5-1-1976

A Study of the Reading Proficiency of Fourth Grade Children in North Dakota with Special Emphasis on the Disabled Reader

Michael S. Worner

A STUDY OF THE READING PROFICIENCY OF FOURTH GRADE CHILDREN IN NORTH DAKOTA WITH SPECIAL EMPHASIS ON THE DISABLED READER

by

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Bachelor of Science, Moorhead State College, 1965
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A Dissertation

Submitted to the Graduate Faculty

of the

University of North Dakota

in partial fulfillment of the requirements

for the degree of

Doctor of Education

Grand Forks, North Dakota

May
1976

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Michael S. Worner, Ed.D.

The University of North Dakota, 1976

Faculty Advisor: Professor Vito Perrone

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The purposes of the study were two-fold: (1) to determine the reading proficiency of fourth grade children in North Dakota, with a primary focus on the identification of disabled readers and (2) to ascertain the assistance that was provided for disabled readers by the schools and classroom teachers.

Questions of Study

The study was designed to ascertain answers to the following questions:

1. How well do fourth grade children in North Dakota read? The analysis of this question has three parts: how well they read overall, how boys and girls compare in their reading, and how well they read by school classification.

2. What percentage of fourth grade children in North Dakota are disabled readers. The analysis of this question has three parts: how well they read overall, how boys and girls compare in their reading, and how well they read by school classification.

3. What percentage of fourth grade children in North Dakota who are disabled readers received supplementary instruction and what

is the weekly time allocation for such instruction overall, and by school classification?

4. To what extent were disabled readers appropriately placed for reading instruction with regard to material difficulty by their classroom teachers overall and by school classification?

Summary of the Design and Procedures

The sample of the study was 2,069 fourth grade students enrolled in fifty-seven North Dakota public school districts. The school districts were randomly selected by population size (Classification I - 400 or more pupils; II - 200-399 pupils; III - 100-199 pupils; IV - 99 or less pupils) in an attempt to secure an approximate mix of school sizes and pupil distributions that prevailed in the State of North Dakota at the time the study was undertaken. Criteria for inclusion of a school district in the study were: (1) classification as a public high school district, (2) selection from the random sample, (3) willingness of the school district to participate in the study, and (4) availability of the Iowa Test of Basic Skills test data on fourth grade students enrolled in the school districts.

The Iowa Test of Basic Skills and Lorge Thorndike Intelligence Test were administered as group tests to all fourth grade students in the study sample group by school district personnel. The investigator and a trained group of twenty-three diagnosticians individually tested potential disabled readers with the Slosson Intelligence Test for Children and Adults and the Informal Reading Inventory and collected additional student and test data on the Diagnostic Summary Sheet and Pupil Information Form.

The analysis of data were accomplished through the use of the student's t- distribution and multiple comparisons. The chi-square statistic was also employed in the treatment of dichotomous data.

Summary of the Findings

The mean reading achievement grade equivalent score of North Dakota fourth grade students in the study sample group was 4.31. The national norm for fourth grade students taking the Iowa Test of Basic Skills in October, 1971 was 4.10. The sample group achieved a mean grade equivalent score that was approximately two months higher than the 4.10 national norm. The mean reading achievement grade equivalent score for each of the four school classifications exceeded the 4.10 grade equivalent national norm. The mean reading achievement grade equivalent score of female subjects in the study sample group was 4.52, while male subjects scored a mean reading achievement grade equivalent of 4.12.

An examination of the 2,069 North Dakota fourth grade students' test results indicated that 284 or 13.73 percent of the students met all four criteria for disabled readers as defined in the study. An analysis of disabled readers on the basis of sex illustrated that 198 or 69.72 percent of the 284 disabled readers in the study sample group were male subjects, and 86 or 30.28 percent of the disabled readers were female subjects.

An examination of data collected on the 284 fourth grade disabled readers in the study sample group indicated that 95 disabled readers or 33.45 percent received supplementary instruction in their school district. One hundred eighty-nine disabled readers received no supplementary

instruction. The data available on 264 disabled readers' instructional placement in reading established that 57 disabled readers or 21.59 percent were appropriately placed for reading instruction and 207 disabled readers or 78.41 percent were not appropriately placed for reading instruction.

Diagnostic test data on the 264 disabled readers indicated that 254 or 96.21 percent of those on whom data were received should be placed in reading materials below the fourth grade level. On the basis of actual placement data acquired from school districts participating in the study, 217 of the 264 disabled readers or 82.19 percent were actually placed at or above the fourth grade level for reading instruction.

The two most striking findings of the study were the degree to which school districts involved in the study failed to place disabled readers appropriately for instruction (78.41 percent of the time) and the incidence with which grade level materials were prescribed to disabled readers (82.19 percent of the time). Such findings caused the investigator to conclude that the diagnostic and placement techniques and practices, as well as subsequent prescriptive/instructional procedures, are not sufficiently well developed or operationalized. Such conditions will not foster confidence that the special problems of disabled readers will be detected, appropriately treated, and diminished in the school districts involved in this study, unless present practices are dramatically altered.

This dissertation submitted by Michael S. Worner in partial fulfillment of the requirements for the Degree of Doctor of Education from the University of North Dakota is hereby approved by the Faculty Advisory Committee under whom the work has been done.

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Dean of the Graduate School

Permission

Title A STUDY OF THE READING PROFICIENCY OF FOURTH GRADE CHILDREN IN NORTH DAKOTA WITH SPECIAL EMPHASIS ON THE DISABLED READER

Department Center for Teaching and Learning

Degree Doctor of Education

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Date _____

ACKNOWLEDGMENTS

I wish to express my appreciation and thanks to the many individuals who contributed to the development and completion of this study and who made my stay at the University of North Dakota a fulfilling and rewarding experience.

To my chairman, Dr. Vito Perrone, I extend deep appreciation and gratitude for the rewarding experiences made available to me through the New School of Behavioral Studies. I also extend gratitude for the guidance and assistance that were provided in completing this study.

I wish to extend a warm and sincere "thank you" to Professor Clara Pederson, whose longtime friendship and encouragement have helped me grow professionally.

To committee members Dr. Richard Landry, Dr. Ivan Dahl, and Dr. Alice Clark go my special thanks. In his absence, I would like to thank Dr. James Peebles for the assistance he afforded me prior to and following his departure from the University. To my brother, Dr. Roger Worner, I express appreciation for the encouragement and assistance that was extended, and to the many educators who served on the diagnostic team, I bestow my sincere appreciation. I wish, also, to thank Mrs. Lorraine Rose for the typing of this dissertation.

I wish to render a final word of acknowledgment to my wife, Marilyn, and to my children, Matthew, Michelle and Martha, for their support, love and understanding during the completion of this dissertation and throughout my Doctoral Program.

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ABSTRACT

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The two most striking findings of the study were the degree to which school districts involved in the study failed to place disabled readers appropriately for instruction (78.41 percent of the time) and the incidence with which grade level materials were prescribed to disabled readers (82.19 percent of the time). Such findings caused the investigator to conclude that the diagnostic and placement techniques and practices, as well as subsequent prescriptive/instructional procedures, are not sufficiently well developed or operationalized. Such conditions will not foster confidence that the special problems of disabled readers will be detected, appropriately treated, and diminished in the school districts involved in this study, unless present practices are dramatically altered.

CHAPTER I

STATEMENT OF THE PROBLEM

Purpose of the Study

The purposes of the study were two-fold: (1) to determine the reading proficiency of fourth grade children in North Dakota, with a primary focus on the identification of disabled readers and (2) to ascertain the assistance that was being provided for disabled readers by the schools and classroom teachers.

Context of the Study

Educators have consistently established and reaffirmed the existence of reading problems in the American schools. From Thorndike's (1917) revelation that American children exhibited poor abilities in silent reading to Flesch's (1955) concern over methodology of reading instruction, immense controversy has surrounded suggestions of alternative approaches to identifying the nature of reading problems, means of ascertaining the prevalence of those problems and, finally, selecting appropriate corrective procedures for ameliorating or eliminating them. Alternately, proponents of select diagnostic, philosophical, procedural, or methodological approaches have claimed superiority for their techniques in achieving better results in teaching children how to read.

Studies directed at reading achievement in the elementary schools (First Grade Reading Studies, 1966) document that most

children are successful in learning to read regardless of the program or methodological approach employed. At the same time, however, the statement of former U. S. Commissioner of Education, Dr. James Allen (1969) would seem to indicate that substantial numbers of students enrolled in formal reading programs and exposed to a range of methodological approaches are not successful in learning to read. In an appeal to the nation to launch an attack on reading disability, he stated that twenty-five percent of the school age population was unable to read adequately. In a publication circulated by the Reading Reform Foundation (1965), the incidence of reading disability in the United States was cited as high as seventy-five percent. Both of the foregoing reports received wide circulation and generated much public attention.

Discrepancies in reports documenting the incidence of reading disability are a common phenomenon in American public education. Strang (1968), for example, estimated that the range of reading disability was between ten and twenty-five percent of the school-age population but admitted that definitive information on the extent of reading disability was not available. She further hypothesized that variations in populations sampled in studies, types of disabilities examined, definitions of reading disability, statistical and methodological procedures employed, and investigator interpretations within the wide range of studies conducted on the topic of reading disability are all causal factors which prevent consistency in reporting the incidence of reading disability.

Harris (1970) supported Strang's conclusions and added that " . . . age of school entrance, socioeconomic background, method of reading, and the degree of regularity in the sound-symbol relationship of the language will produce variations." In light of the myriad of

variables purportedly influencing a determination of the nature and incidence of reading disability, Strang and Harris suggest that the study of reading status and the extent of reading disability rest with local practitioners and clearly delineated target groups of readers.

The problems of reading disability are of more than passing interest to groups other than reading and research authoririte s. Noted educational authors, the federal government, state-wide educational committees and commissions and parents have vocally expressed and legislatively acted upon the expressed problem of reading disability.

Individuals such as Holt (1969), Silberman (1970), Postman and Weingartner (1969), and Riessman (1962) have consistently identified the critical role that reading occupies in the child's educative process and his future success in life. The works of these authors have done much to stir public indignation about and reaction to the problems of reading disability.

Since the Elementary and Secondary Education Act was authored in 1965, the United States Office of Education, the National Institute for Education, the Right to Read Commission, and other national agencies and institutions have consistently supported programs aimed at the identification and treatment of reading disability. As a result of the Elementary and Secondary Education Act and subsequent federal and state legislation, the availability of monies for addressing the problems of reading disability has substantially increased.

Two studies conducted in the State of North Dakota are germane to this investigation of reading disability. The North Dakota Statewide Study of Education (1967) illustrated that a substantial number of school systems within the state employed less-than-degree teachers who offered minimal

instructional programs to elementary school children. Over-all opportunities for elementary education in North Dakota, as defined in the Statewide Study of Education, ranked the state fiftieth among the several states in the United States, and nearly 23,000 elementary children were instructed solely by less-than-degree teachers. Dr. Kent Alm, Director of the Study, concluded that the long range impact on student achievement as a result of prevailing instructional and personal practices in North Dakota's public school systems " . . . will be markedly and negatively affected . . ." Commenting on the approximately fifty-nine percent of the elementary teachers in North Dakota who had less than four years of academic training, Dr. Alm expressed that "the impact of these people upon the over-all quality of education in the State is crucial." Finally and of greatest significance to the focus of this study was one of the report's assessments of programs in at least twenty percent of the classrooms of North Dakota elementary schools. The report maintained that "Children . . . receive less individual attention than they should, and the reduced quality of their elementary school instruction is reflected in the lower levels of achievement in their high school studies." To carry this statement further, the implication is that children are at a serious disadvantage in learning to read due to the fact that they are instructed by less-than-degree teachers who lack adequate training in reading education. A large proportion of these teachers were employed in small, rural school systems throughout the State of North Dakota with school enrollments of less than 200 in grades 9-12.

Consistent with the findings of the North Dakota Statewide Study of Education, Krahmer's study (1966) surveyed school administrators, parents and students in an educational needs assessment and determined that

all three groups ranked "providing special reading programs for students exhibiting disability" as a high priority for North Dakota education. The implication of such a priority ranking is a need for offering specialized instructional programs, manned by trained personnel, who can identify, treat, and correct problems associated with reading disability.

In summary, the writer's rationale in appraising the significance of this study was predicated on four factors: (1) the prevailing national, state, and local concern about reading disability; (2) the lack of agreement among reading authorities concerning the criteria for reading disability; (3) the priority rating of special reading programs in North Dakota for disabled readers; and (4) the implication of the North Dakota Statewide Study of Education that many elementary school children, particularly in small school districts, are being exposed to instructional programs which are inadequate. In this light, the writer felt that by ascertaining the reading status of fourth grade students in North Dakota schools, the incidence of reading disability among those students, the frequency with which select treatment and prevention procedures were employed, and the accuracy of placement activities initiated with disabled students, recommendations could be tendered on means of increasing the accuracy of student identification, treatment, and prevention of reading disability.

Scope of the Study

The purposes of the study were two-fold: (1) to determine the reading proficiency of fourth grade children in North Dakota, with a primary focus on the identification of disabled readers and (2) to ascertain the assistance that was being provided for disabled readers by the schools and classroom teachers.

Two other related, but subordinate, issues were examined relative to the foregoing purposes: (1) the degree to which school classification (enrollment) was related to reading achievement as suggested by the North Dakota Statewide Study of Education (1967) and (2) the degree to which the sex of the student was related to reading achievement as has been suggested by past research.

The population examined in this study was a representative sample of all fourth grade children enrolled in public high school districts in the State of North Dakota during the 1970-71 school year.

Limitations

For the purposes of the study, the following limitations were established:

1. In setting the population sample of all fourth grade students enrolled in public high school districts in North Dakota, children attending Bureau of Indian Affairs, parochial, graded elementary, and one room rural elementary school districts were excluded.
2. Since results of reading ability are pertinent only to the specific samples of children where studies are conducted, the results reported in this dissertation are generalizable only to the sample studied. Further, all results reported in the study are related to the writer's definition of key concepts and procedures and reflect his interpretation of specific issues encountered in the study.
3. Though the study was limited to children enrolled in grade four in North Dakota public high school districts and it is

possible to relate the findings of the study to all other grade levels found in the State's public schools, it cannot be presumed that the findings can be generalized to children enrolled at all levels in the educational system.

Definition of Terms

For the purpose of the study, the following terms are defined to enhance clarity.

Developmental Reader. A student whose reading achievement is nearly commensurate with his potential for learning.

Disabled Reader. A student whose reading achievement is one and one-half or more years below his potential for learning, as assessed by the Bond and Tinker reading expectancy formula, and whose intelligence quotient is eighty-five or above.

Informal Reading Inventory. Reading materials graded in difficulty and individually administered to locate a student's independent, instructional, and frustrational reading levels.

Instructional Reading Level. The level at which reading instruction should be initiated for a student by his teacher. The criteria used to determine instructional reading level (Betts, 1946) are based on silent and oral reading performances including the following: word recognition accuracy, 95 percent; comprehension accuracy, 75-89 percent; and absence of anxiety, tension, discomfort, and head movements while reading. For the purposes of this study, instructional reading level was represented by the minimum score obtained when an instructional reading range existed.

Reading Achievement. The reading comprehension sub-test score for each subject examined in the study as reported on the Iowa Test of

Basic Skills (1967). Reading achievement refers to the minimal instructional reading level obtained from the Informal Reading Inventory by each subject.

Reading Expectancy. A student's expected reading score based on his ability to learn. Reading expectancy is derived from the Bond and Tinker formula (1967): R. E. (reading expectancy) = years in school x I.Q. + 1.0.

School Classification. The size of public high school districts in the State of North Dakota by student enrollment in grades nine through twelve. The four school classes were as follows: (1) Class I = 400 or more students enrolled; (2) Class II = 200-399 students enrolled; (3) Class III = 100-199 students enrolled; and (4) Class IV = 99 or less students enrolled. School classification categories were established for comparative purposes.

Supplementary Instruction. Any form of special assistance that directly extends a child's reading instruction beyond the regular time allocation offered in the classroom. It normally includes special help offered in an individual or small group setting by a special teacher.

Questions of the Study

The study was designed to ascertain answers to the following questions:

1. How well do fourth grade children in North Dakota read? The analysis of this question has three parts: how they read overall, how boys and girls compare in their reading, and how well they read by school classification.
2. What percentage of fourth grade children in North Dakota are disabled readers. The analysis of this question has three

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3. What percentage of fourth grade children in North Dakota who are disabled readers received supplementary instruction and what is the weekly time allocation for such instruction overall, and by school classification?
4. To what extent were disabled readers appropriately placed for reading instruction with regard to material difficulty by their classroom teachers overall and by school classification.

Summary

Chapter I delineated basic information pertinent to understanding the focus of the study. Included are the purposes which provide a framework within which the research was undertaken and an enumeration of the motivations and concerns of the investigator. Limitations of the study and definitions were provided to enhance reader clarity. Questions were posed for the purpose of investigation and the acquisition of information which might improve the delivery of reading instruction to reading disabled students.

Chapter II presents a review of literature and research that pertains to the purposes and questions of this dissertation. Chapter III describes the methods and procedures used, and Chapter IV presents the analysis of data and the results obtained from those analyses in relation to the research questions. Chapter V provides a discussion of the results, major findings, and recommendations pertinent to the study. Several appendices follow the fifth chapter to permit the reader to examine materials relevant to the study which are not included in the main body of the text.

CHAPTER II

REVIEW OF THE RELATED LITERATURE

Because of the pivotal role accorded reading programs in the curricula of elementary and secondary school districts in the United States, literally thousands of studies, monographs, reports, articles, and books have been compiled to examine such diverse topics as the preparation of reading teachers, the reading curricula, methodology, reading dysfunction, readiness, achievement, instrumentation, prediction of placement, grouping, supplementation, remediation, progress reporting, diagnosis, and placement among others. In reviewing the massive amount of literature available that seemingly bore some relationship to the focus of this study, four characteristics were particularly and dismayingly noteworthy: (1) few research studies were directly pertinent to the focus of this investigation; (2) the preponderance of those studies bearing direct or tangential relationships to this investigation were not generalizable, and the authors cautioned against generalization because of limited sample size, select methodological procedures, geographical or subject limitations and the grade level(s) under investigation; (3) the studies were basically speculative or inferential; and (4) few regional or state-wide studies had been inaugerated by reading researchers that employed instrumentation which examined study subjects through both group and individual intelligence and reading testing. No such studies had been carried out previously in the State of North Dakota.

In light of these findings in the review of the literature, the writer concentrated only on information that was pertinent to those facts of the study under direct investigation. The review is organized around three major areas and includes important findings and observations of reading specialists and researchers who have studied the reading progress of children. The first section consists of an overview of reading disability and the issues of definition and prevalence. In the second, sex differences are explored in relation to reading achievement and reading disability. The final section presents evidence related to the effectiveness of select instructional provisions made by classroom teachers for children who are disabled readers. A summary of major findings is presented as a conclusion to the chapter.

Reading Disability

Generally, there has been consensus among most reading authorities that reading disability is identified by a significant discrepancy between potential ability for reading and actual reading achievement. There has not been consensus, however, about how to determine reading potential, what measures are most appropriate for determining reading achievement and expectancy, or the degree of discrepancy between reading achievement and expectancy that ought to exist in order to use the term "reading disability."

Durrell (1940), Strang (1968) and Harris (1970), all considered authorities in reading, have cited that approximately ten to twenty-five percent of America's school age population are disabled readers. Strang (1968) noted, however, that the estimates of reading disability vary greatly, depending upon the definition and type of reading disability,

the population sampled, the tests used, statistical methods employed, and the investigator's interpretation of what constitutes a reading disability.

Spache (1968) indicated that the following four processes were typically used to predict reading potential: (1) tests based solely on intelligence, (2) indexes using a combination of predictors, (3) measurements of listening or auditory comprehension, and (4) prognostic learning tests. He stated that because multiple factors enter into the prediction of reading capacity it was doubtful whether a single test could be employed to predict reading capacity.

The two methods employed most frequently by reading researchers for identifying children with reading disabilities are the Bond and Tinker Formula and the Mental Grade (mental age) Method. Both of these compare the current reading achievement status of a child with higher expected achievement based on measures of intelligence.

In a study of the reading achievement of fifth grade children in a large midwestern city conducted by Bond and Tinker (1967), children were administered the Stanford-Binet Intelligence Test and the Gates Reading Survey Test. Results of the study indicated that the average reading achievement of the 379 randomly selected children was 5.5. In compiling the results of the study, the researchers found that application of their reading capacity index at the fifth grade level provided them with estimates of reading achievement for groups of pupils at various intelligence levels. The reading expectancy formula used by the authors was computed by multiplying the years a child is enrolled in school (excluding kindergarten) times the intelligence quotient plus one. The one was added to compensate for the fact that the child

starts school at grade one and following a year in school, the average child is at grade (2.0) or just entering grade two. If an intermediate grade child had a discrepancy of one and one half years (1.5 or greater), with the reading achievement lower than the potential, the child was considered to be a disabled reader. Bond and Tinker made the assumption that a child progresses in school according to his intelligence quotient. That is, a child with a 150 I.Q. will normally progress a year and one half in reading in one year, while a child with an intelligence quotient of 100 will normally achieve only one year of progress.

Spache (1968) stated that the assumption made by Bond and Tinker is only partially true. He agreed that for predicting the probable reading achievement of large numbers of students the Bond and Tinker index is as practical as any method yet used. Spache, however, questioned how accurate the index was for predicting the reading potential of individuals.

Harris (1961) advocated the use of mental age (which he converted to a grade level equivalency), as obtained from an intelligence test, as an indicator of a child's reading potential. When a specific discrepancy existed between a child's performance on both silent and oral reading achievement tests and his mental age, he was classified, in Harris' research, as a disabled reader. Harris defined a child as a disabled reader if the discrepancy was at least six months at the primary grades, nine months at grades four and five, and one year for older children.

Bond and Tinker (1967), in the study previously described, compared the mental ages of children with their reading achievement scores. They found that using the mental age method, used by Harris, for identifying disabled readers bright children were frequently characterized

as underachievers and dull children as overachievers. They further determined that the only common points where the intelligence and achievement scores were similar were for children scoring between the intelligence ranges of 90 to 110.

Bruininks, Glaman, and Clark (1973) studied commonly used reading expectancy formulas to determine their effectiveness in identifying disabled readers. The authors challenged the long tradition of using mental age as a criterion for determining reading potential. They recommended indexes, such as the Bond and Tinker formula, that provide consideration for the length of time a child has been exposed to school to be used to replace the mental age for identifying disabled readers.

Sex Differences in Reading

Studies of sex differences in reading may generally be classified in these categories: (1) those reports that have examined the problems of sex differences in reading as the basic purpose, (2) studies that have reported sex differences in reading as a secondary issue, and (3) special reports from clinics which serve children in need of special reading help.

In an early study of sex differences Samuel (1943) paired 200 first grade boys and girls matched on mental and chronological age. The Gates Primary Test was used as the criterion measure of reading achievement at the end of the grade. Girls were superior to boys in every measure used. All differences were found to be statistically significant. Anderson, Hughes, and Dixon (1957) noted that sex differences in learning how to read were relatively slight among children of higher intelligence, but they concluded that lower ability boys as a group start to read later than lower ability girls.

The studies of Samuels (1943), and Anderson, Hughes and Dixon (1957) detected sex differences in the beginning stages of reading. A large number of researchers have also been interested in whether or not sex differences continue in later grades or if they disappear as children progress through higher grade levels. Hughes (1953) investigated the reading achievement of children in grades 3-8 in two elementary schools. Using one hundred subjects randomly selected from each of the grades, he found that the achievement of female subjects was significantly greater than male subjects at the third and fourth grade levels, but such a difference did not occur in grades 5-8.

Gates (1961) conducted a massive study of sex differences in reading over a ten state region with a study population of 13,114 children in grades 2-8. Pupils were administered the Speed of Reading, Reading Vocabulary, and Comprehension Subtests of the Gates Reading Survey. The results of the comparisons of mean raw scores favored girls at all grade levels. Most of the differences were significant.

The number of studies reporting sex differences in reading achievement as a secondary aspect of the investigation far exceeds those examining sex differences as a primary purpose. The twenty-seven first grade studies (1967) carried out under the auspices of the United States Office of Education are examples of this type of study. The primary purpose of these studies was to compare methods of beginning reading instruction; however, sex differences were reported by many of them. The majority of studies indicated that boys achieved less well as a group than girls at the end of grade one.

While those studies analyzed delineated, in general, that girls are superior to boys in reading achievement during the elementary

grade years, other writers noted, in addition, that a greater number of boys are disabled readers than girls. Alden, Sullivan and Durrell (1941) measured the reading ability of 6,300 children in grades 2-6 in eleven schools and found a higher percentage of reading disability among boys than girls at each grade level. The mean occurrence of reading disability at each grade level was 18.6% of the boys and 9.8% of the girls, a ratio of approximately two to one. The greatest degree of retardation appeared in grades four and five for both boys and girls. Harris' (1956) survey of the literature noted that about two thirds of the mild reading disability cases in the elementary schools were boys. He further estimated that the major proportion (75-90%) of severe reading disability cases were also boys. Durrell (1940) noted that of those who applied to the Boston University Reading Clinic for corrective or remedial help, boys outnumbered girls by a ratio of ten to one.

Diagnostic Placement Implications Related to the Success or Failure of the Disabled Reader

The literature abounds in information regarding techniques that can be employed to improve the delivery and effectiveness of instructional services to disabled readers. References include analyses of such diverse activities as the reorientation of state department standards on the certification of reading teachers to techniques of curricular material selection. The literature also includes analyses, in relation to reading, of class grouping procedures, methodological approaches, testing programs, screening, readiness, remediation, supplementation, diagnosis/placement, intelligence, class structure, curriculum design, program organization, reward systems, teacher training institution philosophies and programs, to mention only a small sampling

of topics. In light of the defined focus of the study and the plethora of reading instruction variables that could be considered as bearing on the success or failure of the disabled reader, it was determined that an examination of the literature should be directed toward identifying sources that might provide information on the effectiveness of diagnostic/placement practices used in the schools.

Regarding the conduct of diagnostic/placement process in school districts, Botel (1972) estimated that as many as ten to fifteen million pupils in the United States may be suffering from over-placement in reading materials. He further proposed that the frustration accompanying over-placement in reading materials can produce symptoms which are commonly associated with dyslexia.

Ilg and Ames (1964) supported Botel's findings when they reported that the majority of children referred to them because of difficulties in school were found to be overplaced. Many of the children could not keep up with their work, let alone understand what was expected of them. Results from their study indicated that more than twenty-five percent of the children in school were seriously misplaced in terms of their developmental needs.

Ladd (1961) and Emans (1965) conducted studies illustrating that teachers are often inaccurate in identifying levels of reading performance and implied that the subsequent outcome would be student misplacement. Milsap (1962) found that regular classroom teachers were not as accurate in identifying correct reading performance levels as were remedial teachers, and Emans (1965) ascertained that classroom teachers tend to form judgments based on skills they think children need rather than evaluating the individual needs of pupils.

Preston (1953) conducted a study of elementary school children considered retarded in reading by their teachers. Results of the study demonstrated that many of the students were, in fact, not retarded when comparisons were made between silent reading levels and expected performances computed against their mental ages. Teacher judgment on students' performances tended to be inaccurate at all levels, though more so at the primary than at the intermediate levels.

Avery (1972) stated that few school districts had developed systemized procedures to inventory each individual child's basic strengths and weaknesses and to use that inventory to recommend placement with a teacher and a reading program offering individual children the best possible chance of experiencing success. The implications of Avery's findings were that the likelihood of student misplacement was highly probable in the majority of school districts. Worner (1970), in reviewing a variety of assessment indicators commonly employed by teachers for student placement in reading, found that there was a tendency to overrate children on their instructional reading levels and, in effect, overplace children in reading materials.

Hawkins (1966) conducted a research study to determine the changes in reading group composition within thirty-five classrooms. The author found that only 86 of 940 students studied were changed in their reading groups during the seventeen week duration of the study. The researcher found that 41 percent of the teachers involved in the study made no changes in reading group composition during the course of the investigation.

Summary

A review of the literature related to the major purposes of this study indicated that a reading disability is commonly considered to exist when the reading achievement of an individual is substantially below a higher potential for learning. Consensus however, has not been formulated regarding the specific criteria to be used for identifying the disabled reader. The most commonly accepted estimates of reading disability approximate ten to twenty-five percent of the school population. Generally, boys experience a reading disability twice as frequently as girls. The research also indicates that the diagnostic/placement practices employed by many classroom teachers frequently does not meet the needs of the disabled reader.

CHAPTER III

DESIGN AND PROCEDURES

General Procedures

The purposes of the study were (1) to determine the reading proficiency of fourth grade children in North Dakota, with a primary focus on the identification of disabled readers and (2) to ascertain the assistance that was being provided for disabled readers by the schools and classroom teachers.

Early Interests and Focuses

The North Dakota State Department of Public Instruction was preparing to undertake a comprehensive statewide survey on reading in September, 1970 when representatives of the University of North Dakota and the investigator met with State Department officials to discuss basic and corollary research that could be conducted on the reading characteristics of North Dakota elementary school students.

The primary interests of the investigator were the identification of the general reading status of North Dakota elementary school students, the prevalence of reading disability among elementary school students, and an examination of the degree to which disabled readers are appropriately placed in reading materials and/or receive specialized assistance. Also, the investigator proposed to examine whether the foregoing were a function of school classification as was implied by the North Dakota Statewide Study of Education (1967).

It was anticipated that the information derived from this study would have implications for the North Dakota State Department of Public Instruction, North Dakota colleges and universities, and the State's school districts as they prepare programs designed to improve the planning and conduct of instruction for disabled readers. Officials for both the North Dakota State Department of Public Instruction and the University of North Dakota supported the design and conduct of the study.

Basic Procedural Design

A basic procedural design was established by the investigator to aid in conceptualizing the selection of the study's sample group, instruments, data collection, and statistical procedures.

First, it was established that definitive information on the general status of reading achievement in North Dakota could be determined through broad instrumentation; namely, a national standardized achievement test. Such tests are normally administered on a general basis in most school districts throughout the United States, and they are recognized as the most definitive form of instrumentation available for achievement comparison from one state to the next and nationally.

Second, it was ascertained that identifying the incidence and location of disabled readers was a multi-step process which would include the elimination from the study of low intelligence students and developmental readers to insure that analytical judgments were made only on disabled readers. In this regard, investigation necessitated the following: (1) determining the gross reading achievement of the subjects through the administration of a group reading achievement instrument

(national standardized achievement test); (2) determining the gross reading expectancy of the subjects through the administration of a group intelligence instrument and the application of those results to a reputable reading expectancy formula; (3) eliminating from the study those subjects whose group intelligence test scores were below 85 and could not be classified as reading disabled; (4) eliminating from the study those subjects whose variance of reading expectancy and reading achievement, as determined by the Iowa Test of Basic Skills, was insufficient to be tentatively classified as reading disabled; (5) eliminating from the study those subjects whose individual intelligence test scores were below 85 and could not be classified as reading disabled; (6) determining the refined reading expectancy of the subjects through the administration of an individual intelligence instrument and the application of those test results to a reputable reading expectancy formula; (7) determining the refined reading achievement of the subjects through the administration of an individual reading achievement test (Informal Reading Inventory); (8) eliminating from the study those subjects whose variance in reading expectancy and reading achievement, as determined by the individually administered Informal Reading Inventory, was insufficient to be finally classified as reading disabled; and (9) collecting and analyzing specific data on the remaining disabled readers by sex and school classification.

Third, it was affirmed that pertinent information could be acquired from the classroom teachers regarding the existence and time allocation, if any, of supplemental instruction that reading disabled students received in the school setting. It was essential for the

reading disabled student to be identified prior to the acquisition of information on supplementary instruction.

Fourth, it was established that the current reading placement of reading disabled students could be obtained from classroom teachers. Again, it was essential for the reading disabled students to be identified prior to assessing their current reading placement.

It was within this basic procedural design that the investigator conceptualized and selected the sample group, instruments, data collection procedures and statistical applications to carry out the study.

Sample

Subjects in this study were school students enrolled in fourth grade in public high school districts in North Dakota which administered the Iowa Test of Basic Skills, a national standardized achievement test.

In determining the sample of this study, students enrolled in fourth grade were selected as the primary group for the investigation of reading disability. The rationale for this first qualifying criterion was (1) fourth grade children have normally completed the facet of reading instruction which emphasizes decoding skills; independence in reading is acquired by the majority of children; and it is at this point that reading skill instruction broadens to include reading in content subject areas through a variety of source materials and (2) virtually all fourth grade children in the State of North Dakota participated in national standardized achievement testing and, thus, the availability of test data which was vital for efficient determination of reading status and screening of reading disabled students was insured. Though a similar emphasis on national standardized achievement testing occurred at grades six and eight in North Dakota, these

grade levels are far removed from the instructional point where decoding skills are emphasized and where reading disability is more likely to have first evidenced itself.

Administration of the Iowa Test of Basic Skills to fourth grade students was a second qualifying criterion for retaining or deleting school students from the sample group. Access to comparative national standardized achievement test data was essential in making judgments about the reading status of North Dakota fourth grade students and screening reading disabled students. The Iowa Test of Basic Skills was selected in preference to competing national standardized achievement test instruments due to the prevalence of its usage by school districts in the state. Nearly three times as many school districts used this national standardized achievement test instrument as used the next most popular test.

The sample was limited by a third qualifying criterion. Only public high school districts were considered for inclusion in the study. Private and parochial schools, Bureau of Indian Affairs' schools, graded elementary and one-room rural school districts were not used in the study inasmuch as they are not typical.

The number of public high school districts in North Dakota that met the third qualifying criteria for consideration of their students in the sample group was 262. These districts were stratified on the basis of school classification (student enrollment), grades 9-12. This classification system is used by the North Dakota State Department of Public Instruction for the reporting of school data (North Dakota Educational Directory, 1970-71). The school classifications, numbers of districts

by classification, composite student enrollment (9-12), and composite percentage of student enrollment by school classification found in public school districts in North Dakota appear in Table 1.

TABLE 1

STUDENT AND SCHOOL STRATIFICATION BY SCHOOL CLASSIFICATION IN NORTH DAKOTA 1970-1971

School Classifications	Attendance Ranges	Number of Districts in Range	Number of Students	Proportion of Student Enrollment
I	400-	14	19,246	41.16
II	200-399	35	9,248	19.80
III	100-199	69	9,798	20.95
IV	0-99	144	8,460	18.09
Totals		262	46,752	100.00

Final determinations on the school districts that would participate in the study and the final sample size were made after the 262 school districts had been arranged by school classification and assigned random numbers from a table of random numbers (Lindquist, 1964). Selection procedures were instituted to preserve a final study sample group whose student composition (by school classification) closely approximated the student composition (by school classification) that generally prevailed in public high school districts in North Dakota (as illustrated in the right hand column of Table 1).

The random selection of public high school districts from among the 262 and subsequent personal contacts with those school districts yielded sixty participating school districts with a sample group of

2,508 fourth grade children or approximately twenty percent of the 13,774 fourth grade enrollment in the public high school districts of North Dakota in 1970-71. The sixty school districts all met the three qualifying criteria for study participation. After consultation with research specialists at the University of North Dakota, Bureau of Educational Research, it was affirmed that the sample group was sufficiently large to obtain results which would be representative of the fourth grade population of public high school districts in North Dakota. The willingness of school districts to participate in the study was confirmed through letters and telephone communications from the North Dakota State Department of Public Instruction and the investigator urging school administrators to cooperate with the study.

Subsequent to the final data analysis, however, the sample group was reduced in both numbers of school districts and student subjects as a result of local testing errors, student absenteeism at the time of final testing and inaccurate enrollment reporting. As reported in Table 2 below, the final sample group of fourth grade students in public high school districts participating in the study was 2,069 or 16.4 percent of the population of North Dakota fourth grade students enrolled in public high school districts. Fifty-seven public high school districts were involved in the study (see Appendix A). The student composition by school classification of the sample group, the last column in Table 2, closely approximated the student composition by school classification of the population of grade 9-12 students enrolled in public high school districts in North Dakota during 1970-71 as reported in Table 1.

TABLE 2

SCHOOL DISTRICT PARTICIPANTS, PUPIL ENROLLMENT, AND PROPORTIONS OF SAMPLE GROUP BY SCHOOL CLASSIFICATION 1970-71

School Classifications	School Districts Participating	Student Participants (4th Grade)	Proportion of Sample Group
I	11	799	38.6
II	7	368	17.8
III	18	578	27.9
IV	21	324	15.7
Totals	57	2,069	100.0

Instruments

Four published data gathering instruments and two instruments devised by the investigator were used to collect information relevant to the study. Two of the published data gathering instruments were used for the purpose of collecting student reading achievement data, and two were employed to gather student intelligence quotient data. Two instruments devised by the investigator were used to record all individual student data. The instruments used in the study and a description of each are briefly presented below in the order of their administration and compilation.

Group Reading Achievement Testing

The Iowa Test of Basic Skills (1964) subtest for reading was administered to the study sample group as the criterion measurement of general reading ability. Grade equivalent scores in reading were

obtained for each of the members of the sample group from the administration of this national standardized achievement test. Administration time for the reading subtest is 65 minutes.

Group Intelligence Testing

The Lorge Thorndike Intelligence Test, Form I, multi-level edition (1964) was administered to the study sample group as the criterion measurement of general intelligence. An intelligence quotient was obtained from the five verbal and three non-verbal subtests of the instrument for each of the members of the study sample group. Administration time for the test is 62 minutes.

Individual Intelligence Testing

The Slosson Intelligence Test for Children and Adults (1963) was individually administered to study sample group individuals as a refined criterion measurement of intelligence. An intelligence quotient was obtained for each of the members of the sample group. Administration time for the test is approximately 20 minutes.

Individual Reading Achievement Testing

An Informal Reading Inventory, comprised of all word lists and correlated stories from the Standard Reading Inventory (McCracken, 1965) and the scoring criteria from the Classroom Reading Inventory (Silvaroli, 1969), was administered individually to the study sample group individuals as the refined criterion measurement of reading ability. Grade equivalent scores in reading were obtained for each of the members of the sample group from the administration of the instrument. The instrument consisted of two forms: Form A and Form B. Each contained eleven

graded word lists and eleven graded silent and oral reading selections. Both oral and silent selections included comprehension questions ranging in reading difficulty from pre-primer to seventh reader level. Administration time varied from 10-50 minutes for each student.

Diagnostic Summary Sheet and Pupil Information Form

All data pertinent to reading achievement, intelligence, placement, and supplemental instruction of sample group students were recorded on two summary sheets devised by the investigator. The instruments were used for recording all test data, notations, and documentation critical to the determination of the reading status of students in the study's sample group. A Diagnostic Summary Sheet was completed for each child by the diagnosticians. A separate Pupil Information Form was completed by the student's classroom teacher and special needs teacher. These two instruments are included in Appendix B.

Data Collection and Analysis

Data collection and analysis procedures were defined and executed to collect information pertinent to the questions of the study. The substance of those procedures, the sequence in which they occurred, and their logic in examining the questions of the study are presented below.

Iowa Test of Basic Skills Testing

In the Fall of 1970, the 2,508 students in the original sample group were administered the Iowa Test of Basic Skills in the home school setting in the identical manner employed in the past by each of the individual school districts. All test booklets were scored by the test

publishers, and the results were returned to the local districts and the North Dakota State Department of Public Instruction. With the consent of the school districts participating in the study, test results were made available to the investigator by the North Dakota State Department of Public Instruction.

Following attrition, described earlier, data analysis was carried out with the sample group of 2,069 students to determine the status of North Dakota fourth grade students' reading ability and whether this group, as a whole, exhibited general reading ability which was typical of the national norm for students of like grade level placement in reading. It was felt that if the sample group's general reading ability was substantially the same as the fourth grade reading ability of the broader population of fourth grade readers in the United States, findings on the degree and nature of reading disability would be of more generalized value than if atypical variance in general reading ability existed between the sample group and the broader, national population.

Lorge Thorndike Testing

The Lorge Thorndike Intelligence Test, Form I, multi-level edition was distributed to school districts participating in the study to be administered to all students in the study's sample group. Specific administration instructions were provided to the school districts. After test administration was completed, the test documents were returned for scoring and tabulation.

The Lorge Thorndike Intelligence Test, Form I, yielded three intelligence quotient scores--verbal, non-verbal, and a composite of verbal and non-verbal. While only one of the three scores was used

for computing a student's reading expectancy, all three were considered in applying the formula of reading expectancy. It is generally conceded that verbal ability or the verbal score on intelligence tests is most closely associated with actual reading ability. Verbal subtests of a group intelligence instrument require reading ability. This factor penalizes poor readers who are administered group intelligence instruments. As a consequence, it was determined that the following parameters would be employed in assessing group intelligence test scores with the expectation that more accurate intelligence quotients and estimates of reading expectancy could be obtained from all study participants:

1. The verbal test score on the Lorge Thorndike Intelligence Test was used if it exceeded the non-verbal score.

2. The composite test score on the Lorge Thorndike Intelligence Test was used if the non-verbal score exceeded the verbal test score by one to fourteen points.

3. The non-verbal test score on the Lorge Thorndike Intelligence Test was used if it exceeded the verbal score by fifteen or more points.

Intelligence quotient data was converted to reading potential data through use of the Bond and Tinker Formula. The reading achievement data gathered from the Iowa Test of Basic Skills was compared with the reading expectancy data in order to identify the variance between reading expectancy and actual achievement. This activity was requisite to addressing the second question of the study; namely, a determination of the number of disabled readers in the study's sample group.

Estimating Reading Expectancy

The investigator, in conjunction with the reading staff of the University of North Dakota, examined the results from both the Iowa Test of Basic Skills and Lorge Thorndike Intelligence Test for the

purpose of determining the existence and frequency of potential disabled readers. Two criteria were applied to the data and the sample group to separate developmental readers and low intelligence readers from potential disabled readers.

First, all sample group students with Lorge Thorndike Intelligence Test scores lower than 85 were not considered, by definition, disabled readers and were excluded from further consideration in this study.

Second, using the Bond and Tinker (1967) formula for reading expectancy (R. E. = years in school x I.Q. + 1.0) and the Lorge Thorndike Intelligence Test results, each of the remaining sample group students' reading expectancy was calculated. The students' reading expectancies were compared to their reading achievement scores (Iowa Test of Basic Skills) and the differences in grade equivalents were noted. If the discrepancy between a student's reading achievement score and reading expectancy score was 1.4 grade equivalents or less, the student was considered, by definition, to be a developmental reader and eliminated from further consideration as a disabled reader. If the discrepancy between a student's reading achievement score and reading expectancy score was 1.5 grade equivalents or more, the student was considered a potential disabled reader and received further individual testing. Of the original 2,069 students in the sample group, 425 met the first two qualifying criteria (intelligence test scores on a group instrument of 85 or above and a discrepancy between reading achievement score and reading expectancy score of 1.5 grade equivalents or more for a disabled reader.

The investigator recognized that the selection of the grade equivalent discrepancy of 1.5 or more between reading expectancy and reading achievement was a stringent criterion for identifying disabled readers inasmuch as a 1.0 grade equivalent discrepancy is often employed in studying the disabled reader. Had a 1.0 discrepancy been used, the sample size, according to group measures only, would have increased to 721. This was clearly too large a sample for the administration of individual tests. In addition, this researcher felt that a more stringent criterion (a discrepancy level of 1.5 or more grade equivalents) would insure that the sample of disabled readers would be virtually free of developmental readers and low ability students who were or may already have been functioning at a satisfactory instructional level and, under even more desirable instructional conditions, might not be expected to achieve at significantly higher levels. The disabled reader, as defined in this study, is not a low intelligence student, does exhibit substantial variance between reading expectancy and reading achievement, and conceivably could benefit from some form of corrective instruction to a greater degree than either low intelligence or developmental readers.

Staff Training

With the identification of 425 sample group students as potential disabled readers from among the 2,069 students who were administered group reading achievement and group intelligence instruments, the investigator trained a staff of diagnosticians to undertake individual intelligence and achievement testing of the 425 students.

Altogether, twenty-three diagnosticians (Appendix C), including the investigator, comprised the team that carried out the individual

achievement and intelligence testing. Diagnosticians were recruited from among graduate students of education in the College of Education and the New School of Behavioral Studies at the University of North Dakota and administrative and instructional personnel from the Fargo Public Schools, the Grand Forks Public Schools, and the Alvarado, Minnesota Public Schools.

All participating diagnosticians were trained in the administration and interpretation of the Slosson Intelligence Test for Children and Adults and the Informal Reading Inventory. They were also prepared for a multiplicity of record keeping procedures to compile results of the tests. The training consisted of twenty class hours dealing with reading and diagnostic processes and test administration and interpretation. Tests were introduced, demonstrated, practiced, and discussed. Between sessions, the diagnosticians acquired additional experience by administering the tests to children and scoring and interpreting them.

It was essential during the course of the training activities, to establish testing reliability among the diagnosticians. This was especially true for the Informal Reading Inventory. In order to establish a measure of reliability, a taped recording of a child's reading performance was presented for analysis, diagnosis, and placement by the diagnosticians. The responses of the diagnosticians, at the conclusion of formal training, were computed with the Pearson Product Moment Correlation and yielded an $r = .85$. The identical procedure was repeated at the conclusion of the entire study and statistical analysis of the diagnosticians' responses produced an $r = .921$. In addition, an improved level of reliability was sought by assigning diagnosticians to the field in groups. At the conclusion of each day's testing, the diagnosticians were encouraged to discuss testing results when they summarized records

produced during the day. Telephone contacts were also maintained between group leaders and the investigator at the University of North Dakota to answer questions that arose on testing procedures, administration, scoring, and analysis.

Individual folder records were maintained by school for each subject tested. Forms for each test to be used were placed in individual files before the testing groups were sent to the field. A separate kit containing extra test copies was provided to each testing group in case they were needed. The Diagnostic Summary Sheet was used by the diagnosticians to record all pertinent test results on each student individually tested. A second form, the Pupil Information Form, was completed by the classroom teacher and the special needs teacher if such an individual was employed in a school. At the completion of all individual testing, the diagnosticians collected and returned the Diagnostic Summary Sheets and Pupil Information Forms to the investigator for data compilation and analysis.

Individual Testing

In the Spring of 1971, the trained diagnosticians visited each of the sample group school districts in the study and individually tested each of the 425 potential disabled readers with the Slosson Intelligence Test for Children and Adults and, if applicable, the Informal Reading Inventory. Individual testing was carried out to reaffirm or refute the potential disabled reader classification affixed to each of the 425 students as a result of earlier group achievement and intelligence testing.

The diagnosticians first administered the Slosson Intelligence Test for Children and Adults. All potential disabled readers who achieved an intelligence quotient score of less than 85 were eliminated from

further consideration as potential disabled readers. All students who achieved an intelligence quotient of 85 or above were tested with the Informal Reading Inventory to determine an individual grade equivalent score. Forty-eight students were eliminated from further study and testing consideration as a result of the administration and scoring of the Slosson Intelligence Test for Children and Adults. The remaining 377 students were administered the Informal Reading Inventory.

Estimating Reading Expectancy

The investigator again applied intelligence test results--in this instance from the individually administered Slosson Intelligence Test for Children and Adults--to the Bond and Tinker (1967) formula for reading expectancy. This application yielded a reading expectancy score for each of the remaining 377 potential disabled readers in the study to whom the Informal Reading Inventory had been administered. The investigator then compared each student's reading expectancy score to his reading achievement score as assessed on the Informal Reading Inventory. If the student's reading expectancy score exceeded the reading achievement score on individual testing by less than 1.5 grade equivalents, the student was classified as a developmental reader and eliminated from further consideration in the study. In the event that the student's reading expectancy score exceeded the reading achievement score by 1.5 grade equivalents or more, the student was termed a disabled reader as defined in the study. Of the 377 potential disabled readers, 93 were eliminated because the discrepancy, on the additional testing, was not great enough.

Determining Supplemental Instruction and Placement

It was on the final group of disabled readers, as defined in the study, that classroom teachers and special needs teachers were requested to complete the Pupil Information Form. Pertinent information on the presence and time duration of supplemental instruction, if any, provided to the disabled reader was noted, and the present materials in which each of the disabled readers was placed for reading instruction was documented with regard to material difficulty. These data were crucial for analysis of the study's third and fourth questions.

Additional demographic and test data, all categorized on the basis of school classification, were noted for each disabled reader on the Diagnostic Summary Sheet by the diagnosticians. All final information pertinent to the study was collected by the diagnosticians and returned to the investigator.

Statistical Treatment

Three statistical formulas were employed in the analysis of the study's four hypotheses. The formulas were selected on the basis of their appropriateness for (1) providing a measure of statistical significance between groups, (2) usage in studies with large samples, and (3) treating the specific information collected in the study.

Two statistics, the student's t distribution and multiple comparisons were employed to treat continuous interval data (achievement data) collected to answer Question One. The chi-square statistic was employed in the treatment of dichotomous data collected to answer Questions Two, Three, and Four.

CHAPTER IV

ANALYSIS OF THE DATA

The study was designed to ascertain answers to the following questions: (1) How well do fourth grade children in North Dakota read? The analysis of this question has three parts: how they read overall, how boys and girls compare in their reading, and how they read by school classification. (2) What percentage of fourth grade children in North Dakota are disabled readers? The analysis of this question has three parts: how they read overall, how boys and girls compare in their reading, and how they read by school classification. (3) What percentage of fourth grade children in North Dakota who are disabled readers received supplementary instruction and what is the weekly time allocation for such instruction overall and by school classification? (4) To what extent were disabled readers appropriately placed for reading instruction with regard to material difficulty by their classroom teachers overall and by school classification?

Question One

Question One was posed to determine how well fourth grade children in North Dakota read. The analysis of this question has three parts: how they read overall, how boys and girls compare in their reading, and how well they read by school classification.

Based on the analysis of test results obtained from the administration of the Iowa Test of Basic Skills (1967) to the sample group of

2,069 fourth grade students in North Dakota, it was established that the mean reading achievement grade equivalent score for the sample group was 4.31. The sample group achieved a mean grade equivalent score that was approximately two months higher than the 4.10 stated national norm of this section of the Iowa Test of Basic Skills for all fourth grade children being administered the test in late September or early October.

Table 3 below illustrates summary data regarding the mean reading scores for the sample group of North Dakota fourth grade students overall

TABLE 3

READING ACHIEVEMENTS AND STANDARD DEVIATIONS BY SCHOOL CLASSIFICATION AND TOTAL GROUP FOR THE SAMPLE OF NORTH DAKOTA FOURTH GRADE STUDENTS 1970-1971

School Classification	N	$\overline{X}$	S.D.
I	799	4.34	1.27
II	368	4.29	1.24
III	578	4.19	1.20
IV	324	4.46	1.25
Totals	2,069	4.31	1.26

and by school classification. In this regard, the data reflect that fourth grade students enrolled in each of the four school classifications scored a mean reading grade equivalent that exceeded the stated national norm for this edition of the test. The analysis of variance between school classification levels produced an $\underline{F}$ ratio of 3.5496 which, with 3 and 2065 degrees of freedom, is significant at the .05 level. The highest mean reading achievement grade equivalent score

was attained by school classification IV with a mean score of 4.46. The lowest mean reading achievement grade equivalent score was in school classification III where the mean score was 4.19.

Using multiple comparisons to determine whether or not paired school classification mean reading achievement grade equivalent scores differ significantly, it was found that school classification I varies significantly from school classification III at the .05 level (t=2.220); school classification III varies significantly from school classification IV at the .05 level (t=-3.146) and the total of all school classifications at the .05 level (t=-2.089); and school classification IV varies significantly from the total of all school classifications at the .05 level (t=-2.003).

A tangential, but correlated, examination of reading achievement test data was undertaken by the investigator to ascertain the nature and significance of sex differences in reading achievement. As is depicted in Table 4, the mean reading grade equivalent score of the 1,016 female fourth grade subjects in the sample group was 4.52 while the 1,053 male

TABLE 4

MEAN READING ACHIEVEMENTS AND STANDARD DEVIATIONS BY SEX FOR THE SAMPLE OF NORTH DAKOTA FOURTH GRADE STUDENTS 1970-1971

	N	$\overline{X}$	S.D.	t
Boys	1053	4.12	1.30	7.38[a]
Girls	1016	4.52	1.17	

[a]Significant at the .01 level

fourth grade subjects in the sample group attained a mean reading grade equivalent score of 4.12. Thus, it could be established that, on the average, female subjects in the sample group attained a reading grade equivalent score that exceeded that of the male subjects in the sample group by four months. Applying a t-test in comparing the mean scores of the two groups, it was found that the female group scores were statistically significant ($t=7.38$; $df = 2,067$) at the .01 level of significance when compared to the male group scores.

Question Two

Question Two was posed to determine the percentage of fourth grade children in North Dakota who are disabled readers. The analysis of this question has three parts: how they read overall, how boys and girls compare in their reading, and how well they read by school classification.

Four criteria were employed in the study to establish the percentage of disabled readers in the sample group of fourth grade children in North Dakota overall, by sex and by school classification: (1) the administration of the Lorge Thorndike Intelligence Test to ascertain those subjects whose intelligence test scores were at or above 85; (2) the comparison of the Iowa Test of Basic Skills reading achievement test scores (administered prior to Lorge Thorndike testing by the school districts and a requisite criterion for inclusion in the sample group) to reading expectancy scores to ascertain those students whose group reading achievement scores were at least 1.5 grade equivalents less than their reading expectancy; (3) the administration of the Slosson Intelligence Test for Children and Adults to ascertain those students whose

individual intelligence test scores were at or above 85; and (4) the comparison of Informal Reading Inventory reading achievement test scores to the Slosson reading expectancy scores to ascertain those students whose individual reading achievement scores were at least 1.5 grade equivalents less than their reading expectancy. The application of the four criteria permitted the investigator to establish those members of the sample group who were disabled readers as defined in the study and, further, to determine the incidence of reading disability by school classification and sex.

As is illustrated in Table 5 the four criteria for establishing the percentage of fourth grade children in North Dakota who were disabled readers overall, by sex and by school classification were applied to the original sample group of 2,069 fourth grade students. Criteria I and II were applied concomitantly to sample group students, inasmuch as the Iowa Test of Basic Skills instrument administration was a requisite consideration for each school district's inclusion in the sample group. Thus, at the completion of the administration of the Lorge Thorndike Intelligence Test, reading expectancy scores were computed for all of the 2,069 sample group members and both low intelligence score students (an intelligence test score of less than 85) and students with reading achievement scores that varied less than 1.5 grade equivalents for their reading expectancy were eliminated from the study sample group simultaneously. The application of Criteria I and II reduced the sample group to 425 potential disabled readers.

Subsequently, Criteria III was applied to the 425 potential disabled readers in the study sample group. With the administration of the Slosson Intelligence Test for Children and Adults, it was established

TABLE 5

SAMPLE GROUP FOURTH GRADE STUDENTS MEETING STUDY CRITERIA BY SCHOOL CLASSIFICATION
1970-1971

School Classification	Sample Group N	Criterion: I and II N	%	Criterion: III N	%	Criterion: IV N	%
I	799	160	20.03	146	18.27	109	13.64
II	368	81	22.01	68	18.48	49	13.32
III	578	130	22.49	118	20.42	89	15.40
IV	324	54	16.67	45	13.89	37	11.42
Totals	2,069	425	20.54	377	18.22	284	13.73

that forty-eight of the 425 students attained individual intelligence test scores lower than eighty-five. These students were eliminated from further consideration in the study, and with the application of Criteria I, II, and III, the study sample group was reduced to 377 potential disabled readers.

The remaining students in the study sample group were individually tested with the Informal Reading Inventory. The application of Criterion IV yielded 93 students who were developmental readers. These students failed to meet Criterion IV and were eliminated from further consideration in the study sample group. As represented in Table 6, 284 students of the original sample group of 2,069 or 13.77 percent of the fourth grade students in North Dakota were identified as disabled readers as defined in the study.

Classification IV schools had the smallest percentage of disabled readers among the four school classifications with 37 or 11.42 percent of their fourth grade student population. Classification III schools exhibited the highest percentage of disabled readers among the four school classifications with 89 or 15.40 percent of their fourth grade student population assessed as disabled readers. School classifications I and II student populations contained 109 students or 13.64 percent and 49 students or 13.32 percent of their fourth grade student populations, respectively, who were assessed as disabled readers.

Table 6 provides the application of a chi-square analysis to the number of disabled readers in the study sample group of fourth grade children in North Dakota to determine whether or not the distribution of disabled readers within and between school classifications occurred by chance. The chi-square value (χ^2=2.875; df=3) was not significant at the .05 level

TABLE 6

CHI-SQUARE ANALYSIS OF DISABLED AND NON-DISABLED READERS BY SCHOOL CLASSIFICATION 1970-1971

Classification	Non-Disabled Readers Fo	Fe	Disabled Readers Fo	Fe	Total
I	690	689.33	109	109.67	799
II	319	317.49	49	50.51	368
III	489	498.66	89	79.34	578
IV	287	279.53	37	44.47	324
Totals			284		

and indicated that the incidence of disabled readers occurred independent of school classification. Analyzing the six pairings of school classifications with the chi-square statistic, it was determined that there were no significant differences within any of the pairings.

Table 7 illustrates the incidence of disabled readers by sex and school classification among the final sample group of fourth grade students. Of the 284 students identified as disabled readers in the final sample group, 69.72 percent were male subjects while 30.28 percent of the identified disabled readers were female subjects.

Table 7 further delineates that the incidence of male disabled readers consistently exceeded the incidence of female disabled readers in all four school classifications. In school classification I, II, III, and IV, the respective percentages of male disabled readers in the reduced sample group were 73.39 percent, 61.22 percent, 67.42 percent, and 75.68 percent.

TABLE 7

FREQUENCY AND PERCENTAGE OF MALE AND FEMALE DISABLED READERS BY SCHOOL CLASSIFICATION 1970-1971

Classifications	Male Disabled Readers N	Percentage	Female Disabled Readers N	Percentage
I	80	73.39	29	26.61
II	30	61.22	19	37.78
III	60	67.42	29	32.58
IV	28	75.68	9	24.32
Totals	198	69.72	86	30.28

Table 8 presents a chi-square analysis of male and female disabled readers by school classification to determine whether or not the

TABLE 8

CHI-SQUARE ANALYSIS OF MALE AND FEMALE DISABLED READERS BY SCHOOL CLASSIFICATION 1970-1971

School Classifications	Male Disabled Readers Fo	Fe	Female Disabled Readers Fo	Fe	Total χ^2
I	80	75.99	29	33.01	109
II	30	34.16	19	14.84	49
III	60	62.05	29	26.95	89
IV	28	25.80	9	11.20	37
Totals	198				284

incidence of male and female disabled readers within and between school classifications were or were not occurrences that could happen by chance. The chi-square value (χ^2=3.215; df=3) was not significant at the .05 level and indicated that the incidence of male and female disabled readers occurred independent of school classification.

Analyzing the six pairings of school classifications with the chi-square statistic, it was determined that there were no significant differences with any of the pairings.

Question Three

Question Three was posed to determine the percentage of fourth grade disabled readers in North Dakota who received supplementary instruction and the weekly time allocation for such instruction overall and by school classification.

Employing the definition of disabled readers established for the purpose of this study, 95 of the 284 students or 33.45 percent of the disabled readers in the reduced study sample of fourth grade children in North Dakota received supplementary instruction. The mean supplementary instruction time received weekly by the 95 disabled readers was 113.06 minutes. For those disabled readers receiving supplementary reading instruction, school classification I provided the greatest amount of supplementary instruction time weekly to each disabled reader with a mean time amount of 134.86 minutes per disabled reader.

Table 9 provides information on the frequency with which disabled readers received supplementary instruction by school classification. In school classifications III and IV, 43 of the 89 disabled readers or 48.31 percent and 16 of the 37 disabled readers or 43.24 percent, respectively, received supplementary instruction. School

TABLE 9

FREQUENCY OF DISABLED READERS RECEIVING OR NOT RECEIVING SUPPLEMENTARY INSTRUCTION BY SCHOOL CLASSIFICATION 1970-1971

School Classification	Disabled Readers N	Receiving Supplementary Instruction N	%	Not Receiving Supplementary Instruction N	%
I	109	22	20.18	87	79.82
II	49	14	28.57	35	71.43
III	89	43	48.31	46	51.69
IV	37	16	43.24	21	56.76
Totals	284	95	33.45	189	66.55

classifications I and II provided supplementary instruction to 20.18 percent and 28.57 percent of their respective disabled readers.

Table 10 illustrates the application of the chi-square statistic to supplementary instruction data to determine whether or not the incidence of supplementary instruction within and between school classifications was statistically significant or a chance occurrence.

The chi-square value (χ^2=19.566; df=3) was significant at the .01 level and illustrated that the receipt of supplementary instruction was a function of school classification. Further analysis of paired school classifications indicated that there were statistically significant differences in students receiving/not receiving supplementary instruction between school classifications I and III (χ^2=17.582; df=1; significant at .01 level); I and IV (χ^2=7.625; df=1; significant at .01 level); and II and III (χ^2=5.080; df=1; significant at .05 level).

TABLE 10

CHI-SQUARE ANALYSIS OF DISABLED READERS RECEIVING OR NOT RECEIVING SUPPLEMENTARY INSTRUCTION BY SCHOOL CLASSIFICATION 1970-1971

School Classification	Receiving Supplementary Instruction Fo	Fe	Not Receiving Supplementary Instruction Fo	Fe	Total
I	22	36.46	87	72.54	109
II	14	16.39	35	32.61	49
III	43	29.77	46	59.23	89
IV	16	12.38	21	24.62	37
Totals	95		189		284

Table 11 below delineates the weekly supplementary reading instruction time allocated weekly to disabled readers by school

TABLE 11

SUPPLEMENTARY INSTRUCTION TIME ALLOCATION FOR DISABLED READERS BY SCHOOL CLASSIFICATION 1970-1971

Time Allocation Minutes/Week	Students by School Classification I	II	III	IV	Total
0 - 30	0	0	2	2	4
31 - 60	0	2	10	1	13
69 - 90	1	0	5	3	9
91 - 120	2	0	2	1	5
121 - 150	10	3	10	2	25
151 - 165	5	6	8	5	24
Totals	18	11	37	14	80

classification. On the basis of completed data received on 80 of the 95 students who were receiving supplementary instruction, it was determined that weekly time allocations for supplementary reading instruction ranged from less than 30 to 165 minutes weekly. Approximately 49 of 80 or 60 percent of the disabled readers on whom data were collected received supplementary reading instruction of 121 to 165 minutes weekly. Thirty-one disabled readers received two or less hours of supplementary instruction each week.

Table 12 illustrates the mean weekly supplemental reading instruction time allocation by school classification for each disabled reader who received supplemental reading instruction. School classification I allocated the largest mean time amount (134.86 minutes) of supplementary instruction. The mean weekly time allocation of supplementary instruction to disabled readers in other school classifications was II (130.91 minutes); III (100.00 minutes); IV (105.54 minutes); and overall in the four classifications, the mean was 119.06.

TABLE 12

MEAN TIME ALLOCATION OF SUPPLEMENTARY READING INSTRUCTION FOR DISABLED READERS BY SCHOOL CLASSIFICATION 1970-1971

School Classification	Students N	Mean Time Allocation of Supplementary Instruction in Minutes Per Week
I	18	134.86
II	11	130.91
III	37	100.00
IV	14	105.54
Totals	80	113.06

Question Four

Question Four was posed to determine the extent to which disabled readers overall and by school classification, were appropriately placed for reading instruction with regard to material difficulty by their classroom teachers.

Table 13 illustrates the minimum reader level positions of the study's disabled readers in the four school classifications as assessed

TABLE 13

MINIMUM DIAGNOSED STUDENT PLACEMENT OF DISABLED READERS BY SCHOOL CLASSIFICATION 1970-1971

	Minimum Diagnosed Reader Level by School Classification									
	I		II		III		IV		Total	
Reader	N	%	N	%	N	%	N	%	N	%
RR	2	2.0	3	6.4	1	1.2	0	0	6	2.3
PP, P, 1	29	28.4	17	36.2	25	29.4	9	30.0	80	30.3
2.0, 2.5	26	25.5	6	12.8	20	23.5	7	23.3	59	22.3
3.0, 3.5	41	40.2	19	40.4	36	42.4	13	43.3	109	41.3
4.0	4	3.9	2	4.2	3	3.5	1	3.4	10	3.8
Totals	102	100.0	47	100.0	85	100.0	30	100.0	264	100.0

by the investigating team. Of the 264 fourth grade disabled readers on whom computed and actual placement data were acquired, 254 or 96.21 percent had minimum placement positions in reading identified below the fourth grade level. Similar results were found to hold true for each of the individual school classifications.

Table 14 provides information about the actual placement of fourth grade disabled students in each of the four school classifications. A total of 217 of 264 or 82.19 percent of the fourth grade disabled readers in the four school classifications were placed in fourth grade reading instructional materials (basal readers). An additional 42 of the 264 disabled readers or 15.91 percent were placed in basal readers at the

TABLE 14

ACTUAL TEACHER PLACEMENT OF DISABLED READERS BY SCHOOL CLASSIFICATION 1970-1971

	Actual Student Placement by School Classification									
	I		II		III		IV		Total	
Levels	N	%	N	%	N	%	N	%	N	%
RR	0	0	0	0	0	0	0	0	0	0
PP, P, 1	1	1.0	0	0	0	0	0	0	1	0
2.0, 2.5	4	3.9	0	0	0	0	0	0	4	0
3.0, 3.5	26	25.5	6	12.8	4	4.7	6	20.0	42	0
4.0	71	69.6	41	87.2	81	95.3	24	80.0	217	0
Totals	102	100.0	47	100.0	85	100.0	30	100.0	264	0

third grade level, and five students or 1.90 percent of the disabled readers were placed in basal readers below the third grade level. The four school classifications were consistent in their placement patterns, tending toward placing 70 percent or more of their disabled students in basal readers on grade level (at fourth grade). Only school classification I placed its disabled readers in basal readers below the third grade, though all four school classifications had disabled readers whose

diagnosed placements in basal readers were determined to be at reading levels lower than third grade. Both school classifications I and II placed greater percentages of disabled readers in third grade materials than school classifications III and IV indicating a greater propensity on the part of teachers in those school districts to try lower grade level basal readers with their disabled readers, even though such lower level placements were not necessarily correct for the diagnosed placement of the disabled readers.

Table 15 provides a comparison between the minimum instructional reading level placement determined for the fourth grade disabled readers in the final sample group and the actual reading level placement (basal readers) ascribed by teachers for the instruction of the same students.

TABLE 15

COMPARATIVE ANALYSIS OF THE MINIMUM DIAGNOSED AND ACTUAL TEACHER PLACEMENT OF DISABLED READERS BY SCHOOL CLASSIFICATION 1970-1971

Reader Levels	Actual Student Placement vs Diagnosed Reading Level School Classification I ASP	I DRL	II ASP	II DRL	III ASP	III DRL	IV ASP	IV DRL	Totals
RR	0	2	0	3	0	1	0	0	6
PP, P, 1	1	29	0	17	0	25	0	9	80
2.0, 2.5	4	26	0	6	0	20	0	7	59
3.0, 3.5	26	41	6	19	4	36	6	13	109
4.0	71	4	41	2	81	3	24	1	10
Totals	102	102	47	47	85	85	30	30	264

Data gathered from the Diagnostic Summary Sheets and Pupil Information Forms indicated that 207 or 78.41 percent of the 264 disabled readers on whom placement information was returned were not appropriately placed according to individual placement testing results. School classification I students were appropriately placed with greater frequency than were students in the other three school types. Thirty-five or 34.31 percent of the disabled readers in school classification I were appropriately placed. School classification II, III, and IV, respectively, placed their disabled readers appropriately in 17.03 percent, 8.24 percent, and 24.33 percent of the cases.

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Purposes of the Investigation

The purposes of the study were (1) to determine the reading proficiency of fourth grade children in North Dakota, with a primary focus on the identification of disabled readers and (2) to ascertain the assistance that was provided for disabled readers by schools and classroom teachers.

The following four research questions were investigated in this study:

1. How well do fourth grade children in North Dakota read? The analysis of this question has three parts: how they read overall, how boys and girls compare in their reading, and how well they read by school classification.
2. What percentage of fourth grade children in North Dakota are disabled readers. The analysis of this question has three parts: how they read overall, how boys and girls compare in their reading, and how well they read by school classification.
3. What percentage of fourth grade children in North Dakota who are disabled readers received supplementary instruction and what is the weekly time allocation for such instruction overall and by school classification?

4. To what extent were disabled readers appropriately placed for reading instruction with regard to material difficulty by their classroom teachers overall and by school classification?

Summary of the Design and Procedures

The sample of the study was 2,069 fourth grade students enrolled in fifty-seven North Dakota public high school districts. The school districts were randomly selected by population size (Classification I - 400 or more pupils; II - 200-399 pupils; III - 100-199 pupils; IV- 99 or less pupils) in an attempt to secure an approximate mix of school sizes and pupil distributions that prevailed in the State of North Dakota at the time the study was undertaken. Criteria for inclusion of a school district in the study were: (1) classification as a public high school district, (2) selection from the random sample, (3) willingness of the school district to participate in the study, and (4) availability of the Iowa Test of Basic Skills test data on fourth grade students enrolled in the school districts.

The Iowa Test of Basic Skills and Lorge Thorndike Intelligence Test were administered as group tests to all fourth grade students in the study sample group by school district personnel. The investigator and a trained group of twenty-three diagnosticians individually tested potential disabled readers with the Slosson Intelligence Test for Children and Adults and an Informal Reading Inventory and collected additional student and test data on the Diagnostic Summary Sheet and Pupil Information Form.

The analysis of data was accomplished through the use of the student's t distribution and multiple comparisons. The chi-square statistic was also employed in the treatment of dichotomous data.

Summary of the Limitations of the Investigation

The study was conducted with fourth grade students enrolled in public high school districts in North Dakota. The findings of the study are generalizable only to the studied sample group and the larger population of North Dakota fourth grade students.

Summary of the Results

Subject to the limitations identified earlier, the findings of the study are as follows:

Question One

How well do fourth grade children in North Dakota read? The analysis of this question has three parts: how they read overall, how boys and girls compare in their reading, and how well they read by school classification.

1. The mean reading achievement grade equivalent score of North Dakota fourth grade students in the study sample group was 4.31. The National norm for fourth grade students taking the Iowa Test of Basic Skills in October, 1971 was 4.10. The sample group achieved a mean grade equivalent score that was approximately two months higher than the 4.10 national norm.

2. The mean reading achievement grade equivalent score for each of the four school classifications was classification I, 4.34; classification II, 4.29; classification III, 4.19; and classification IV, 4.46.

The mean reading achievement grade equivalent score for each of the four school classifications exceeded the 4.10 grade equivalent national norm. Using multiple comparisons to determine whether or not paired school classification mean achievement scores differed significantly it was found that school classification I varied significantly from school classification III at the .05 level ($t=2.220$); school classification III varied significantly from school classification IV at the .05 level ($t=-3.146$) and the total of all school classifications at the .05 level ($t=-2.089$); and school classification IV varied significantly from the total of all school classifications at the .05 level ($t=-2.003$).

3. The mean reading achievement grade equivalent score of girls in the study sample group was 4.52, while boys scored a mean reading achievement grade equivalent of 4.12. Differences between mean reading achievement for girls and boys were found to be statistically significant at the .01 level when tested with the t test statistic ($t = 7.38$; $df = 2,067$).

Question Two

What percentage of fourth grade children in North Dakota are disabled readers? The analysis of this question has three parts: how they read overall, how boys and girls compare in their reading, and how well they read by school classification.

1. An examination of the 2,069 North Dakota fourth grade students' test results indicated that 284 or 13.73 percent of the students met all four criteria for disabled readers as defined in the study.

2. As a function of school classification, it was found that the incidence of disabled readers in the study sample group was as

follows: classification I: 109 students or 13.64 percent; classification II: 49 students or 13.32 percent; classification III: 89 students or 15.40 percent; and classification IV: 37 students or 11.42 percent. Application of a chi-square analysis to the number of disabled readers in the study sample was conducted to determine whether or not the distribution of disabled readers within and between school classifications occurred by chance. The chi-square value (χ^2=2.875; df=3) was not significant at the .05 level and indicated that the incidence of disabled readers occurred independent of school classification. Analyzing the six pairings of school classifications with the chi-square statistic, it was determined that there were no significant differences within any of the pairings.

3. An analysis of disabled readers on the basis of sex illustrated that 198 or 69.72 percent of the 284 disabled readers in the study sample group were boys, and 86 or 30.28 percent of the disabled readers were girls.

4. As a function of school classification, it was found that the incidence of male and female disabled readers in the study sample group was as follows: classification I: 80 male subjects or 73.39 percent and 29 female subjects or 26.61 percent; classification II: 30 male subjects or 61.22 percent and 19 female subjects or 37.78 percent; classification III: 60 male subjects of 67.42 percent and 29 female subjects or 32.58 percent; and classification IV: 28 male subjects or 75.68 percent and 9 female subjects or 24.32 percent. Differences in the number of male and female disabled readers within and between school classifications were analyzed by using the chi-square statistic to determine whether or not such differences were or were not occurrences that could happen by

chance. The chi-square value (χ^2=3.215; df=3) was not significant at the .05 level and indicated that the incidence of male and female disabled readers occurred independent of school classification. Analyzing the six pairings of school classification with the chi-square statistic, it was determined that there were no significant differences with any of the pairings.

Question Three

What percentages of fourth grade children in North Dakota who are disabled readers received supplementary instruction and what is the weekly time allocation for such instruction overall and by school classification?

1. An examination of data collected on the 284 fourth grade disabled readers in the study sample group indicated that 95 disabled readers or 33.45 percent received supplementary instruction in their school district. One hundred eighty-nine disabled readers received no supplementary instruction.

2. As a function of school classification, it was found that the number of disabled readers provided supplementary instruction by their respective school districts was as follows: classification I: 22 students or 20.18 percent; classification II: 14 students or 28.57 percent; classification III: 43 students or 48.31 percent; and classification IV: 16 students or 43.24 percent. Differences in the number of disabled readers who received or did not receive supplementary instruction were analyzed within and between school classifications, employing the chi-square statistic, to determine whether or not such differences were statistically significant. The chi-square value

(χ^2=19.566; df=3) was significant at the .01 level and illustrated that the receipt of supplementary instruction was a function of school classification. Further analysis of paired school classifications indicated that there were statistically significant differences in students receiving/not receiving supplementary instruction between school classification I and III (χ^2=17.582; df=1; significant at the .01 level); I and IV (χ^2=7.625; df=1; significant at .01 level); and II and III (χ^2=5.80; df=1; significant at .05 level).

3. On the basis of completed data received on 80 of the 95 students who were receiving supplementary instruction, it was determined that school districts in North Dakota provided supplementary reading instruction time allocations to disabled readers that ranged between 0 and 165 minutes each week. The 80 disabled readers in the study sample on whom data were received were allocated an average of 113.06 minutes of supplementary reading instruction each week by their school districts and teachers. School classification I delivered the largest average time allotment for supplementary reading instruction to disabled readers among the four school classifications. Their time allocation was an average of 134.86 minutes each week for each disabled reader. School classifications II, III, and IV respectively delivered an average of 130.91 minutes, 100.00 minutes, and 105.54 minutes of supplementary reading instruction to each disabled reader each week.

Question Four

To what extent were disabled readers appropriately placed for reading instruction with regard to material difficulty by their classroom teachers overall and by school classification?

1. An examination of the data collected on 264 disabled readers' instructional placement in reading established that 207 disabled readers or 78.41 percent were not appropriately placed for reading instruction.

2. Diagnostic test data on the 264 disabled readers indicated that some 254 or 96.21 percent of those on whom data were received should be placed in reading materials below the fourth grade level. On the basis of actual placement data acquired from school districts participating in the study, 217 of the 264 disabled readers or 82.19 percent were actually placed at or above the fourth grade level for reading instruction.

3. As a function of school classification, it was found that school classification I was erroneous in the placement of disabled readers for reading instruction no less than 65.68 percent of the time. School classifications II, III, and IV were respectively erroneous in their reading placement of disabled readers 82.98 percent, 91.76 percent, and 76.67 percent of the time. As a total group all school classifications were erroneous in placing disabled readers 78.41 percent of the time for reading instruction.

Implications of the Study

Students at the fourth grade level enrolled in public high school districts in the state of North Dakota read above the national norms as a group. All four school classifications examined in the study scored above the national norms of the Iowa Test of Basic Skills. The school districts in school classification IV, with the smallest enrollments, yielded the highest reading achievement scores. However, the combined reading achievement scores of the school districts in the largest two school classification ranges were nearly similar to the combined averages of the school

districts in the two smallest school classifications. As a result of the findings of this study it appears that the conclusions generated through the North Dakota Statewide Study of Education (1967) which concluded that students in small rural school districts were achieving at a lower level than children from larger school districts does not appear to be valid in relationship to reading achievement data collected in this study. It also appears that many of the problems identified by the Statewide Study of Education (1967) as being related to the lower achievement patterns identified in small school districts, namely, a high proportion of less-than degree level teachers and the lack of supplementary reading services, had been substantially improved during the time of this investigation. These factors may have contributed to the more similar or equivalent reading achievement scores evidenced at each school classification at the fourth grade level throughout the state of North Dakota.

In spite of the vast amount of literature that supports individualized instruction, there appears to be little evidence that individualization of reading instruction occurred in most fourth grade classrooms throughout the state of North Dakota at the time of this investigation. In most instances disabled readers examined in this study were placed in basal reading programs in grade level materials. Seldom were those students placed in materials at their diagnosed instructional reading level. Because of the great numbers of disabled readers in the study who were severely misplaced in the classroom reading program it appears that classroom teachers either do not have the expertise to diagnose and place children appropriately in the classroom reading program and/or do not take the time to work with these students in the classroom reading program.

In terms of the numbers of disabled and slow learners identified in this study, it is unrealistic to expect that these children can or should be served exclusively through supplementary reading programs outside of the classroom. At present there appears to be no guarantee that such instruction, outside of the classroom, will be of improved quality. It appears further much more realistic to alter the delivery of the regular classroom reading program so that it is more conducive to the varying needs of students (e.g., improved diagnosis, placement, grouping, prescription, supplementation). In light of the large proportion of disabled readers that were found to be misplaced in instructional materials, this investigator is guarded about labeling children with such terms as learning disabled, aphasic dyslexic, disabled, disenchanted, emotionally disturbed and so forth, unless precautions are undertaken to ensure that children receive instruction that is appropriate initially within the classroom environment. It seems indefensible to disguise substandard instructional practices that are harmful to children under the guise of new programs without focusing on correcting and remediating the problems at hand.

While it was not the purpose of this study to examine affective education, the issue regarding what happens to students behaviorally and attitudinally as they go through the educational system without receiving appropriate instruction should be further examined.

The prevalence of reading disability in North Dakota included approximately 14 percent of the fourth grade population. It should be noted that this figure was derived through the use of individual testing procedures, a practice that has not been duplicated on a large scale elsewhere in the United States. Normally, studies on the frequency of reading

disability have been conducted only through group standardized testing procedures. It is interesting also to note that the frequency of disabled readers identified in this population decreased by seven percent as a result of the refined testing process used in this study. The frequency of reading disability identified in this study, as a result of the use of the Bond and Tinker Reading Expectancy Formula, included children who were functioning at or near grade level in reading, but who were functioning substantially below their intellectual potential for learning. This is a realistic definition of reading disability if it is a major concern that children learn in relationship to their potential.

According to the North Dakota Statewide Study of Education (1967) small rural school districts had few supplementary reading services available for children as compared to larger school districts. The findings of this investigation indicated that supplementary reading services were available and provided to children in all school classifications on a fairly equitable basis. Although a large proportion of the disabled readers in all school classifications in the study did not receive supplementary reading services most of the severe cases of reading disability did receive such services. It may be assumed that those children identified as disabled readers who were functioning in reading near grade level would not be detected or defined as disabled readers by their classroom teachers and, hence, would not receive supplementary reading services.

Although the Bond and Tinker Reading Expectancy Formula is a commonly used method for identifying disabled readers throughout the United States, it has questionable value as a practical tool for the

identification and selection of children for special reading services within most school districts because schools generally do not provide these services for children who are functioning at or near grade level. It would appear, however, that the Bond and Tinker Reading Expectancy Formula would be a very useful tool for those schools or districts that have a commitment to employing individualized reading programs and that have children enrolled in their school district that do not have language interference problems.

Although this study did not focus on the quality of the supplementary services provided to disabled readers, information obtained from classroom and supplementary reading teachers indicated that many of the disabled readers received much of the same type of instruction in the supplementary reading programs as they received in the classroom reading programs. It appeared that the supplementary reading programs duplicated many of the same kinds of activities and practices that occurred in the classroom.

According to the findings of this study girls outperformed boys in reading achievement and boys experienced a reading disability twice as frequently as girls. These findings are similar to those found in other studies conducted throughout the United States. With the current interest in the sexual stereotyping of reading materials it appears that reading materials should be examined and utilized in schools that relate to special interests of both boys and girls.

Recommendations

It is recommended that the North Dakota State Department of Public Instruction assume a major leadership role, with the assistance of

the state's colleges and universities and the public and private school districts, in assuring that each school district throughout the state of North Dakota develop and implement a K-12 comprehensive individualized reading program. It is essential that all segments of the educational community and the public be involved in the proposed plan so that the needs of the state and local communities can be identified, appropriate long and short term goals defined, and appropriate public support gained. It is also particularly crucial at this time that available resources--federal, state, and local--be effectively correlated to the proposed plan. It does not appear defensible at this time in history to continue to establish new programs at the state and local levels unless the programs improve the quality of the services offered to children.

Nationally, Right to Read and Title III ESEA programs are available that may serve as models for improving reading programs throughout the state of North Dakota. This investigator feels that sufficient data and support are now available to begin the process of developing and implementing a long range plan for the improvement of reading instruction at all levels of education throughout the state of North Dakota.

It is recommended at the local level that experience-based training sessions, for teachers and principals, focused on the improvement of the reading programs be established. Such training sessions could be organized by exemplary practitioners and state college and university faculty. These training sessions should include information and practice related to such topics as diagnosis, placement, prescription, supplementation, individualized instruction, grouping for instruction, interest centers, alternative reading methodologies, readability assessment, reading in the content areas, student tutoring, community involvement,

and norm, criterion, and informal testing. Information and activities relating to the foregoing can aid both administrators and teachers in approaching the problems of the disabled reader with a broader base of knowledge and a storehouse of tested, successful techniques.

Additionally, school administrators are encouraged to become involved in viewing reading instruction as a critical educational priority--one which requires much more than verbal commitment--by becoming advocates of more flexible staffing and grouping patterns, selecting better trained personnel, acquiring a broader range of material resources, and encouraging the design of exemplary reading programs.

Finally, boards of education and communities will need to recognize that the problems of the disabled reader are not confined to the deprived, the slow learner, and the mentally incapable. Rather, disabled readers are a product of every type of environment and home-setting. In this regard, community patrons will need to support and promote the continued development and expansion of efforts to improve the quality of reading instruction for all children, both through their tax dollars and their personal involvement in the daily operation of the local schools.

APPENDIX A

PUBLIC HIGH SCHOOL DISTRICTS AND SCHOOLS BY SCHOOL CLASSIFICATION THAT PARTICIPATED IN THE STUDY

CLASS I

Bismarck
Devils Lake
Dickinson
Fargo
Grafton
Grand Forks
Minot
Rugby
Wahpeton
West Fargo
Williston

CLASS II

Beach
Cavalier
Ellendale
Enderlin
Forman
Napoleon
Tioga

CLASS III

Arthur-Hunter
Center
Cooperstown
Drake
Glenburn
Hatton
Hoople
Lakota
LaMoure
Medina
Milnor
Minto
New Town
Northwood
Ray
Rolla
Underwood
Washburn

CLASS IV

Bisbee
Buffalo
Carpio
Cleveland
Columbus
Edinburg
Epping
Hampden
Hannaford
Luverne
McClusky
Montpelier
Oriska
Osnabrock
Page
Reader
Riverdale
Rock Lake
Thompson
Tolna
Wolford

CITY	ELEMENTARY SCHOOL	PRINCIPAL OR SUPERINTENDENT
	CLASS I	
Bismarck	Wachter Riverside	Don Prouty Maynard Dahl
Devils Lake	Minnie H.	Mr. Grossman
Dickinson	Jefferson	Donald Stoxen
Fargo	McKinley Roosevelt	Walter Fogel Roger Olgard
Grafton	Westview	Mr. Normandy
Grand Forks	West Belmont	David C. Shearer Andy Swanson
Minot	Longfellow North Hill	John Youngbeck Dr. Borgen
Rugby	Rugby	James Kappel
Wahpeton	Zimmerman	Katherine Anderson
West Fargo	South	Dean Hall
Williston	McVey	Lorraine Quie
	CLASS II	
Beach	Lincoln	Kent Olson
Cavalier	Cavalier	John Sunderland
Ellendale	Ellendale	Judy Bertsch
Enderlin	Enderlin	Douglas Oglesby
Forman	Rutland	Werner Veil
Napoleon	Napoleon	Donald Geigle
Tioga	Hillcrest	Darrel Lambrecht
	CLASS III	
Arthur-Hunter	Dakota	Duane Silseth
Center	Center	David Blackstead

CITY	ELEMENTARY SCHOOL	PRINCIPAL OR SUPERINTENDENT
	CLASS III (continued)	
Cooperstown	Central	Arthur Morlock
Drake	Drake	Richard Grose
Glenburn	Glenburn	Duane Paulsrud
Hatton	Hatton	H. L. McLain
Hoople	Hoople	Elwood Richmond
Lakota	Lakota	Neil Dardis
LaMoure	LaMoure	Dwayne Erickson
Medina	Medina	Casper Kourajian
Milnor	Delamere	Corine M. Anderson
Minto	Minto	Vernon Schreiner
New Town	Edwin Loe	Ernest Medalen
Northwood	Northwood	Dorothy Peterson
Ray	Ray	Daniel Delaney
Rolla	Kyle	Helen Peterson
Underwood	Underwood	Stuart Lokken
Washburn	Washburn	Cleo Nordquist
	CLASS IV	
Bisbee	Bisbee	Leander Wernberg
Buffalo	West	Morris Olson
Carpio	Carpio	Fern Patterson
Cleveland	Cleveland	Fletcher Wilson
Columbus	Columbus	James Peterson
Edinburg	Edinburg	Roger Erickson
Epping	Epping	Eugene Burns

CITY	ELEMENTARY SCHOOL	PRINCIPAL OR SUPERINTENDENT
	CLASS IV (CONTINUED	
Hampden	Hampden	Norman Bakke
Hannaford	Hannaford	Robert Ness
Luverne	Willow Lake	John Conlon
McClusky	McClusky	Bertha Hamilton
Montpelier	Montpelier	Donald Grinolds
Oriska	Oriska	Eugene Hendricks
Osnabrock	Osnabrock	John Taylor
Page	Page	Orville Myhr
Reeder	Reeder	Mr. Karsky
Riverdale	Riverdale	Alvin Weller
Rock Lake	North Central	Kenneth Backmeier
Thompson	Thompson	Bernard Olson
Tolna	Tolna	Curtis Herman
Wolford	Wolford	Gurmen Schimke

APPENDIX B

DIAGNOSTIC SUMMARY SHEET AND

PUPIL INFORMATION FORM

DIAGNOSTIC SUMMARY SHEET

(1) Slosson Intelligence Quotient - Enter the total I.Q. obtained from the Slosson on line one. It is imperative that the chronological age for each pupil is verified. The CA should be verified through school records, the pupil, or the teahcer.

(2) Years in School - Enter the number of years and months that the pupil has attended school on line two. This figure is critical for determining the reading potential of the child. For the purpose of this study the years in school figure refers to the years and months that the average fourth grade child has attended school (excluding kindergarten) as of March, 1971. The typical fourth grade child who has neither been retained nor accelerated will have attended (3.7) years in school at the time of the reading diagnosis. The number one (1.0) should be added to the base (3.7) for each year a particular child has been retained. Conversely, one (1.0) should be subtracted from the base (3.7) for each year a particular child has been accelerated in school. Again, it is imperative that accurate information be obtained pertaining to the retention or acceleration of a specific child.

(3) Bond and Clymer Reading Expectancy Index - The index is one of numerous methods currently used for predicting the expected reading achievement level for individual and groups of children. The reading expectancy level of a specific child is computed by multiplying his years in school attendance (excluding kindergarten) times the intelligence quotient plus one, (yrs. in school x I.Q. + 1.0). For the purposes of this study the reading expectancy of a particular child may be rapidly computed by using the Bond and Clymer Table. Enter the appropriate capacity level for the child on line three.

(4) Instructional Reading Level - The (IRL) indicates the pupil's present reading achievement level.

(Note: The (IRL) where the child is presently achieving in reading instruction and the Bond and Clymer Reading Expectancy Index indicates where the child should be functioning in reading under the most favorable circumstances.)

For the purposes of this study only one instructional reading level will be used to represent a child's reading achievement level. This level will be obtained from the Informal Reading Inventory. The instructional reading level will then be converted for the purposes of computation to the following numerals and entered on line four:

(IRI) Reading Levels	Numerals	(IRI) Reading Levels	Numerals
Reading Readiness	0	3.2	3.5
PP and P	1.0	4	4.0
1	1.5	5	5.0
2.1	2.0	6	6.0
2.2	2.5	7	7.0
3.1	3.0		

(5) The reading achievement score obtained in number four should be subtracted from the Bond and Tinker expectancy score obtained in number three. If the difference obtained in number five equals or exceeds (1.5) the child will be defined as a disabled or retarded reader. It should be noted that if the value of number four is less than number three, the value of number five will be negative.

(6) If the child's reading achievement-reading expectancy discrepancy equals or exceeds (1.5) he is defined as a disabled reader. (This simply means that he is currently reading 1 1/2 years or more below his maximum learning potential. If this occurs, the yes response should be circled in number six.

(9) Describe the physical location of the testing situation. If the diagnostic session was conducted in a place that was distracting to the child, this should be noted. Any obvious learning disabilities or handicaps of the child should also be described at this time. (For example: Speech defect, foreign language, dialect, and poor vision, etc.)

Pupil_____
ID Number_____
Examiner_____

DIAGNOSTIC SUMMARY SHEET

(1) Slosson Intelligence Quotient____ Present Date_____
(yr.) (mo.) (day)

(2) Years in school (verify)_____ Birth Date _____
(yr.) (mo.) (day)

(3) Bond and Clymer Rdg. Expectancy___ Chronological Age _____
(yr.) (mo.) (day)

(4) Instructional Reading Level_____

(5) (+) or (-) achievement_____

(6) The child is a disabled reader (circle one) yes no

(7) IRI Summary: (Circle the appropriate level or levels)

(a) Independent level or levels None, PP, P, 1-2, 2-1, 2-2, 3-1,3-2, 4,5, 6,7
(b) Instructional level or levels None, PP, P, 1-2, 2-1, 2-2, 3-1,3-2, 4,5, 6,7
(c) Frustrational level None, PP, P, 1-2, 2-1, 2-2, 3-1,3-2, 4,5, 6,7
(d) Listening capacity level Other, Not tested, 2.0, 3.0, 4, 5, 6, 7

(8) Analysis of Oral Reading Errors (IRI): Record the total number of oral reading errors at each level.

(a) Word Recognition	PP	P	1-2	2-1	2-2	3-1	3-2	4	5	6	7
Mispronounciations											
Omissions											
Additions											
Substitutions											
Words pronounced by examiner											
Insertions											

(b) Fluency	PP	P	1-2	2-1	2-2	3-1	3-2	4	5	6	7
Poor phrasing, word by word											
Volume, too loud or soft											
Pitch, too high or low											
Monotone											
Ignores punctuation											
Loses place											
Finger Points											

(c) Posture	PP	P	1-2	2-1	2-2	3-1	3-2	4	5	6	7
Book too close, too far											
Moves head											
Squints or frowns											
Tilts head, tilts book											

(d) Other comments

PUPIL INFORMATION FORM

Examiner_____

North Dakota Statewide Reading Study

General Information

Pupil_____ ID number_____ Grade_____ Sex_____
(first name) (last name)

School_____ ID number_____City_____

Teacher_____ School Telephone_____

Administrator_____

Description of Pupil's School Program

1. Did the child attend kindergarten? (circle one) yes / no

2. Approximate duration of kindergarten experience. (circle one)
1-3 wks., 1-3 mos., 4-6 mos., 7-9 mos., 10-18 mos., 19-27 mos.

3. Indicate the number of times the child has been retained. (circle one) 0, 1, 2, 3

4. If the child was retained, circle the specific grade or grades. K, 1, 2, 3, 4

5. Indicate the number of days absent each school year.
K____ 1____ 2____ 3____ 4____

6. Please record all grades received for each reporting period during the fourth grade school year in the following curriculum areas:

Reading	_____	Social Studies	_____
Language	_____	Science	_____
Spelling	_____	Arithmetic	_____

7. Does the child presently receive all reading instruction from a regular classroom teacher? (circle one) yes /no

8. Does the child presently receive special reading instruction from a remedial reading teacher, SLD teacher, or a basic skills teacher, etc.? (circle one) yes / no
(Please briefly describe the amount of time alloted for the child in the special program)

9. Does the child presently receive formal directed reading instruction in both situations described above in 7 and 8. (circle one) yes / no

Description of Pupil's School Program

Describe the child's present reading program. The description should include information from both special and classroom reading teachers.

Please include the following:

I. Basal Reading Program or Developmental Programs

A. Publisher of Basal Material
(Example: a. Houghton-Mifflin)
(Example: b. Open Court Basic Readers)

B. Title and Level of Present Reader used for the child
(Example: a. On We Go 2-2)
(Example: b. A Magic World 3-1)

C. Approximate Page Number
(Example: a. p. 69)
(Example: b. p. 15)

II. Special Reading Kits

A. Name and Publisher of Kit
(Example: SRA Reading Laboratory, Science Research Associates, Inc.)

B. Students Placement Level in Kit
(Example: Kit II-a, Aqua)

III. Special Skills Materials (includes special word analysis and comprehension skills materials)

A. Name & Publisher of Skills Materials
(Example: a. "Phonics We Use" Workbooks, Lyons and Carnahans)
(Example: b. "Be a Better Reader," Prentice Hall, Inc.)

B. Student's placement in skill material
(Example: a. Book "B," Initial Consonants, page 16)
(Example: b. Book B, Study Skills, p. 25)

IV. Other

In the event that the child receives all instruction through an individualized program, programmed instruction approach, language experience approach, or a combination of these methods, try to be as specific as possible as to the nature of the program and the specific placement of the child in specific materials. (Use reverse side if needed.)

APPENDIX C

READING DIAGNOSTICIANS

READING DIAGNOSTICIANS

1971 State-Wide Reading Study Personnel
Grand Forks

Brinster, Kathleen
801 Oak Street
Grand Forks, North Dakota 58201 775-7058

Teacher
Winship Elementary School
Grand Forks, N. D.

Gilbraith, Glenn
2515 Cherry St.
Grand Forks, North Dakota 58201
Telephone No. 772-5490

Principal
Roosevelt Elementary School
Telephone No. 775-9114
Grand Forks, N. D.

Grenz, Cindy
C - 20 Princeton Tr. Ct.
Grand Forks, North Dakota 58201 775-9402

Teacher
West Elementary School
Grand Forks, N. Dak.

Hanson, Dick
2210 University Ave.
Grand Forks, North Dakota 772-9408

Doctoral Student
University of N. D.
Telephone No. 777-3991

Larson, Viola
Oslo, Minnesota
Telephone No. 695-3192

Teacher
Alvarado, Minnesota
Alvarado Public School

Loebrick, Darlene
A - 6 Princeton Tr. Ct.
Grand Forks, North Dakota 58201
Telephone No. 772-7431

New School
Graduate Student
University of North Dakota
Grand Forks, N. D.

Maresh, Roger
Rulane Drive
Grand Forks, North Dakota 58201
Telephone No. 775-9968

Doctoral Student
University of N. D.
Grand Forks, N. D.
Telephone No. 777-3991

McMiller, Jane
824 D J St.
Grand Forks, North Dakota AFB
Telephone No. 594-2173

New School
Under graduate
U.N.D.

McNeill, Sandra
3805 Berkeley Dr. Apt. #4
Grand Forks, North Dakota 58201
Telephone No. 775-2684

Teacher
Wilder Elementary School
Grand Forks, N. D.
Telephone No. 775-9612

Possehl, Cheryl
619 18th Ave. So.
Grand Forks, North Dakota 58201
Telephone No. 772-1109

Teacher
Roosevelt Elementary School
Grand Forks, N. D.
Telephone No. 775-9114

Peebles, Dr. James
619 Belmont Road
Grand Forks, North Dakota 58201
Telephone No. 772-9298

Director of Reading Clinic
University of N. D.
Grand Forks, N. D.
Telephone No. 777-2511

Stahlecker, Mary
313 Stanford Rd.
Grand Forks, North Dakota 58201
Telephone No. 772-1409

New School
Under graduate
University of N. D.
Grand Forks, N. D.

Swenson, Ken
3810 Berkeley Dr.
Grand Forks, North Dakota 58201
Telephone No. 775-5430

Doctoral Student
University of N. D.
Grand Forks, N. D.

Worner, Marilyn
518 Northwestern Drive
Grand Forks, North Dakota 58201
Telephone No. 772-3783

Teacher
Washington Elementary School
Grand Forks, N. D.
Telephone No.

Worner, Michael
518 Northwestern Drive
Grand Forks, North Dakota 58201
Telephone No. 772-3783

Doctoral Student
University of N. D.
Grand Forks, N. D.
Telephone No. 777-3991

1971 State-Wide Reading Study Personnel
Fargo Public Schools

Caldwell, Erin
1906 - 16 1/2 St. South
Fargo, North Dakota 58102
Telephone No. 235-7993

Visiting Counselor
District Office
Fargo, North Dakota
Telephone No. 235-6461

Dodge, Jane
204 24th St. So. #317
Fargo, North Dakota 58102
Telephone No. 237-6996

Teacher (3rd Grade)
Jefferson Elementary School
Fargo, N. D.

Nielson, Judy
615 So. Univ. Dr.
Fargo, North Dakota 58102
Telephone No. 235-2292

Teacher (Second Grade)
Lincoln Elementary School
Fargo, N. D.

Rustebakke, Patricia
315 30th Ave. N.
Fargo, North Dakota 58102
Telephone No. 232-8516

Teacher (First Grade)
Longfellow Elementary School
Fargo, N. D.
Telephone No. 232-4217

Severson, Elynn
2403 S. 18th St. So.
Moorhead, Minnesota 56560
Telephone No. 236-7162

Diagnostician
Horace Mann Elementary School
Fargo, N. D.

Stone, Jeanette L.
2908 7th St. N.
Fargo, North Dakota 58102
Telephone No. 235-1170

Principal
Longfellow Elementary School
Fargo, N. D.
Telephone No. 232-4217

Wegenast, Judy
415 Forest Ave.
Fargo, North Dakota 58102
Telephone No. 237-4928

Teacher (Second Grade)
Jefferson Elementary School
Fargo, N. D.

Spriggs, Fred
3110 So. Rivershore Drive
Moorhead, Minnesota

Visiting Counselor
District Office
Fargo, North Dakota
Telephone No. 235-6461

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