incidental and more closely approximating the child's ordinary experiences in the home, the variable of letter training would have been very difficult to control and in fact the experimental training could have differed very little from the experience of the control group.

A second question involving instructional method arose. It was pointed out that the letter training given to the experimental group was not substituted for the sight training common to both groups but was added as a second

method. Had the use of two methods become burdensome to the child so that he used what appeared to him to be the easier or more interesting method? In such a case the letter instruction might not have been used to advantage.

A purer phonic approach would have meant that the experimental group would have been given no sight reading vocabulary but would have combined known letters into the words of the early reading vocabulary. It is true that in this experiment the investigator was interested in the effect of added letter training rather than in the use of a purely phonetic approach through reading readiness to reading. However the question provided another limitation to the contribution of the research and another possibility of further research.

It was admitted that the absolute separation of method between visual and phonic might have given different results particularly if the differentiated training had been carried on through Grade One.

For the time being however the investigator was concerned with the effect of additional letter training not entirely different methods of training.

Further unanswered questions involved the sample populations. It was noted in the description of the two groups that the apparent intellectual or scholastic maturity of girls in both groups did not differ significantly from

those of boys. Some believe that due to the faster rate of maturation in girls they may be up to one year in advance of boys in some or all areas of maturation, including apparent intellectual or scholastic maturity, by the time they enter Grade One. Would the results of the experiment therefore have been different if the girls in the sample populations had been thus advanced?

While there seemed to be no evidence that less advanced children would have increased their reading readiness scores because reading readiness appears to be positively correlated fairly highly with mental age<sup>3</sup> and with knowledge of letters<sup>4</sup>, there was no answer to the question of more advanced girls or boys. It was quite possible that more advanced children might have profited significantly in reading readiness from the experimental training but there was no proof of this nor any indication of at what mental age the significance would become apparent.

Because the girls' and boys' scores were not separated in the present study it was not possible to make an adequate comparison of the scores achieved by the two groups

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<sup>3</sup> Mabel Vogett Morphett and Carleton Washburne, When Should Children Begin to Read? in Elementary School Journal, Vol. 31, No. 7, issue of March, 1931, p. 496-503.

<sup>4</sup> F. T. Wilson and C. W. W. Fleming, Grade Trends in Reading Progress in Kindergarten and Primary Grades in Journal of Educational Psychology, Vol. 31, No. 1, issue of June, 1940, p. 1-13.

of children with the published average scores for the province of Ontario.<sup>5</sup> The published means for the boys, the lower of the two sexes, are, for sub-tests one to five, 8.90, 5.82, 6.62, 5.13 and 3.88 respectively and for the total test 30.35. The means of both samples in the experiment were somewhat lower than these but there was not enough information with the published means to establish whether the difference was significant. If it was, there was a possibility that the chronological age of the children used in standardizing the test may have been higher than that of the population used in the present study. The information is given that about eight hundred of the 1315 children were over six years of age and fifteen per cent were in Grade One.

A further question was in regard to the means of the mental ages of the samples in this study. It was presumed that the mean mental age of the Kindergarten-Primary population was probably closer to 105 than to 100. If this presumption was too great and if the mean mental age of normal population was really lower, would the significance of the experimental results have changed? Using the same arguments of correlations between reading readiness and mental age and between reading readiness and knowledge of letters that have

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<sup>5</sup> Department of Educational Research, Manual of Directions, Dominion Group Test of Reading Readiness, Toronto, College of Education, University of Toronto, 1951, p. 25-39.

already been stated it was probable that they would not.

The influence of the slightly higher than average social and economic background of the two groups on the experimental results was the basis of the last question. If the children had come from slightly less fortunate backgrounds, would the possibly lesser degree of home stimulation and encouragement, as part of reading readiness, have made a difference? By this it was meant that the children in the control group might have learned fewer letters and the difference in reading readiness scores might have become more significant. But the actual knowledge of the letter form itself did not appear to definitely influence test results as much as familiarity with letters. For example in sub-test three the words to be distinguished were printed in small letters and while the control and experimental groups knew almost the same number of capital letters there was considerable difference in the number of small letters known, yet there was no significant difference in the score made by the two groups on this sub-test. However this argument did not completely answer the question because if the children had come from less favourable environments the children in the control group might have missed a degree of acquaintance with letters that those in the experimental group would have partially compensated for in their training.

In examining the experimental results and all the arguments which presented themselves the investigator concluded that probably training of Kindergarten-Primary pupils in the names and sounds of letters did not increase the measurable reading readiness of these children with a possible exception being made for slightly more mature girls or boys who were not represented in the groups.

## CONCLUSIONS

The conclusions from the experiment in elementary phonic instruction as a part of reading readiness training in the Kindergarten-Primary class must be stated. In order to do this a brief summary of the statistical deductions and of the arguments made in the course of this research is presented in the following paragraphs.

Training composed of formal teaching and drill in the names and sounds of single letters of the alphabet in capital and small letter form does not appear to influence significantly the level of reading readiness achieved in the Kindergarten-Primary class.

The training itself does not result in learning all the letters nor does it result in learning by all the children. Children who do not receive the training appear to learn some letters informally, an observation which has been stated in the literature on reading readiness.

A possible exception might be made for more mature children but it has not been proved that their reading readiness would be improved significantly by such training or at what mental age the significant improvement would become apparent if it does exist.

It is admitted that the possibility exists that the substitution of phonic teaching rather than the addition of letter training to visual training might produce different results.

There is no indication that the learning and recall of the first few words in the reading vocabulary is aided by knowledge of letter names or sounds but this does not include acquaintance with letter forms.

It would seem therefore that training in letter names and sounds is of no significant value as part of kindergarten-Primary training. However this does not mean that the kindergarten-Primary teacher should not answer the children's questions about letters nor point out interesting similarities between the manner in which children's names or other words begin. It is presumed that this is just the type of informal training received in the home which the control group had received in this experiment.

Also informal letter training is probably what other investigators have measured when they speak of the correlation between knowledge of letter forms and reading readiness. As the child becomes curious about letters he learns them and both his curiosity and his resultant learning are indicators of the level of his reading readiness.

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-----, Foundations of Reading Instruction, New York, American Book, 1946, p. 103-247.

A long descriptive list of abilities and areas of maturation which the author believes are normally achieved at the mental age of seventy-six to eighty months is supplied. The important point is emphasized that reading readiness training is correlated with all Kindergarten activities and should be differentiated to meet the needs of various pupils.

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Dolch, Edward William, Psychology and the Teaching of Reading, Champagne, Garrard Press, 1951, vii-513 p.

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Gates, Arthur I., The Improvement of Reading, A Program of Diagnostic and Remedial Methods, New York, MacMillan, 1947, p. 20-30, 41-51, and 140-176.

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The author analyses factors of intellectual, physical, and personal development needed for reading. It is one of the earliest comprehensive descriptions of reading readiness.

Ilg, Frances L. and Louise Bates Ames, Developmental Trends in Reading Behaviour in Journal of Genetic Psychology, Vol. 76, No. 2, issue of June, 1950, p. 291-312.

A gradient of descriptive data on reading readiness and elementary school reading presented according to a developmental frame of reference. This information is gathered from experience with large groups of children and may set a somewhat high standard for some early letter skills in average Ontario children.

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The exposition of the nature of training and experience needed to help children develop readiness to read but, as an important addition, to interpret what is read.

Morphett, Mabel Vogett, and Carleton Washburne, When Should Children Begin to Read? in Elementary School Journal, Vol. 31, No. 7, issue of March, 1931, p. 496-503.

A report of one of the first studies on reading readiness. The reported fairly high positive correlation between mental age and ability to read and the statement that a mental age of six years six months seemed to be the one at which the child could begin reading with the greatest efficiency have been supported by most of the investigators since that time.

Petty, Mary C., An Experimental Study of Certain Factors Influencing Reading Readiness in Journal of Educational Psychology, Vol. 30, No. 3, issue of March, 1939, p. 215-230.

A comparison of the relationships existing between reading readiness and various abilities on which it may depend. This is an interesting treatment of a few aspects, particularly visual ones.

Wilson, Frank T., and Cecile White Fleming, Grade Trends in Reading Progress in Kindergarten and Primary Grades in Journal of Educational Psychology, Vol. 31, No. 1, issue of June, 1940, p. 1-13.

The report of a study at the Horace Mann School in which for Kindergarten and Grade One the letter abilities of young children were reported. A fairly high relationship was said to exist between beginning reading and giving letter sounds, naming small letters, and a lesser relationship with writing capitals. The authors pointed to technical aspects of letter consciousness not frequently mentioned in descriptions of reading readiness.

-----, Cecile White Fleming, Agnes Burke and Charlotte Garrison, Reading Progress in Kindergarten and Primary Grades, in Elementary School Journal, Vol. 38, No. 6, issue of February, 1938, p. 442-449.

This report emphasizes the interest children have in letters and the fact that children who know the most letter forms and sounds tend to read first and best. The interesting point is made that children taught by non-phonetic methods tend to learn and use letters in spite of the methods of instruction.

Witty, Paul A., A Modern Interpretation of Readiness for Reading in Educational Administration and Supervision, Vol. 32, No. 1, issue of May, 1946, p. 257-270.

This description of reading readiness includes the author's philosophy of human development. The writer has attempted to indicate some approaches to the discovery of the child's needs as the core of reading readiness instructions.

APPENDIX I

THE DOMINION TESTS, GROUP TEST OF READING READINESS,  
KINDERGARTEN AND GRADE ONE, FORMS A AND B

THE DOMINION TESTS

GROUP TEST OF READING READINESS

KINDERGARTEN AND GRADE I

FORM **A**

Name..... Boy or Girl.....  
(In Capitals) Last First

Age last Birthday..... Birthday.....  
Day Month Year

Grade..... Name of School.....

Province..... City, Town or Municipality.....

Today's Date..... Name of Teacher.....

FOR MARKER'S USE ONLY

Test	1	2	3	4	5	Total
Score						

PERCENTILE  
RANKING

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1949  
DEPARTMENT OF EDUCATIONAL RESEARCH  
ONTARIO COLLEGE OF EDUCATION  
371 BLOOR ST. WEST  
TORONTO 5

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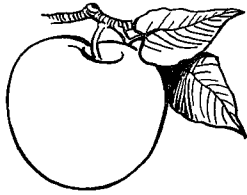
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can

can



away

ripple

stay

play

after

apple



bell

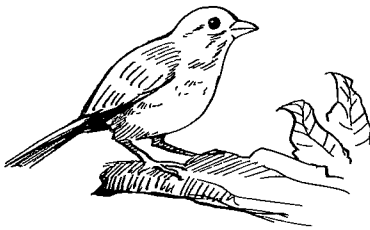
ball

tell

box

bed

tall



third

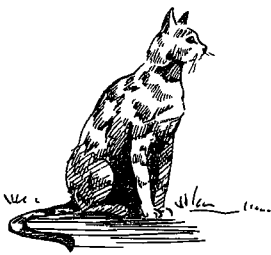
bed

try

baby

fly

bird



cat

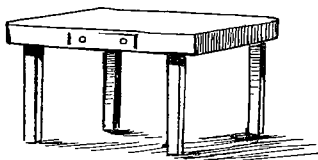
rat

cap

meow

can

mat



made

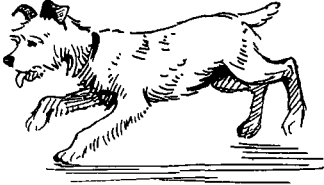

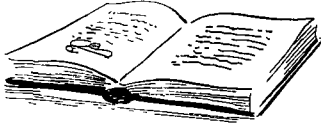

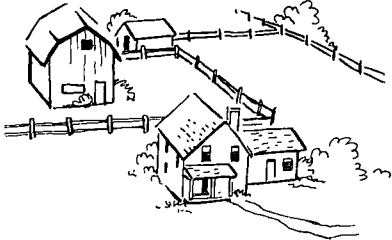
able

sable

table

babble

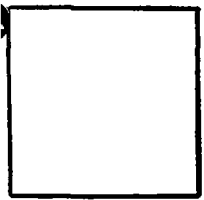
tank

	<p>pig cat</p>	<p>dog egg</p>	<p>gag log</p>
	<p>ring ran</p>	<p>rain right</p>	<p>ringing sing</p>
	<p>sore coat</p>	<p>took book</p>	<p>look boot</p>
	<p>tool talk</p>	<p>thank track</p>	<p>roof tooth</p>
	<p>far find</p>	<p>face fire</p>	<p>farm charm</p>

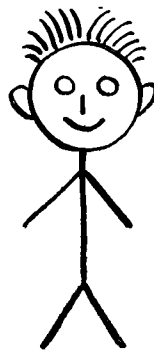
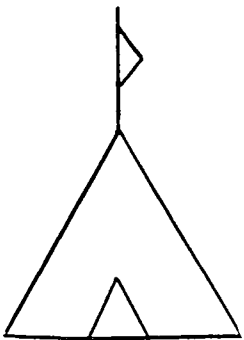
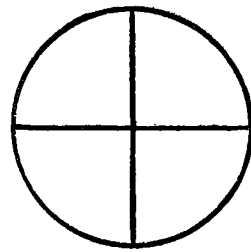
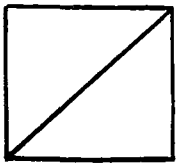


P

CC



S



THE DOMINION TESTS

GROUP TEST OF READING READINESS

KINDERGARTEN AND GRADE I

FORM **B**

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Name (In Capitals) Last First Boy or Girl .

Age Birthdate Date Month Year .

Grade Name of School

Province City, Town or Municipality ....

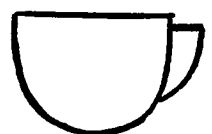
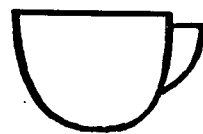
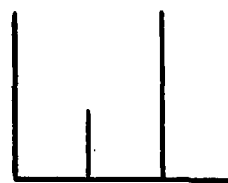
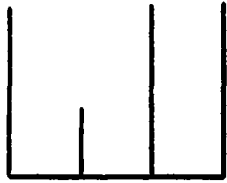
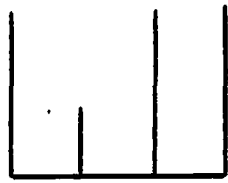
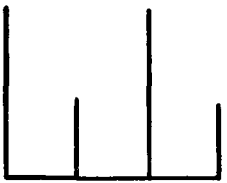
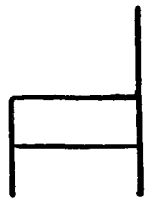
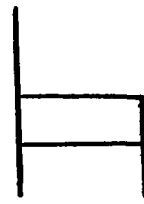
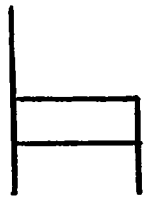
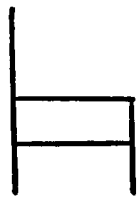
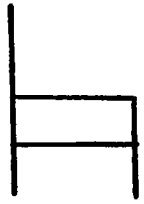
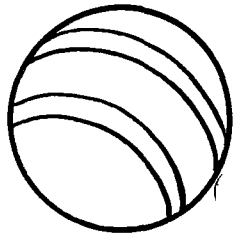
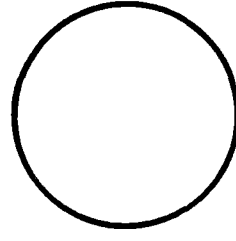
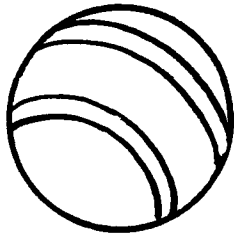
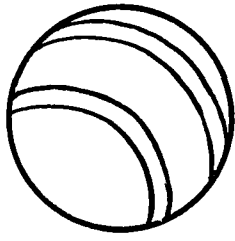
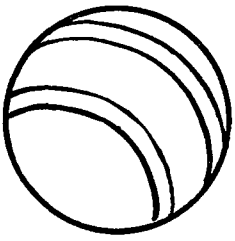
Today's Date Name of Teacher

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FOR MARKER'S USE ONLY

Test	1	2	3	4	5	Total
Score						

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1949  
DEPARTMENT OF EDUCATIONAL RESEARCH  
ONTARIO COLLEGE OF EDUCATION  
371 BLOOR ST WEST  
TORONTO 5



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O Q O O O

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CITY CITY CITY ICE CITY

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K K X K K

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W W W W M

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WHO HOW HOW HOW HOW

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party party party pretty party

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cost most cost cost cost

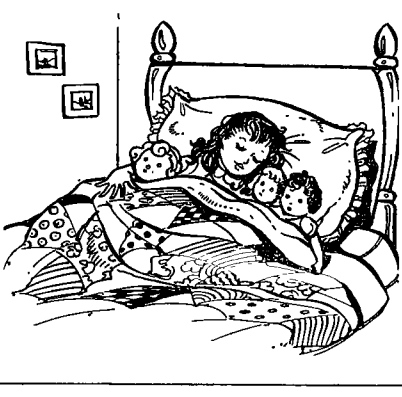
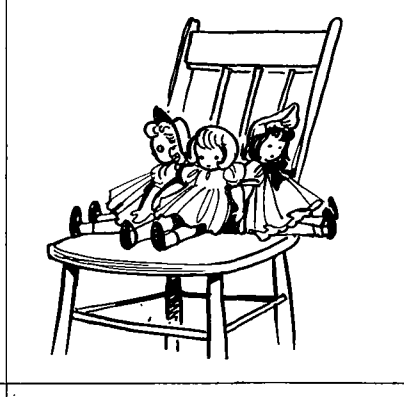
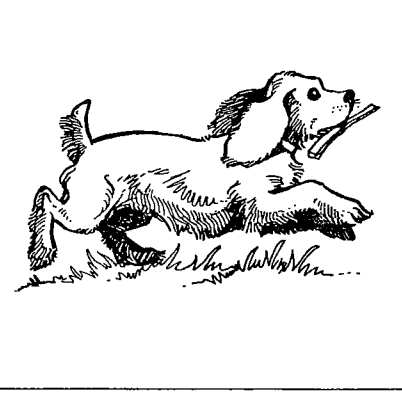
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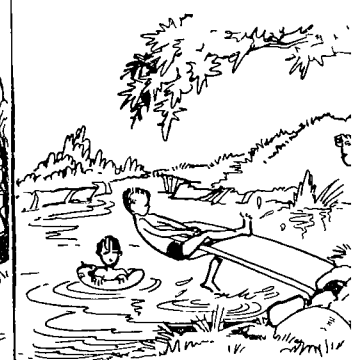
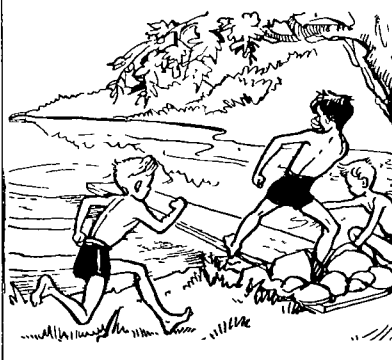
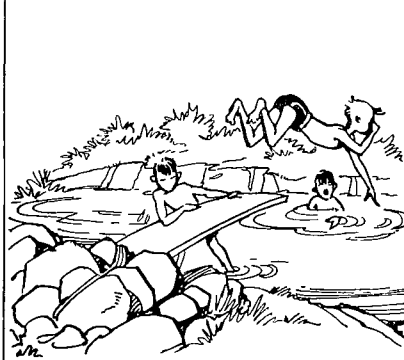
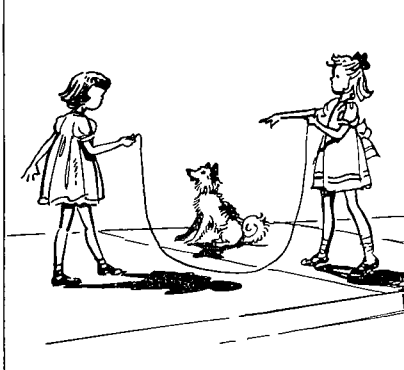
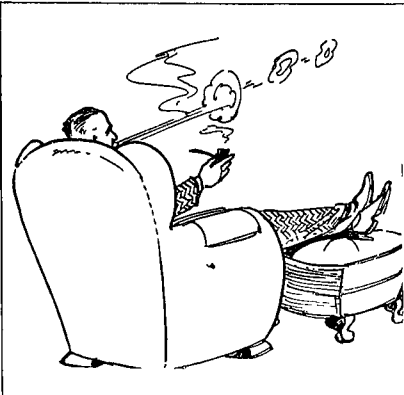
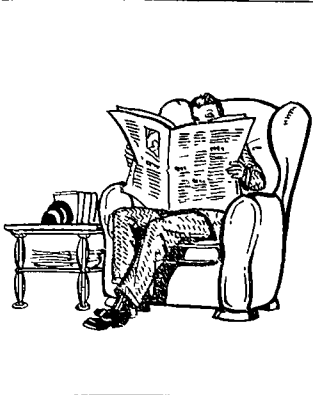
BANK BANK BANK BANK BARK

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IV VI IV IV IV

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cat	Pat
cab	cat

boat	goat
door	boat

girl	girl
goat	good

here	yellow
hello	hello

pan	pat
pat	meat

there	the
three	three

away	wants
wants	always

yes	guess
you	yes

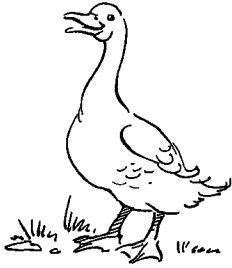
came	home
come	home

wish	wish
wink	with

run	can
ran	ran



she	green	he
three	train	tree



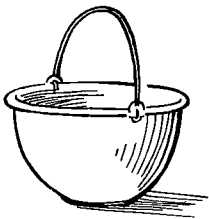
dog	luck	duck
stuck	drink	dug



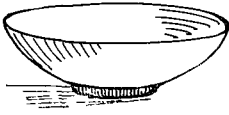
boat	cook	poor
tore	oats	door



jam	jar	must
just	jump	far



pay	pet	pot
pig	stay	let



dark

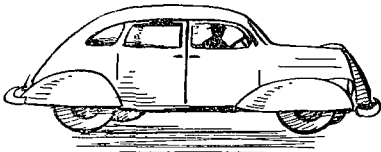
day

fish

dish

drum

stay



tear

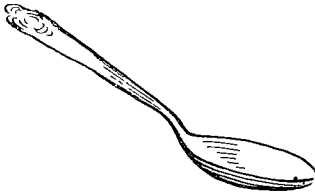
car

farm

tar

ran

cart



soon

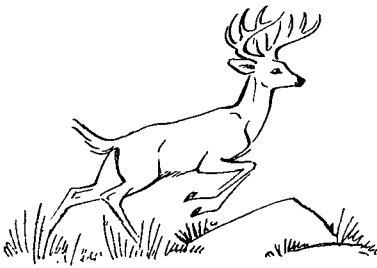
song

spin

so

sun

spoon



dear

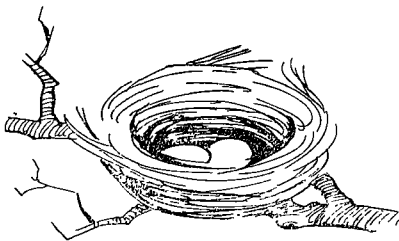
deep

feel

deer

desk

keep



near

new

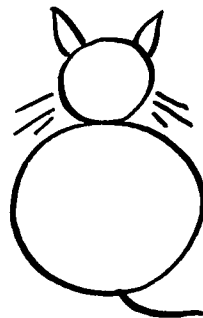
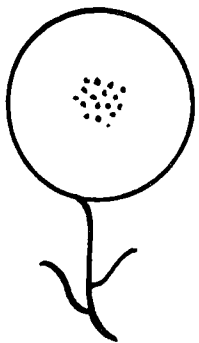
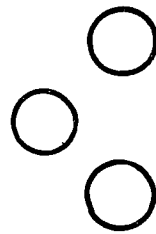
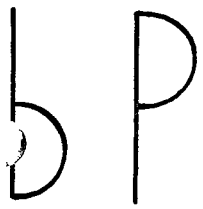
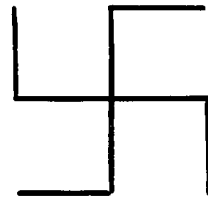
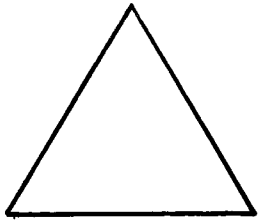
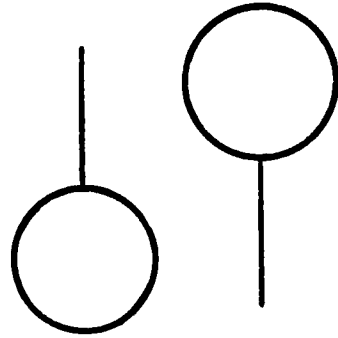
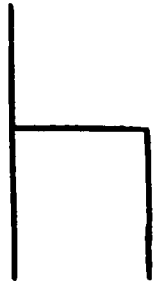
seed

need

nest

rest





## APPENDIX 2

### ABSTRACT OF

#### The Influence of Formal Training in Names and Sounds of Single Letters on Measurable Reading Readiness of Kindergarten-Primary Pupils<sup>1</sup>

Research in reading readiness has led some authors to believe that a considerable degree of positive relationship exists between the knowledge of letters and reading readiness itself, but it has been presumed that the children's knowledge of letters came through the informal contacts in the environment.

This experiment subjected a group of nineteen Ottawa Kindergarten-Primary children to five months of thrice-weekly formal teaching and drill in the names and sounds of single letters.

Using the Dominion Group Test of Reading Readiness this group and the control group, also composed of nineteen children, were tested to find whether a significant difference in final reading readiness score and amount of improvement had resulted.

Scores obtained on the test as a whole and on sub-tests 1, 2, 3, 4, and 5, were examined. The mean total score of the experimental group was 25.84 and of the control group 24.05 with a D/σ of .34. The mean improvement of the

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<sup>1</sup>M.A. Thesis presented by Doris Sutherland de Merlis, in 1955, to the Institute of Psychology of the University of Ottawa, 75 pages.

experimental group was 7.00 and of the control group was 8.47 with a  $D/\sigma_0$  of .955.

Possible differences in results resulting from changes in the samples and training methods were discussed.