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A Comparison of Reading Readiness between Kindergarten and Non-Kindergarten Children in the Wenatchee School District

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A COMPARISON OF READING READINESS BETWEEN KINDERGARTEN AND NON-KINDERGARTEN CHILDREN IN THE WENATCHEE SCHOOL DISTRICT

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STATEMENT OF THE PROBLEM AND DEFINITION OF TERMS USED

THE PROBLEM

The value of kindergarten, as a phase of our educational system which helps prepare young children socially, emotionally, and academically for future levels of learning, has been supported and opposed since it was introduced into our public education system in 1848.

The history of kindergarten in Wenatchee School District No. 246 has been sporadic since its inception in 1949. From September, 1949, to June, 1953, Wenatchee included kindergarten in its educational program. From September, 1953, to June, 1957, kindergarten was dropped from the school system. Kindergarten was re-established in September, 1957, and continued to be a part of the program until 1960. From September, 1960, to September, 1967, Wenatchee School District No. 246 did not include kindergarten in its educational program. In September, 1967, the district re-established kindergarten in the school system.

During the years that Wenatchee School District No. 246 was without kindergarten, parents in the district could enroll their children in private kindergartens. During these "no kindergarten years," the

district offered a one-month orientation program prior to the beginning of school in the fall. This orientation program was provided for children who would enter first grade in September.

Much of the research since 1930 indicates that children who have had kindergarten experience are better prepared socially, emotionally, and academically for first grade than those children who have not had kindergarten experience.

Statement of the Problem

It was the purpose of this study to compare the percentile scores of the Metropolitan Readiness Test of first grade children in Wenatchee School District No. 246 who have had kindergarten with those first grade children in Wenatchee School District No. 246 who have not had kindergarten. The following factors were considered in this study: Chronological age, sex, and total percentile score. This data was taken from the Metropolitan Readiness Tests over a two-year period, 1966-67 and 1967-68.

Statement of Hypothesis

The null-hypothesis was used to treat the data in this study. This hypothesis states that there was no significant measurable difference in reading readiness between first grade children in Wenatchee School District No. 246 who have had kindergarten and first grade children in Wenatchee School District No. 246 who have not had kindergarten as measured by the Metropolitan Readiness Test.

Importance of the Study

There is an abundance of research with regard to the value of kindergarten as a part of the educational system in America.

> Most of the recent research on the value of pre-school education has been devoted to the study of the effects and/or value of kindergarten education. The criterion most often used is the degree of readiness or achievement in the first grade among those children who have been in kindergarten and those who have not (15:395).

In a study by Willis E. Pratt, the researcher reported that children who had had previous kindergarten experience had significant superiority, as determined by reading readiness tests, over children who had not had kindergarten experience. Pratt also found that, at the end of first grade, children who had had kindergarten experience were superior in reading achievement to the non-kindergarten group as measured by the Gates Primary Reading Test (25:533).

Research conducted by Sarah Lou Hammond involved the opinions of first grade teachers concerning the value of kindergarten experiences of children. Fifty-nine percent of the first grade teachers saw much evidence of development in the areas of social and emotional adjustment. Fifty-one percent of these teachers thought there was much evidence of development in physical health. Fifty-nine percent of the teachers thought there was much evidence of development in readiness for learning. Fifty-four percent of the teachers thought there was much evidence of development in the relationship between parents and the school (10:314).

Hammond suggests that further research be done to find out how other first grade teachers feel. Topics for further research are: How do the parents feel about kindergarten? Does the type of kindergarten program make a difference? What type of kindergarten program seems most effective in meeting the needs of children? What about the qualifications of kindergarten teachers? Does the length of time the child spends in kindergarten have an effect on readiness for learning?

Other research conducted by J. K. East indicates that, first of all, the median grade placement for kindergarten children was four months more advanced than that of non-kindergarten children. Secondly, the greatest difference in achievement between kindergarten and non-kindergarten was in word meaning. Third, numbers seemed to trouble non-kindergarten children least. Fourth, kindergarten children, as a group, excelled in all areas (9:53).

Most of the research conducted slightly favors the value of kindergarten as a part of our educational system.

Limitations of the Study

The following are limitations of the study:

1. Statistical data was taken from the Metropolitan Readiness Test which had been given to all first grade children in Wenatchee School District No. 246 for the years 1966-67 and 1967-68.

2. Random samples, according to the table of random numbers, were taken from the years 1966-67 and 1967-68 (7:316-317).

3. The study was limited to children in Wenatchee who entered first grade in September of the 1966-67 school year and September of the 1967-68 school year.

4. The Metropolitan Readiness Test is a general type readiness test and does not require the ability to read. However, if scores from the Metropolitan Readiness Test are used with the test scores from more specific reading readiness tests like the Monroe Reading-aptitude Tests (1:111), then readiness for reading may be predicted.

Procedure and Collection of Data

Each elementary school principal in the Wenatchee School District provided the writer with class record sheets of all first grade children in Wenatchee who had taken the Metropolitan Readiness Test for the school years 1966-67 and 1967-68. Statistical data with regard to chronological age, sex, and percentile scores were taken from the Metropolitan Readiness Test given to all first grade children in Wenatchee for the school years 1966-67 and 1967-68.

Treatment of the Data

The table of random numbers was used to select the random samples for this study. The standard deviation was calculated for the boys, girls, and a group of boys and girls. A test of significance was

administered to the standard deviation to ascertain whether there was a significant difference between groups at the five percent level.

DEFINITION OF TERMS USED

Kindergarten

As used in this study, kindergarten refers to the first formal school organization for children in an institutional setting. The curriculum covers play activities as well as preparation for academic readiness for first grade. Children in kindergarten must have attained their fifth birthday on or before October first of the year in which they enrolled.

Metropolitan Readiness Test

A standardized test, published by Harcourt, Brace and World, Inc., given to determine the reading readiness of all first grade children. Sections of this test include Word Meaning, Listening, Matching, Alphabet, Numbers, and Copying.

Chronological Age

The age of children in terms of years and months.

CHAPTER II

REVIEW OF LITERATURE

HISTORICAL DEVELOPMENT OF KINDERGARTEN

The philosophy of early childhood education is deeply entrenched in history. For example, before the birth of Christ, Plato realized the importance of the early years of childhood and the unique responsibility the community had for educating its children. But, like other philosophers of his day, Plato believed that physically deformed children and children whose parents were of questionable mentality should be removed from society and placed in some secret abode. Since one of Plato's chief concerns was for the "Republic," he outlined a system of education to develop the best possible citizens for the utopian kind of state which he envisaged. Plato also believed that each child was endowed with specific talents and that it was the responsibility of education to develop and refine these talents in each child. Within this framework, Plato was "modern" in his idea that individual differences did exist in children and that these individual differences should be recognized by the schools (21:1).

From Plato's time to the fifteenth century, the concept of early childhood education seems to have existed in a dormant state. In the

fifteenth century Vittorino da Feltre established a school in Mantua for boys nine through twenty-one years of age. The educational principles by which these boys were taught were very similar to many of the principles of modern day kindergarten. da Feltre's school emphasized the development of good manners and morals. da Feltre believed in light, pleasant surroundings for children and that learning should be fun. He believed there was great value in alternating periods of study and play which provided variety to combat fatigue and boredom. da Feltre believed that good character and self-discipline could be built by self-government. He also believed that teachers should be leaders and should not coerce children (21:3).

During the sixteenth century, a Moravian bishop, John Amos Comenius, who had been exiled from his native country, assumed charge of a school in Poland. In The Great Didactic, Comenius formulated what he believed to be the underlying principles of education. First, he believed that all education should be carefully graded and arranged to follow the order of nature. Second, education must proceed from easy to difficult. Third, education must proceed from near to remote. Fourth, education must proceed from the general to the specific. And fifth, education must proceed from the known to the unknown. Comenius urged teachers to appeal to children's sensory perceptions and to use materials based on the experiences of the child. Comenius believed that children needed a great amount of physical

activity in order to mature physically and mentally into more useful adults.

> The more a child is employed, runs about and plays, the sweeter is its sleep, the more easily does the stomach digest, and the more quickly does the child grow and flourish, in both mind and body (21:3).

One of the most articulate champions of the rights of children in the eighteenth century was the French philosopher Jean-Jacques Rousseau. Much of his psychology seems inappropriate today, but he correctly emphasized the need for studying children in order to design better educational programs by which the child could learn more efficiently and effectively. Rousseau recognized and believed in the individual differences of children. He did not consider the child to be a miniature adult and insisted that each age of man, from child to adult, has its own characteristics and needs.

> He protested against the humanist, formal-discipline educational theories that were in vogue in his time and against the treatment of children as little adults (28:191).

It was, then, necessary for educators to consider these characteristics and needs when designing educational programs for children.

Unlike Rousseau, Johann Heinrich Pestalozzi developed his theories of early childhood education in actual association with children. Like Rousseau, Pestalozzi was convinced that man was basically good and that education was a process of watching the child develop physically and mentally.

During the late eighteenth and early nineteenth centuries, Friedrich Froebel organized the first comprehensive theory of early childhood education and designed a method of implementation. After teaching older boys, Froebel decided that the early years of the child are extremely important and should be given more attention by educators. Froebel's first attempt at establishing a private school for educating young children failed. This school was organized around the idea of play, music, and activity which was motivated by the interest of the students. Froebel did not give up the idea of establishing a comprehensive educational program for young children. In 1840 he established another school in which the dominating characteristics were play, songs, games, and other activities. Along with the establishment of the second school for young children, Froebel invented the name "kindergarten," which means "children's garden" (21:5).

Froebel recognized that man is a social animal and, to live effectively, must cooperate with his fellow man. Therefore, he conceived of education as being a social process and advocated that cooperation, courtesy, and helpfulness must be important features in educating young children.

Other educational philosophers who have had a profound influence in developing educational programs for young children include Dr. Maria Montessori and John Dewey. Some of the outstanding characteristics of Dr. Montessori's school include: Her

insistence on the adaptation of school work to the individual child; she insisted that neither the teacher or the child should dominate the other; she emphasized the training of the senses. Dr. Montessori failed to realize the significance of allowing young children to engage in dramatic play, sing, look at pictures, or to experiment with paints and clay. Dr. Montessori's influence on childhood education has declined in the United States, to some degree, since 1952.

John Dewey is considered by many to be the most brilliant educational philosopher of our time. He became the symbol of modern education in the United States. The kindergarten in the United States is based largely on the principles of John Dewey.

> It goes without saying that the philosophy and teaching of John Dewey are reflected in one way or another in almost every phase of the current kindergarten program (18:9).

According to Dewey's philosophy, the young child lives in the present. He sets up aims and modifies his experiences as he goes along. By continually re-adjusting to the complexities of the environment in which the child lives, he is enriching his own experiences. This, according to Dewey, is the heart of the educational process.

Dewey also believed that if the child is left to himself he will use his developing abilities to satisfy his own selfish ends, but for any society to continue, the individual child must learn to consider the welfare of the whole. The school, then, should provide

an environment in which the continuing activities of the adult world are carried on in a modified form which are understood by the child. It is in this embryonic form of social life that the child needs to learn through direct meaningful experiences. Dewey further believed that learning must grow out of the normal activities of the child and must be based on what is of real interest to him. It was John Dewey who aided educators, as well as others, to become aware of the practical --the here and now--in education.

John Dewey's philosophy of education continues to support kindergarten teachers by emphasizing: (1) that only life educates, (2) that education should involve both the hands and minds of children, (3) that the aim of education is to teach children how--not what--to think, (4) that education involves a continuous re-construction of living experiences that go beyond the four walls of the classroom (18:9).

The first kindergarten was introduced into the United States at Watertown, Wisconsin, in 1855 by Mrs. Carl Shurz who, with her husband, fled Germany during the revolution in 1848. This first American kindergarten was private and was organized in Mrs. Shurz's home so that her three-year-old daughter might benefit by the type of education in which her parents had such great faith. A second German-speaking kindergarten was organized at Columbus, Ohio, in 1858 by Miss Caroline Frankenberg who had studied with Froebel in Germany.

The first private English-speaking kindergarten was established in Boston, Massachusetts, by Elizabeth Peabody in 1860. Through Elizabeth Peabody's efforts, such people as Ralph Waldo Emerson, Susan Blow, and William T. Harris (who later became U. S. Commissioner of Education), became interested in the kindergarten movement in the United States. It was William T. Harris who, in later years, gave thrust to the kindergarten movement in America. Susan Blow and William T. Harris are credited with implementing the first public kindergarten at St. Louis, Missouri, in 1873. Later, Los Angeles, Indianapolis, Denver, and San Francisco followed the example set by Susan Blow and William T. Harris in establishing kindergartens for young children (18:10).

RECENT KINDERGARTEN RESEARCH

There is an abundance of research, including paragraphs, articles, and chapters in books, with regard to the value of kindergarten as a part of the educational system in America. Much of the research has been specifically designed to measure the value of kindergarten.

> Most of the recent research on the value of pre-school education has been devoted to the study of the effects and/or value of kindergarten education. The criterion most often used is the degree of readiness or achievement in the first grade among those children who have been in kindergarten and those who have not (15:395).

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Millie C. Almy suggests, in a study conducted in 1949, that there is a significant positive relationship which exists between children's beginning success in reading and their earlier response to many sources of reading stimuli. Almy does not make a case for any formal reading program. Rather she stresses the importance of exposure of the child to the printed word so that the child can become aware of the function of these words in everyday life (1:54-55).

In a longitudinal study reported by Dolores Durkin, the advantages of kindergarten, with regard to reading, were investigated in 1958. This study involved all the first grade children in a

California public school system who were individually tested to identify those children who had learned to read at home. From this group of 5,103 children, 49 were found to have some reading ability. From this group of 49, 25 were finally selected for the experimental group. The range in intelligence quotient for this group was 91 to 161 with an average IQ of 114.8. Reading scores of this group, which were based on tests administered by the schools toward the end of grade three, showed grade levels ranging from 4.4 to 6.0, with a median of 5.0.

The control group was made up of 201 children who had entered first grade with the twenty-five children in the experimental group. These children in the control group had remained in the same schools as the early readers through grades 1, 2, and 3. The control group had also been given the Revised Stanford-Binet Scale. The intelligence quotient for this group ranged from 70 to 191 with a median IQ of 110.2. School administered reading achievement test scores ranged from 2.0 to 6.0 with a median grade level of 4.3.

As a result of this study, two comparisons were made between achievement of children who were early readers and children who were not early readers. The first comparison dealt with children from the experimental and control groups who had intelligence quotients of 120 or less. The second comparison dealt with children from the experimental and control groups who had intelligence quotients of 121

or higher. In the first comparison, the coefficient of correlation between intelligence, as measured by the revised Stanford-Binet Scale, and reading achievement of children who were not early readers was calculated. The coefficient of correlation was found to be +0.61.

In the second comparison, the regression equation for predicting reading achievement on the basis of intelligence was formulated and used to calculate predicted reading scores for each of the fifteen early readers who had intelligence quotients of 120 or less.

The results of these comparisons showed that when the predicted scores were calculated for all early readers, actual scores in reading were greater than would have been predicted on the basis of their intelligence, as measured by the revised Stanford-Binet Scale. The greatest single difference, in terms of years of reading achievement, was 1.3. The smallest single difference was 0.2.

It is difficult to make any concrete statements from this study, with regard to the advantages of kindergarten, because the experimental and control groups were very small. However, two observations can be made about the fifteen early readers whose intelligence quotients were 120 or less. First, all appear to have profited from an early start. Second, the lower the child's intelligence quotient, the greater seems to be the advantage of an early start in school (8:149).

Other researchers have reported findings which favor the value of kindergarten in America's educational system. In 1962, Elizabeth

Mechem Fuller reported that, after reviewing over one hundred research studies and articles, the evidence in support of early childhood education, including kindergarten, is abundant. However, there is much research in support of the weaknesses in early childhood education programs (18:36).

In addition to statistical studies which support the value of kindergarten, there are studies which deal with the opinions of kindergarten teachers, first grade teachers, parents, and college professors with regard to the value of kindergartens. For example, in an article entitled "What About Kindergartens?," Sarah Lou Hammond solicited the opinions of first grade teachers to see whether there was support for kindergartens. In the area of social and emotional adjustment, 99 percent of the first-grade teachers thought that the kindergarten enhanced growth; 49 percent of these teachers thought there was some enhancement to social and emotional adjustment; 59 percent of these teachers thought there was much growth in social and emotional adjustment; 97 percent of these first-grade teachers thought the kindergarten had enhanced the physical development and health of their first graders. In this category, 46 percent of the teachers saw some growth; 51 percent of the teachers saw much growth. Ninety-nine percent of the teachers thought there was evidence of enhancement in readiness to learn. In this area, 40 percent of the teachers thought there was some evidence of growth; 59 percent thought there was much evidence

of growth. Ninety-six percent of the teachers thought there was evidence of a better parent-school relationship. In this category, 42 percent thought there was some evidence and 54 percent felt there was much evidence of a better parent-school relationship.

Within this same study, these first-grade teachers were asked to state what they felt to be some of the greatest values to a kindergarten program. These teachers concluded that the children who enter first grade with kindergarten experiences are acquainted with the school routines; they know how to work and play together; they know how to care for materials; they have been exposed to good books and stories; they have learned how to listen and follow directions; they are curious and eager to learn.

The kindergarten in American education is continuing to be supported by professional organizations, parents, civic organizations, and others throughout the country. One aspect of kindergarten that is being given a considerable amount of attention, at present, is the type of program that is being offered. Kindergarten curriculums are being written in many school districts throughout the country.

The aims of our modern day kindergartens are as follows: First, the kindergarten provides each child an opportunity to be in a social situation where his all-around readiness can be appraised before he has to face the challenges of first grade. Second, kindergarten provides the child an opportunity to have a wide variety of

experiences particularly adapted to his developmental needs. Third, kindergarten provides the child with the opportunity to mesh old and new learnings and, in so doing, to build for himself a broad base for understanding. Fourth, kindergarten provides the child an opportunity to be in many situations that will help him perceive relationships through problem solving. Fifth, kindergarten provides the child with an opportunity to be in social situations where he can feel needed. Sixth, kindergarten provides an opportunity for the child to be in situations where he can become increasingly aware of the relationship between freedom and responsibility. Seventh, kindergarten provides an opportunity for the child to have many experiences that will help him "grow into reading" (17:45).

SUMMARY

With the launching of Sputnik I by the Soviet Union in 1957, there was a great deal of investigation of practically every aspect of American education, including the kindergarten. Now that the tumult between the "Hurry-Hurry-Hurry's" and the "Don't-Push-Me's" has begun to die, the kindergarten is emerging as a strengthened, integrated part of American education. One reason is that the public, for the most part, has accepted the concept of early childhood education. Several professional and semi-professional magazines have found their way into American homes which discuss early childhood

education. Another reason is that through experimentation and studies, teachers have become aware that today's kindergarten children have a vast unorganized background of information which needs to be channeled properly to clarify present concepts and develop new understandings.

Studies also indicate that children from culturally disadvantaged environments often have difficulty in adjusting to the first grade reading program. Schools throughout the nation are making great efforts to meet the needs of these children by fitting the educational program to meet the needs of the children. Some communities are currently developing educational programs for three- and four-year-old children who come from culturally disadvantaged environments. These programs are designed to broaden and enrich the experiences of culturally disadvantaged children.

Some of the programs that are being incorporated into the kindergarten curriculum include Science Research Associates Mathematics Program and the Minnimath Program. Also, from a national standpoint, kindergarten teachers have been made aware that many features exhibited by such reading programs as the Denver Reading and Prereading Program, the Initial Teaching Alphabet, the Omar K. Moore Typewriter-Teaching Program, and others, are features that teachers have been using for years (18:97).

All evidence indicates that kindergarten, as well as other aspects of early childhood education, are definitely becoming an integral component of American education.

CHAPTER III

COLLECTION AND TREATMENT OF DATA

COLLECTION OF DATA

Tests

Several types of tests are currently being used in the field of education and each test is designed for a specific purpose. For example, the Iowa Test of Basic Skills is a battery of tests designed to measure the acquisition of specific academic skills. This battery of tests includes Vocabulary, Reading Comprehension, Spelling, Capitalization, Punctuation, Usage, Map Reading, Reading Graphs and Tables, Knowledge and Use of Reference Materials, Arithmetic Concepts, and Arithmetic Problem Solving.

Another type of test being used in education is one called "What I Like to Do" and is designed to inventory the interests of children in grades four through seven. The makers of this test claim that the test may be used to aid in the development of curriculum, as a guide in the selection of instructional materials, aid in parent-teacher conferences, help teachers in recognizing and understanding individual differences in children, aid educators in planning instructional and recreational programs for children, and pupil guidance.

A third type of test is the Metropolitan Readiness Test which is administered to kindergarten children in the late spring or to first grade children early in September. This test is given to help determine the reading readiness of first grade children. Sections of this test include Word Meaning, Listening, Matching, Alphabet, Numbers, and Copying.

Suffice it to say, these tests do not provide the teacher with an all-inclusive evaluation of the child. Rather, these test results are to be used in conjunction with other information about the child in order to determine readiness for learning.

Metropolitan Readiness Test Results

In this study, the writer used the results of the Metropolitan Readiness Test which was given to each first grade child who entered first grade in the Wenatchee School District No. 246 at the beginning of the school years 1966-67 and 1967-68. Only the chronological age of the child, sex of the child, and total percentile scores of the tests were used in this study.

Administration of Tests

In the Wenatchee School District No. 246, the Metropolitan Readiness Test was administered by each first grade teacher during the first two weeks after the beginning of school in September.

Method of Collecting Data

Each of the seven elementary school principals in the Wenatchee School District No. 246 supplied the writer with statistical data from the master sheets of the Metropolitan Readiness Test which had been given to each first grade child who entered school at the beginning of September for the school years 1966-67 and 1967-68.

Sampling of the Population

In selecting the size of the sample, Rummel says:

> From a logical point of view, the size a sample should be depends upon the extent to which the individuals are representative of the population to be studied, the inclusiveness of the sample, the types of groups involved, the number of categories of data required, and the method of analysis of the data (21:73).

Therefore, the population to be studied was matched against Rummel's criteria for determining the size of a sample. The representativeness of the group, the types of children involved in the group, the homogeneity of the group, and the statistical treatment of the sample led the writer to select forty as the size of the sample for each group. The assumption is made that the size of this sample, when treated statistically, would not result in any significant difference from that of the total population. Consultation with an experienced mathematician supported the writer's decision in the selection of the size of the sample.

In this study, the writer selected random samples containing forty items each, of first grade girls, boys, and a group of boys and girls in the Wenatchee School District No. 246 for the school years 1966-67 and 1967-68. These random samples were taken from a total school district population of 406 first grade children. This group was labeled the "no kindergarten group."

Random samples of forty items each were also selected for girls, boys, and a group of boys and girls in the Wenatchee School District No. 246 for the school year 1966-67. These random samples were taken from a total school district population of 320 first grade children. This group was labeled the "kindergarten group."

To minimize the element of bias, the writer used the technique of random sampling. By using this technique, all items in the population had an equal chance of being selected. The items in the population, from each year, were numbered serially so that each item had the same number of digits. The items were run through the table of random numbers until the number to be included in the sample was selected. The writer selected an arbitrary point on the table of random numbers and read consecutive numbers either horizontally, vertically, or diagonally in any direction (27:75). The starting point on the table of random numbers was selected before the writer looked at any number on the table. This was done by closing the eyes and putting the point of a pencil down on the table of random numbers. The point where the

pencil point was placed became the starting point for selecting the number of the item that was included in the sample. The sample was then selected.

TREATMENT OF THE DATA

In this study, the writer collected statistical data from the Metropolitan Readiness Test which was given to each first grader in the Wenatchee School District No. 246 for the school years 1966-67 and 1967-68.

The table of random numbers was used to select random samples for the girls who had not had kindergarten and for the girls who had had kindergarten. Random samples were also selected for the boys who had not had kindergarten and for the boys who had had kindergarten. Finally, random samples were selected for a group of boys and girls who had not had kindergarten and a group of boys and girls who had had kindergarten. Each sample from the school year 1966-67 contained forty items from a total first grade population of 406 first graders. Each sample from the school year 1967-68 contained forty items from a total school population of 320 first graders.

As illustrated in Table 1, the girls who had not had kindergarten ranged in age from five years and nine months to seven years and four months. The girls who had had kindergarten ranged in age

from five years and eleven months to seven years and five months. The boys who had had kindergarten ranged in age from five years and eleven months to seven years and ten months. The boys who had not had kindergarten ranged in age from six years to seven years and nine months. The group of boys and girls who had not had kindergarten ranged in age from six years to seven years and ten months. The group of boys and girls who had had kindergarten ranged in age from five years and eleven months to seven years and six months.

Table 1. Age Range, in Terms of Years and Months, of a Sample of First Grade Children in the Wenatchee School District for the School Years 1966-67 and 1967-68.

	Children Without Kindergarten 1966-67	Children With Kindergarten 1967-68
Girls	5.9 to 7.4	5.11 to 7.5
Boys	6.0 to 7.9	5.11 to 7.10
Group	6.0 to 7.10	5.11 to 7.6

To compare each group from the school year 1966-67 with each group from the school year 1967-68, the standard deviation was calculated for the girls, boys, and a group of boys and girls. A test of significance was applied to the standard deviation to ascertain whether there was a significant difference at the five percent level. The results are presented in Table 2.

Table 2. The Mean, Standard Deviation, and Test of Significance for a Sample of First Grade Girls, Boys, and a Group of Boys and Girls from the Wenatchee School District No. 246 for the School Years 1966-67 and 1967-68.

	Children Without Kindergarten, 1966-67		Children With Kindergarten, 1967-68		Difference in Means	*t* Value
	Mean	S.D.	Mean	S.D.		
Girls	70.00	31.125	78.35	28.725	8.35	3.439
Boys	61.65	24.455	70.00	27.555	8.35	4.258
Group	71.25	31.45	80.00	23.525	8.75	4.135

RESULTS AND CONCLUSIONS

When the girls who had not had kindergarten were compared statistically with the girls who had had kindergarten, the mean for the "no kindergarten" group was 70.00 and the mean for the "kindergarten" group was 78.35. The standard deviation for the girls who had not had kindergarten was 31.125. The standard deviation for the girls who had had kindergarten was 28.725. When the test of significance was applied to the standard deviations of the girls who had not had kindergarten and the girls who had had kindergarten, the result was 3.439, which is significant at the five percent level. According to the value of t at the five percent level of significance, this means that in this study, 95 percent of the time first grade girls in the Wenatchee School District No. 246 who had had kindergarten experience were superior in terms of readiness to read, as measured by the Metropolitan Readiness Test, than first grade girls in the Wenatchee School District No. 246 who had not had kindergarten experience, and that only in 5 percent of the time could this difference be attributed to a chance factor.

When the boys who had not had kindergarten were compared statistically with the boys who had had kindergarten, the mean for the "no kindergarten" group was 61.65. The mean for the "kindergarten" group was 70.00. The standard deviation for the boys who had not had kindergarten was 24.455. The standard deviation for the boys who had had kindergarten was 27.555. When the test of significance was applied

to the standard deviations of the boys who had not had kindergarten and the boys who had had kindergarten, the result was 4.258 which is significant at the five percent level. This indicates that 95 percent of the time first grade boys in the Wenatchee School District No. 246 who had had kindergarten experience were superior in reading readiness, as measured by the Metropolitan Readiness Test, than first grade boys in Wenatchee School District No. 246 who had not had kindergarten experience and that in only 5 percent of the time could this difference be attributed to chance.

When the group of boys and girls who had not had kindergarten was compared statistically with the group of boys and girls who had had kindergarten, the mean for the "no kindergarten" group was 71.25. The mean for the "kindergarten" group was 80.00. The standard deviation for the group of boys and girls who had not had kindergarten was 31.295. The standard deviation for the group of boys and girls who had had kindergarten was 23.525. When the test of significance was applied to the standard deviations of the group of boys and girls who had not had kindergarten and the group of boys and girls who had had kindergarten, the result was 4.135 which is significant at the five percent level. These results signify that 95 percent of the time the group of first grade boys and girls in the Wenatchee School District No. 246 who had had kindergarten were superior in reading readiness, as measured by the Metropolitan Readiness Test, to the group of first grade boys and girls

in the Wenatchee School District No. 246 who had not had kindergarten. In only 5 percent of the time could this difference be attributed to a chance factor.

Therefore, the null-hypothesis, as used in this study, was rejected. This hypothesis stated that there was no significant measurable difference in reading readiness between first grade children in the Wenatchee School District No. 246 who had had kindergarten experience and first grade children in the Wenatchee School District who had not had kindergarten experience, as measured by the Metropolitan Readiness Test.

CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

SUMMARY

This study was a statistical study based on the results of the Metropolitan Readiness Test which was given to all first grade children in the Wenatchee School District No. 246 for the school years 1966-67 and 1967-68. First grade children from the school year 1966-67 were children who had not had kindergarten experience. First grade children from the school year 1967-68 were children who had had kindergarten experience. Only statistical data with regard to sex of the child, age of the child, and total percentile score of each child was used in this study.

The table of random numbers was used to select random samples of girls, boys, and a group of boys and girls. After the mean had been determined for each sample, the standard deviation was calculated. A test of significance was administered to the standard deviations to determine whether there was a significant difference, at the five percent level, in reading readiness between first grade children in Wenatchee School District No. 246 who had not had kindergarten and

first grade children in Wenatchee School District No. 246 who had had kindergarten as measured by the Metropolitan Readiness Test.

CONCLUSIONS

When the test of significance was administered to the standard deviations of first grade girls in Wenatchee School District No. 246 who had not had kindergarten and first grade girls in Wenatchee School District No. 246 who had had kindergarten, the result was 3.439, which is significant at the five percent level.

The test of significance between first grade boys in Wenatchee School District No. 246 who had not had kindergarten and first grade boys in Wenatchee School District No. 246 who had had kindergarten was 4.258 at the five percent level which is significant.

The test of significance between a group of first grade boys and girls in Wenatchee School District No. 246 who had not had kindergarten and a group of first grade boys and girls in Wenatchee School District No. 246 who had had kindergarten was found to be 4.135, which is significant at the five percent level.

Therefore, the null-hypothesis assumed in this study was rejected. This hypothesis stated that there was no significant measurable difference in reading readiness between those first grade children in the Wenatchee School District No. 246 who had not had kindergarten

experience and those first grade children in the Wenatchee School District No. 246 who had had kindergarten as measured by the Metropolitan Readiness Test.

RECOMMENDATIONS

Research conducted by Willis E. Pratt indicates that, at the end of first grade, children who had had kindergarten experience were superior in reading achievement to first grade children who had not had kindergarten experience as measured by the Gates Primary Reading Test. Other researchers, including Sarah Lou Hammond, J. K. East, and Dolores Durkin, report significant superiority in reading readiness of first grade children who had had kindergarten experience over first grade children who had not had kindergarten experience.

This study supports these researchers. Children who had had kindergarten experience were significantly more able to begin reading skills than children who had not undergone this experience.

On the basis of current research and this study, it is the writer's recommendation that kindergarten be continued in the Wenatchee School District No. 246.

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APPENDICES

APPENDIX A

Random Selection of Girls in First Grade for the School Year 1966-67 Who Have Not Had Kindergarten

c.i.	f	d	fd	fd^2
95-99	12	5	60	300
90-94	4	4	16	64
85-89	1	3	3	9
80-84	1	2	2	4
75-79	2	1	2	2
70-74	1	0	0	0
65-69	1	1	1	1
60-64	1	2	2	4
55-59	1	3	3	9
50-54	1	4	4	16
45-49	4	5	20	100
40-44	2	6	12	72
35-39	1	7	7	49
30-34	3	8	24	192
25-29	2	9	18	162
20-24	0	10	0	0
15-19	0	11	0	0
10-14	2	12	24	288
5-9	1	13	13	169
0-4	1	14	14	196
	40		142	1637

Mean = 70.00

Standard Deviation = 31.125

APPENDIX B

Random Selection of Girls in First Grade for the School Year 1967-68 Who Have Had Kindergarten

c.i.	f	d	fd	fd^2
95-99	6	4	24	96
90-94	4	3	12	36
85-89	5	2	10	20
80-84	4	1	4	4
75-79	3	0	0	0
70-74	0	1	0	0
65-69	2	2	4	8
60-64	3	3	9	27
55-59	1	4	4	16
50-54	1	5	5	25
45-49	1	6	6	36
40-44	2	7	14	98
35-39	2	8	16	128
30-34	0	9	0	0
25-29	1	10	10	100
20-24	1	11	11	121
15-19	0	12	0	0
10-14	1	13	13	169
5-9	2	14	28	392
0-4	1	15	15	225
	40		135	1501

Mean = 78.35

Standard Deviation = 28.725

APPENDIX C

Random Selection of Boys in First Grade for the School Year 1966-67 Who Have Not Had Kindergarten

c.i.	f	d	fd	fd^2
95-99	4	7	28	196
90-94	5	6	30	180
85-89	0	5	0	0
80-84	2	4	8	32
75-79	2	3	6	18
70-74	2	2	4	8
65-69	3	1	3	3
60-64	3	0	0	0
55-59	4	1	4	4
50-54	3	2	6	12
45-49	1	3	3	9
40-44	2	4	8	32
35-39	5	5	25	125
30-34	0	6	0	0
25-29	1	7	7	49
20-24	1	8	8	64
15-19	1	9	9	81
10-14	0	10	0	0
5-9	0	11	0	0
0-4	1	12	12	144
	40		82	957

Mean = 61.65

Standard Deviation = 24.455

APPENDIX D

Random Selection of Boys in First Grade for the School Year 1967-68 Who Have Had Kindergarten

c.i.	f	d	fd	fd^2
95-99	6	5	30	150
90-94	7	4	28	112
85-89	1	3	3	9
80-84	2	2	4	8
75-79	0	1	0	0
70-74	4	0	0	0
65-69	3	1	3	3
60-64	1	2	2	4
55-59	2	3	6	18
50-54	3	4	12	48
45-49	2	5	10	50
40-44	3	6	18	108
35-39	0	7	0	0
30-34	1	8	8	64
25-29	1	9	9	81
20-24	0	10	0	0
15-19	1	11	11	121
10-14	1	12	12	144
5-9	1	13	13	169
0-4	1	14	14	196
	40		118	1285

Mean = 70.00

Standard Deviation = 27.555

APPENDIX E

Random Selection of a Group of Boys and Girls in First Grade for the School Year 1966-67 Who Have Not Had Kindergarten

c.i.	f	d	fd	fd^2
95-99	6	5	30	150
90-94	6	4	24	96
85-89	3	3	9	27
80-84	1	2	2	4
75-79	1	1	1	1
70-74	4	0	0	0
65-69	1	1	1	1
60-64	1	2	2	4
55-59	1	3	0	0
50-54	2	4	8	32
45-49	4	5	20	100
40-44	0	6	0	0
35-39	0	7	0	0
30-34	3	8	24	192
25-29	1	9	9	81
20-24	1	10	10	100
15-19	1	11	11	121
10-14	2	12	24	288
5-9	2	13	26	338
0-4	1	14	14	196
	40		146	1731

Mean = 71.25

Standard Deviation = 31.295

APPENDIX F

Random Selection of a Group of Boys and Girls in First Grade for the School Year 1967-68 Who Have Had Kindergarten

c.i.	f	d	fd	fd^2
95-99	4	3	12	36
90-94	7	2	14	28
85-89	4	1	4	4
80-84	5	0	0	0
75-79	1	1	1	1
70-74	0	2	0	0
65-69	2	3	6	18
60-64	2	4	8	32
55-59	2	5	10	50
50-54	3	6	18	108
45-49	3	7	21	147
40-44	0	8	0	0
35-39	2	9	18	162
30-34	2	10	20	200
25-29	2	11	21	231
20-24	1	12	12	144
15-19	0	13	0	0
10-14	0	14	0	0
5-9	0	15	0	0
0-4	0	11	0	0
	40		135	1161

Mean = 80.00

Standard Deviation = 23.525

APPENDIX G

Random Samples of Children in First Grade for the School Year 1966-67 Who Have Not Had Kindergarten

Age of Child			Percentile Score		
Girls	Boys	Group	Girls	Boys	Group
6.9	6.10	7.10	99	99	99
6.9	6.8	6.8	99	99	99
6.6	7.9	6.6	99	98	99
6.6	6.6	6.8	99	98	98
6.8	6.10	6.8	98	93	98
6.5	6.7	6.2	98	93	97
6.5	6.5	6.7	97	93	93
6.2	6.10	6.10	97	92	92
6.4	6.9	6.6	97	92	92
6.9	6.11	6.2	95	83	92
6.5	6.3	6.2	95	83	92
6.5	6.0	6.0	95	79	92
6.8	6.3	7.0	93	75	88
6.0	6.3	6.3	93	73	88
6.5	6.4	6.6	92	71	86
6.5	6.3	6.4	90	69	81
6.0	6.10	7.3	88	67	79
6.5	6.0	6.6	84	67	73
6.10	6.7	6.3	79	61	73
6.1	6.4	6.2	79	61	73
6.5	6.3	6.0	70	61	70
6.4	6.10	6.5	66	59	66
6.11	6.2	6.11	61	59	61
6.0	6.2	7.1	58	59	51
6.0	6.10	6.8	53	57	51
7.4	7.0	7.10	48	53	48
6.9	6.9	6.3	48	51	47
6.11	6.5	6.2	45	51	45
6.2	7.1	6.1	45	48	45
6.0	6.11	7.0	43	44	33
6.5	6.11	6.1	41	44	33
6.6	6.6	6.6	37	38	31
7.0	6.2	6.0	33	38	25
6.6	6.11	6.6	31	36	20
6.1	6.4	6.3	29	36	15
6.0	6.9	6.10	29	35	10
6.0	6.2	6.6	14	27	10

APPENDIX G--Continued

Age of Child			Percentile Scores		
Girls	Boys	Group	Girls	Boys	Group
6.7	7.6	6.6	10	22	9
6.0	6.7	6.0	5	19	5
5.9	6.4	6.3	3	4	1

APPENDIX H

Random Samples of Children in First Grade for the School Year 1967-68 Who Have Had Kindergarten

Age of Child			Percentile Scores		
Girls	Boys	Group	Girls	Boys	Group
6.8	6.11	6.10	99	99	98
6.7	6.9	6.7	98	99	98
6.4	6.8	6.10	97	99	97
6.0	6.6	6.3	97	99	96
6.6	6.5	6.9	95	99	94
6.5	7.10	6.3	95	96	94
6.4	6.0	6.0	94	93	94
6.0	7.2	6.6	92	92	93
6.5	6.9	6.9	91	92	92
6.3	6.7	6.9	91	92	91
6.10	6.6	5.11	89	92	91
6.4	6.5	6.10	89	92	89
6.7	6.9	6.8	88	90	88
6.6	6.9	6.4	86	86	86
6.4	6.2	6.4	86	84	86
6.7	6.11	6.11	84	80	83
6.7	6.6	6.4	81	73	83
5.11	6.6	6.4	81	73	83
6.3	6.2	6.7	80	73	81
6.4	6.1	5.11	79	70	81
6.0	6.3	6.2	77	68	75
7.0	6.0	6.10	75	66	69
7.5	6.4	6.0	69	66	67
6.3	6.3	6.1	69	61	63
7.1	6.7	6.3	63	58	61
6.9	7.0	6.7	63	55	59
6.4	6.6	6.4	63	53	55
6.4	6.4	6.2	55	53	53
6.2	6.7	6.11	53	51	51
6.2	6.10	6.2	48	48	51
6.5	6.7	7.1	44	45	48
6.4	5.11	6.4	42	43	48
6.4	6.10	6.4	38	43	48
6.5	6.11	6.6	35	41	38
6.7	6.3	6.11	26	31	36
6.5	6.0	6.9	22	25	31
6.2	6.5	6.0	13	15	31

APPENDIX H--Continued

Age of Child			Percentile Scores		
Girls	Boys	Group	Girls	Boys	Group
6.8	7.3	7.6	8	12	27
5.11	6.0	6.4	7	8	25
6.1	6.5	6.5	1	3	22