

A COMPARISON OF THE ACADEMIC SUCCESS OF GRADED AND ONE-ROOM RURAL  
SCHOOL STUDENTS OF THE INTERMOUNTAIN SCHOOL DIVISION

A Thesis

presented to

THE FACULTY OF GRADUATE STUDIES AND RESEARCH  
UNIVERSITY OF MANITOBA

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE  
MASTER OF EDUCATION

by

JACK HERSEY GIBSON

OCTOBER 1968



A COMPARISON OF THE ACADEMIC SUCCESS OF GRADED AND ONE-ROOM RURAL  
SCHOOL STUDENTS OF THE INTERMOUNTAIN SCHOOL DIVISION

ABSTRACT OF THESIS

There was a prevalent feeling that the one-room rural school was no longer fulfilling the educational needs of its students, and, as a result, a trend towards the elimination of the rural schools and the formation of larger centralized schools was becoming more prominent. The reorganization of schools in The Intermountain School Division had not been carried out to any great extent, but it seemed likely that pressure to carry out further school consolidation would be increased. Therefore, the purpose of the study was to compare the academic achievement of students from one-room rural schools with that of comparable students from the larger graded schools of this division.

Hypotheses were proposed that there was no significant difference in the achievement of students from the two types of schools in language, mathematics, social studies, science, and in the aggregate of these subjects, as measured by the Grade IX Departmental Achievement Tests. In addition, the degree of academic success in Grade IX, as measured by promotion results, the drop-out rate and the incidence of grade repetition in both types of schools were also compared.

The method of investigation consisted of obtaining the scholastic records of all the students that entered Grade I of either type

of school, within the division, over a five-year period, the setting up of matched pairs and the comparing of the relative achievement of each group of students.

After the data were arranged in tables the various hypotheses were tested by either a t-test or a chi-square statistic. The study indicated that, for comparable students, the graded school pupils achieved significantly higher in language and social studies, and in the aggregate of the four subjects investigated. The graded school students did not have a significantly higher degree of academic success in Grade IX, as measured by promotion results, when the matched pairs were considered, but did have a significantly higher degree of success when all those who wrote the Grade IX Departmental Achievement Tests were included. The graded schools had a much lower drop-out rate and a lower incidence of grade repetition.

The study indicated that the one-room rural school was not as successful as the graded school in preparing its students for the first year of high school and that the trend towards the elimination of the rural school and the development of the larger graded school should be continued in The Intermountain School Division and in other rural areas of Manitoba.

## TABLE OF CONTENTS

CHAPTER	PAGE
I. INTRODUCTION . . . . .	1
The Statement of the Problem . . . . .	4
Purpose of the Study . . . . .	5
Significance of the Study . . . . .	6
Definition of Terms Used in the Study . . . . .	6
Limitations and Delimitations . . . . .	8
II. REVIEW OF RELATED LITERATURE . . . . .	11
Studies Completed in Ontario . . . . .	11
Studies Completed in Alberta . . . . .	17
American Studies . . . . .	19
Summary . . . . .	21
III. RESEARCH METHODOLOGY . . . . .	22
Collection of Data . . . . .	22
Null Hypotheses . . . . .	24
Universe . . . . .	27
IV. ANALYSIS OF DATA . . . . .	30
Aptitude Tests . . . . .	30
Language Achievement . . . . .	31
Achievement in Mathematics . . . . .	33
Achievement in Social Studies . . . . .	35
Achievement in Science . . . . .	37
Aggregate Achievement . . . . .	39
Results in the Study of Sub-Problem 1 . . . . .	41

CHAPTER	PAGE
Results in the Study of Sub-Problem 2 . . . . .	45
Results in the Study of Sub-Problem 3 . . . . .	48
Testing the Hypotheses . . . . .	50
Achievement When the Individual Collegiates are Considered . . . . .	57
Conclusions . . . . .	64
V. SUMMARY, CONCLUSIONS, AND IMPLICATIONS . . . . .	65
Summary . . . . .	65
Conclusions . . . . .	67
Implications . . . . .	69
Reorganization of School Districts . . . . .	69
For the Administrator . . . . .	71
Further Research . . . . .	73
BIBLIOGRAPHY . . . . .	77
APPENDIX . . . . .	82

LIST OF TABLES

TABLE	PAGE
I. Number of Schools and Pupils in the Sample . . . . .	28
II. Number of Matched Pairs Formed Each Year . . . . .	28
III. Name of Aptitude Test Used Each Year . . . . .	30
IV. Grade IX Language Achievement of Students Who Attended Graded or One-Room Schools . . . . .	31
V. Grade IX Language Achievement of Students Who Attended Graded or One-Room Rural Schools Grouped According to the Secondary School Attended in Grade IX . . . . .	32
VI. Achievement in Grade IX Mathematics by Students Who Attended Graded or One-Room Rural Schools . . . . .	33
VII. Grade IX Mathematics Achievement of Students Who Attended Graded or Rural Schools Grouped According to the Secondary School Attended in Grade IX . . . . .	34
VIII. Grade IX Social Studies Achievement of Students Who Attended Graded or One-Room Rural Schools . . . . .	35
IX. Grade IX Social Studies Achievement of Students Who Attended Graded or One-Room Rural Schools Grouped According to the Secondary School Attended in Grade IX.	36
X. Achievement in Grade IX Science by Students Who Attended Graded or One-Room Rural Schools . . . . .	37
XI. Achievement in Grade IX Science by Students Who Attended Graded or One-Room Rural Schools Grouped According to the Secondary School Attended in Grade IX.	38

TABLE	PAGE
XII. A Comparison of the Mean Scores of the Average Mark Obtained in all the Four Departmental Achievement Tests by Students Who Attended Graded or One-Room Rural Schools . . . . .	40
XIII. A Comparison of the Mean Scores of the Average of the Marks Obtained in Grade IX Achievement Tests by Students Who Attended Graded or Rural Schools Grouped According to the Secondary School Attended in Grade IX . . . . .	41
XIV. A Comparison of the Grade IX Promotion Results of the Matched Pairs Over a Five-Year Period . . . . .	42
XV. A Comparison of the Academic Success of All the Students of Each Group in Grade IX . . . . .	43
XVI. A Comparison of the Academic Success of Students From Each Group Considering Only Those Students Who Wrote the Grade IX Tests at the End of the Nine-Year Period . . . . .	44
XVII. Summary of the Number of Students Who Dropped Out of Both Types of Schools Within a Nine-Year Period of School Commencement . . . . .	46
XVIII. A Comparison of the Number of Drop-Outs Occurring in Both Types of Schools . . . . .	47
XIX. Highest Grade Successfully Completed by Students of Both Types of Schools . . . . .	49

TABLE	PAGE
XX. A Comparison of the Number of Students From Each Type of School Who Repeated at Least One Grade During the First Nine Years of Their Schooling . . . . .	50
XXI. The Level of Significance in the Differences in the Mean Scores Obtained By Pupils From the Two Types of Schools Who Attended Collegiate C . . . . .	58



## CHAPTER I

### INTRODUCTION

There has always been considerable controversy concerning the relative merits of the one-room school and the larger graded schools throughout most of Canada, and, in particular, in the Province of Manitoba. While there has been a general acceptance by educational authorities that the one-room school could no longer meet the increasing needs of the changing curriculum, very little actual research has been carried out on this problem in this province.

The public in the areas served by the one-room schools have not readily accepted the alleged inferiority of their school. They could list many advantages of this small administrative unit, including short travelling distance for their children, local control, community activity, parent-teacher communication, and the development of student initiative and responsibility in the learning process. In the Inter-mountain School Division it was not unusual for the award for the highest achievement in Grade XII to go to a student who had obtained all his elementary education in a one-room rural school. This led many people to claim that the rural school must be at least as good as the larger graded town school.

The question of what type of school best serves the needs of the students of an area cannot be ascertained on the success of one or two outstanding students. Each school must serve all its students and, therefore, an assessment of the merits of how well a school meets the

needs of its students must be based on the relative success of the entire school population.

Because of the many problems that appeared to be facing the one-room rural schools in the Intermountain School Division of Manitoba, the question of consolidating these schools into larger consolidated or central graded schools was becoming more important. While there was no research to support the idea, it seemed possible, to many people, that the needs of the children from the rural areas could best be served if the one-room schools were closed and the children transported to larger, graded schools.

In this province, the only way that a rural school district may be dissolved and its lands transferred to another area, is by the consent of the majority of the electors of that rural district. Since this would involve the education of the electors to the relative alleged shortcomings of their school, it would be helpful if it were possible to present definite and authenticated evidence that the academic achievement of the students of their schools was inferior to that of comparable students of the larger schools. If such information was researched, it would reassure the educational leaders that a campaign to consolidate these schools was a proper and progressive step in the best interest of the students involved.

The Intermountain School Division is situated in the Northwestern part of the populated region of Manitoba. It composes a predominantly rural area fifty-five miles long and forty miles wide. There are only three larger towns whose population varies from one

thousand to fifteen hundred. Larger graded elementary schools of at least eight classrooms are operated in each town. While there are several two-room and one four-room elementary schools, the largest number of students that do not attend the three graded schools receive all their elementary education in one-room rural schools which have enrolments which vary from seven in the smallest to thirty-six in the largest. In this division the number of one-room rural schools varied from fifty-seven to fifty-one before the study commenced in 1965.

In 1964 the problems of the rural schools in this division appeared to be reaching an acute state. Many of the buildings had deteriorated and were in need of replacement or major renovation. It was becoming increasingly difficult to obtain the services of qualified competent teachers. The changes in curriculum appeared to be designed to suit the larger graded schools and this greatly increased the difficulty of offering a proper education program in a one-room rural school situation.

At the same time the graded schools were rapidly reaching the point where they had to have additional classrooms or be replaced by larger and more functional structures. It did not seem expedient to build new schools just large enough to accommodate the town children and then shortly find out that these buildings would have to be greatly enlarged to accommodate the rural students if the process of consolidation was suddenly speeded up.

It would seem much more expedient to find out if the electors of the rural areas were desirous of consolidating with the town schools,

prior to the development of the building plans for the central schools.

In order for the rural people to make a judicious decision, it was necessary that a study be made of just how well the rural schools had been serving its students.

It was with the preceding thoughts in mind that a decision was made to carry out a research project which would investigate the relative academic achievement of the students of the two types of schools: the one-room rural school, and the graded central elementary school located in each of the larger towns of the Intermountain School Division #36.

#### I. THE STATEMENT OF THE PROBLEM

In order to obtain a valid assessment of the relative merits of the two types of schools to be compared, the writer undertook to investigate one major problem and three sub-problems.

The major problem to be researched was:

Does a child who obtained all his elementary education in a larger graded school in the Intermountain School Division of Manitoba achieve significantly better than does a comparable student who attended a one-room rural school in the same area? More specifically, how do the pupils of the two types of schools compare in their academic results as measured by the Department of Education Grade IX Achievement Tests in Language, Social Studies, Mathematics, Science, and in the aggregate of these four subjects?

Sub-problems to be studied were:

1. Does a child from one type of school stand a better chance of being promoted from Grade IX to X?
2. Is there a greater drop-out rate in one type of school than in the other?
3. Is there a greater incidence of grade repetition in one type of school as compared to that in the other?

## II. PURPOSE OF THE STUDY

This study grew out of the need for accurate information concerning the relative merits of the two types of schools so that important and judicious decisions could be made concerning the future role that they should play in the education of the pupils in the Intermountain School Division. Since any school re-organization in this province needed the consent of the electors concerned, it was hoped that the findings of the study would prove useful in guiding the educational leaders and assist them in whatever campaign was conducted to make the elementary school system of this division more valuable and efficient.

Since the one-room school appeared to be on its way out, in this Division and across the province, there was a need for specific and accurate information to help determine if this change was in the best interest of the students of the rural areas.

### III. SIGNIFICANCE OF THE STUDY

There is a scarcity of research on the academic achievement of pupils from one-room schools. There have been several studies carried out in Alberta, Ontario, and in the United States, but very little has been done in Manitoba.

Only one study in Canada has attempted to measure the relative achievement of students with comparable aptitudes.<sup>1</sup> This study will attempt to do so, and although its findings may be valid in the Inter-mountain School Division only, it may be of assistance in assessing the relative merits of both types of schools in other divisions which bear a close relationship or similarity to it.

In any of the studies reported in Manitoba very little attempt has been made to compare the drop-out rate or the incidence of grade repetition occurring in both types of schools.

While the group of pupils was relatively small, it did contain all those students who commenced Grade I over a five-year period and obtained all their elementary education in one of the two types of schools considered in this study.

### IV. DEFINITION OF TERMS USED IN THE STUDY

Rural School: In this study the term "rural school" is used for that type of one-room school, located in a farming rural area, and which

---

<sup>1</sup>The Status Committee, "The Relative Achievement of Students of Schools of Varying Sizes," The Federation of Women Teachers' Association of Ontario, Toronto, Canada, 1965.

offers instruction in Grades I-VIII in one classroom and in which the instruction is given by one teacher.

Graded School: In this study a "graded school" is an elementary school in which instruction in Grades I-VIII is shared by at least seven teachers and is given in at least seven classrooms. No more than two grades are instructed in one classroom and it is most common to have only one grade in each classroom. All the graded schools in this study were located in towns within the division.

Academic Success: Completion of the Department of Education Grade IX examinations with a pass mark of 50 per cent or better in each subject, or a Complete Pass to Grade X when success in Grade IX is considered.

Complete Pass From Grade IX: A "Complete Pass from Grade IX" is defined as an unconditional promotion to Grade X as a result of having successfully obtained a pass mark of 50 per cent in each of the four subjects examined by the Department of Education at the end of Grade IX, plus a school pass in at least one optional subject not examined by the department. The marks of each student in each subject of those examined by the Department of Education were determined as a result of the average of the mark assigned by the department in its examination and the mark assigned by the school in that subject based on the school's own testing program. The mark assigned by the department was not necessarily a true percentage mark but an equated mark which attempted to result in 77-80 per cent of all the Grade IX students of the province receiving an equated mark of 50 per cent or better.

Provisional Pass From Grade IX: A type of conditional pass or promotion

to Grade X granted to those who did not quite meet the requirements for a Complete Pass. It is usually granted to those students who received a pass mark in only three of the four subjects examined by the Department of Education and in one optional subject or who received a pass in the four subjects examined by the Department of Education but who did not receive a pass in any optional subject. A student who received a Provisional Pass from Grade IX might have his Grade X course considerably limited by being compelled to drop one or more Grade X subjects during the year if his Grade X work was not considered to be satisfactory.

Failure in Grade IX: If a student failed to meet the requirements for a Complete or Provisional Pass to Grade X, he was required to repeat the entire Grade IX program for another year before he would receive any credit for Grade IX.

Elementary Education: For the purposes of this study "elementary education" is considered to be the education a child received from Grade I through to the end of Grade VIII as outlined in the curriculum guides for the Province of Manitoba.

## V. LIMITATIONS AND DELIMITATIONS

### Limitations

1. This study is limited to the students of the one-room rural schools and the larger graded elementary schools of the Intermountain School Division who commenced Grade I during the years 1951-56. Any generalizations would be applicable to only those schools or schools



similar to them.

2. The examination results used in the statistical treatment of the matched pairs were those received on the Departmental Examinations conducted by the Department of Education in four subject areas; Language, Mathematics, Social Studies and Science. The study of the promotion of the students from Grade IX is based on the over-all assessment of those responsible for the promotion of these students from Grade IX. Their decisions were made on the basis of: (1) Department of Education Examinations; (2) school results based on the school's testing program; (3) subjective assessments of the school authorities on what type of promotion or failure would best serve the interest of each student.

3. The aptitude scores used to form the matched pairs were obtained as the result of one group test administered at the end of Grade IX and, therefore, the aptitude scores might not be as valid as they would have been if several aptitude tests had been administered.

#### Delimitations

Although the universe used is rather small, it did contain all the students who commenced Grade I over a period of five years and obtained all their education in the same type of school they started.

The scores used in the study of the matched pairs were those obtained on departmental examinations set and marked centrally in Winnipeg and were not scored by any teacher responsible for the instruction of the students involved in the study. In marking the

examinations, every possible effort was made to ensure the uniformity of the standard of marking.

## CHAPTER II

### REVIEW OF RELATED LITERATURE

While there are no studies that explored the identical problem that this study is concerned with, there are a number of related studies that have something in common with some aspects of the question under investigation.

No similar studies of the problem made within this province have been reported, but studies carried out in Alberta and Ontario did investigate one or more problems that are closely related to some of the problems studied in this investigation.

#### I. STUDIES COMPLETED IN ONTARIO

Probably the most extensive and comprehensive study in this field is the one carried out by the Federation of Women Teachers' Association of Ontario.<sup>1</sup> This study was commenced in 1963 and was reported in 1965. The Status Committee of this organization conducted a comprehensive investigation of the relative achievement of Grade VIII pupils in schools of varying sizes within the Province of Ontario. The study involved four types of elementary schools:

1. One-room Rural Schools
2. Two to Four-room Rural Schools

---

<sup>1</sup>The Status Committee, "The Relative Achievement of Students of Schools of Varying Sizes," The Federation of Women Teachers' Association of Ontario, Toronto, Canada, 1965.

3. Larger Central Schools

4. Larger Urban Schools

It can be reasonably assumed that the one-room school of the Intermountain School Division is similar to the one-room school in their study, and that the graded school in the former is similar to either the central school, or the urban school, or both, as defined in the Ontario study.

In the Ontario study the sample was quite large, involving over 611 schools and 4601 pupils, and was supported by a wealth of statistics. The relative achievement of the Grade VIII students from the various sizes of schools was studied through the use of the following tests:

1. The Canadian Academic Aptitude Test
2. The Canadian English Achievement Test
3. The Canadian Mathematics Achievement Test

The study reached the following conclusions concerning the relative aptitudes of the pupils from the schools:

- "1. Pupils from urban schools have significantly higher aptitudes than pupils from rural schools.
2. Pupils from central schools had significantly higher aptitudes than pupils from the other types of rural schools combined.
3. Pupils from one-room rural schools did not differ significantly in aptitude from pupils from two to four-room schools."<sup>2</sup>

---

<sup>2</sup>Ibid., pp. 58-59.

When no adjustment was made for differences in aptitude the following conclusions were reported for English achievement:

"1. Pupils from urban schools achieved significantly higher in English than did pupils from rural schools.

2. Pupils from central schools achieved significantly higher in English than did the pupils from rural schools

3. Pupils from two to four-room schools did not differ significantly in English achievement from one-room rural schools."<sup>3</sup>

When no adjustment was made for the difference in aptitude the conclusions reached for mathematics achievement of the students from the various types of schools were:

"1. Pupils from urban schools achieved significantly higher in mathematics than pupils from rural schools.

2. Pupils from central schools achieved significantly higher in mathematics than pupils from one and two to four-room schools combined.

3. Pupils from two to four-room schools did not differ significantly on mathematics achievement from pupils from one-room schools."<sup>4</sup>

Since it is quite feasible that aptitude could have some effect on the mean scores in English and mathematics, a study of the results in the two subjects was made with the aptitude controlled or made comparable. When this was done for English the following conclusions were drawn:

---

<sup>3</sup>Ibid., pp. 63-64.

<sup>4</sup>Ibid., p. 69.

"1. Pupils from urban schools achieved significantly higher in English than pupils from rural schools.

2. Pupils from central schools did not differ significantly from pupils from one and two to four-room schools combined.

3. Pupils from one-room schools achieved significantly higher in English than pupils from two to four-room schools."<sup>5</sup>

The study points out that the majority of the students from central schools did not obtain all of their elementary education in such a school because most of the central schools were formed through the relatively recent consolidation of one and two to four-room schools. An analysis of the results indicated that the achievement of the students in English varied directly with the number of years they had attended central schools, except for those who repeated one or more grades and had attended nine years or more (slow learners).

The results in mathematics achievement by the four groups when adjusted to equate the aptitude of the students led to the following conclusions:

"1. Pupils from rural schools achieved significantly higher in mathematics than pupils from urban schools.

2. Pupils from central schools did not differ significantly on mathematics achievement from the pupils of one and two to four-room schools combined.

3. Pupils from one-room schools did not differ significantly

---

<sup>5</sup>Ibid., p. 86.

from pupils from two to four-room schools on mathematics achievement."<sup>6</sup>

The study pointed out that there was some doubt as to the validity of the statement that rural school students achieved significantly higher in mathematics than did pupils from urban schools, and that it might be that the "four groups did not differ significantly on mathematics achievement when the aptitude was controlled."<sup>7</sup>

A further "rationale" was offered to explain why rural pupils might have achieved better than urban pupils. It was felt that in the one-room schools, in particular, more time might have been spent on mathematics and less time on social studies, music, art, etc., as compared to that in the urban schools. This might occur as a result of the teachers having as many as eight grades to teach at one time in rural schools. This would encourage the teacher to give considerable "seat-work" to the students not under direct instruction. Very often this "seat-work" would consist of mathematics, because it is much easier to assign this subject. In contrast, teachers in the larger schools might be pressured into following a timetable very closely and to devote more time than her rural colleague to social studies, art, music, etc. The study warned that care should be taken in interpreting the mathematics achievement scores.<sup>8</sup>

---

<sup>6</sup>Ibid., p. 91.

<sup>7</sup>Ibid., pp. 91-92.

<sup>8</sup>Ibid., pp. 28-29.

R. W. B. Jackson conducted an experiment in four counties of Ontario in which he measured the achievement in the skill subjects of reading, arithmetic and spelling from two rural areas, a small city, and a large city. Results indicated that "except for reading speed, achievement in the two rural areas tends to be lower on the average than in city schools."<sup>9</sup>

In a survey of over seventy Inspectors of Schools, Superintendents, and Directors of Education in Ontario conducted by W. Rogers<sup>10</sup> concerning the advisability of having more than one grade in a classroom, a great variety of opinion was obtained but the following general conclusions were drawn:

1. Generally speaking, the opinions indicate that it would seem wise to continue to organize on a single-grade basis wherever possible and feasible.
2. There should be continuing and further study of practices being followed in the centres which are breaking down the traditional "lock-step" method of promotion.
3. In rural areas, the establishment of central schools will not only reduce the number of multi-grade classrooms but will also help to improve the standard of classroom instruction.

---

<sup>9</sup>R. W. B. Jackson, "Achievement in Skill Subjects in Public Schools in Four Areas of Ontario," Department of Educational Research, 1955-56, Rural School Survey, Information Series No. 7, Ontario College of Education, 1957, Toronto, p. 12.

<sup>10</sup>W. Rogers, "Single Grade and Multi-Grade Classrooms in the Public Schools of Ontario," Ontario Journal of Educational Research, Vol. 4, No. 2, Spring, 1952, pp. 97-104.



## II. STUDIES COMPLETED IN ALBERTA

Several studies have been carried out in the Province of Alberta. Anne Carmichael and R. E. Rees found that reading achievement of Grade IV students ranked in the following order: urban students, town students, graded rural students and ungraded rural students.<sup>11</sup>

In a study involving Grades IV and VII children, T. J. Reid and G. R. Conquest found that urban children had higher I.Q.'s than rural children and that there was a marked relationship between tested intelligence and language.<sup>12</sup>

H. T. Coutts and H. S. Baker found that Grades IV and VII urban students achieved significantly higher than rural children in written composition.<sup>13</sup>

C. E. Clemenhaga found that in the arithmetic achievement of Grade VIII pupils, the four types of schools ranked as follows: urban, town, graded rural, and ungraded rural.<sup>14</sup>

According to a study conducted by G. M. Dunlop, S. Hunka, and

---

<sup>11</sup>Anne Carmichael and Robert E. Rees, "A Survey of Reading Achievement in Alberta Schools," Alberta Journal of Educational Research, Vol. 1, No. 1, March, 1955, pp. 18-33.

<sup>12</sup>T. James Reid and George R. Conquest, "A Survey of Language Achievement of Alberta School Children," Alberta Journal of Educational Research, Vol. 1, No. 2, June, 1955, pp. 39-52.

<sup>13</sup>H. T. Coutts, and H. S. Baker, "A Study of Written Composition of a Representative Sample of Grade Four and Grade Seven Pupils in Alberta Schools," The Alberta Journal of Educational Research, Vol. 1, No. 2, June, 1955, pp. 5-18.

<sup>14</sup>Clarence E. Clemenhaga, "A Survey of Arithmetic Achievement of Grade VIII Pupils in Alberta Schools," The Alberta Journal of Educational Research, Vol. 1, No. 4, December, 1955, pp. 35-47.

H. Zingle, Grade VII urban children were superior to rural students of that grade on average reading score, language achievement and spelling.<sup>15</sup> Their study of the Grade VIII students also found that the urban children achieved significantly higher results than did rural pupils on arithmetic achievement.

In a study which was concerned with a comparison of the achievement of students in single-grade classrooms with that of students in classrooms containing two or more grades, one of which was Grade IX, L. A. Truckey and W. D. Knill reached the following conclusions:<sup>16</sup>

1. A student taught in schools where there were two or more Grade IX rooms tend to achieve significantly higher results in Grade IX departmental examinations than do students taught in schools having one Grade IX class and lower and higher multi-grade classrooms.

2. Students who receive instruction in schools where there is one complete Grade IX room tend to achieve better results in Grade IX departmental examinations than do students taught in multi-grade rooms where there are also grades lower than Grade IX.

3. Multi-grade students where higher grades are also taught tend to achieve slightly higher than multi-grade students where lower grades are also taught.

---

<sup>15</sup>G. M. Dunlop, S. Hunka, and H. Zingle, "Individual Differences in Alberta Schools," The Alberta Journal of Educational Research, Vol. 1, No. 4, December, 1955, pp. 5-14.

<sup>16</sup>L. A. Truckey and W. D. Knill, "Achievement of Students in Single Grade and Multi-Grade Classes," The Alberta Journal of Educational Research, Vol. IX, No. 1, March, 1965, pp. 37-44.

4. The study, in general, tends to support the centralization of schools on the basis of academic achievement at the Grade IX level since single grade and double grade groups did achieve significantly higher results than did lower multi-grade groups. However, it should be noted that on the basis of this study, Grade IX students taught in the same room as higher grades achieved at approximately the same level as Grade IX students taught in a single grade situation.

### III. AMERICAN STUDIES

Many studies of a similar nature have been carried out in the United States. One that bears considerable relationship to this study is one reported by Clarence C. Martins.<sup>17</sup> In his study of the educational achievements of the eighth grade pupils in one-room and graded schools of Iowa he came to the following conclusions. He found that graded town school students scored significantly higher on mental ability. When adjustments were made to compensate for the difference in mental ability, he also found that the town graded school pupils scored significantly higher in arithmetic reasoning, total arithmetic achievement, reading vocabulary, comprehension and total reading, and in the mechanics of English and total English. He found that the differences in the mean scores in the preceding subjects were significant at the one per cent level. He also found that they achieved scores in arithmetic fundamentals that were significantly

---

<sup>17</sup> Clarence C. Martins, "Educational Achievements of Eighth Grade Pupils in One-Room Rural and Graded Town Schools," The Elementary School Journal, Vol. 54, May, 1954, pp. 523-25.

higher at the five per cent level, while there were no significant differences between the schools in spelling achievement. In his study he considered only those students who had received all their elementary education in either the one-room school or in the graded town school. He came to the conclusion that there was sufficient justification for the closing of all the one-room schools in Iowa.

In a very extensive survey, carried out over a seventeen year period in ten communities, Dr. Burton Kreitlow found that, once beyond Grade I, students in reorganized or central schools achieved significantly higher than their counterparts in the rural schools.<sup>18</sup>

In an investigation concerning the Grade VIII pupils of three typical areas of Kentucky, Paul Street, James H. Powell, and John W. Hamblin concluded that there was evidence to point towards a strong likelihood that students in larger schools (above 300 students) tend to out-perform students in smaller schools in the same or comparable districts.<sup>19</sup> They pointed out that all the differences may not be the result of the size alone but to other factors as well. These conclusions really amounted to the statement that the small schools in the areas studied did not equip its pupils to achieve as well as did the larger schools of the same areas.

---

<sup>18</sup>Dr. Burton Kreitlow, "The Rural Child and His School," National Educational Association Journal, 54:98, May, 1954, p. 98.

<sup>19</sup>Paul Street, James H. Powell, and John W. Hamblin, "Achievement of Students and the Size of School," The Journal of Educational Research, Vol. 55, No. 6, March, 1962, pp. 261-66.

## IV. SUMMARY

While there has been a limited number of studies that investigated the relative achievement of students of one-room rural schools and that of students of larger graded elementary schools, most of the reports appeared to indicate that the students of the graded school had some academic advantages over their counterparts of the one-room school. While the investigations often concerned specific areas of a province or country, there seems to be a trend throughout the research that would lead educators to believe that the students of a one-room school were receiving an elementary education of a lower standard than were many students of other types of schools.

## CHAPTER III

### RESEARCH METHODOLOGY

While the problems to be considered in this study concern the relative educational merits of the one-room rural school as compared to those of the larger graded elementary school, it was decided that the major problem and the three sub-problems would be investigated by setting up and testing null hypotheses.

#### I. COLLECTION OF DATA

The study was commenced in 1964 and the data were collected in 1964 and 1965. All the schools of the two types that existed in the division were used. All the students who commenced Grade I of either type of school, and remained in the same school as they started were included in the study.

Steps were taken to get the names of all the students who commenced school in the years 1952 to 1956. A survey form for each year was sent to all of the schools asking for the names of those who entered Grade I during the years under study to be placed on each appropriate form. The teacher was then asked to indicate the students' academic standing and school attended at the end of an eight-year period. The teacher was asked to provide the following information:

1. School presently attended by each student.
2. In cases where the student had discontinued school, the date of last regular attendance and the highest grade successfully completed.

3. The name of the high school to which he had graduated if he had gone on to Grade IX.

A copy of the form and the accompanying letter are enclosed in the Appendix.

The forms were returned one hundred per cent and every attempt was made to complete all the information on the form. If the student reached Grade IX and wrote the aptitude test and the other departmental examinations, the scores of these tests were obtained from the departmental records and placed on the original information sheets. The type of promotion or failure that each Grade IX student received was also recorded on the form. This information, as well as the student's age, sex, elementary school and high school attended, was placed on individual cards to facilitate the formation of matched pairs.

A count was made of all the students that started both types of schools and did not transfer to another school. All of these students were then included in the study.

In order to investigate the major problem, which was a study of the achievement of comparable students from each type of school, matched pairs were set up out of those students who reached Grade IX and wrote departmental examinations at the end of nine years of schooling. The students were matched according to the following criteria:

1. Age
2. Sex
3. Ability

4. High School Attended

5. Year School Commenced

For matching purposes students born in the same calendar year were matched together. Since no student repeated or skipped a grade or year this procedure did differentiate between those students who were six prior to June 30th of the year they commenced school and those who were not six at that time. This would also match any students who started school before usual school age of six prior to December 31st of that year and would also match students whose commencement of school was delayed for any reason.

In matching the students according to mental ability every attempt was made to have the I.Q.'s as close as possible. In the occasional year, in order to obtain sufficient pairs, it was necessary to match students whose I.Q. ratings varied up to three points. Since the ratings were obtained by the administration of only one group test, it was felt that this slight variation would not adversely affect the validity of the test.

No variation on the high school attended or the year school was commenced was made in the matching.

## II. NULL HYPOTHESES

While the major problem concerned the relative achievement of students from both types of schools on the Departmental Grade IX Achievement Tests, it was felt necessary that it be studied through the use of the following five separate but related null hypotheses:



Null Hypothesis 1.

No significant difference exists between the mean scores obtained by students of the two types of schools on the Departmental Grade IX Achievement Tests in Language.

Null Hypothesis 2.

No significant difference exists in the mean scores obtained by students of the two types of schools on the Departmental Grade IX Achievement Test in Mathematics.

Null Hypothesis 3.

No significant difference exists in the mean scores obtained by students of the two types of schools on the Departmental Grade IX Achievement Test in Social Studies.

Null Hypothesis 4.

No significant difference exists in the mean scores obtained by students of the two types of schools on the Departmental Grade IX Achievement Test in Science.

Null Hypothesis 5.

No significant difference exists on the mean scores of the aggregate of the scores obtained by the students of the two types of schools on the four Departmental Achievement Tests in Grade IX.

The preceding null hypotheses were tested separately for each of the five years studied and, because the number of matched pairs was relatively small, by the combined results over the five-year period. In order to ascertain if the results between the two groups differed according to the particular high school attended, each subject and the aggregate scores were analyzed for the combined five-year period for each high school. The mean scores received by the students in the matched pairs were subjected to t-test to test the preceding null hypotheses.

The first sub-problem, which concerned the possibility of

promotion from Grade IX was investigated by the use of the following null hypothesis:

Null Hypothesis 6.

No significant difference exists in the degree of academic success in Grade IX between those students who had attended graded schools and those who had attended rural schools for their elementary education.

The null hypothesis was tested by use of the t-test in two ways. A study was made of all the students who reached Grade IX in eight years of schooling and wrote Grade IX examinations and a further study was made of the promotion patterns of only those students who were included in the matched pairs. The latter case would thus compare the relative academic success of comparable students.

The second sub-problem, which was concerned with the relative drop-out rate of both types of schools, was investigated by means of the following null hypothesis:

Null Hypothesis 7.

No significant difference exists in the drop-out rates of the two types of schools.

This problem was studied by the consideration of all the students who commenced each type of school and who did not transfer to another school during a nine-year period measured from school commencement. No attempt was made to equate the two groups for aptitude as the I.Q. scores were not available for any of the students who did not reach and complete Grade IX.

The third sub-problem, which was concerned with the incident of grade repetition was investigated by the use of the following null

hypothesis:

Null Hypothesis 8.

No significant difference existed in the incidence of grade repetition in the two types of schools.

This null hypothesis was tested by considering all those who commenced either type of school and did not transfer out of that type of school. As the Mental Ability scores for many of the students were not available, no attempt was made to equate the two groups on the basis of aptitude. Grade repetition considered only those who repeated one or more grades in the first eight years of schooling. No attempt was made to differentiate on the statistical analysis between those who repeated one grade and those who repeated more than one grade.

In all the three sub-problems the data for each of the five years studied was combined and studied as one unit. Each null hypothesis in this section was tested by the use of the chi-squared test.

### III. UNIVERSE

The universe used in the study consisted of all the pupils who commenced Grade I in either type of school over a five-year period and did not transfer to some other school. Each pupil in the sample obtained all his elementary education in the type of school that he commenced. Table I indicates the number of such students.

Table II indicates the number of matched pairs it was possible to form in each of the five years from the students contained in the sample.

TABLE I  
NUMBER OF SCHOOLS AND PUPILS IN THE SAMPLE

Year	Rural		Graded	
	No. of Schools	No. of Pupils	No. of Schools	No. of Pupils
1952-61	57	94	3	79
1953-62	56	76	3	72
1954-63	54	83	3	69
1955-64	51	159	3	94
1956-65	51	83	3	68
Total		498		382

TABLE II  
NUMBER OF MATCHED PAIRS FORMED EACH YEAR

Year	Number of Matched Pairs
1952-61	18
1953-62	18
1954-63	21
1955-64	33
1956-65	23
Total	113

The number of rural schools involved varied from year to year as indicated in Table I. This was because some of the one-room rural schools were beginning to run into enrolment problems as it was impossible to earn government grants unless the enrolment was seven pupils or more. When they could no longer earn grants they were usually closed and the children were sent to a neighboring rural school or to a graded school in town. The graded or central schools involved the following three schools which were the only ones that existed in this division.

School A - An eight-room school in a town of 1000 population

School B - A fourteen-room school in a town of 1000 population

School C - An eight-room school in a town of 1000 population

All three towns are rural service areas with little or no industry.

Both the town and the rural areas are populated by a number of nationalities. There are pockets of Anglo-Saxon people but the majority would be of the nationalities that originate in Central Europe with the Ukrainian people in the majority. Many of the older people of the latter group were immigrants to Canada while the majority were first or second generation Canadians. Most of the area has been settled for approximately seventy-five years. Farm consolidation has been going on for some time but the average size of farm unit would be considerably smaller than that of southern Manitoba.

## CHAPTER IV

### ANALYSIS OF DATA

The data on the various aspects of the major problem and the sub-problems were collected. In order to determine whether there were any significant differences between the students of the two types of schools, the data were subjected to either a t-test or a chi-square statistic.

#### I. APTITUDE TESTS

The aptitude tests used in the study varied from year to year as they were administered to every Grade IX student in the province each year. The tests used are indicated in Table III.

TABLE III

NAME OF APTITUDE TEST USED EACH YEAR

Year	Name of Test	Provincial Mean
1961	Dominion Form A. Advanced Grade X to Adult	103.98
1962	Dominion Form B. Advanced Grade X to Adult	103.32
1963	Henmon Nelson Form A. Grade IX-XII	106.32
1964	Otis Gamma Form A M. Senior High Schools and Colleges	104.46
1965	Otis Gamma Form B M. Senior High Schools and Colleges	106.05

The fact that different aptitude tests with different provincial mean scores were used created no particular problem as the students were matched for the year that they were in Grade IX.

## II. LANGUAGE ACHIEVEMENT

Table IV contains the mean scores obtained by each group in the Language Achievement Tests conducted by the Department of Education for each year and for the combined five-year period along with the difference in means, the t-score and the level of the significance of the difference on the mean.

TABLE IV  
GRADE IX LANGUAGE ACHIEVEMENT OF STUDENTS WHO ATTENDED  
GRADED OR ONE-ROOM SCHOOLS

Year	No. of Students	Mean Scores		Difference in Means	t-Scores
		Graded	Rural		
1961	18	67.94	61.33	6.57	0.50
1962	18	67.11	62.88	4.23	1.08
1963	21	67.71	57.14	10.57	2.76*
1964	33	70.00	70.00	0.00	0.00
1965	23	65.50	66.43	0.87	0.31
Combined	113	68.05	64.20	3.85	3.21*

\* Significant at the .01 level.

In the study of the results for the five years, the graded school students received higher mean scores than did comparable students from the rural schools in four of the five years. In 1963 the significance of the difference was at the one per cent level.

When the mean scores for the entire five-year period were combined, it was found that the graded school student received a significantly higher mean score than did the rural students and that the difference was significant at the one per cent level.

Table V shows the results in language over a five-year period when the students are grouped according to the secondary school in which they took their Grade IX instruction.

TABLE V

GRADE IX LANGUAGE ACHIEVEMENT OF STUDENTS WHO ATTENDED GRADED OR ONE-ROOM RURAL SCHOOLS GROUPED ACCORDING TO THE SECONDARY SCHOOL ATTENDED IN GRADE IX

Collegiate	No. of Students	Mean Score		Difference in Means	t-Score
		Graded	Rural		
A.	36	62.11	58.66	3.45	1.12
B.	43	68.51	64.67	3.84	1.41
C.	34	74.12	69.21	4.91	2.35*

\*Significant at the .05 level.

In each collegiate, those who had obtained their elementary



education in a graded school received a higher mean score in language than did those who attended one-room rural schools. In Collegiate C the difference in the means was significant at the five per cent level.

### III. ACHIEVEMENT IN MATHEMATICS

Table VI contains the mean scores of each of the groups in the Grade IX Mathematics Achievement Tests conducted by the Department of Education for each of the five years and for the combined five-year period, along with the difference in the means, the t-scores, and the level, if any, at which the difference in the means was significant.

TABLE VI  
ACHIEVEMENT IN GRADE IX MATHEMATICS BY STUDENTS WHO  
ATTENDED GRADED OR ONE-ROOM RURAL SCHOOLS

Year	No. of Students	Mean Scores		Difference in Means	t-Scores
		Graded	Rural		
1961	18	82.33	77.94	4.39	0.82
1962	18	77.05	73.77	3.28	0.84
1963	21	73.61	62.58	11.03	2.17*
1964	33	73.30	75.51	2.21	0.51
1965	23	77.78	77.00	0.78	0.49
Combined	113	76.34	73.57	2.77	1.52

\*Significant at the .05 level.

In four of the five years studied, the graded school students received a higher mean score than did the rural school students. In 1963 the difference in the means was significant at the five per cent level. In 1964 the rural school students received a higher mean score in mathematics than did the graded group. When the results were combined for the five-year period, the graded group received a higher mean score in mathematics than did the rural group, but the difference of 2.77 was not significant at the five per cent level.

Table VII contains the mean scores in mathematics over the five-year period grouped according to the collegiate in which the students took their Grade IX instruction.

TABLE VII

GRADE IX MATHEMATICS ACHIEVEMENT OF STUDENTS WHO ATTENDED  
GRADED OR RURAL SCHOOLS GROUPED ACCORDING TO THE  
SECONDARY SCHOOL ATTENDED IN GRADE IX

Collegiate	No. of Students	Mean Score		Difference in Mean	t-Scores
		Graded	Rural		
A.	36	73.02	70.52	2.50	0.62
B.	43	75.48	76.49	1.01	0.27
C.	34	80.91	73.15	7.76	3.51*

\* Significant at the .01 level.

In two of the three collegiates those who had attended graded schools obtained higher mean scores in mathematics than did those who

attended one-room rural schools. In Collegiate B the opposite was true. The difference was significant in only one school, Collegiate C, where the difference was significant at the one per cent level.

#### IV. ACHIEVEMENT IN SOCIAL STUDIES

Table VIII contains the mean scores obtained by each of the groups in the Grade IX Social Studies Achievement Tests conducted by the Department of Education for each year, as well as for the combined five-year period, along with the difference in the mean, the t-score when the means are compared and the level of significance, if any, of the difference of the means.

TABLE VIII

GRADE IX SOCIAL STUDIES ACHIEVEMENT OF STUDENTS WHO  
ATTENDED GRADED OR ONE-ROOM RURAL SCHOOLS

Year	No. of Students	Mean Scores		Difference in Means	t-Scores
		Graded	Rural		
1961	18	69.94	62.50	7.44	1.29
1962	18	79.44	72.00	7.44	1.81
1963	21	70.57	66.14	4.43	0.88
1964	33	72.76	66.75	6.04	2.40*
1965	23	73.13	70.65	2.48	0.81
Combined	113	72.53	68.08	4.45	2.75**

\* Significant at the .05 level

\*\* Significant at the .01 level

In all of the five years studied the students who had attended graded elementary schools obtained higher mean scores than did comparable students who had attended one-room rural schools, and in 1964, the difference in the mean scores was significant at the five per cent level.

When all the social studies scores were combined for the five-year period, the graded school students obtained a mean score that was significantly higher than that of the rural students. The difference in means was significant at the one per cent level.

Table IX contains the mean scores in Grade IX Social Studies over the five-year period grouped according to the secondary school at which the students took their Grade IX instruction.

TABLE IX

GRADE IX SOCIAL STUDIES ACHIEVEMENT OF STUDENTS WHO ATTENDED GRADED OR ONE-ROOM RURAL SCHOOLS GROUPED ACCORDING TO THE SECONDARY SCHOOL ATTENDED IN GRADE IX

Collegiate	No. of Students	Mean Score		Difference in Means	t-Scores
		Graded	Rural		
A.	36	64.72	61.89	2.83	0.73
B.	43	75.88	72.25	2.63	1.12
C.	34	76.50	69.44	7.06	2.04*

\*Significant at the .05 level

In all of the three secondary schools the students who had

attended graded schools for their elementary education obtained higher mean scores in social studies than did comparable students who had attended one-room rural schools. In Collegiate C the difference in the mean was significant at the five per cent level.

#### V. ACHIEVEMENT IN SCIENCE

Table X contains the mean scores obtained by the various groups on the Grade IX Science Achievement Tests conducted by the Department of Education for each of the five years studied, and for the combined five-year period, along with other information that was derived in the statistical analysis.

TABLE X  
ACHIEVEMENT IN GRADE IX SCIENCE BY STUDENTS WHO ATTENDED  
GRADED OR ONE-ROOM RURAL SCHOOLS

Year	No. of Students	Mean Scores		Difference in Means	t-Scores
		Graded	Rural		
1961	18	73.66	71.44	2.22	0.52
1962	18	75.61	69.61	6.00	1.30
1963	21	74.38	70.47	3.91	0.89
1964	33	72.57	70.45	2.12	1.21
1965	23	75.52	72.83	2.69	0.71
Combined	113	73.62	71.51	2.11	1.60

In each of the five years studied, the students who had obtained their elementary education in graded school obtained higher mean scores in the Grade IX Science Achievement Tests than did those who had attended one-room rural schools, but the difference did not prove to be significant at the five per cent level for any year.

When the scores for the five years were combined, the mean attained by the graded group was higher than that of the rural group, but the difference was not significant at the five per cent level.

Table XI contains the statistical information for the results, obtained by the two groups when the scores for the entire five-year period were combined and were grouped according to the secondary school in which the student took his Grade IX instruction.

TABLE XI

ACHIEVEMENT IN GRADE IX SCIENCE BY STUDENTS WHO ATTENDED  
GRADED OR RURAL SCHOOLS GROUPED ACCORDING TO THE  
SECONDARY SCHOOL ATTENDED IN GRADE IX

Collegiate	No. of Students	Mean Score		Difference in Means	t-Score
		Graded	Rural		
A.	36	66.86	68.28	-1.42	0.51
B.	43	78.72	78.00	.72	0.54
C.	34	74.52	66.75	7.79	2.94*

\*Significant at the .01 level

In two of the three secondary schools, those that had attended graded elementary schools obtained higher mean scores in the Grade IX Science Achievement Tests than did comparable students who had attended one-room rural schools, and in Collegiate A the opposite situation resulted. In only one collegiate, Collegiate C, was the difference significant and there, it was significant at the one per cent level.

#### VI. AGGREGATE ACHIEVEMENT

Table XII contains the means of the average of all the marks obtained by each student in each group in the four departmental examinations or achievement tests of Language, Mathematics, Social Studies, and Science, along with other information that was obtained in the statistical treatment of the scores.

In all of the five years studied, those who had obtained their elementary education in graded schools obtained higher mean scores of the averages of the four departmental Grade IX Achievement Tests than did comparable students who had attended one-room rural schools. In 1962 and 1963 the difference in the means was significant at the five per cent level.

When all the averages were combined for the five-year period, the graded group obtained a higher mean score than did the rural group of comparable students and the difference was significant at the five per cent level.

TABLE XII

A COMPARISON OF THE MEAN SCORES OF THE AVERAGE MARK OBTAINED  
IN ALL THE FOUR DEPARTMENTAL ACHIEVEMENT TESTS BY STUDENTS  
WHO ATTENDED GRADED OR ONE-ROOM RURAL SCHOOLS

Year	No. of Students	Mean Score		Difference in Means	t-Scores
		Graded	Rural		
1961	18	73.45	68.80	4.65	1.01
1962	18	75.05	70.00	5.05	2.11*
1963	21	71.54	64.10	7.44	2.36*
1964	33	72.17	70.94	1.23	0.80
1965	23	72.70	72.07	0.63	0.61
Combined	113	72.69	69.53	3.16	2.07*

\*Significant at the .05 level

Table XIII contains the statistical information that was derived when all the averages for each student were grouped according to the collegiate in which the student took his Grade IX instruction.

In all the three collegiates the students who had obtained their elementary education in graded schools received a higher mean score in their averages for the four subjects examined than did comparable students who had attended one-room rural schools. In Collegiates A and B the difference was not significant but in Collegiate C the difference was significant at the one per cent level.



TABLE XIII

A COMPARISON OF THE MEAN SCORES OF THE AVERAGE OF THE MARKS OBTAINED IN GRADE IX ACHIEVEMENT TESTS BY STUDENTS WHO ATTENDED GRADED OR RURAL SCHOOLS GROUPED ACCORDING TO THE SECONDARY SCHOOL ATTENDED IN GRADE IX

Collegiate	No. of Students	Mean Score		Difference in Means	t-Score
		Graded	Rural		
A.	36	66.25	64.43	1.72	0.93
B.	43	74.63	72.85	1.78	1.33
C.	34	76.57	69.55	7.05	2.93*

\*Significant at the .01 level

#### VII. RESULTS IN THE STUDY OF SUB-PROBLEM 1

Sub-problem 1 concerned the relative number of passes or failures obtained by the Grade IX students who reached Grade IX after eight years of school attendance. It involved firstly those that were in the matched pairs, and secondly, all of those in the original groups of graded and rural school students who reached Grade IX after eight years of school and who spent a full year taking Grade IX instruction.

Table XIV shows the type of promotion or failure received by each group of the matched pairs over the five-year period. The promotions were based on the following criteria:

1. The departmental examination results;

2. The marks assigned by the schools;
3. The subjective advice of the staff as to what would be best for each student.

TABLE XIV

A COMPARISON OF THE GRADE IX PROMOTION RESULTS OF THE MATCHED PAIRS OVER A FIVE-YEAR PERIOD

Year	No. of Students	Graded			Rural		
		Complete	Provi- sional	Failure	Complete	Provi- sional	Failure
1961	18	14	3	1	14	2	2
1962	18	16	2	0	14	1	3
1963	21	19	0	2	15	3	3
1964	34 <sup>1</sup>	27	6	1	25	7	2
1965	23	20	3	0	21	2	0
Total	114	96	14	4	89	15	10
Per cent of Total		84.2	12.3	3.5	78.1	13.1	8.8

$$X^2 = 1.434, df = 2, p > .05$$

Out of the 114 students of the graded group 96 or 84.2 per cent received a Complete Pass, 14 students or 12.3 per cent received a Provisional Pass while only 4 students or 3.5 per cent were failed. Out of the

<sup>1</sup>Note that there is one more matched pair than in the number that was used for the subject analysis as one student did not write the examinations because of ill-health but received a promotion on the basis of the year's work.

114 students in the rural group, 89 or 78.1 per cent of the students received a Complete Pass, 15 students or 13.1 per cent received a Provisional Pass, while 10 students or 8.8 per cent were failed. In other words, two and a half times as many students from the rural group failed as did those from the graded group.

When tested by the chi-square statistic, it was found that the difference was not significant at the five per cent level. The chi-square score was only 1.434 at 2 degrees of freedom.

Table XV indicates the degree of academic success obtained by all those who started each type of school and reached Grade IX in the eight-year period.

TABLE XV  
A COMPARISON OF THE ACADEMIC SUCCESS OF ALL THE STUDENTS OF  
EACH GROUP IN GRADE IX

Type of Pass or Failure	Graded		Rural	
	Number	Per Cent of Total	Number	Per Cent of Total
Complete Pass from IX	209	54.1	158	31.7
Provisional Pass from IX	19	5.0	30	6.0
Failed IX	7	1.8	33	6.6
Delayed 1 year or more	132	34.6	202	40.7
Dropped out	15	3.9	75	15.0
Total	382	100.0	498	100.0

$$\chi^2 = 201.8, df = 2, p < .01$$

It is evident from Table XV that for the graded group, 59.7 per cent of all those included in the study were able to receive some kind of pass to Grade X within a nine-year period of school commencement. In contrast only 37.7 per cent of all those from the rural group were able to receive either of the two types of passes to Grade X. 40.3 per cent of the graded group were not able to successfully complete Grade IX in the nine-year period while 63.0 per cent of the rural group were also not able to successfully complete Grade IX in the same length of time.

When the data of Table XV were subjected to the chi-square test, the differences proved to be significant at the .01 level.

Table XVI reports only those students who did reach Grade IX in the eight-year period and wrote the Grade IX examinations at the end of the nine-year period.

TABLE XVI

A COMPARISON OF THE ACADEMIC SUCCESS OF STUDENTS FROM EACH GROUP  
CONSIDERING ONLY THOSE STUDENTS WHO WROTE THE GRADE IX TESTS  
AT THE END OF THE NINE-YEAR PERIOD

Degrees of Success	Graded Students	Rural Students
Complete Pass from IX	209	158
Provisional Pass from IX	19	30
Failed Grade IX	7	33
Total	235	221

$$X^2 = 26.04, df = 2, p < .01$$

When the data of Table XVI were subjected to the chi-square statistic a value of 26.04 was obtained and the differences proved to be significant beyond the .01 level.

#### VIII. RESULTS IN THE STUDY OF SUB-PROBLEM 2

The study of the drop-outs that occurred in both types of schools under consideration was not concerned with the reasons for the dropping out, but only with the number that dropped out and the degree of academic success that they had prior to the discontinuing of school. The study considered all the students who entered Grade I in either type of school and did not transfer to some other institution. As far as could be ascertained, the point or level at which the drop-out occurred marked the end of formal education for these students.

Table XVII indicates the last grade completed by each student before discontinuing school. These drop-outs occurred within a nine-year period of commencing school in one of the two types of schools and does not include those who transferred to another school at any level or who may have dropped out sometime after spending nine years in school, even though they may not have reached Grade IX.

Table XVII indicates that five times as many students dropped out of the rural schools as did students from the graded schools, within a nine-year period of school commencement. When expressed as a percentage of the total starting population over the period studied, it shows that 3.9 per cent of the students of graded schools dropped out within a nine-year period of commencement while 15.1 per cent

dropped out of the rural schools in a similar period. On a percentage basis, this means that the drop-out rate was over four times as high in the rural schools.

TABLE XVII

SUMMARY OF THE NUMBER OF STUDENTS WHO DROPPED OUT OF BOTH  
TYPES OF SCHOOLS WITHIN A NINE-YEAR PERIOD OF  
SCHOOL COMMENCEMENT

Grade Completed Before Drop-Out Occurred	Graded	Rural
VIII	1	19
VII	1	16
VI	9	23
V	3	13
IV	1	1
III	0	3
Total	15	75
Percentage drop-out	3.9	15.1

A consideration of the grade level at which the drop-outs occurred from both types of schools shows that the rural schools compared even less favorably with the graded schools. In the rural schools three students dropped out with only a Grade III education and seventeen students or 3.4 per cent dropped out with only a Grade V education or less. The comparable numbers for the graded schools were:

none dropped out with only a Grade III education and only four students or approximately one per cent dropped out with a Grade V education or less.

It would appear that in both types of schools more students dropped out after completing Grade VI rather than at any other level. In rural schools thirty-five students or seven per cent dropped out after completing Grades VII or VIII while only two students dropped out of the graded schools at the same grade levels.

Table XVIII indicates the number of drop-outs in relation to those starting both types of schools, irrespective of what grade was completed before the student dropped out.

TABLE XVIII

A COMPARISON OF THE NUMBER OF DROP-OUTS OCCURRING IN  
BOTH TYPES OF SCHOOLS

	Graded	Rural
Number starting school	382	498
Number of drop-outs in a nine-year period	15	75
Percentage drop-out	3.9	15.0

$$\chi^2 = 15.86, df = 1, p > .01$$

When the data were subjected to a chi-square test, the value was 15.86. This value is significant at the .01 level.

## IX. RESULTS OF THE STUDY OF SUB-PROBLEM 3

The incident of grade repetition is indicated in Table XIX. If there had been no repetition of grades, all of the students would have completed Grade IX at the end of the ninth year of school and would have passed that grade successfully. No attempt was made to determine just what grades were repeated or if students were in any grade for more than two years. Continuous progress was not common in these schools at the time under study, so it is most likely that complete grades were repeated. This is not to say that there were not some aspects of continuous progress in any of the schools. Some of the students might have spent three years covering the regular work for two grades but this would show up in the statistics as having repeated one grade. These students would be delayed at least one year in comparison to other students who had progressed at the normal rate. The study did not take into account the one or two isolated cases where a student may have completed more than the nine grades in nine years.

Table XIX indicates that only 37.7 per cent of the students that started Grade I and received all their elementary education in a one-room rural school did not repeat at least one grade before successfully completing Grade IX. In contrast, 59.7 per cent of all the students that started in a graded school were able to complete Grade IX without repeating a grade.

It is further evident that in the rural schools 33.1 per cent



of the students failed at least one grade in the first nine years of school, 16.3 per cent failed at least two grades and 9.0 per cent failed at least three times. In the graded schools 40.3 per cent failed at least one grade, 21.5 per cent failed at least two grades, and 10.7 per cent failed at least three grades. It should be noted that three students or 0.6 per cent successfully completed only Grade III in the nine-year period.

TABLE XIX  
HIGHEST GRADE SUCCESSFULLY COMPLETED BY STUDENTS OF BOTH  
TYPES OF SCHOOLS

Grade Completed	Graded		Rural	
	Number	Percentage	Number	Percentage
IX	228	59.7	221	44.3
VIII	172	18.9	132	26.5
VII	41	10.8	71	14.2
VI	33	8.6	45	9.0
V	4	1.0	23	4.8
IV	4	1.0	2	0.4
III	0	0.0	4	0.8
Total	382	100.0	498	100.0

It can be assumed that the students who dropped out of school repeated at least one grade before they did so, as provincial law

required that a student attend school until he is at least fourteen years of age. The number of drop-outs was added to the number who repeated at least one grade but remained in school to give the figures contained in Table XX.

When the figures in Table XX were subjected to a chi-square test, the value was 24.80. This value is significant at the .01 level.

TABLE XX

A COMPARISON OF THE NUMBER OF STUDENTS FROM EACH TYPE OF SCHOOL WHO REPEATED AT LEAST ONE GRADE DURING THE FIRST NINE YEARS OF THEIR SCHOOLING\*

	Graded	Rural
Number starting school	382	498
Number repeating one or more grades	147	277
Number not repeating one or more grades	235	221

$\chi^2 = 24.80, df = 2, p > .01$

\*Students that failed Grade IX were not considered to have repeated a grade for the purposes of this study.

#### X. TESTING THE HYPOTHESES

##### Null Hypothesis 1

No significant difference exists between the mean scores obtained by students of each of the two types of schools on Departmental Grade IX Achievement Tests in Language.

When the mean scores in language achievement were subjected to a t-test, it was found that those students who received their elementary education in a larger graded school achieved a significantly higher mean score in language achievement than did those students who had attended one-room rural schools. When the scores were combined for the five-year period studied, the t-score was 3.21 which was significant at the .01 level. The null hypothesis was, therefore, rejected.

Thus it is reasonable to assume that students who obtained their elementary education in larger graded schools were likely to receive higher scores in Grade IX language achievement than were comparable students who received their elementary education in one-room rural schools.

When the students were grouped according to the collegiate at which they had attended Grade IX, the difference between comparable students of the two types of elementary schools was significant at Collegiate C only. The difference was significant at the .05 level. This would indicate that either the elementary schools in the region served by Collegiate C differed more radically than they did in the regions served by the other two collegiates, or some basic difference existed in the type of teaching in Grade IX at Collegiate C as compared to that of the other two collegiates.

#### Null Hypothesis 2

No significant difference exists between the mean scores obtained by students of the two types of schools on the Departmental Grade IX Achievement Tests in Mathematics.

When the t-test was applied to the mean scores in mathematics, no significant difference occurred when the scores were combined for the five-year period as the t-score was only 1.52. Therefore, the null hypothesis was accepted.

It may be assumed, therefore, that the students who received their elementary education in the larger graded schools of the Inter-mountain School Division did not achieve significantly higher in Grade IX Mathematics.

When the students were grouped according to the collegiate attended for Grade IX, in Collegiate C the graded school students did achieve significantly higher in mathematics than did the rural school students. In Collegiate C the t-score was 3.51 so the difference was significant at the .01 level. There was no significant difference in the mathematics scores in the other two collegiates.

It may be assumed, therefore, when conditions were similar to those that existed in the area served by Collegiate C, the graded school students achieved better in Grade IX Mathematics than did the rural school students, but when conditions were similar to those that existed in the regions served by Collegiate A and Collegiate B, the graded school students did not achieve significantly better in mathematics than did the one-room rural school students.

While it is not surprising to find that the graded school students apparently out-performed the rural school students in many of the areas studied, the results in mathematics and science were not anticipated.

Compared with the graded school students there were times when the rural school students received as high or higher scores in mathematics, but at no time was the difference in the mean found to be significant. One possible reason for the success of the rural students in mathematics might be that the rural school students often spend far more time in school on mathematics than do the graded school students. Because of the multiplicity of grades and the consequent demands on the teacher's attention, it was often necessary for the rural school teacher to assign seatwork or "busy-work" to many of the grades. The seatwork often consisted of something that did not require the direct attention of the teacher while it was being done and often took the form of additional mathematics, because seatwork in mathematics was easy to prepare. Therefore, many children in rural schools spent far more time and effort on mathematics than was recommended by the Department of Education. In contrast, the graded school teachers were often required to follow a rigid timetable that allowed only the recommended amount of school time for mathematics. This factor could have resulted in the rural school students being as well prepared for Grade IX Mathematics as were comparable students from the graded schools.

### Null Hypothesis 3

No significant difference exists in the mean scores obtained by students of the two types of schools on Departmental Grade IX Achievement Tests in Social Studies.

When the mean scores for the combined five-year period in

Grade IX Social Studies were subjected to a t-test, the difference between the means of the students from the two types of schools proved to be significant at the .05 level as the t-score was 2.75. When the students were grouped according to the collegiate attended in Grade IX, the difference in the mean scores proved to be significant at Collegiate C only, where the difference was significant at the .05 level as the t-score was 2.04. Therefore, the null hypothesis was rejected.

It is, therefore, reasonable to assume that the students who attended the larger graded schools of the Intermountain School Division achieved significantly better results in Grade IX Social Studies than did the students who had attended one-room rural schools. This is particularly so for that part of the division which is served by Collegiate C.

There are probably many reasons why the graded group outperformed the rural group in social studies. The multiplicity of grades, the dearth of instructional aids, and the inexperience of many of the teachers are some of the most obvious.

Because the rural school teacher was responsible for all the instruction in the eight grades within the one classroom, she was often unable to give all subjects the emphasis that each required. It would appear that social studies might have been one of the instructional areas that did not receive sufficient of the teacher's attention. In the lower grades no social studies textbooks were authorized and this made it difficult to assign work to the students that they could do on their own.

The lack of adequate library materials and visual education equipment in the rural schools probably had a detrimental effect on social studies more than on mathematics and science.

The teachers of the one-room rural schools were, in many cases, less experienced than those of the graded schools. It is not unusual for a beginning teacher to concentrate her efforts on mathematics and reading to the detriment of the other subjects.

#### Null Hypothesis 4

No significant difference exists in the mean scores obtained by the students of the two types of schools on the Departmental Grade IX Achievement Tests in Science.

When the scores in science achievement for the combined five-year period were subjected to a t-test, no significant difference between the scores of the students of the two types of schools was evident as the t-score was only 1.60. When the students were grouped according to the collegiate attended in Grade IX, a significant difference in the mean scores in science existed in Collegiate C only, where the difference was significant at the .01 level as the t-score was 2.94. Therefore, the null hypothesis was accepted.

It may be reasonable to assume that one-room rural school students achieve equally as well in Grade IX Science as do students who obtained their elementary education in graded schools, except for the areas in which conditions were similar to those that existed in the area served by Collegiate C.

The graded school students did not achieve significantly higher

results in Grade IX Science. While there may be many reasons for this, one factor that could be considered is that the rural students have grown up in an environment which is more closely related to nature. Much of the Grade IX Science course taken by these students was concerned with plants and animals, some of them quite common to the average farm of this region, and it is quite conceivable that, if the rural students have an advantage in any subject, it would be science.

#### Null Hypothesis 5

No significant difference exists in the mean scores of the aggregate of the scores obtained by the students of the two types of schools on the Departmental Achievement Tests in Grade IX.

When the t-test was applied to the aggregate scores for the five-year period, the mean scores were significantly different at the .05 level as the t-score was 2.07. Therefore, the null hypothesis was rejected.

When the students were grouped according to the collegiate attended for Grade IX, the difference proved to be significant at Collegiate C only where a t-score of 2.93 proved to be significant at the .01 level. Therefore, for this group, the null hypothesis was rejected.

It may be assumed, therefore, that the graded school students out-performed comparable students from the rural schools in those subjects of Grade IX tested by the Department of Education.

When one considers the difficult task that confronted the



teacher of a one-room rural school, it is not surprising that the graded school students obtained higher aggregate scores on the Grade IX Departmental Achievement Tests. The multiplicity of grades in the one classroom, the dearth of instructional equipment, visual aids and library facilities, the lack of experience of many of the teachers, all tended to place the one-room rural school at a disadvantage.

#### Achievement When the Individual Collegiates are Considered

When the mean scores for the five-year period in each individual subject and the average of the subjects were calculated for each type of elementary school in relation to the individual collegiate attended for Grade IX instruction, an interesting trend appeared.

In Collegiate A and Collegiate B no significant difference in the mean scores was noted, while in Collegiate C a significant difference in the mean score was noted in all subjects and in the average of the subjects.

It would appear from Table XXI that a student who attended the large graded school in the area served by Collegiate C had a much better chance of achieving a higher score in the Grade IX Achievement Tests than did a comparable student who obtained all his elementary education in a one-room rural school in the same general area. In the writer's opinion there could be one or two reasons why the difference between the two groups was consistently significant in Collegiate C and not in the other two collegiates. Firstly, the area served by Collegiate C did contain a relatively large number of rural schools

TABLE XXI

THE LEVEL OF SIGNIFICANCE IN THE DIFFERENCES IN THE MEAN  
SCORES OBTAINED BY PUPILS FROM THE TWO TYPES OF  
SCHOOLS WHO ATTENDED COLLEGIATE C

Subject	Mean Scores		t-Scores	Level of Significance of Difference
	Graded	Rural		
Language	74.12	96.21	2.35	0.05
Mathematics	80.91	73.15	3.51	0.01
Social Studies	76.50	69.44	2.04	0.05
Science	74.52	69.55	2.94	0.01
Average of Subjects	76.57	69.55	2.93	0.01

of a substandard nature. Many of these rural schools had a relatively large enrolment and a succession of "permit" or untrained teachers, with the result that academic conditions in these schools were not as good as they were in other rural schools. In contrast the graded school in the area of Collegiate C had a relatively large number of competent and well-experienced teachers and academic conditions in the school appeared to be relatively good.

In the area served by Collegiate A the rural schools seemed to be of a higher standard. The district has been settled for a longer time and the adults seemed to have a more progressive outlook on education. Their schools were often staffed by very competent teachers who had been in the school for a large number of years. The graded school

of this area was equally well staffed, but there did not appear to be such a wide difference between the calibre of the rural and graded schools as there was in the area served by Collegiate C.

In the area served by Collegiate B, there were also some rural schools of a lower academic standard and these schools had difficulty in recruiting the services of qualified teachers, but the graded school of this area had also had difficulty in offering an academic program that measured up to that of the other two graded schools. There appeared to be a fairly large turnover of teachers in this school and the student population seemed to be drawn from families of a lower economic status. There was a high percentage of welfare families and a relatively high rate of student turnover. Thus there did not appear to be such a wide difference in the academic conditions of the two types of schools.

A second reason for the significant difference in the area served by Collegiate C might be related to the character of the Grade IX instruction in the three collegiates. In Collegiate C, those teachers who taught the Grade IX subjects examined by the Department of Education were very competent teachers with many years of experience. Their methods were consistent with those used by the teachers in the graded elementary schools. They tested regularly and made considerable use of drill exercises. Such teaching was familiar to those students who had come up through the graded schools. Those who attended one-room rural schools were not familiar with this type of teaching and, possibly, took several months of the Grade IX year to adjust to the

new teaching situation.

In the other collegiates, Grade IX was taught mostly by teachers who were in their first year of teaching and thus were not as effective as those of Collegiate C. They often covered the course with very little attention to constant evaluation and review. They did much less "spoon-feeding" and gave less emphasis to drill. In other words, they presented a less structured learning situation, with the result that students who had been "spoon-fed" in the graded schools could not cope with the sudden change. The rural school students who had managed to reach Grade IX in the ninth year of school had learned to work under such conditions and were able to cope with the situation. This may have contributed to the lessening of the gap between the students of the two types of schools.

The preceding reasons are only conjecture and are not substantiated by empirical research but the writer has observed these schools over a twelve-year period and believes that these factors did contribute to the rather sharp difference in the various areas.

#### Null Hypothesis 6

No significant difference exists in the degree of academic success in Grade IX between those students who attended graded schools and those who attended rural schools for their elementary education.

When the data concerning the degree of academic success in Grade IX, based on promotion results, were tested by the chi-square statistic, it was found that, for the matched pairs, no significant difference existed between the students of both types of schools.

When the data concerning the degree of academic success in Grade IX, based on promotion results, for all the students who wrote the

Grade IX Departmental Achievement Tests at the end of a nine-year period of schooling, were tested by the chi-square statistic, it was found that there was a significant difference between the students of both types of schools. A chi square of 201.8 is significant at the .01 level. The null hypothesis for this group, therefore, was rejected.

It may be assumed, therefore, that for comparable students, the graded school students did not have a higher degree of academic success in Grade IX than did those from one-room rural schools, but when all students who wrote the Grade IX Departmental Achievement Tests after nine years of schooling, the graded school students did have a higher degree of academic success in Grade IX, as measured by the Grade IX promotion results.

That no significant difference existed between the two groups within the matched pairs in the degree of academic success in Grade IX seemed to refute the idea that the graded schools were preparing their students for Grade IX more successfully than were the one-room rural schools. The major difference in the data occurred in the number of students that received a complete pass and in the number that failed. The presence of the data for those that received a provisional pass when the chi-square statistic was applied tended to keep the difference between the two groups from being significant. A provisional pass to Grade IX should not be considered as an indication of academic success, so one should be very cautious in accepting the statement that, for comparable students, the two types of schools were equally successful in preparing their students for academic success in the first year of high school.

#### Null Hypothesis 7

No significant difference exists between the drop-out rates of both types of schools.

When the data for the drop-out rates for both types of schools were tested by the chi-square statistic, it was found that there was a significant difference between the rates. The chi-square score was 15.86, which proved to be significant at the .01 level. Therefore, the null hypothesis was rejected.

It may be assumed, therefore, that in this division, a student had a better chance of remaining in school for a nine-year period, measured from the year he entered Grade I, if he attended a graded school rather than a one-room rural school.

While there may be a large number of factors contributing to this considerable difference between the number of drop-outs, this study only indicates that there was a significant difference between the drop-out rates of both types of schools.

Some of the reasons for the difference in the drop-out rate might include the following:

1. It is probable that the less experienced and less qualified teachers in the rural schools were unable to provide as much remedial teaching as was possible in the graded schools.

2. Children who were doing poorly in rural schools would be more inclined to drop out as soon when they reached the legal age to drop out than would comparable students of the graded school because there would always be sufficient work at home to keep the former occupied, while drop-outs from graded schools who lived in town had to find employment outside the home. Even the School Attendance Act contributed to the difference as the legal school leaving age was fourteen,

if and only if, the child were gainfully employed. Otherwise, the age was sixteen.

3. Often conditions were such that some of the young boys attending rural schools had to remain out of school for considerable periods during the fall or the spring term to help with work on the farm. This often resulted in their getting behind in their school work and many of them dropped out rather than face the difficult task of making up for lost time. Many of them were not able to make up for this lost time and, therefore, fell further behind and eventually quit school.

#### Null Hypothesis 8

No significant difference exists in the incidence of grade repetition in the two types of schools.

When the data for the incidence of grade repetition in both types of schools were tested by the chi-square statistic, the difference was significant at the one per cent level. Therefore, the null hypothesis was rejected.

It can be assumed, therefore, that, in this division, students who attended graded elementary schools had a better chance of not having to repeat an elementary grade than did students who attended one-room rural schools.

While no allowances were made for any differences in native ability, it is doubtful if any differences in native ability between the two groups of students could have been the sole contributing factor to the very great difference that existed in the incidence of grade

repetition.

When one considers the number of unqualified and inexperienced teachers that taught in the rural schools, and the task that these teachers faced in dealing with the work of eight grades at one time, it is understandable that a higher percentage of students would run into difficulty in gaining the academic skills and knowledge necessary to complete each grade in one year.

#### XI. CONCLUSIONS

The graded school group did out-perform the rural school group of comparable students in language, social studies and in the aggregate or average results in the Grade IX Departmental Achievement Tests. When the promotion results of all those who wrote the Grade IX departmental tests were considered, the graded school students had a higher degree of academic success in Grade IX than did the one-room rural school students. The graded schools had a much lower drop-out rate and a lower incidence of grade repetition than did the rural schools.

Therefore, in the Intermountain School Division, a student had a better chance of reaching Grade IX after eight years of school and a better chance of successfully completing Grade IX in his first year of high school if he had attended a larger graded school rather than a one-room rural school.



## CHAPTER V

### SUMMARY, CONCLUSIONS, AND IMPLICATIONS

#### I. SUMMARY

Since there seemed to be considerable controversy about the relative merits of the one-room rural school in many parts of the country, and particularly in Manitoba, it was felt that a research project in which the academic achievement of its students would be compared with that of comparable students from the larger graded elementary schools. For this reason, it was decided that the achievement of the students from the two types of schools would be compared by investigating their apparent success in Grade IX where uniform central examinations were conducted by the Department of Education. It was felt that the results of the study would be useful in helping to decide the future role of the one-room rural school within the Inter-mountain School Division No. 36. It was important that valid information about the two types of schools be obtained because there seemed to be a distinct trend towards the closing of many of the one-room rural schools.

A review of the literature seemed to indicate that the students from graded schools did tend to out-perform their rural counterparts in several areas but there did not seem to be too much consistency. There was considerable variation in the geographic and economic areas studied and in the type of schools included in the investigations. This indicated that there was a need for such a study in a rural area

of Manitoba before any direct application of the results could be made to the Manitoba situation.

In the study, the relative academic strengths of the students from both types of schools were compared by a consideration of their performance in the Grade IX Department of Education Achievement Tests. Matched pairs were set up by matching the students as to their mental ability, age, sex, high school attended, and the year school was commenced. Only those students who spent one year in Grade IX after completing the eight grades of elementary school were included in the study. All such students over a period of five years were included. The achievement of the matched pairs in language, social studies, mathematics and science as well as the aggregate results in the four subjects were compared for each of the five years of the study and for the combined five-year period. In addition, the results were analyzed separately for the students who attended each of the three high schools.

Null hypotheses that there were no significant differences in the achievement of the two groups of students in the preceding areas were formed. These null hypotheses were tested by the application of the t-test. In addition, three sub-problems were investigated:

1. Does a child from a graded school have a better chance of being promoted from Grade IX to X than does one from a one-room rural school?
2. Is there a greater drop-out rate in one type of school than in the other?

3. Is there a greater incident of grade repetition in one school as compared to that in the other?

The preceding sub-problems were investigated by considering all the students who started either type of school over a five-year period and did not transfer to another type of elementary school. The data collected were subjected to a chi-square test to ascertain whether or not any significant differences existed between the two groups.

An analysis of the results revealed that there were significant differences between the achievement of the students of the two groups in language and social studies, but no significant differences in mathematics and science. These differences indicated that the achievement of the graded school students was better than that of a comparable student from a one-room rural school.

In the study of the three sub-problems, it appeared that the graded school did have a significant advantage over the rural school. The graded school students seemed to have a better chance of successfully completing Grade IX in one year and the drop-out rate and incident of grade repetition were considerably lower than they were in the one-room rural school.

## II. CONCLUSIONS

1. On the Grade IX Departmental Achievement Tests in Language, the students who had attended the larger graded schools of the Inter-mountain School Division obtained significantly higher scores than did comparable students who had obtained their elementary education in the

one-room rural schools of the same division.

2. On the Grade IX Departmental Achievement Tests in Mathematics, the graded school students did not obtain significantly higher scores than did comparable students from one-room rural schools.

3. On the Grade IX Departmental Achievement Tests in Social Studies, the graded school students obtained significantly higher scores than did comparable students from one-room rural schools.

4. On the Grade IX Departmental Achievement Tests in Science, the graded school students did not obtain significantly higher scores than did the students from one-room rural schools.

5. On the four Grade IX Departmental Achievement Tests, the graded school students did obtain significantly higher aggregate scores than did the students from one-room rural schools.

6. In Collegiates A and B, the graded school students did not obtain significantly higher mean scores on any of the four Grade IX Departmental Achievement Tests or on the mean of the aggregate of the four tests than did comparable students from one-room rural schools.

7. In Collegiate C, graded school students did obtain significantly higher scores on each of the four Grade IX Departmental Achievement Tests in Language, Mathematics, Social Studies and Science and in the aggregate scores of these four subjects, than did comparable students from one-room rural schools.

8. Graded school students did not have a significantly greater degree of academic success in Grade IX, as measured by the promotion results, than did comparable students from one-room rural schools.

9. Graded school students did have a significantly higher degree of academic success in Grade IX, as measured by promotion results, than did students from one-room rural schools when all the students who reached Grade IX after eight years of schooling were considered and no allowances were made for differences in native ability.

10. There was a significantly higher drop-out rate among the students of the one-room rural schools than there was among the students of the graded schools.

11. There was a significantly higher incidence of grade repetition among the students of one-room rural schools than there was among the students of the graded schools.

12. The students who obtained all their elementary education in the larger graded schools of The Intermountain School Division appeared to be better prepared to successfully complete the academic work of Grade IX in one year than were the students who had attended one-room rural schools during the same eight-year period.

### III. IMPLICATIONS

#### Reorganization of School Districts

The results of this study indicate that there is a distinct academic advantage to the student of the Intermountain School Division who obtains his elementary education in a graded rather than a one-room rural school. The difference in achievement was significant in language, social studies and aggregate results. There was a significant

difference in the chances of promotion from Grade IX and less chance of dropping out or repeating an elementary grade if the student attended a graded school.

In the Intermountain School Division, there is a clear indication that the one-room school is no longer able to meet the educational needs of the rural students. It can no longer be argued that the average rural student does not need a high school education. Many, and even a majority, of the farm youth do not remain in the rural areas and must compete in the labor force with those who have attended a graded school. As farming becomes a more mechanized and complex operation, those who remain on the farm need much more education than in former years.

If the rural schools can no longer meet the needs of the rural youth, then important steps must be taken as soon as possible. While many of the deficiencies of the rural school might be overcome by spending greatly increased sums of money on them, by the improvement of facilities, by the recruitment of dedicated and competent teachers, the improvement would only be temporary. Good teachers appear to be unwilling to teach in one-room rural schools and regardless of what is spent, the education will only be as good as the teachers that staff them.

It is the writer's opinion that the only way in which the students of the rural areas will receive an education comparable to their town counterparts, is to close the rural schools and transport the students to the larger graded schools. While distances must be

taken into account, the children in the rural areas will have to make sacrifices to obtain the advantages of better schooling. In the Intermountain School Division it should be possible to close every one-room rural school. No child would have to travel more than twenty-five miles and this is not too much inconvenience in view of the increase in the standard of education.

This study indicates that the one-room schools in most areas of Manitoba might not be able to meet today's educational needs and that efforts should be made to close them down wherever possible. The disadvantages of long transportation will have to be weighed against the advantages of the large elementary schools. It may be that in some areas boarding schools may have to be set up to accommodate children from the more remote areas although one hesitates to suggest that children should be taken away from home for elementary education. It is evident, though, that if the rural school is not meeting the needs, every effort should be made towards overcoming this problem.

In the last year the government of Manitoba has recognized the limitations of our smaller schools and has advocated the formation of unitary school divisions in which one board would administer all public elementary and high school education. Where this has been accepted, it is now much easier to centralize the elementary education by closing many of the one- and two-room schools.

For the Administrator

The study points out quite clearly to school administrators

that there is a need to consider the closing of all rural schools in their areas. There is no doubt that the rural school is failing to meet the educational needs of its students and therefore should be closed or drastically upgraded.

The fact that the one-room rural schools have been operated beyond the time when they could successfully carry out the functions of modern elementary education, would indicate that the administrator should carefully study the relative achievement of students of all the types of schools under his jurisdiction. It may be that many of the smaller schools are failing to provide the standard of education that might be possible through further centralization.

There is also an indication that administrators should be making a constant evaluation of all types of schools in a division or in the province. In an age when more and better education is necessary and when such vast sums are being spent on public education, there is room for only the most efficient types of elementary schools. An administrator must be fully aware that a type of school that was successfully fulfilling a need in one decade, may not be meeting these needs at the present time.

The administrator, after determining what types of schools are most efficient from an academic standpoint, should centralize his schools so as to have only those types. He should also try to determine what were the good aspects of the schools he is closing and try to introduce as many of these as possible into his centralized schools. While the smaller school may not be meeting the academic needs of its



pupils, it may have many valuable aspects that should be introduced into the larger school, if at all possible.

#### Further Research

While this study has indicated that the one-room school has not been meeting the academic needs of its students as well as the graded school has, it has also brought to light the need for much more research in this area.

In this study the number of cases in some of the samples was quite small. A study of the same problems over a larger area would be much more conclusive and valid. It might be that such a study could be conducted by such provincial organizations as The Manitoba Teachers' Society or the Manitoba Educational Research Council.

One of the limiting factors in this study was the unavailability of mental aptitude scores of a more reliable nature. If reliable mental aptitude scores of all students could be obtained in the primary grades, a more valid comparison of the drop-outs rate and the incidence of grade repetition could be made.

Further studies should be carried out in Manitoba to determine what is the optimum size of an elementary school for academic success. If a study over a much larger area could compare the relative achievements of the students attending all types and sizes of schools, there might be more definite answers as to what types of schools should be operated in a rural division. Such answers would be extremely valuable at a time when considerable centralization is being planned.

Studies should also attempt to evaluate the relative worth of the various types of schools in more than one aspect. While academic success is a very important outcome of a school, it is not the only one worthy of consideration. The relationship of the size of a school to such aspects as the student's ability to work cooperatively, to persevere, to discover for himself, to work independently, to adjust to life in general, to become a contributing citizen, etc. should also be the subject of further investigation. Although such aspects are more difficult to measure and assess, they are no less important outcomes of any type of school. Our schools must be reorganized in light of their total worth rather than in light of just one aspect.

It might also be worthwhile if studies could be carried out to determine just what factors tend to make one type of school more successful than another. Then, in the process of reorganization that might follow, steps could be taken to ensure that our reorganized schools would retain as many as possible of them. This would enable our reorganized school to be of the highest calibre possible and not just a replica of our best type today. If our school system is to retain its top priority on public money and community effort, only the very best and most efficient type of elementary school is acceptable. A study should be made of all the desirable goals of an elementary school so that the reorganized school could incorporate all or most of these goals.

To be of sufficient value a study of this nature should be much more comprehensive. It should cover a wider area, have a much larger

sample and investigate more problems. To do this, it would be more practical to have it carried out by an organization rather than an individual. A much more scientific study could be conducted and use could be made of computers to carry out the statistical work. Such a study would be much more valuable as it would give more precise direction to the administrators of our school system.

## BIBLIOGRAPHY

## BIBLIOGRAPHY

### A. BOOKS

- Cervantes, Lucius F. Dropout -- Causes and Cures. The University of Michigan Press, Ann Arbor, Michigan, 1966.
- Flowers, George E. How Big is Too Big. Quance Lectures in Canadian Education, W. J. Gage Limited, Toronto, 1964.
- Gramb, Jean Dresden. Schools, Scholars, and Society. Foundations of Education Series, Prentice Hall Inc., Englewood Cliffs, N. J., 1965.
- Percival, W. P. Life in School. Protestant Education for the Province of Quebec, 1940.

### B. PUBLICATIONS OF GOVERNMENT, LEARNED SOCIETIES AND OTHER ORGANIZATIONS

- Fitzwater, C. O. Educational Change in Reorganized School Districts. Office of Education, Washington, D. C., 1953.
- Renny, A. J. Some Aspects of Rural and Agricultural Education in Canada. The Department of Education Research, Ontario College of Education, Education Research Series, No. 21, Toronto, 1950.
- Schreiber, Daniel (ed.). The School Dropout. National Education Association, Washington, D. C., 1965.
- Siemens, Leonard B. The Influence of Selected Family Factors in the Educational and Occupational Aspiration Levels of High School Boys and Girls. Faculty of Agriculture and Home Economics, University of Manitoba, Winnipeg, Canada, No. 1, June, 1965.
- Siemens, Leonard B., and Leo Driedger. Some Rural-Urban Differences Between Manitoba High School Students. Faculty of Agriculture and Home Economics, University of Manitoba, Winnipeg, Canada, No. 4, December, 1965.
- The Relative Achievement of Students of Schools of Varying Sizes. The Status Committee, The Federation of Women Teachers' Associations of Ontario, Toronto, Canada, 1965.
- Report of the Royal Commission on Education in Alberta, Queen's Printer, Edmonton, 1959.

Interim Report of the Manitoba Royal Commission on Education, Queen's Printer, Winnipeg, 1958.

Report of the School Divisions Boundary Commission, Queen's Printer, Winnipeg, Manitoba, 1959.

Brief Presented to The Manitoba Royal Commission on Local Government Organization and Finance by The Manitoba Teachers Society.  
Winnipeg, May 1963, Chap. II, III, and IV.

### C. PERIODICALS

Allison, C. J. "Characteristics of Students Who Failed Grade Seven in Edmonton Junior High Schools, 1951-52." Alberta Journal of Educational Research. 8:1, 1962, pp. 11-24.

Ayers, J. D. "Why Larger Units." The Manitoba Teacher. May-June, 1965, pp. 22-25.

Carmichael, Anne and Robert E. Rees. "A Survey of Reading Achievement in Alberta Schools." Alberta Journal of Educational Research. Vol. 1, No. 1, March 1965.

Coutts, H. T. and H. S. Baker. "A Study of Written Composition of a Representative Sample of Grade Four and Grade Seven Pupils in Alberta Schools." The Alberta Journal of Educational Research. Vol. 1, No. 2, June, 1955.

Dawson, Howard A. "The Rural Child and His School." The Journal of the National Education Association. October, 1954, p. 426.

Donald, Ross L. "The Little Black School House." The Manitoba Teacher. Jan-Feb., 1964, pp. 29-31.

Duncan, Otis Durant. "The Rural Epoch." The Journal of the National Education Association. Vol. 45, No. 2, Feb., 1965, p. 98.

Dunlop, G. M., S. Hunka, and H. Zingle. "Individual Differences in Alberta Schools." The Alberta Journal of Educational Research. Vol. 1, No. 4, December, 1955.

Gaumnitz, Walter H. "Some Rural School Facts." School Life. Vol. 42, No. 7, March, 1960, pp. 32-33.

Gaumnitz, Walter H. "The Exodus of the One-Teacher School." School Life. Vol. 42, No. 6, Feb., 1960, pp. 13-14.

- Gee, Wilson. "The Farmer Lags in Educational Attainment." School Life. Vol. 43, No. 1, September, 1960, pp. 24-27.
- Gorman, F. H. and Frances Holliday. "A Recent Study Sheds Light on the Problems of Rural School Teaching." The Journal of the National Education Association. Vol. 43, December, 1954, p. 553.
- Grigg, Charles M. and Russell Middleton. "Community of Orientation and Occupational Aspirations of Ninth Grade Students." Social Forces, 38, 1960, pp. 303-308.
- Guzniczuk, Harry E. "City Boy - Rural Teacher." The Journal of the National Education Association. Vol. 46, No. 3, March 1957, p. 191.
- Haller, Archie O. and William H. Sewell. "Farm Residence and Occupational Aspiration." American Sociological Review. 62, 1957, pp. 407-411 .
- Isenberg, Robert M. "The Rural Disadvantages". The Journal of the National Education Association. Vol. 52, No. 4, April, 1963, p. 21.
- Jackson, R. W. B. "Achievement in Skill Subjects in Public Schools in Four Areas of Ontario." Department of Education Research, 1955-56, Rural School Survey, Information Series, No. 7, Ontario College of Education, Toronto, 1957.
- Kreitlow, Burton. "The Rural Child and His School." The Journal of the National Education Association. Vol. 55, No. 6, March, 1962, pp. 18-19.
- Larson, H. L. "The Five School Project Dropout Study." Alberta Journal of Educational Research. 4:4, 1958, pp. 212-215.
- Martin, L. D. "Two Research Projects Undertaken by the Federation of Women Teachers' Association of Ontario." Ontario Journal of Educational Research, Vol. 7, No. 2. Winter 1964-65, pp. 179-186.
- Martins, Clarence C. "Educational Achievements of Eighth Grade Pupils in One-Room and Graded Town Schools." The Elementary School Journal. Vol. 54, May, 1954.
- Middleton, Russell and Charles M. Grigg. "Rural Urban Differences in Aspirations." Rural Sociology, No. 18, 1953, pp. 347-355.
- Partrick, Nina. "Open Season on One-Room Schools." The Manitoba School Trustee. September, 1963, pp. 2-3.
- Reeves, A. W. "The Impact of District Reorganization on the Superintendency." Canadian Education. 14:4, September, 1959.

- Reid, James T. and George R. Conquest. "A Survey of Language Achievement of Alberta School Children." Alberta Journal of Educational Research. Vol. 1, No. 2, June 1955.
- Rogers, W. "Single Grade and Multi-Grade Classrooms in the Public Schools of Ontario." Ontario Journal of Educational Research. Vol. 4, No. 2, Spring, 1952.
- Street, Paul, James H. Powell and John W. Hamblin. "Achievement of Students and the Size of the School." The Journal of Educational Research. Vol. 55, No. 6. March, 1962, pp. 261-6.
- Truckey, L. A. and W. D. Knill. "Achievement of Students in Single Grade and Multi-Grade Classes." The Alberta Journal of Educational Research. Vol. 9, No. 1, March, 1965.

#### D. UNPUBLISHED MATERIAL

- Bergen, John J. "School Reorganization in Rural Manitoba." Unpublished Ph. D. thesis, University of Alberta, 1967.
- Giles, Oscar Earle. "A Study of the Students Comprising the 1959-60 Grade VII Entering Class in Four District High Schools of Kings Country." Unpublished M. Ed. thesis, Acadia University, 1962.
- Martin, George Ernest. "A Survey of Factors Related to Drop-Outs in Grade IX in Newfoundland Central High Schools in 1961-62." Unpublished M. Ed. thesis, University of Alberta, 1964.



APPENDIX

Letter to Principals and Teachers

Form to be filled in by Principal

Grandview, Manitoba  
October 15th, 1964.

The Principal and Teachers,  
Intermountain School Division #36.

Dear Sir or Madame:

At the recent convention I discussed with you a research project that was being undertaken concerning a comparison of the academic achievement of students from graded and one-room rural schools as measured by their performance in Grade IX.

You are asked to fill out the enclosed forms as completely and as accurately as possible. A separate form is provided for each of the five years under study. You are asked to look back in the old registers and find the names of all the students who commenced Grade I in your school in the year indicated on the forms. Place their names in Column I.

In Column II please indicate the grade the student was in in his ninth year of school, if he is in your school or in Grade IX of a division high school.

If the child has transferred out of your school before reaching Grade IX, please indicate in Column III the last grade completed in your school and the name of the school to which he transferred, if it is at all possible for you to find out this information.

If the student did not transfer, but stopped attending before the end of his ninth year of school, please indicate in Column IV the last grade completed before dropping out.

Please leave Column V blank as this information will be obtained from departmental scoresheets.

You may have some difficulty in obtaining some of this information but you are asked to make every effort possible. To determine some of the facts you may have to ask for the assistance of the students or adults in your community. It is stressed that it is very important to have complete and accurate information so that the findings will be reliable.

If there are any points about which you are doubtful, or unable to obtain information, please contact me and I will try to

visit your school to discuss the problem with you. Please return the completed forms to me as soon as possible.

Thank you for your assistance in this matter. I will attempt to keep you informed of any findings that become evident as the study proceeds.

Yours truly,

J. H. GIBSON,  
Inspector of Schools.

