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A Comparative Study of Reading Achievement

Alymer C. Bright
Central Washington University

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William D. Floyd, COMMITTEE CHAIRMAN

_____

Daryl Basler

_____

John E. Davis

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CHAPTER I

INTRODUCTION

The earliest public schools in Colonial America considered the learning of "reading, 'riting, and 'rithmetic" as the hub of the curriculum. Although many other subjects have been added through the years, the three R's, as tool subjects, have increased in importance. As our society has developed and become more complex, it has become more important that there be a literate people.

Improving reading achievement has been the concern of many educators. Many elementary and secondary schools established reading clinics (18:349) in an effort to find better methods of teaching reading. Various plans of grouping pupils were tried in order to increase scholastic achievement. This was also done solely with reading instruction.

In 1953, in Joplin, Missouri, Cecil Floyd inaugarated a method for grouping children which became known as the Joplin Plan. Its purpose was to get more nearly homogeneous groups for reading instruction. It was believed that much time could be saved by the teachers in the teaching of reading and that the children would also learn more.

The staff at the Robert E. Lee School in East Wenatchee, Washington, carefully studied and considered the

Joplin Plan, and adopted it with minor modifications in the fall of 1958. It was felt that the children would thereby make greater gains in reading achievement. The other elementary schools in the district continued to group children for reading within the self-contained classroom.

1. THE PROBLEM

Statement of the problem. It was the purpose of this study to replicate a research project conducted in 1961 by Mr. George Laird of the Testing and Research Department of the Eastmont School District.* Mr. Laird tested objectively whether the pupils coming from the Lee, or modified Joplin Reading Program had gained more in the use of reading skills than the pupils who had been exposed to the traditional reading program. The study showed that there was no significant difference in the use of reading skills between the students who were taught under the Joplin Plan of grouping and those who received reading instruction in the self-contained classroom.

The purpose of the present study also was to either accept or reject the following null hypothesis: There will be no statistically significant differences in reading achievement between two different groups of children:

*See Appendix A for a complete report of this research study.

One group shall be the experimental group and will be composed of students from the Lee or Modified Joplin Reading Program, and the other group shall be the control group and will be composed of students in the Eastmont elementary schools where reading instruction is given within the self-contained classroom. None of these pupils were involved in the earlier study.

Importance of the study. Mr. Laird did not feel that one study was enough. He recommended that experimental situations be carefully arranged each year to objectively measure the progress of the Lee Reading Program.

Appropriate questioning of any previous research is desirable, even essential. There is not enough repitition of research projects in the field of education, and this lessens the value of any generalizations reached. This researcher does not doubt the findings obtained by Mr. Laird or by others. It was felt, however, that a replicate of the Laird study would be worthwhile in order to determine if cross-grade grouping in reading is as beneficial to the pupil as it would seem to be.

II DEFINITIONS OF TERMS USED

Joplin Plan. A method for grouping children in the intermediate grades homogeneously on an interclass basis. The plan embodies the following successive steps: measuring

the achievement and needs of children in the intermediate grades, organizing the children into relatively homogeneous groups independent of their grade classification, scheduling reading classes at the same hour during the day, and dispersing pupils to reading classes where the instruction is adapted to their needs (14:1118).

Lee School or Modified Joplin Plan. The Lee School Plan fits the above definition for the Joplin Plan. However, in reading the literature from Cecil Floyd, two differences are apparent. First, in Joplin from five to seven or eight reading levels are usually formed, determined by the achievement of the pupils to be instructed. Some teachers may have to handle two levels. In the Lee Program the number of levels is determined by the number of teachers, and each instructor teaches one level.

After the basic instructional period in Joplin, another twenty minute period was provided for recreatory reading which was apparently carried on in the home room. The Lee Reading Program has no such additional reading period.

Self-Contained Classroom Plan. In the traditional self-contained classroom, one can expect to find a range between five to six years in reading achievement in grade four, and in grade six a range between seven and eight years (32:13). In order to take care of the individual

differences, it is recommended that three reading groups be formed. The teacher is required to plan activities and materials for each of the three reading levels. While the teacher is working with one group, the pupils in the other two groups are working on other lessons.

III. LIMITATIONS OF THE STUDY

One of the limitations of the study is the smallness of the sample. For several years the Lee School had more students than it could accommodate. Some students entered the Lee Reading Program in the fourth grade, continued it in the fifth, and, due to lack of classroom space at Lee, were transferred to another elementary school in the sixth grade. This arrangement severely limited the number of pupils who could be matched with each other.

The small number of pupils who could be matched made it impossible to match the students in regard to socio-economic status. A child's socio-economic background is one of the major factors which determine the cultural environment, and has a good deal to do with the child's attitude toward school, his ability to read, and his scholastic success.

Teacher variables, including the quality and motivation of the teachers, were not controlled. The teachers who were regularly assigned to various positions in the

elementary schools taught reading in those grades. This would seem to be a random selection of teachers.

Data for this experiment were gathered after the students had completed the intermediate grades, and were in grade seven. None of the teachers knew of the experiment in advance, so none of the students were motivated to any undue degree because of knowledge of a forthcoming evaluation.

IV ORGANIZATION OF REMAINDER OF THESIS

The writer will review the related literature in Chapter II. In Chapter III the writer will explain the procedure that was followed in conducting the original experiment and the present study. In chapter IV the researcher will present the findings, will summarize, and present the conclusions and recommendations.

CHAPTER II

REVIEW OF RESEARCH AND RELATED LITERATURE

There have been many attempts in the past to organize children, methods, and materials in an effort to increase reading ability and academic achievement. Some educators believed and continue to believe that even better results could be achieved by grouping children in different ways. Harold Shane, Dean of the School of Education at Indiana University, has listed thirty-two plans for grouping (26). There are undoubtedly other plans for school organization which were not mentioned.

Grouping plans have often by necessity been dictated by the physical facilities and teaching personnel available to a school. The old, traditional one-room school which included children in grades one through eight is an example of an ungraded, heterogeneous group. When an additional teacher could be secured, two-room elementary schools were organized with children in grades one to four in one room and children in grades five to eight in another. With an increasing population and the availability of teachers, a graded elementary school was developed with a teacher assigned to each grade. Grade grouping is chronological age grouping or heterogeneous grouping.

Details of various grouping plans follow:

Homogeneous grouping. Also known as ability grouping, this plan frequently makes intelligence, readiness, and achievement test data the determinants of classroom placement (26:314).

The Winnetka Plan. This plan might be called an 'individual within the group' approach to instruction. The basic classroom unit in grades 1-6 in Winnetka is heterogeneous, but individual progress continues to be personalized by the use of record forms or 'goal cards' which encourage optimum academic growth by each child. (26:314)

Multiple Track grouping. The multiple-track plan was developed late in the 19th century by Preston W. Search in Pueblo, Colorado. In brief, the multiple track permitted some children to finish eight years of elementary school in seven years, while others (on a slower track) might take up to nine years to complete the same tasks. Thus three ability groups were involved, and the amount, not the nature, of requirement was 'scaled down' for slower learning children in a given year, though all children presumably completed the basic requirements before leaving the elementary school (26:315).

X Y Z grouping. This is a form of ability grouping in which the X, Y, and Z labels refer to three levels of intelligence or to three levels of assumed potential performance in academic areas such as arithmetic (26:314).

Social Maturity grouping. A rather loosely defined concept, this one suggests that grouping be heterogeneous but that children be grouped when they leave kindergarten, for example, into three first grades on the basis of social development and friendship patterns rather than on the basis of ability or sheer chance. This plan implies the exercise of professional judgment and the use of available test data in assigning boys and girls to 'well balanced' groups, with the most mature and the least mature assigned to separate classrooms (26:315).

Ungraded primary groups. This term may be used to describe a situation in which grade levels as such are abandoned at the primary level and where children work together in an environment conducive both to individual and to group progress without reference to precise grade

level standards or norms. The teacher in the ungraded primary may work with the same group for two and occasionally three years. It is her purpose to help children progress as far and as fast as they can with less regard for conventional minimum essentials than for total human development (26:315).

Departmental grouping. Rarely used below the intermediate level, a departmental program is one in which children move from one classroom to another for instruction in the several subject fields by different teachers. The departmental program is the antithesis of the unit classroom program in which one teacher handles all (or most) subject areas for one group of children (26:316).

Dalton Plan grouping. The classic Dalton Plan was based upon individual progress, group interaction, and a time budgeting 'contract plan' to facilitate individual achievement. Subject matter was grouped in two component parts, the academic and the physical-social. The former was presented predominately by individualized instruction, the latter by the whole-class method. The work for each grade was laid out in the form of 'contract', which described work to be done over a period of weeks (26:314).

There is no necessity to discuss each plan of school organization. Many of the plans are modifications of the ones that have been summarized. The "Opportunity Room" was designed for the slow learner, and the "Self Realization Room" provided for the gifted.

All these plans have been developed in an effort to improve instruction. However, there are insufficient comprehensive research data to make positive conclusions regarding the superiority of any one plan of organization. Grouping of children is important in reading instruction because of the wide range of ability among the children in

any particular grade. Even in the first grade there are measurable differences in ability. J. Wayne Wrightstone, member of the Bureau of Educational Research, Board of Education, City of New York, stated:

> At the first grade level the range of achievement is between three and four years; at the fourth grade level, the range of achievement is between five and six years; at the sixth grade level, the range of achievement is between seven and eight years; at the secondary level, the assumption can safely be made that the range of achievement will be equal to or even wider than at the sixth grade level (32:13).

It seems logical to assume then, on the basis of this evidence, that there is a wide range of reading achievement in every grade, and the higher the grade level, the greater the span.

When a teacher is confronted with such a wide range in reading achievement in a class, it makes it difficult to effectively teach reading to the class as a whole. Lillian Gray (13:239) advised that most self-contained classrooms were organized into three groups for reading instruction.

One disadvantage of having three reading groups in a classroom is that often times three separate preparations by the teacher are necessary and it is quite time consuming to teach reading to three groups each day.

The Joplin Plan was begun during a period in which many educators were searching for more effective methods and ways of teaching reading.

McKee (18:45) said:

> The reading ability of the pupils in our schools is inexcusably low. It is much lower than most teachers think it is. Furthermore, the situation grows more critical as the education level advances.

In his report on the junior high school, Dr. James B. Conant emphasized the need for more effective reading instruction in the secondary schools. He remarked: (27:19)

> The ability to read is imperative in secondary school. I have been in schools in which practically no one in the ninth grade was reading as low as grade six and I have been in schools in which thirty-five to fifty per cent of the ninth graders were reading at the sixth grade level or below. . .

"In most schools," according to Traxler, (31:3) "from 10% to 25% of the children are two or more grades retarded in reading achievement, as measured by standard tests, by the end of the elementary school."

Many lay critics were also quite vocal about the quality of reading instruction in the public schools. Rudolf Flesch published his book Why Johnny Can't Read in 1955 (11). In 1957 Russia launched Sputnik. The United States was momentarily behind in the space race, and, if we were to catch up, Johnny would have to read better and learn more in school than Ivan. The popular periodicals and even the daily newspapers were the media for pot shots at reading instruction and other aspects of the school

program. Admiral Rickover and others who had little background in the field of education supplied most of the ammunition.

It was mentioned in Chapter I that the Joplin Plan, which sought to organize children according to reading achievement for classes in reading on an interclass basis for the intermediate grades, was initiated by Cecil Floyd in Joplin, Missouri, in 1953. The plan was designed for children in grades four, five, and six. The pupils in these grades were extensively tested to determine their reading ability. They were then assigned to classes for reading instruction according to their reading level. These classes were tailored for children who could only handle second grade material to classes for those who could cope with reading on a ninth grade level.

A fifty minute reading period was provided in which the child left his graded classroom and went to his reading class. The range in chronological age in these classes often varied considerably. For example, a class could be composed of one child nine years of age as the youngest in the class and a child thirteen years of age as the oldest. According to Roul Tunley, reporter for The Saturday Evening Post, "Nobody is frustrated; nobody is bored because each is reading at his own level of achievement" (28:108).

Usually under the Joplin Plan a total of from five to

seven or eight reading levels are formed to adequately care for the reading needs of the pupils in grades four through six. Often times one teacher will have to take two groups. In the pamphlet mimeographed by Cecil Floyd, it also stated:

> The range of reading achievement for any group depends upon several factors among which are number of teachers, number of pupils, number of pupils falling at various categories and needs of pupils. Some groups or levels may be represented by, for example, only fifteen pupils, while others may have thirty five or more. Sometimes the range of pupils within the group may vary only two or three months while in other groups the spread may be greater. Generally speaking, the higher levels may be handled with wider ranges than lower levels. In a beginning second grade group you probably would not want a reading grade level of greater than 2.0 to 2.4 while a sixth grade group might have a range of 6.0 to 6.7. Our top groups, when working on seventh or eighth levels, are made up of fifth and sixth graders only and the range is wider, sometimes from 6.9 up (33:4).

Teacher judgment as well as the reading score determined in what reading class the child was placed. Even if a fourth grade child scored as high as seventh or eighth grade in achievement, he was not placed with a group which was studying basal seventh or eighth grade materials for it was felt that such groups would be too advanced and the pressure too great.

It was necessary to purchase additional reading materials and additional basal texts when starting the Joplin Plan to avoid having a child repeat any material which he had previously studied.

According to the elementary principal, Cecil Floyd,

who fostered the program, the students' reading had progressed about twice as much as usual. They had done a whole year's work in one semester. The children had improved in other subjects, too.

> "for . . . when Joplin's five hundred top students, who had been exposed to the reading plan for three years, graduated into junior high school . . . they were ready to begin the seventh grade. Tests revealed that their average reading level was approximately on a ninth grade level . . . . Previous tests, made in 1950, showed that the top five hundred students at that time averaged only slightly above the beginning seventh grade level." (28:110)

The Joplin Plan elsewhere was not always as successful as it was reported to be in Joplin, Missouri. Other schools have tried the plan, with varying degrees of success. The results have been conflicting. Ramsey made a study of a Joplin Plan reading program in Logansport, Indiana, during the school years 1958-1960. The study showed the following:

> The program was effective in producing gains for all three grade levels when each group was considered as a whole. For those in the upper one third of the classes in intelligence it was effective in producing gains equal to or greater than expected, except for the fourth grade in vocabulary. For those children who were in the lower one third in intelligence, it was not effective in producing gains as great as expected, except in the fifth grade (23:572).

The data for the above conclusions are listed on the following page:

TABLE I

RESULTS OF LOGANSPORT, INDIANA EXPERIMENT

Grade	Number of pupils	Gain expected	Gain in comprehension	Gain in vocabulary	Gain in total
Reading growth for the upper third (I.Q. 110-136)					
4	26	.85	1.15	.67	.91
5	22	2.02	x	x	2.69
6	22	2.01	2.79	1.97	2.01
Reading growth of the lower third (I.Q. 77-100)					
4	21	.70	.65	.50	.58
5	27	1.63	x	x	1.89
6	25	1.58	1.54	1.17	1.38

(x) - not available (23:571)

When Fay (10:66) said, "However, regardless of how the children are grouped the range of abilities and needs would remain such that further within class grouping would continue to be desirable," he implied that there were individual difference within a homogeneous group, and that often times the teacher failed to provide for the differences that existed. Irving H. Balow, from the University of California, in his study of Joplin Plan classes in reading in Southern California, showed the range in ability in various phases of reading within the high group. Class "A" was composed of twenty-one pupils who ranked from 5.7 to 9.0, with a median of 6.7 as composite scores on the Iowa Silent Reading Test, Form A.N. However, there were eight sub-tests, and the scores for this group ranged as follows: (1:29)

TABLE II

RANGE OF SCORES OF READING SKILLS
IN A HIGH READING GROUP

Skill	Range of scores
Rate	2.1 - 12.7
Comprehension	3.8 - 11.1
Directed Meaning	2.5 - 11.8
Word Meaning	4.5 - 8.5
Paragraph Comprehension	3.7 - 10.2
Sentence Meaning	4.4 - 10.3
Alphabetizing	3.1 - 12.4
Use of Index	4.7 - 11.3

Note that in class "A", which was the "above grade level" class, the smallest range, four years, was in word meaning, and the greatest range, ten years and six months, was on the rate test. On rate, the children in this class ranged from more than three years below grade level to almost seven and one half years above grade level. On each of these eight sub-tests, some children in class "A" scored below grade level. Such a wide range showed that the "homogeneous" group was not homogeneous.

Balow tested the hypothesis that once the pupils have been grouped, the problem of teaching reading is solved and greater gains in reading achievement will result. Additional details of Balow's experiment follow:

Balow chose three other sixth grade classes in three other schools in this southern California community. One school was using homogeneous grouping for reading instruction for the second year. The faculty thought that the children had made greater gains in reading as a result of homogeneous grouping. The sixth graders that served as the control group were selected because no special grouping methods had been used in these schools. Each sixth grade teacher had a random selection of all the sixth graders in the school (1:30).

It was found that both groups were quite well matched in mental ability. According to the California Short Form

of Mental Maturity, the average I.Q. for the control group was 103.9, and the average I.Q. for the experimental group was 103.5.

Even though there was no significant difference in mental ability, when the Metropolitan reading test was given in October,

> The mean raw score of the homogeneous group was 23.80 and the control group 20.97, a difference of 2.83 points. When the mean difference was tested by using the "t" test, a "t" value of 2.64 was found, which is significant at the one per cent level of probability. The hypothesis that the two groups were equal in reading abilities at the beginning of the experiment was therefore rejected. At the start of the study, the reading achievement of the homogeneous group was significantly higher than the reading achievement of the control group. (1:31).

The Metropolitan Reading Test was given to each child in the experiment again in June. The mean gain for the children in the homogeneous group was 5.078 points, and for the children in the heterogeneous group, 5.157 points. The "t" test showed that there was no significant difference in growth during the experiment between the two groups (1:31).

> There may be advantages which accrue to classes that are homogeneously grouped for reading instruction, but these advantages are not automatic. Procedures more sophisticated than achievement testing are required to secure a reasonably homogeneous class. But homogenity is not enough. Once homogenity is secured, to justify the grouping, a program must be devised that will result in greater reading growth (1:32).

The results of Balow's study did not provide a

testimonial for the Joplin Plan of grouping. Douglass noted that there is a common assumption that children will learn to read better if they are taken from a heterogeneous group and placed in a homogeneous one. Research failed to provide proof that this was the case (8:87).

William R. Powell of Ball State Teachers' College reported on an experiment which was conducted in two public elementary schools in Indianapolis, Indiana. At the time of the experiment, school "A" had been operating under the Joplin Plan for about three a nd one half years. School "B" taught reading in the self-contained classroom. The pupils included in the study were in grades four, five, and six, and had been enrolled in their respective schools since entering the fourth grade.

The populations of the two schools were very similar in their socio-economic level, similar in rate of promotion, class size, and time spent in reading instruction. The schools were nearly equal in the availability of reading material. The teachers were comparable in experience and training. The pupils were approximately equal in reading achievement and mental ability (21:388,389). The evidence showed that:

> The Joplin Plan of organization for reading instruction produced no significant differences in reading achievement when reading achievement under that plan was compared with reading achievement in a comparable self-contained classroom situation. This finding

> applied to the reading achievement of the entire group, to boys separately, to high reading achievers, and to low reading achievers. There was some evidence in the study to suggest that the self-contained classroom possibly produced higher reading achievement for superior readers than the Joplin Plan did. (25:390).

> The Joplin Plan of reading instruction did not produce any significant differences in performance in the content areas when achievement in those areas was compared with achievement in a self-contained classroom (21:390).

Morgan and Stucker compared the Joplin Plan and the traditional method of grouping with ninety matched pairs of fifth and sixth graders in a rural consolidated school. The two groups were matched according to sex, intelligence quotient, and initial reading ability. In each grade the subjects were divided into fast and slow experimental and control groups. Teachers were assigned on a random basis to teach the experimental and control groups (5:39).

> The experiment ran for one year. The experimental groups at all levels made significant reading gains over the control groups. It was concluded that for the single school where the experiment was made, the Joplin Plan was more effective (33:39).

An experiment was carried out in the Sebastopol Union School District in Sonoma County in California during the 1961-62 school year. Matched groups were established on the basis of reading test scores, teacher judgment, cumulative record data, and previous test results.

Both the reading gains for the groups as a whole and the gains of fast and slow readers for both the experimental

and the control groups were compared. The results are summarized here:

> Both the experimental and the control groups showed gains of more than one year in total reading, reading vocabulary and reading comprehension. There were no significant differences between the two groups in reading gains (5:41).
>
> A further comparison of the fast and the slow readers was made in the experimental and the control groups to determine whether the different organizational plans affect pupils at extremes of the continum. There was no significant difference in reading gains between the two groups for fast or slow readers. A further comparison of the fast and the slow readers in the experimental group revealed no significant differences in reading gains (5:41).

Several letters have been written by the present investigator to Cecil Floyd in Joplin, Missouri, in order to get up to date results on the teaching of reading with the Joplin Plan at Joplin itself. A pamphlet was received, but it showed no date of publication. Quoted from page 5, without date, it is stated: "Today this program is in use in all of our schools, with over two thousand children participating. Results are more and more satisfactory the longer the program is used." (33:5).

Again, no date, the following is written:

> At the end of the last school year, in the schools there were approximately 500 children who were studying reading material above the sixth grade level. At the close of the school year, by test results, the average reading grade achievement of these 500 pupils was 8.8, or approximately an average of 3 years above elementary work. Approximately 100 pupils attained a reading achievement test result of either tenth or eleventh grade in reading ability (33:5).

It was the intent of the writer in this chapter to review the research and literature related generally to grouping for reading and specifically that related to the Joplin Plan. In summary, then, the following points seem to have been made:

1. Learning to read is a complex, complicated process; learning to read well is even more difficult.

2. There is a variety of grouping procedures, all of which are designed to improve a child's reading ability.

3. Most of the research showed that the Joplin Plan of organization for reading instruction produced no better results than those attained in the self-contained classroom, even though results differed slightly from one experiment to another.

4. Many of the achievements claimed by the proponents of the Joplin Plan, its originator included, may have been due to the "Hawthorne effect," or some specific phase of the program, rather than to the actual method of grouping.

CHAPTER III

PROCEDURE USED IN THE STUDY

In the original study conducted by Mr. Laird nineteen pupils from the Lee School were matched with nineteen pupils from the other elementary schools in the district. He matched them according to IQ, sex, and chronological age in order to get pairs of students as similar as possible. These pupils, in the fall of 1961, were in the seventh grade, the control group having been taught reading in the self-contained classroom, and the experimental group taught by the Joplin Plan of grouping in the Lee School.

The I.Q. scores were taken from the results of the California Short Form of Mental Maturity Test when the students were in grade three. The students were matched according to sex, but the sexes were not divided into two groups. The matching data are given below:

TABLE III

DATA FOR MATCHED GROUPS, LAIRD EXPERIMENT

	Experimental Group		Control Group	
	Mean	Standard Deviation	Mean	Standard Deviation
Age (in months)	145.8	7.3	144.5	6.0
I.Q. (Language)	113.5	14.3	113.9	15.3
I.Q. (Total)	111.6	11.7	111.5	11.2

First quarter social studies and English marks were obtained for each pupil. Mr. Laird thought that

> "If real gains were made in the use of reading skills, they should be reflected most in such subjects as social studies and English which require more extensive use of reading skills than other school subjects (Appendix A).

The marks were then totaled and a grade point average was computed for each group. Then the differences between the averages of the two groups were obtained. The grade point difference was subjected to the "t" test to determine whether these gains were significant or happened by chance.

In the present experiment twenty-three pupils from the Lee School were matched with twenty-three pupils from the other elementary schools in the Eastmont District except Grant School, which had also started a Joplin reading program. At the time of the experiment all pupils were seventh graders at the Sterling Junior High School in the Eastmont School District. The control group was composed of pupils from the other elementary schools who had received reading instruction in the self-contained classroom, and the experimental group was composed of pupils from the Lee School who had participated in the modified Joplin Reading Program. All pupils selected for the experiment had been enrolled in their respective schools during the fourth, fifth, and sixth grades.

The pupils selected for this experiment were also matched according to IQ, sex, and age. The two sexes were not divided into two groups. The IQ data was taken from the results of the California Short Form of Mental Maturity Test, which was given in the third grade. The figures on matching are given in the table below:

TABLE IV

DATA FOR MATCHED GROUPS, PRESENT EXPERIMENT

	Experimental Group		Control Group	
	Mean	Standard Deviation	Mean	Standard Deviation
Age (in months)	149.13	4.4	149	3.6
IQ (Language)	105.5	9.3	105.3	10.95
I.Q. (Total)	101.26	10.95	100.4	9.43

First quarter social studies marks and English marks were also obtained for each student. The marks were averaged and the statistical procedure used by Mr. Laird was followed.

Besides using the English and social studies marks for the first quarter of the seventh grade, in this experiment the Iowa Every Pupil Reading Test A, Form L was given to the twenty-three matched pairs on September 16, 1964. The tests were scored, and an average score was obtained for both the control group and the experimental group.

Again the statistical procedure described above was repeated, and the "t" test was used in order to find out if the difference was significant.

The findings for both the original study and the present study will be reported in detail in the next chapter.

CHAPTER IV

SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

It is to be recalled that this experiment was conducted to either verify or deny the findings and conclusions of a previous study involving a similar group of students in the same school district. It was the intent of this study to determine if there was any significant difference in reading achievement between the Lee School Reading Program with its interclass grouping and the other schools in the district where reading was taught in self-contained classrooms.

In this chapter the findings of the two studies will be compared. The results of Mr. Laird's study will be reported first, followed by the results of the present study. This chapter will also contain conclusions and recommendations based on the findings of these two studies.

I FINDINGS

Each study obtained first quarter, seventh grade social studies marks for both the experimental group and the control group and compared them. The data are as follows:

TABLE V

COMPARISON OF FINDINGS IN SOCIAL STUDIES MARKS

A. Social Studies Marks:	Experimental Group Grade Point Average	Control Group Grade Point Average	Difference Grade Point Average
1. Laird's study	2.31	2.00	+.31
2. Present study	2.03	2.33	-.30

In Mr. Laird's experiment the mean of the social studies marks showed a small, positive gain in favor of the experimental group. In order to determine whether this gain was significant, the investigator subjected the grade point difference to the "t" test. Probability tables showed that the quotient of 1.12 from the "t" test was not significant, and that the difference in grade point average could have happened by chance. A quotient of 2.101 was needed to show a significant difference.

In the present study, it was found that the mean grade point average of the first quarter social studies grades was 2.33 for the control group, and 2.03 for the experimental group, giving the control group the edge. In using the "t" test, it was found that there was no significant difference between the grade point average of the

experimental and the control groups. The quotient was 1.7. To be significant at the one per cent level of confidence, the "t" would have to be 2.819, and at the five per cent level, 2.074.

In each study English marks for the first quarter, seventh year were obtained and compared. The data are as follows:

TABLE VI

COMPARISON OF FINDINGS IN ENGLISH MARKS

B. English Marks:	Experimental Group Grade Point Average	Control Group Grade Point Average	Difference Grade Point Average
1. Laird's study	2.59	2.31	.28
2. Present study	2.26	2.22	.04

In Mr. Laird's study the experimental group was higher with a mean difference in grade point average of .28. Since the difference in grade point average for the English scores was even smaller than the difference in the social studies scores, it follows that the difference in English scores could also have happened by chance.

In the present study the experimental group was just slightly higher, with a mean difference in grade point average of .04. The "t" test showed a quotient of .17. To

be significant at the five per cent level of confidence the quotient would have to be 2.074.

The Iowa Every Pupil Reading Test was only given in the second experiment. The data are as follows:

TABLE VII

FINDINGS FROM STANDARDIZED READING TEST SCORES

C. Standardized Reading Test Scores:	Experimental Group Mean Raw Score	Control Group Mean Raw Score	Difference Mean Raw Score
1. Laird's study	No test administered, hence no data available.		
2. Present study	66.73	61.65	5.08

The results from the Iowa Every Pupil Reading Test A, Form L, which was given to the seventh graders on September 16, 1964, indicated a higher mean score for the experimental group. There was a mean difference in the raw scores of 5.08. The "t" test was used. A quotient of .92 was obtained, which indicated again that there was no significant difference between the average scores of the two groups, since a quotient of 2.819 was needed to be significant at the one per cent level of confidence, and 2.074 to be significant at the five per cent level of confidence.

It is interesting to note that in the present study, the social studies marks indicated that the control group

achieved somewhat better, but that in the reading test the results favored the experimental group. The subjectivity of teachers' grades might account for this discrepancy. This is not to say that the teachers consciously upgraded one group of pupils and downgraded the pupils in the other group, although an investigator would be naive to discount this possibility since philosophy and practices of grading differ from teacher to teacher.

II. CONCLUSIONS

1. The null hypothesis, which stated that there will be no statistically significant difference in reading achievement between the two groups of children in the present experiment, can be accepted.

2. One may now conclude with considerable confidence that there have not been, are not now, and are likely not to be any significant differences in achievement between reading instruction taught under the modified Joplin Plan type of grouping described and used in this particular study and reading taught in the self-contained classroom, since both of the research studies indicate the same general findings. This conclusion applies at least as far as the schools involved in this study are concerned.

3. It would seem that the degree of pupil success in reading achievement probably depends more upon the

teaching skill of the teacher than upon the type of grouping that is established, as important as grouping might be.

III. RECOMMENDATIONS

1. It is recommended that small sample research such as the ones discussed in detail in this study comprise a unit and that no additional research be conducted of the same type in the Eastmont School District unless it were designed to test completely different hypotheses or problems.

2. In grouping children for reading classes, more refined tests should be used in order to diagnose their needs and give them the proper instruction.

3. It is recommended that a study be made to determine the quality of reading instruction actually given to pupils in the intermediate grades. It should be determined whether there is a definite decline in reading achievement at this grade level, and if this is true, to discover the reasons for it.

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APPENDIX

APPENDIX "A"

TEST BULLETIN

Eastmont Schools February 1961

TO: Teachers and Administrators

FROM: Office of the Testing Supervisor

SUBJECT: Research Study: Objective Evaluation of the Lee Reading Program: A Preliminary Comparison of the Average Grade Point (Social Studies and English, First Quarter, 1960) of 19 Pupils Formerly from Lee School with the Average Grade Point of 19 Seventh Grade Pupils Formerly from other Schools in the Eastmont School District.

PURPOSE

Over the past few years it was felt that the Lee Reading Program resulted in positive gains in reading skills for its participating students. The purpose of this study was to test objectively whether or not the pupils coming from the Lee Reading Program had gained more in the use of these reading skills than the pupils who had been exposed to the more traditional reading programs.

TEST USED California Test of Mental Maturity, Short-form, 1957 Edition Elementary Level

PROCEDURE

A The Matching Process

The pupils from Lee School were matched according to IQ, sex, and age with pupils from the other schools. Because of the relatively small number of pupils available from the experimental school (Lee) the investigator chose the matching procedure rather than random selection. (Using the random selection approach would have necessitated about 76 pupils in each group rather than 19 used in this experiment.)

Reasons for using this particular method of matching the two groups of pupils are given below.

1. IQ (Total Score) Group IQ test scores generally have a significantly

high correlation with marks given by teachers. The correlations usually range from .50 to .70.[1]

2. IQ (Language Score) While the total score of an IQ test is generally regarded as a more reliable and valid index of the pupil's total mental ability than either the Language or Non-language parts, the Language score is probably a better indicator of his verbal or reading skills.[2]

3. Sex: Research has shown that teachers tend to give higher marks to girls than to boys. Also, girls may score higher on tests of linguistic (language) ability than boys.[3]

4. Age: Pupils having the same IQ may have different mental levels because of different chronological ages. In short, the above matching method tends to minimize the differences in grade points which may be due to sex, IQ, and age differences.

B Summary of Matching Data

	Experimental Group (Lee School)		Control Group (other schools)	
	Mean	Standard Deviation	Mean	Standard Deviation
Age (in months)	145.8	7.3	144.5	6.0
IQ (Lang.)	113.5	14.3	113.9	15.3
IQ (Total)	111.6	11.7	111.5	11.2

C Validation Criteria

First quarter grades in social studies and English were used for the following reasons:

1. If real gains were made in the use of reading skills, they should be reflected most in such subjects as social studies and English which require more extensive use of reading skills than other school subjects.

2. First quarter grades only were used because another specialized reading program was introduced to all seventh grade pupils shortly after first

quarter marks were recorded. It was felt that the effect of the new reading program might neutralize (to an unknown degree) the effect of the experimental program. If no longer true that the special program is delayed, this would have to become a stated limitation and the tests should be given between the 6th and 7th week or during the 6th week.

D Comparisons

After the matching was completed, the first quarter grades were recorded for each pupil. These marks were then totaled and a grade point average was computed for each group. Then the difference between the averages of the two groups was obtained. (See below)

	Experimental Group	Control Group	Difference
	Grade Point Average	Grade Point Average	GPA
Soc. Studies	2.31	2.00	.31
English	2.59	2.31	.28

E Use of the "T" Test

It will be noted that the above results indicate small but positive gains in favor of the experimental group. Were these gains significant or did they happen by chance?

To find out the answer to this crucial question, the investigator subjected the .31 (Social Studies grade point difference) to a test formula called the "T" test.[4]

The quotient obtained from this test or formula was 1.12. Confidence levels (probability tables) were then used to see if the figure 1.12 was significant.[5] It was found that the quotient obtained from the "T" test would have to be at least 2.101 in order to be significant.

CONCLUSION

Therefore it must be concluded that-- as a result of this particular study-- the difference gain of .31 grade point average for the Experimental Group could have happened by chance.

It follows that the .28 difference gain for the Experimental Group in English grade point average could also have happened by chance.

IMPLICATIONS

These gains in favor of the Experimental Group were found to be insignificant statistically in this particular study. However, if such gains were observed in several experiments of a similar nature, repeated yearly for several years, it would be highly probably that they would prove to be significant.

RECOMMENDATIONS

In view of the positive results and the implications noted above, it is recommended that experimental situations be carefully arranged each year to objectively measure the progress of the Lee Reading Program and other such experimental projects undertaken in Eastmont Schools.

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