

A COMPARATIVE STUDY OF TWO METHODS OF GROUPING STUDENTS  
IN THE INTERMEDIATE GRADES OF THE  
HOBBS PUBLIC SCHOOLS,  
HOBBS, NEW MEXICO

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THESIS

Presented to the Graduate Council of the North  
Texas State Teachers College in Partial  
Fulfillment of the Requirements

For the Degree of

MASTER OF SCIENCE

By

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140830

Hobbs, New Mexico

August, 1946

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## CHAPTER I

### INTRODUCTION

#### Purpose of Study

The purpose of this study is to determine, in the light of available data, which of two methods of grouping students for instructional purposes is best suited to the needs of the Hobbs Elementary Schools, Hobbs, New Mexico.

#### Limitation

This study is limited to a comparative study of achievement of the fifth-grade classes of the North Hobbs Elementary School for the years 1943 and 1944. No attempt will be made to prove the alleged benefits to be derived from either method of grouping.

#### Sources of Data

The data used in this study consisted of both documentary and primary. The documentary data were obtained from published literature including books and periodicals. The primary data were collected from intelligence tests and achievement tests administered as a part of the regular school program, from personal interviews with students and parents, and from questionnaires accomplished by teachers.

### Location of School

Hobbs, a progressive town of about twelve thousand people, is located in the southeastern part of New Mexico. For many years, Lea County, in which Hobbs is located, was referred to as "Little Texas" by the residents of other parts of the state. This name was applied because the topography of the land is a continuation of the level sandy expanse of West Texas. However, since the discovery of oil in the county, it has become known as the "Oil Capital of New Mexico." Most major oil companies and oilfield supply houses maintain offices in the county and the majority of them have their headquarters in Hobbs. Because of the type of employment offered in Hobbs and vicinity, the town has many transient workers and due to this fact, the public schools have many difficult problems to solve.

### The North Hobbs School

The public schools of Hobbs employ seventy-one teachers and enroll approximately two thousand students each year. The schools for the past four years have had such a large enrollment that the classroom teachers have been overburdened.

The North Hobbs Elementary School is the largest of the two elementary schools in Hobbs. It is housed in a modern brick building but due to the crowded conditions, all available space, including the cafeteria, kitchen, and music room, has been converted into regular classrooms. In addition, three rooms of first-year pupils are attending classes in the First Baptist Church.



### Procedure

The fifth grade of the North Hobbs Elementary School was chosen for this study. This grade was selected because intelligence tests are given to that grade each year.

Prior to 1943, pupils in grades two through six were sectioned according to the total grade equivalent made on standardized achievement tests over the previous year's work. This grade equivalent was determined by administering the Metropolitan Achievement Test. Since 1943, students in the intermediate grades have been placed in sections heterogeneously, that is, without reference to ability, intelligence, or scholarship records. The fifth grade of 1942-1943 and the fifth grade of 1943-1944 were included in this study: the former being the last class to be grouped according to achievement records and the latter the first to be grouped heterogeneously.

The Detroit Alpha Intelligence Test was given to both groups to determine their native ability. This test was administered and scored by the principal of the school and the results became a part of the permanent records of the school. These tests were given soon after the opening of school in 1942 and 1943.

In May, 1943, and May, 1944, the classes were given the Metropolitan Achievement Test, Revised and Partial Edition. The tests were administered by the principal of the school and scored by the teachers working as a group as

directed by the manual of directions accompanying the tests. The scoring was checked by the principal and no re-checking was deemed necessary as the errors found were insignificant. The test provided grade equivalents for reading comprehension, vocabulary, arithmetic fundamentals, arithmetic problems, English, and spelling.

Thirty-two pairs of boys and twenty-nine pairs of girls in the two groups were equal on three counts: age, sex, and intelligence quotients. The boys were ten, eleven, twelve, and thirteen years of age and fell within the I.Q. range 86-125. The girls were ten, eleven, twelve, and thirteen years of age and fell within the I.Q. range 93-131. The boys in each group were divided into the I.Q. ranges 86-99, 100-111, and 113-125 and a comparison in achievement standing of each I.Q. range of the two groups was made. A comparison of ten-year-olds, eleven-year-olds, and twelve- and thirteen-year-olds was also made. The same comparisons in achievement standing were made for the girls. The I.Q. ranges for the girls were 93-99, 100-110, and 112-131.

#### Related Studies

Sears says:

The grouping of children in schools is a means not an end. The end is desirable learning through instruction. For the school, learning is a broad term referring to the entire child who learns as a going enterprise in a physical and social world. Whatever the school does, it must seek to improve and not destroy the unity of the physical, mental, aesthetic, and social elements in the learner. Instruction seeks balance and harmony among

parts as essentials in the separate development of the parts. The theory that these several parts of the learner may be developed as if each were independent of the other, has given place to the theory that any learning is completed only when it is fully integrated with all other learning and established not merely as knowledge possessed, or as a skill or an attitude, but as an element in a unified personality. It is with reference to this background that any study of child grouping must proceed.<sup>1</sup>

A vast amount of material dealing with the grouping of children for instructional purposes is to be found in educational literature. Many studies have been made involving the experimental technique. Austin H. Turney has made a comprehensive survey of the published literature concerning homogeneous grouping for the period 1899-1929.<sup>2</sup> Based upon the literature reviewed Turney concluded that:

1. Most of the studies purporting to evaluate ability grouping have proved nothing regarding ability grouping but have only added evidence bearing upon the nature and extent of individual differences.
2. Most of the experimental attacks upon the value of ability grouping have failed to evaluate the chief claim for it, i.e., the possibility of adapting content, method, or time.
3. There is some reason to believe that ability grouping can best be exploited by using measures of mental ability as the major basis for sectioning.
4. The experimental literature indicates that more often than not pupils do better in homogeneous groups than in heterogeneous groups.
5. There is fairly strong indication that when efforts are made to adapt means and materials of instruction to the needs of different levels of ability, better achievement occurs in homogeneous than in heterogeneous groups.

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<sup>1</sup>Jesse B. Sears, "Some Aspects of the Problem of Homogeneous Grouping," Educational Administration and Supervision, XXII (October, 1936), 499.

<sup>2</sup>Austin H. Turney, "The Status of Ability Grouping," Educational Administration and Supervision, XVII (January-February, 1931), 21-42, 110-127.

6. In the experimental situation where there is no special effort made to adapt content or method the average and lower groups appear to benefit more often than the higher groups.

7. There is some evidence, not conclusive, that ability grouping promotes motivation of pupils to increased effort.

8. There is not adequate information drawn as to whether the majority of teachers really find it easier to teach homogeneous groups.

9. There is no acceptable evidence as to the effect upon the mental hygiene of the child.

10. There is some evidence that homogeneous grouping reduces failures but it is not conclusive.

11. There is not direct evidence that elimination is reduced as a result of homogeneous grouping, per se.

12. The true evaluation of ability grouping must be deferred until adequate experimental attacks have succeeded in measuring its alleged advantages.<sup>3</sup>

Purdom,<sup>4</sup> in 1923, began a study of the value of homogeneous grouping made on the basis of intelligence tests. His study, completed in 1926, was limited to a comparison of achievement in two subjects, algebra and English. The students in each of the five schools included in the investigation were given the Terman Group Intelligence Test. The pupils were then divided into two equivalent groups on the basis of the intelligence tests, and designated Group I, the experimental, and Group II, the control. Group I was divided into two sections in the smaller schools. The higher fifty per cent of Group I was called bright and the lower fifty per cent was called dull. Group II was divided into sections with approximately the same number in each and equivalent in intelligence as measured by the Terman test. Thus each section of

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<sup>3</sup>Ibid., pp. 122-123.

<sup>4</sup>T. Luther Purdom, The Value of Homogeneous Grouping.

Group II contained both bright and dull students. In the next larger schools, grouping was done in the same manner except there were three sections of each group formed instead of two. The term mediocre was applied to the middle section. Each group, therefore, contained bright, mediocre, and dull pupils. In the largest schools each group was divided into five sections on the basis of the intelligence tests, the twenty per cent making the lowest score in one section, and so on up to the twenty per cent making the highest score. Group II was divided into five sections, each containing pupils with all grades of intelligence.

\* In order to measure results and make comparisons, four standardized tests were given the English students at the beginning of the study. Since it was the first time for the pupils to study algebra, no tests were given in that subject. At the beginning of the study there were 700 pupils participating but many of them were not included in the analysis for various reasons.

\* The pupils, grouped in pairs for easy comparison, were approximately equal on four counts: sex, intelligence, age, and teacher. Each student of the experimental group was compared with a student of the control group in achievement measured by standardized tests in both English and algebra and in semester grades as given by the teacher.

In each of the schools with one exception, one teacher taught both the control and experimental sections in her

subject. Two teachers handled the work in the school having five sections in the group. One taught two control and three experimental sections; the other three control and two experimental sections. The problem of the investigation was carefully explained to all the teachers. No special instructions were given teachers except that each was told to teach the students all that she could of her subject and to feel perfectly free in using her own judgment.

X Purdom's findings were analyzed in the light of certain claims adhered to by the advocates of homogeneous grouping. He listed the following claims as advanced by this group:

1. It makes possible more rapid progress of bright pupils.
2. It offers an opportunity to adapt teaching methods to the different levels of intelligence.
3. It creates more rivalry and causes the pupils to put forth better efforts.
4. It makes teaching much easier.
5. It eliminates many problems of discipline.
6. It reduces the number of failures.
7. It discourages the dull pupils less.
8. It makes possible an enriched curriculum.<sup>5</sup>

"It is well to note that many of the advantages ascribed to ability grouping are dependent upon the teacher."<sup>6</sup> The teacher who can and is willing to put forth the necessary effort to do good teaching will bring about many of the alleged advantages of homogeneous grouping regardless of the type of grouping in her room.

The major conclusions reached by Purdom follow:

<sup>5</sup>Ibid., p. 36.

<sup>6</sup>Turney, op. cit., p. 24.

1. Pupils in homogeneous sections do not gain more than pupils in heterogeneous sections when the results are measured by standardized tests.

2. Pupils in homogeneous sections make lower semester grades in English but higher in algebra.

3. Pupils in homogeneous sections do not cover more course material.

4. The semester grades do not show that pupils in homogeneous sections put forth greater effort.

5. The gains made on the standardized tests and the semester grades do not show that the pupils of any degree of intelligence were favored by homogeneous grouping.

6. Homogeneous grouping on the basis of intelligence tests does not reduce failures.<sup>7</sup>

Purdom's study, one of the best to date and quite comprehensive, does not settle the problem of grouping.

During 1931-1933, Hartill<sup>8</sup> made a study of homogeneous grouping in the New York Elementary Schools. The experiment was confined to the fifth and sixth grades. Participating schools were asked to enroll as many grades of 5A, 5B, and 6A sections as was possible, each grade to consist of three classes. In December of 1931 all grades were given the New Stanford Achievement Test, Form V, and the children were divided homogeneously and heterogeneously on the basis of their educational ages as determined by the test. Those grouped homogeneously during the term February, 1932, to June, 1932, were given a differentiated course of study and those grouped heterogeneously were given an undifferentiated course of study. In June, 1932, both groups were given the

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<sup>7</sup>Purdom, op. cit., p. 92.

<sup>8</sup>Rufus M. Hartill, Homogeneous Grouping as a Policy in the Elementary Schools in New York City.

New Stanford Achievement Test, Form W. In September, 1932, the students were regrouped; the heterogeneous groups formed new heterogeneous groups and the homogeneous groups were again grouped homogeneously. Teachers were advanced one grade so that the same teacher would instruct the same children under both grouping plans. In December, 1932, the groups were given the New Stanford Achievement Test, Form V.

For various reasons it was necessary to eliminate many students who began the experiment. After these eliminations there were two groups of students remaining. In each group there were 687 children which were designated Section A and Section B. Section A consisted of pupils who were grouped homogeneously the first term and heterogeneously the second term. With Section B the situation was reversed. Students were classified "1," "2," and "3" within the sections. "1" students were called bright, "2" students were called dull, and "3" were called average. A comparison of achievement in reading and English was made of the two sections. From this experiment Hartill found that:

1. Bright children made significantly larger gains when grouped heterogeneously than when grouped homogeneously.
2. Dull children made significantly larger gains when grouped homogeneously.
3. Average children did equally well in either group.<sup>9</sup>

An interesting and unique study is that of Keliher's<sup>10</sup>

<sup>9</sup>Ibid., p. 36.

<sup>10</sup>Alice V. Keliher, A Critical Study of Homogeneous Grouping.



in which basic assumptions of the proponents of homogeneous grouping were attacked. Her technique included the setting up of the assumed position, listing statements supporting the assumed position, and critically analyzing the assumed position. From the evidence presented, she concluded that "homogeneous grouping is not in accord with progressive theory nor with recent facts brought to light by biology, psychology, physiology, and mental hygiene,"<sup>11</sup> and therefore, "homogeneous grouping is not desirable in our elementary schools."<sup>12</sup>

A. G. Breidenstine<sup>13</sup> conducted a study of 1,163 students grouped heterogeneously and 1,162 students grouped homogeneously. This study was limited to grades two through nine. The students were paired for easy comparison and were equivalent on two counts, grade and intelligence. Results showed that differentiation into groups did not materially improve educational achievement.<sup>14</sup>

Foster,<sup>15</sup> from his study of grouping in the elementary schools in Texas, found the trend to be away from homogeneous

<sup>11</sup>Ibid., p. 164.

<sup>12</sup>Ibid., p. 162.

<sup>13</sup>A. G. Breidenstine, "The Educational Achievement of Pupils in Differentiated and Undifferentiated Groups," Journal of Experimental Education, V (September, 1936), 91-135.

<sup>14</sup>Ibid., p. 123.

<sup>15</sup>A. N. Foster, "Homogeneous Grouping in Elementary Schools," The Texas Outlook, XXVIII (February, 1944), 47-48.

grouping. Of interest are the criteria he listed for grouping pupils:

1. Teacher's estimate of pupil's achievement.
2. Standardized achievement tests.
3. Intelligence tests.
4. Chronological age.
5. Scholarship record.<sup>16</sup>

Burr,<sup>17</sup> however, contradicts Foster when he says:

. . . a plan for homogeneous grouping that includes measures of intelligence, of achievement, of physical status, of social maturity, and chronological age. . . will yield groups that are practically heterogeneous.<sup>18</sup>

He also says, "Individual pupils are not themselves homogeneous in physical or mental traits nor in achievement in school subjects."<sup>19</sup>

Burr found that great overlapping in achievement existed in other subjects when pupils were grouped homogeneously in one subject and that overlapping existed in other phases of the subject when pupils were grouped homogeneously in one phase of the subject such as arithmetic meaning.<sup>20</sup>

From the survey of results of homogeneous grouping, it is evident that there is not enough conclusive evidence to warrant broad generalizations. "The first general impression one gains from these studies is that. . . they raise more

<sup>16</sup>Ibid., p. 48.

<sup>17</sup>Marvin Y. Burr, A Study of Homogeneous Grouping in Terms of Individual Variations and the Teaching Problem.

<sup>18</sup>Ibid., p. 49.

<sup>19</sup>Ibid., p. 55

<sup>20</sup>Ibid., p. 42.

issues than they settle."<sup>21</sup> Cornell lists the following as reasons for such conflicting results as are to be found in literature bearing on the study at hand.

1. We can evaluate such results as can be measured only in the light of the conditions and purposes of the particular study. These vary so greatly that results are obviously not comparable.

2. Many of the alleged desirable or undesirable results are either not susceptible of measurement or are so difficult to measure that an experimental attack has not been made upon them.

3. In the practical exigencies of administration and teaching it is virtually impossible to maintain a situation in which all factors except the experimental one are under control for a sufficient length of time to determine the complete or permanent effects of the experimental factor.

4. If the most important effects of grouping are changes in habits of thinking, work habits, and social attitudes, then we have not yet even begun to measure results objectively.

5. In many instances the tests in use to measure changes in achievement over periods of one semester or a year are inadequate for such purposes because the probable error of a score is frequently greater than the normal difference in scores for the interval.

6. There seem to have been, even from the earliest attempts at a better classification of pupils, two conflicting ideas regarding the objectives of democratic education.<sup>22</sup>

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<sup>21</sup>Harold S. Wyndham, Ability Grouping, (Melbourne: Melbourne University, Educational Research Series, No. 31, 1934), quoted in, Cornell, "Effects of Ability Grouping Determinable from Published Studies," The Grouping of Pupils, Thirty-Fifth Yearbook of the National Society for the Study of Education, Part I, p. 290.

<sup>22</sup>Ethel L. Cornell, "Effects of Ability Grouping Determinable from Published Studies," The Grouping of Pupils, Thirty-Fifth Yearbook of the National Society for the Study of Education, Part I, pp. 290-292.

## CHAPTER II

### SUBJECTIVE OPINION CONCERNING GROUPING

Of the sixty-one students included in this study who attended school under both grouping arrangements, forty-one are still in attendance in the Hobbs schools. These forty-one students were contacted in personal interviews and were asked questions relative to grouping. Tabulations were made on responses to the questions (1) What did the number after the 5 mean when you were in the fifth grade? (2) Was your very best friend in your room when you were in the fifth grade? and (3) Which way did you prefer to be grouped, the way you were grouped in the fifth grade or the way that you were grouped in the sixth grade?

To the first question, nineteen pupils answered that they did not know what the section number meant; two students answered that the number was used in order to tell the sections apart; and twenty students gave answers which indicated that they knew the basis for sectioning. These answers included the following statements:

It meant the smartest group.

It was the average group.

It was the room with the smartest students.

It was the best group.

It meant the next to the highest room.

It meant how smart we were.

It meant the best students were in my room, 5<sup>1</sup>.

It meant the group with the highest average grade.

It meant the highest section.

It meant the best pupils.

As noted from these responses, these students, with two exceptions, were from the highest sections. Also significant is the fact that of the nineteen replies of "I do not know," fifteen of them came from students of the two lowest sections which may indicate that students of the upper sections were aware of the basis for grouping while those students in the lower sections did not know the basis for grouping.

To the second question there were twenty-one affirmative replies and twenty negative replies. This response, by no means conclusive, may indicate that achievement in school subjects does not necessarily affect the social life outside the school.

To the third question, there were twelve students whose answers showed a preference for the grouping method used in the fifth grade, and twenty-seven, a preference for the sixth-grade plan. Two had no choice. Significant again, is the fact the majority of the pupils preferring the fifth-grade grouping plan were students who were in the upper sections of the fifth grade.

In interviews with eighteen parents of children included in this study, thirteen were of the opinion that children did better in school when grouped for instructional purposes; thirteen believed that students did not show inferior and superior attitudes when grouped; fifteen replied that children seemed happy enough when grouped; nine believed that children who do well in one subject are likely to do well in all subjects; and fifteen said that children should be grouped in the elementary school for instructional purposes.

Of the thirty-two elementary teachers returning questionnaires on the subject at hand, twenty-one had had experience teaching both homogeneously and heterogeneously grouped students. Twenty-four believed that intelligence quotients were a poor basis for classification and twenty-three replied that achievement tests scores were a poor basis for grouping. Twenty-four teachers did not believe that pupils grouped according to intelligence were also likely to be grouped as to temperament, personal traits, and physical development, but that homogeneous grouping did tend to bring about superior achievement groups. Nineteen individuals believed that better attitudes did not come about through homogeneous grouping while twenty-seven were of the opinion that a child's knowledge of his classification definitely influences his social attitudes and behavior. Eighteen of the teachers replied that teachers of homogeneous groups did not learn more about their pupils and eighteen were of the opinion

that homogeneous grouping made for better provisions for individual differences. Seventeen teachers believed that homogeneous grouping tends to reduce failures and seventeen were of the opinion that teachers preferred to instruct homogeneous groups. Eighteen teachers believed that grouping for instructional purposes should not be practiced in the elementary school.

## CHAPTER III

### GROUPING AS RELATED TO ACHIEVEMENT

In this chapter, the data which have been arranged in tabular form will be examined to determine what trends and tendencies, if any, make themselves evident. Students that were grouped according to achievement test records will be referred to as Group A and students that were grouped heterogeneously will be referred to as Group B.

Table 1 shows the achievement standing of Group A boys

TABLE 1  
ACHIEVEMENT STANDING IN READING, ARITHMETIC, ENGLISH, AND  
SPELLING OF GROUP A BOYS, AGE 10-11, WITH  
INTELLIGENCE QUOTIENTS 113-125

Pupil No.	Age	I.Q.	Reading		Arithmetic		Eng.	Spell.	Total
			Comp.	Voc.	Fund.	Prob.			
1. . . . .	10	125	7.4	7.8	7.3	7.2	7.5	6.4	7.3
2. . . . .	10	122	7.1	7.0	7.1	6.7	7.3	6.2	6.2
3. . . . .	10	118	7.8	7.8	7.8	9.6	7.4	6.7	7.9
4. . . . .	10	116	7.4	7.8	5.9	6.3	6.8	5.5	6.6
5. . . . .	10	114	7.4	7.0	7.4	8.5	6.7	4.9	6.9
6. . . . .	11	113	5.3	5.0	6.1	5.7	6.6	5.5	5.8
7. . . . .	10	113	7.1	5.9	6.1	6.9	8.0	5.8	6.6
<b>Average</b>	10	117	7.0	6.9	6.8	7.2	7.1	5.8	6.7

who fell within the I.Q. range of 113-125. Noticeable is the fact that these boys, with one exception, were ten years of age, and ranked above the standard norm of 6.0 in total



achievement. The eleven-year-old student achieved the norm in only two subjects, arithmetic fundamentals and English. This student, who was one year behind his age group, made the lowest total achievement score of the group. Only one student fell below the norm in reading comprehension, two in vocabulary, one in arithmetic fundamentals, one in arithmetic problems, none in English, and four in spelling. The group ranked 6.7 in average total achievement which is well above the norm. The highest average was made in arithmetic problems and the lowest in spelling.

Table 2 shows the achievement standing of Group B boys

TABLE 2

ACHIEVEMENT STANDING IN READING, ARITHMETIC, ENGLISH, AND SPELLING OF GROUP B BOYS, AGE 10-11, WITH INTELLIGENCE QUOTIENTS 113-125

Pupil No.	Age	I.Q.	Reading		Arithmetic		Eng.	Spell.	Total
			Comp.	Voc.	Fund.	Prob.			
1. . . . .	10	125	8.5	8.3	6.1	6.9	9.0	7.1	7.2
2. . . . .	10	122	6.7	6.0	5.2	5.4	6.7	4.5	5.8
3. 1 . . . .	10	118	7.0	6.3	6.6	7.0	7.8	5.6	6.7
4. . . . .	10	116	6.9	7.4	6.0	5.4	5.7	6.7	6.4
5. . . . .	10	114	7.2	7.2	6.8	7.4	6.5	6.1	6.9
6. . . . .	11	113	5.3	6.5	6.0	6.9	6.5	4.6	6.0
7. . . . .	10	113	5.3	5.2	6.8	7.4	7.6	4.7	6.2
Average	10	117	6.7	6.7	6.2	6.6	7.1	5.6	6.4

within the I.Q. range of 113-125. Two students fell below the norm in reading comprehension, one in vocabulary, one in arithmetic fundamentals, two in arithmetic problems, one in

English, and four in spelling. The group as a whole ranked above the norm in all subjects except spelling. The eleven-year-old boy made an average of 6.0, exceeding by two months the lowest score of 5.8. The highest total average was made in English and the lowest in spelling.

A comparison of Tables 1 and 2 shows that Group A exceeded Group B in total achievement by three months and did better in all subjects except English. The average achievement in English was 7.1 for both groups. Significant is the fact that both groups fell below the norm in spelling, Group A by two months and Group B by four months.

Table 3 shows the achievement of sixteen Group A boys within the I.Q. range of 100-111. Generally, these boys with lower intelligence quotients stood lower in achievement than did the boys within the I.Q. range of 113-125. Six boys fell below the norm in reading comprehension, six in vocabulary, twelve in arithmetic fundamentals, thirteen in arithmetic problems, five in English, and twelve in spelling. Seven of the sixteen boys fell below the expected norm in total achievement. The group was below the norm in reading comprehension, arithmetic fundamentals, arithmetic problems, and spelling. The highest average was made in English and the lowest in spelling. The total average for the group was 5.8, two months below the norm.

The achievement standing of the Group B boys in the

TABLE 3

ACHIEVEMENT STANDING IN READING, ARITHMETIC, ENGLISH, AND  
SPELLING OF GROUP A BOYS, AGE 10-11, WITH  
INTELLIGENCE QUOTIENTS 100-111

Pupil No.	Age	I.Q.	Reading		Arithmetic		Eng.	Spell.	Total
			Comp.	Voc.	Fund.	Prob.			
1. . . .	11	111	6.2	6.3	6.3	6.4	8.6	5.3	6.5
2. . . .	11	110	7.1	7.9	5.1	4.3	8.0	4.8	6.2
3. . . .	11	109	6.0	8.1	5.0	5.0	7.2	4.4	6.0
4. . . .	10	108	4.8	5.0	5.7	5.7	5.9	4.5	5.3
5. . . .	11	108	6.3	6.3	5.5	5.8	7.2	5.9	6.1
6. . . .	10	107	7.3	6.3	5.8	5.5	6.9	6.6	6.3
7. . . .	10	107	7.1	7.3	6.0	7.0	7.3	6.3	6.8
8. . . .	10	106	5.2	4.6	5.7	5.5	6.2	4.8	5.3
9. . . .	10	105	6.7	6.4	4.9	5.7	6.3	6.7	6.1
10. . . .	11	104	7.0	6.9	5.3	5.7	6.9	4.7	6.1
11. . . .	10	103	6.2	6.9	5.0	4.6	6.8	4.7	5.7
12. . . .	10	102	4.2	5.7	5.4	5.0	5.5	5.3	5.0
13. . . .	11	102	4.8	5.2	6.0	5.8	4.9	5.1	5.3
14. . . .	11	102	6.6	7.5	7.3	8.4	7.8	6.6	7.4
15. . . .	11	101	4.3	5.6	4.0	4.0	5.0	4.9	4.6
16. . . .	11	100	4.8	5.0	5.4	5.0	5.2	3.7	4.9
Average	10	105	5.9	6.3	5.5	5.5	6.6	5.2	5.8

I.Q. range 100-111 is shown in Table 4. These students show a decided drop in achievement when compared with the boys of the I.Q. range of 113-125 as shown in Table 2. Eight students ranked below the norm in reading comprehension, four in vocabulary, seven in arithmetic fundamentals, six in arithmetic problems, three in English, and twelve in spelling. Seven of the sixteen students fell below the norm in total achievement. The group was below the norm in only two subjects, arithmetic fundamentals and spelling, and ranked 6.1

TABLE 4

ACHIEVEMENT STANDING IN READING, ARITHMETIC, ENGLISH, AND SPELLING OF GROUP B BOYS, AGE 10-11, WITH INTELLIGENCE QUOTIENTS 100-111.

Pupil No.	Age	I.Q.	Reading		Arithmetic		Eng.	Spell.	Total
			Comp.	Voc.	Fund.	Prob.			
1. . . .	11	111	8.0	7.3	4.5	6.0	6.4	4.4	6.1
2. . . .	11	110	5.4	6.3	5.5	5.4	5.9	4.4	5.5
3. . . .	11	109	5.9	6.8	6.7	8.0	7.0	5.6	6.7
4. . . .	10	108	7.0	6.7	6.5	6.0	7.5	5.9	6.6
5. . . .	11	108	7.5	8.5	6.5	6.2	6.8	6.2	7.0
6. . . .	10	107	5.0	5.2	5.8	6.0	6.6	5.6	5.7
7. . . .	10	107	8.0	7.5	6.4	7.2	7.6	7.8	7.4
8. . . .	10	106	6.1	6.3	5.2	6.2	6.3	5.6	6.0
9. . . .	10	105	5.6	6.0	6.0	6.3	6.2	4.5	5.8
10. . . .	11	104	6.3	6.6	6.3	6.4	6.5	4.0	6.0
11. . . .	10	103	5.0	6.0	4.3	4.6	6.6	7.5	5.7
12. . . .	10	102	5.2	5.6	5.9	5.0	6.8	5.5	5.7
13. . . .	11	102	6.0	5.5	5.0	5.0	5.1	5.8	5.4
14. . . .	11	102	6.0	6.1	6.3	5.8	6.4	5.1	6.0
15. . . .	11	101	5.6	5.9	6.9	6.9	6.8	6.0	6.4
16. . . .	11	100	5.4	6.6	6.1	5.8	5.9	5.7	5.9
Average	10	105	6.1	6.4	5.8	6.0	6.5	5.6	6.1

in total achievement. The highest total average was made in English and the lowest in spelling.

A comparison of Tables 3 and 4 shows that the boys in Group B exceeded in total average achievement the boys in Group A by three months, and did better in all subjects except English. Both groups made the highest average in English and the lowest in spelling.

Table 5 shows the achievement standing of the Group A boys within the I.Q. range 86-99. Only one of the nine students in this group achieved the norm in reading

TABLE 5

ACHIEVEMENT STANDING IN READING, ARITHMETIC, ENGLISH, AND SPELLING OF GROUP A BOYS, AGE 10-13, WITH INTELLIGENCE QUOTIENTS 86-99

Pupil No.	Age	I.Q.	Reading		Arithmetic		Eng.	Spell.	Total
			Comp.	Voc.	Fund.	Prob.			
1. . . . .	11	99	6.2	7.1	5.1	5.2	7.3	5.4	6.1
2. . . . .	11	99	5.2	5.5	5.5	5.4	6.0	4.6	5.4
3. . . . .	11	98	5.0	5.7	4.8	4.3	6.2	5.1	5.2
4. . . . .	11	98	5.5	4.7	5.2	4.3	5.3	4.2	4.9
5. . . . .	12	96	5.2	5.0	4.6	5.0	5.2	3.8	4.8
6. . . . .	12	93	5.2	5.5	4.4	4.3	6.2	3.5	4.9
7. . . . .	10	91	4.3	4.1	5.1	3.7	3.5	3.4	4.0
8. . . . .	13	90	5.0	4.9	6.1	5.7	6.3	4.5	5.4
9. . . . .	12	86	4.9	5.2	4.2	4.4	4.9	4.0	4.6
Average	11	94	5.1	5.3	5.0	4.7	5.6	4.2	5.0

comprehension, one in vocabulary, one in arithmetic fundamentals, none in arithmetic problems, five in English, and none in spelling. Eight of the nine pupils fell below the norm in total achievement. The highest average was made in English and the lowest in spelling. The group was one full year below the norm in total achievement. With one exception, the boys in this group consisted of eleven, twelve, and thirteen-year-old pupils.

Table 6 shows the achievement standing of the Group B boys within the I.Q. range 86-99. Lower achievement ratings appear in this group as was the case in the Group A boys of the same intelligence quotient range. One student achieved the norm in reading comprehension, one in vocabulary, one in arithmetic fundamentals, two in arithmetic problems, three

TABLE 6

ACHIEVEMENT STANDING IN READING, ARITHMETIC, ENGLISH, AND  
SPELLING OF GROUP B BOYS, AGE 10-13, WITH  
INTELLIGENCE QUOTIENTS 86-99

Pupil No.	Age	I.Q.	Reading		Arithmetic		Eng.	Spell.	Total
			Comp.	Voc.	Fund.	Prob.			
1. . . . .	11	99	4.9	5.2	5.3	5.7	5.2	5.0	5.2
2. . . . .	11	99	5.1	5.3	6.0	6.0	6.0	5.0	5.6
3. . . . .	11	98	5.0	4.9	5.0	4.8	5.8	4.0	4.9
4. . . . .	11	98	4.8	5.4	4.6	4.7	4.6	5.2	4.7
5. . . . .	12	96	5.0	5.2	5.8	6.3	5.2	4.7	5.4
6. . . . .	12	93	5.1	4.8	5.6	5.4	6.0	4.7	5.3
7. . . . .	10	91	5.4	5.8	4.3	4.3	5.2	4.9	5.0
8. . . . .	13	90	6.7	6.0	5.2	5.4	6.7	4.5	5.8
9. . . . .	12	86	4.3	4.9	4.8	4.9	4.7	3.9	4.6
Average	11	94	5.1	5.2	5.1	5.2	5.4	4.6	5.1

in English, and none in spelling. No student achieved the norm in total average achievement. The highest average score was made in English and the lowest in spelling.

A comparison of Tables 5 and 6 reveals that no great differences in achievement standing existed between the boys of Group A and the boys of Group B in the I.Q. range of 86-99. The greatest difference existed in arithmetic problems in which Group B exceeded Group A by five months and in spelling in which Group B exceeded Group A by four months. The total average achievement standing of Group A was 5.0 and of Group B, 5.1.

A comparison in achievement standing of the three I.Q. levels of Group A boys as shown in Table 7 indicates that intelligence is a definite factor influencing achievement.

TABLE 7

COMPARISON OF ACHIEVEMENT STANDING IN READING,  
ARITHMETIC, ENGLISH, AND SPELLING OF THE  
THREE I.Q. LEVELS OF GROUP A BOYS

I.Q. Range	Reading		Arithmetic		Eng.	Spell.	Total
	Comp.	Voc.	Fund.	Prob.			
113-125	7.0	6.9	6.8	7.2	7.1	5.8	6.7
100-111	5.9	6.3	5.5	5.5	6.6	5.2	5.8
86-99	5.1	5.3	5.0	4.7	5.6	4.2	5.0

The students in the I.Q. range 113-125 did much better than the students in the I.Q. range 100-111 who in turn did better than the students in the I.Q. range 86-99.

Table 8 shows the comparison in achievement of the three I.Q. levels of Group B boys. The students in the I.Q.

TABLE 8

COMPARISON OF ACHIEVEMENT STANDING IN READING,  
ARITHMETIC, ENGLISH, AND SPELLING OF THE  
THREE I.Q. LEVELS OF GROUP B BOYS

I.Q. Range	Reading		Arithmetic		Eng.	Spell.	Total
	Comp.	Voc.	Fund.	Prob.			
113-125	6.7	6.7	6.2	6.6	7.1	5.6	6.4
100-111	6.1	6.4	5.8	6.0	6.5	5.6	6.1
86-99	5.1	5.2	5.1	5.2	5.4	4.6	5.1

range 113-125 did better than the students in the I.Q. range 100-111 who in turn did better than the students in the I.Q. range 86-99. These findings, paralleling the facts shown in

Table 7, are further indications that students achieve in school subjects in proportion to their intelligence quotients.

Fourteen of the thirty-two boys of each group were ten-year olds. The achievement standing of the ten-year-olds of Group A is shown in Table 9. This age group included students in all three I.Q. ranges; six in the 113-125 range,

TABLE 9

ACHIEVEMENT STANDING IN READING, ARITHMETIC, ENGLISH, AND SPELLING OF GROUP A BOYS, TEN YEARS OLD, WITH INTELLIGENCE QUOTIENTS 91-125

Pupil No.	I.Q.	Reading		Arithmetic		Eng.	Spell.	Total
		Comp.	Voc.	Fund.	Prob.			
1. . . .	125	7.4	7.8	7.3	7.2	7.5	6.4	7.3
2. . . .	122	7.1	7.0	7.1	6.7	7.3	6.2	6.2
3. . . .	118	7.8	7.8	7.8	9.6	7.4	6.7	7.9
4. . . .	116	7.4	7.8	5.9	6.3	6.8	5.5	6.6
5. . . .	114	7.4	7.0	7.4	8.5	6.7	4.9	6.9
6. . . .	113	7.1	5.9	6.1	6.9	8.0	5.8	6.6
7. . . .	108	4.8	5.0	5.7	5.7	5.9	4.5	5.3
8. . . .	107	7.3	6.3	5.8	5.5	6.9	6.6	6.3
9. . . .	107	7.1	7.3	6.0	7.0	7.3	6.3	6.8
10. . . .	106	5.2	4.6	5.7	5.5	6.2	4.8	5.3
11. . . .	105	6.7	6.4	4.9	5.7	6.3	6.7	6.1
12. . . .	103	6.2	6.9	5.0	4.6	6.8	4.7	5.7
13. . . .	102	4.2	5.7	5.4	5.0	5.5	5.3	5.0
14. . . .	91	4.3	4.1	5.1	3.7	3.5	3.4	4.0
Average	109	6.4	6.4	6.0	6.2	6.5	5.5	6.2

seven in the 100-111 range, and one in the 86-99 range.

Four boys made below the norm in reading comprehension, five in vocabulary, eight in arithmetic fundamentals, seven in arithmetic problems, three in English, and eight in spelling.



five boys made below 6.0 in total achievement. The group, in average achievement, fell below the norm in one subject, spelling. The highest average was made in English and the lowest in spelling. Students within the ten-year-old age of the upper I.Q. levels did better than students of the lower I.Q. level.

Table 10 shows the achievement standing of the boys of the same age level of Group B. Six boys fell below the norm in reading comprehension, four in vocabulary, six in arithmetic fundamentals, five in arithmetic problems, two in English, and nine in spelling. The group as a whole averaged

TABLE 10

ACHIEVEMENT STANDING IN READING, ARITHMETIC, ENGLISH, AND SPELLING OF GROUP B BOYS, TEN YEARS OLD, WITH INTELLIGENCE QUOTIENTS 91-125

Pupil No.	I.Q.	Reading		Arithmetic		Eng.	Spell.	Total
		Comp.	Voc.	Fund.	Prob.			
1. . . .	125	8.5	8.3	6.1	6.9	9.0	7.0	7.6
2. . . .	122	6.7	6.0	5.2	5.4	6.7	4.5	5.8
3. . . .	118	7.0	6.3	6.6	7.0	7.8	5.6	6.7
4. . . .	116	6.9	7.4	6.0	5.4	5.7	6.7	6.4
5. . . .	114	7.2	7.2	6.8	7.4	6.5	6.1	6.9
6. . . .	113	5.3	5.2	6.8	7.4	7.6	4.7	6.2
7. . . .	108	7.0	6.7	6.5	6.0	7.5	5.9	6.6
8. . . .	107	5.0	5.2	5.8	6.0	6.6	5.6	5.7
9. . . .	107	8.0	7.5	6.4	7.2	7.6	7.8	7.4
10. . . .	106	6.1	6.3	5.2	6.2	6.3	5.6	6.0
11. . . .	105	5.6	6.0	6.0	6.3	6.2	4.5	5.8
12. . . .	103	5.0	6.0	4.3	4.6	6.5	7.5	5.7
13. . . .	102	5.2	5.6	5.9	5.0	6.8	5.5	5.7
14. . . .	91	5.4	5.8	4.3	4.3	5.2	4.9	5.0
Average	109	6.3	6.4	5.8	6.0	6.8	5.8	6.2

two months below the norm in two subjects, arithmetic fundamentals and spelling. The total achievement standing of the group averaged 6.2. The highest average was made in English and the lowest in arithmetic fundamentals and spelling. As in Group A, the students with the higher intelligence quotients usually did better than the students with lower intelligence quotients.

A comparison of Tables 9 and 10 shows that the total average achievement standing of the two groups was the same. The greatest difference in averages is found in English and spelling. Group B surpassed Group A by three months in these subjects. These facts indicate, in general, that boys who have made normal progress through school and who possess average or better intelligence, are likely to do equally as well in school subjects under either grouping plan.

The achievement standing of the eleven-year-old boys of Group A is shown in Table 11. These students were one year retarded in school and fell within the middle and lower I.Q. levels. Half of the fourteen boys fell below the norm in reading comprehension, vocabulary, and total average achievement. Ten fell below the norm in arithmetic fundamentals, twelve in arithmetic problems, four in English, and thirteen in spelling. The total average achievement of the group was three months below the norm of 6.0. The group ranked above the norm in only two subjects, vocabulary and English. The highest average was made in English and the lowest in

TABLE 11

ACHIEVEMENT STANDING IN READING, ARITHMETIC, ENGLISH, AND  
SPELLING OF GROUP A BOYS, ELEVEN YEARS OLD,  
WITH INTELLIGENCE QUOTIENTS 98-113

Pupil No.	I.Q.	Reading		Arithmetic		Eng.	Spell.	Total
		Comp.	Voc.	Fund.	Prob.			
1. . . .	113	5.3	5.0	6.1	5.7	6.6	5.5	5.8
2. . . .	111	6.2	6.3	6.3	6.4	8.6	5.3	6.5
3. . . .	110	7.1	7.9	5.1	4.3	8.0	4.8	6.2
4. . . .	109	6.0	8.0	5.0	5.0	7.2	4.4	6.0
5. . . .	108	6.3	6.3	5.5	5.8	7.2	5.9	6.1
6. . . .	104	7.0	6.9	5.3	5.7	6.9	4.7	6.1
7. . . .	102	4.8	5.2	6.0	5.8	4.9	5.1	5.3
8. . . .	102	6.6	7.5	7.3	8.4	7.8	6.6	7.4
9. . . .	101	4.3	5.6	4.0	4.0	5.0	4.9	4.6
10. . . .	100	4.8	5.0	5.4	5.0	5.2	3.7	4.9
11. . . .	99	6.2	7.1	5.1	5.2	7.3	5.4	6.1
12. . . .	99	5.2	5.5	5.5	5.4	6.0	4.6	5.4
13. . . .	98	5.0	5.7	4.8	4.3	6.2	5.1	5.2
14. . . .	98	5.5	4.7	5.2	4.3	5.3	4.2	4.9
Average	103	5.7	6.2	5.4	5.3	6.5	5.0	5.7

spelling. The students with the higher intelligence quotients generally did better than the students with the lower intelligence quotients. The eleven-year-old boys made lower averages than the ten-year-olds in all subjects except English. The average in this subject was the same for both groups.

The achievement standing of the eleven-year-old boys of Group B is shown in Table 12. Nine boys fell below the norm in reading comprehension, six in vocabulary, six in arithmetic fundamentals, seven in arithmetic problems, five in English, and twelve in spelling. The total average

TABLE 12

ACHIEVEMENT STANDING IN READING, ARITHMETIC, ENGLISH, AND  
SPELLING OF GROUP B BOYS, ELEVEN YEARS OLD,  
WITH INTELLIGENCE QUOTIENTS 98-113

Pupil No.	I.Q.	Reading		Arithmetic		Eng.	Spell.	Total
		Comp.	Voc.	Fund.	Prob.			
1. . . .	113	5.3	6.5	6.0	6.9	6.5	4.6	6.0
2. . . .	111	8.0	7.3	4.5	6.0	6.4	4.4	6.1
3. . . .	110	5.4	6.3	5.5	5.4	5.9	4.4	5.5
4. . . .	109	5.9	6.8	6.7	8.0	7.0	5.6	6.7
5. . . .	108	7.5	8.5	6.5	6.2	6.8	6.2	7.0
6. . . .	104	6.3	6.6	6.3	6.4	6.5	4.0	6.0
7. . . .	102	6.0	5.5	5.0	5.0	5.1	5.8	5.4
8. . . .	102	6.0	6.1	6.3	5.8	6.4	5.1	6.0
9. . . .	101	5.6	5.9	6.9	6.9	6.8	6.0	6.4
10. . . .	100	5.4	6.6	6.1	5.8	5.9	5.7	5.9
11. . . .	99	4.9	5.2	5.3	5.7	5.2	5.0	5.2
12. . . .	99	5.1	5.3	6.0	6.0	6.0	5.0	5.6
13. . . .	98	5.0	4.9	5.0	4.8	5.8	4.0	4.9
14. . . .	98	4.8	5.4	4.6	4.7	4.6	5.2	4.7
Average	103	5.8	6.2	5.7	5.9	6.0	5.0	5.7

achievement of the group was 5.7, the same as the eleven-year-old boys of Group A. The group averaged above the norm in two subjects, vocabulary and English. The highest average was made in English and the lowest in spelling. The students with the higher intelligence quotients generally did better than the students with the lower intelligence quotients.

A comparison of Tables 11 and 12 shows the total average achievement of the two groups of eleven-year-old boys to be the same. Group B outranked Group A in arithmetic problems by six months and Group A outranked Group B in English by

five months. The evidence presented indicates that boys retarded one year are likely to do as well under one grouping plan as the other.

Table 13 shows the achievement standing of the twelve- and thirteen-year-old boys of Group A. Only three scores

TABLE 13

ACHIEVEMENT STANDING IN READING, ARITHMETIC, ENGLISH, AND SPELLING OF GROUP A BOYS, TWELVE AND THIRTEEN YEARS OLD, WITH INTELLIGENCE QUOTIENTS 86-96

Pupil No.	I.Q.	Age	Reading		Arithmetic		Eng.	Spell.	Total
			Comp.	Voc.	Fund.	Prob.			
1. . . . .	96	12	5.2	5.0	4.6	5.0	5.2	3.8	4.8
2. . . . .	93	12	5.2	5.5	4.4	4.3	6.2	3.5	4.9
3. . . . .	86	12	4.9	5.2	4.2	4.4	4.9	4.0	4.6
4. . . . .	90	13	5.0	4.9	6.1	5.7	6.3	4.5	5.4
Average	91	12	5.0	5.1	4.9	4.9	5.6	3.9	4.9

were made above the norm, one in arithmetic fundamentals and two in English. The highest average was made in English and the lowest in spelling. The total average achievement for the group was 4.9, one and one-tenth years below the norm. Pupil number 4, the only thirteen-year-old boy in the group, ranked higher in all subjects except comprehension and vocabulary.

In Table 14 the achievement standing of the twelve- and thirteen-year-old boys of Group B is shown. One student averaged the norm or better in reading comprehension, one

TABLE 14

ACHIEVEMENT STANDING IN READING, ARITHMETIC, ENGLISH, AND  
SPELLING OF GROUP B BOYS, TWELVE AND THIRTEEN YEARS  
OLD, WITH INTELLIGENCE QUOTIENTS 86-96

Pupil No.	I.Q.	Age	Reading		Arithmetic		Eng.	Spell.	Total
			Comp.	Voc.	Fund.	Prob.			
1. . . . .	96	12	5.0	5.2	5.8	6.3	5.2	4.7	5.4
2. . . . .	93	12	5.1	4.8	5.6	5.4	6.0	4.7	5.3
3. . . . .	86	12	4.3	4.9	4.8	4.9	4.7	3.9	4.6
4. . . . .	90	13	6.7	6.0	5.2	5.4	6.7	4.5	5.8
Average	91	12	5.2	5.2	5.3	5.5	5.6	4.4	5.2

in vocabulary, one in arithmetic problems, and two in English. The highest average was made in English and the lowest in spelling. The average for the group was 5.2, eight months below the norm. As was noted in the other age groups, the students twelve and thirteen years old with the higher intelligence quotients usually do better in total achievement than the students with the lower intelligence quotients.

A comparison of Tables 13 and 14 reveals that the Group B boys did better than the Group A boys in all subjects except English. Both groups averaged 5.6 in this subject. Group B outranked Group A in total average achievement by three months, an indication that older boys may do better in school subjects when they are grouped heterogeneously.

In Table 15 the achievement standing of Group A girls who fell within the I.Q. range 112-131 is shown. The group exceeded the norm in all subjects but two, arithmetic fundamentals and spelling. The highest average was made in

TABLE 15

ACHIEVEMENT STANDING IN READING, ARITHMETIC, ENGLISH, AND  
SPELLING OF GROUP A GIRLS, AGE 10-12, WITH  
INTELLIGENCE QUOTIENTS 112-131

Pupil No.	Age	I.Q.	Reading		Arithmetic		Eng.	Spell.	Total
			Comp.	Voc.	Fund.	Prob.			
1. . . .	10	131	7.7	7.1	6.9	7.2	8.4	7.2	7.4
2. . . .	10	125	5.0	4.8	4.9	4.0	5.4	3.8	4.7
3. . . .	10	124	6.1	5.8	6.1	6.3	7.9	5.9	6.3
4. . . .	10	122	7.1	6.6	6.7	7.9	8.4	6.9	7.3
5. . . .	10	120	7.1	7.6	6.8	7.9	9.0	6.1	7.4
6. . . .	10	119	7.1	7.1	6.9	6.9	6.7	5.9	6.7
7. . . .	10	118	8.1	8.0	6.8	7.2	7.8	6.4	7.4
8. . . .	10	115	6.2	5.4	5.5	5.4	6.8	6.0	6.0
9. . . .	10	115	6.6	6.6	6.2	6.4	7.8	6.3	6.7
10. . . .	10	114	5.7	5.4	5.5	6.0	6.7	3.9	5.6
11. . . .	10	113	6.2	7.0	5.4	5.8	7.4	6.7	6.4
12. . . .	10	112	5.8	5.6	4.7	4.2	5.4	3.5	4.9
13. . . .	11	112	7.1	6.8	5.3	5.7	6.5	5.3	6.1
14. . . .	12	112	5.3	5.2	5.6	5.4	6.3	5.0	5.5
Average	10	118	6.5	6.3	5.9	6.1	7.1	5.6	6.2

English and the lowest in spelling. Four girls fell below the norm in reading comprehension, six in vocabulary, seven in arithmetic fundamentals, six in arithmetic problems, two in English, and six in spelling. Four of the fourteen girls ranked below the norm in total average achievement. Students with the higher intelligence quotients made the highest scores in all subjects. Compared with the boys of Group A within the highest I.Q. range, the girls ranked lower in all subjects and were five months below the boys in total average achievement.

In Table 16 the achievement standing of the same I.Q.

TABLE 16

ACHIEVEMENT STANDING IN READING, ARITHMETIC, ENGLISH, AND SPELLING OF GROUP B GIRLS, AGE 10-12, WITH INTELLIGENCE QUOTIENTS 112-131

Pupil No.	Age	I.Q.	Reading		Arithmetic		Eng.	Spell.	Total
			Comp.	Voc.	Fund.	Prob.			
1. . . .	10	131	7.3	7.5	6.5	6.3	8.6	7.1	7.2
2. . . .	10	125	4.8	5.6	5.5	5.0	5.7	5.0	5.3
3. . . .	10	124	7.5	6.7	5.1	5.7	7.2	5.8	6.4
4. . . .	10	122	8.0	7.6	6.0	6.9	8.9	6.8	7.4
5. . . .	10	120	7.3	7.1	6.0	6.7	7.6	6.5	6.9
6. . . .	10	119	6.0	6.5	5.7	5.8	5.8	6.0	6.1
7. . . .	10	118	7.3	7.4	6.5	6.7	8.0	5.9	7.0
8. . . .	10	115	6.7	5.9	5.0	6.0	6.6	3.9	5.7
9. . . .	10	115	7.0	6.3	6.6	7.0	7.8	5.6	6.7
10. . . .	10	114	5.3	5.6	6.3	5.7	7.5	5.9	6.0
11. . . .	10	113	7.7	7.8	6.2	6.7	7.6	6.4	7.1
12. . . .	10	112	5.9	5.6	6.1	6.0	6.7	6.6	6.2
13. . . .	11	112	6.9	6.3	5.7	5.7	6.7	5.3	6.1
14. . . .	12	112	6.6	7.1	5.1	5.0	7.3	5.8	6.1
Average	10	118	6.7	6.6	5.8	6.0	7.2	5.9	6.4

range for the Group B girls is shown. Three students fell below the norm in reading comprehension, four in vocabulary, six in arithmetic fundamentals, six in arithmetic problems, two in English, and eight in spelling. Only two girls ranked below the norm in total achievement. The highest score was made in English and the lowest in arithmetic fundamentals. The fifty per cent of the girls whose I.Q.'s were 118-131 generally did better in all subjects than did the fifty per cent whose I.Q.'s were 112-115. The boys of Group B in the highest I.Q. range outranked the girls of Group B in vocabulary, arithmetic problems, and arithmetic fundamentals.



The girls did better in English and spelling and both groups were equal in reading comprehension.

A comparison of Tables 15 and 16 shows that the average total achievement of the two upper intelligence quotient ranges were very close together. Group B exceeded Group A by only two months. The greatest differences were in spelling and vocabulary with Group B outranking Group A by three months in each of these subjects.

In Table 17 the achievement standing of Group A girls within the I.Q. range 100-110 is shown. Three girls attained the norm or better in reading comprehension, three in

TABLE 17

ACHIEVEMENT STANDING IN READING, ARITHMETIC, ENGLISH, AND SPELLING OF GROUP A GIRLS, AGE 10-12, WITH INTELLIGENCE QUOTIENTS 100-110

Pupil No.	Age	I.Q.	Reading		Arithmetic		Eng.	Spell.	Total
			Comp.	Voc.	Fund.	Prob.			
1. . . .	11	110	5.3	5.8	5.2	4.9	6.7	4.2	5.4
2. . . .	11	109	5.0	5.2	5.4	4.9	6.1	5.1	5.2
3. . . .	11	109	5.5	5.7	6.8	7.5	7.0	5.3	6.3
4. . . .	10	108	6.5	6.5	4.9	5.8	6.5	5.4	5.9
5. . . .	11	108	7.1	6.3	6.2	6.0	6.6	5.8	6.3
6. . . .	10	107	6.5	6.1	6.4	6.2	8.2	6.2	6.6
7. . . .	11	105	5.6	5.1	4.8	4.2	5.9	4.1	4.9
8. . . .	12	104	5.5	5.6	5.9	6.3	6.6	4.7	5.8
9. . . .	10	103	5.1	5.9	5.2	4.4	6.5	5.5	5.4
10. . . .	11	100	5.2	5.6	5.2	5.2	6.4	5.5	5.5
Average	10	105	5.7	5.7	5.6	5.5	6.6	5.1	5.7

vocabulary, three in arithmetic fundamentals, four in arithmetic problems, nine in English, and one in spelling.

The highest average was made in English and the lowest in spelling. The average for the group was 5.7. Only three students ranked above the norm in total achievement. Compared with the boys of Group A in the middle I.Q. range there is very little difference in total average achievement. The boys outranked the girls by only one month.

Table 18 shows the achievement of Group B girls within the I.Q. range 100-110. Four girls fell below the norm in

TABLE 18

ACHIEVEMENT STANDING IN READING, ARITHMETIC, ENGLISH, AND SPELLING OF GROUP B GIRLS, AGE 10-12, WITH INTELLIGENCE QUOTIENTS 100-110

Pupil No.	Age	I.Q.	Reading		Arithmetic		Eng.	Spell.	Total
			Comp.	Voc.	Fund.	Prob.			
1. . . .	11	110	7.1	6.7	5.8	4.3	7.2	7.3	6.4
2. . . .	11	109	5.4	6.3	5.3	5.0	7.3	6.0	5.9
3. . . .	11	109	7.2	7.2	6.8	7.4	6.5	6.1	6.9
4. . . .	10	108	7.1	6.6	6.0	6.4	7.9	7.1	6.9
5. . . .	11	108	6.0	6.1	6.3	5.8	6.4	5.1	6.0
6. . . .	10	107	6.8	6.6	5.8	5.5	6.9	6.6	6.3
7. . . .	11	105	5.1	5.5	5.7	5.4	6.1	6.7	5.8
8. . . .	12	104	6.3	6.2	5.0	4.8	6.8	4.6	5.6
9. . . .	10	103	5.4	5.8	5.7	5.2	7.3	5.0	5.7
10. . . .	11	100	5.0	5.7	5.5	5.7	6.7	4.7	5.6
Average	10	105	5.7	6.0	5.7	5.5	6.9	5.9	6.1

reading comprehension, three in vocabulary, seven in arithmetic fundamentals, eight in arithmetic problems, none in English, and four in spelling. The highest average was made in English and the lowest in arithmetic problems. Half of the girls ranked 6.0 or better. The group achieved the norm

in two subjects, vocabulary and English. The total average achievement standing for the group was 6.1 which equalled that of the boys of Group B in the middle I.Q. range. Students whose I.Q.'s were 107-110 did better generally than did those students whose I.Q.'s were 100-105.

A comparison of Tables 17 and 18 shows that the Group B girls surpassed Group A girls in total achievement by four months. Group B did better in vocabulary, arithmetic fundamentals, English, and spelling. The average achievement in reading comprehension and arithmetic problems was the same for both groups. The greatest difference in averages was in spelling in which Group B exceeded Group A by eight months.

Table 19 shows the achievement standing of the lowest I.Q. level of the Group A girls. Only three scores were made above the norm, one in vocabulary and two in English.

TABLE 19

ACHIEVEMENT STANDING IN READING, ARITHMETIC, ENGLISH, AND SPELLING OF GROUP A GIRLS, AGE 11-13, WITH INTELLIGENCE QUOTIENTS 95-99

Pupil No.	Age	I.Q.	Reading		Arithmetic		Eng.	Spell.	Total
			Comp.	Voc.	Fund.	Prob.			
1. . . . .	12	99	5.3	6.1	4.4	4.0	4.3	5.9	5.0
2. . . . .	11	98	5.0	5.4	4.9	4.4	6.1	4.8	4.7
3. . . . .	11	97	5.6	4.7	4.7	4.2	5.0	4.0	4.7
4. . . . .	12	95	5.1	5.4	5.0	4.4	5.6	3.5	4.8
5. . . . .	13	93	4.9	4.7	5.5	4.4	6.3	4.2	5.0
Average	11	96	5.2	5.2	4.9	4.3	5.4	4.5	4.9

No student achieved the norm in total average achievement. The highest average was in English and the lowest in arithmetic problems. When the group is compared with the corresponding I.Q. level of boys in Group A, little difference is found in total average achievement. The girls did better in reading comprehension and spelling and the boys did better in vocabulary, arithmetic problems and arithmetic fundamentals, and English. The boys did better in total average achievement by one month.

Table 20 shows the achievement standing of Group B girls within the lowest I.Q. range. One girl attained the norm in reading comprehension, one in vocabulary, two in arithmetic fundamentals, two in arithmetic problems, four in English, and two in spelling. One girl made 6.2 in total average achievement. The highest average was made in English and the lowest in reading comprehension. Compared with the

TABLE 20

ACHIEVEMENT STANDING IN READING, ARITHMETIC, ENGLISH, AND SPELLING OF GROUP B GIRLS, AGE 11-13, WITH INTELLIGENCE QUOTIENTS 93-99

Pupil No.	Age	I.Q.	Reading		Arithmetic		Eng.	Spell.	Total
			Comp.	Voc.	Fund.	Prob.			
1. . . . .	12	99	6.1	6.3	5.0	5.4	6.8	5.5	5.9
2. . . . .	11	98	4.9	5.6	5.1	4.6	5.8	6.3	5.4
3. . . . .	11	97	5.3	5.6	6.1	6.4	7.6	6.1	6.2
4. . . . .	12	95	5.9	5.4	6.2	6.0	6.9	4.8	5.9
5. . . . .	13	93	5.5	5.4	5.0	5.0	6.9	5.3	5.5
Average	11	96	5.3	5.6	5.4	5.4	6.8	5.6	5.8

boys of the lower I.Q. range of Group B, the girls did much better in all subjects and surpassed the boys in total average achievement by seven months.

A comparison of Tables 19 and 20 shows that the girls of Group B within the intelligence quotient range 93-99 did better in all subjects than did the Group A girls. Group B exceeded Group A in total average achievement by nine months.

A comparison in achievement standing of the three I.Q. ranges within each group shows that the girls in the upper I.Q. range did better than the girls in the middle I.Q. range who in turn did better than the girls in the lower I.Q. range.

The achievement standing of the fifteen ten-year-old girls of Group A is shown in Table 21. Four girls made below the norm in reading comprehension, six in vocabulary, six in arithmetic fundamentals, six in arithmetic problems, two in English, and seven in spelling. Five girls failed to reach the norm in total average achievement. The highest score was made in English and the lowest in spelling. The total average achievement for the group was 6.3 as compared with 6.2 of ten-year-old boys in Group A. Girls with the higher I.Q.'s generally did better than the girls with the lower I.Q.'s.

A comparison in achievement standing of the three I.Q. ranges within each group shows that the girls in the upper

TABLE 21

ACHIEVEMENT STANDING IN READING, ARITHMETIC, ENGLISH, AND  
SPELLING OF GROUP A GIRLS, TEN YEARS OLD,  
WITH INTELLIGENCE QUOTIENTS 103-131

Pupil No.	I.Q.	Reading		Arithmetic		Eng.	Spell.	Total
		Comp.	Voc.	Fund.	Prob.			
1. . . .	131	7.7	7.1	6.9	7.2	8.4	7.2	7.4
2. . . .	125	5.0	4.8	4.9	4.0	5.4	3.8	4.7
3. . . .	124	6.1	5.8	6.1	6.3	7.9	5.9	6.3
4. . . .	122	7.1	6.6	6.7	7.9	8.4	6.9	7.3
5. . . .	120	7.1	7.6	6.8	7.9	9.0	6.1	7.4
6. . . .	119	7.1	7.1	6.9	6.9	6.7	5.9	6.7
7. . . .	118	8.1	8.0	6.8	7.2	7.8	6.4	7.4
8. . . .	115	6.2	5.4	5.5	5.4	6.8	6.0	6.0
9. . . .	115	6.6	6.6	6.2	6.4	7.8	6.3	6.7
10. . . .	114	5.7	5.4	5.5	6.0	6.7	3.9	5.6
11. . . .	113	6.2	7.0	5.4	5.8	7.4	6.7	6.4
12. . . .	112	5.8	5.6	4.7	4.2	5.4	3.5	4.9
13. . . .	108	6.5	6.5	4.9	5.8	6.5	5.4	5.9
14. . . .	107	6.5	6.1	6.4	6.2	8.2	6.2	6.6
15. . . .	103	5.1	5.9	5.2	4.4	6.5	5.5	5.4
Average	116	6.4	6.3	5.9	6.1	7.2	5.7	6.3

I.Q. level did better than the girls in the middle I.Q. level who in turn did better than the girls in the lower I.Q. level.

Table 22 shows the achievement standing of the ten-year-old girls of Group B. Of these fifteen students, four made below the norm in reading comprehension, five in vocabulary, six in arithmetic fundamentals, six in arithmetic problems, two in English, and six in spelling. Three girls failed to reach the norm in total average achievement. The highest average was made in English and the lowest in arithmetic fundamentals. The total average achievement for the group was 6.4 as compared with 6.2 of ten-year-old boys in Group B.

TABLE 22

ACHIEVEMENT STANDING IN READING, ARITHMETIC, ENGLISH, AND  
SPELLING OF GROUP B GIRLS, TEN YEARS OLD,  
WITH INTELLIGENCE QUOTIENTS 103-131

Pupil No.	I.Q.	Reading		Arithmetic		Eng.	Spell.	Total
		Comp.	Voc.	Fund.	Prob.			
1. . . .	131	7.3	7.5	6.5	6.3	8.6	7.1	7.2
2. . . .	125	4.8	5.6	5.5	5.0	5.7	5.0	5.3
3. . . .	124	7.5	6.7	5.1	5.7	7.2	5.8	6.4
4. . . .	122	8.0	7.6	6.0	6.9	8.9	6.8	7.4
5. . . .	120	7.3	7.1	6.0	6.7	7.6	6.5	6.9
6. . . .	119	6.0	6.5	5.7	5.8	5.8	6.0	6.1
7. . . .	118	7.3	7.4	6.5	6.7	8.0	5.9	7.0
8. . . .	115	6.7	5.9	5.0	6.0	6.6	3.9	5.7
9. . . .	115	7.0	6.3	6.6	7.0	7.8	5.6	6.7
10. . . .	114	5.3	5.6	6.3	5.7	7.5	5.9	6.0
11. . . .	113	7.7	7.8	6.2	6.7	7.6	6.4	7.1
12. . . .	112	5.9	5.6	6.1	6.0	6.7	6.6	6.2
13. . . .	108	7.1	6.6	6.0	6.4	7.9	7.1	6.9
14. . . .	107	6.8	6.6	5.8	5.5	6.9	6.6	6.3
15. . . .	103	5.4	5.8	5.7	5.2	7.3	5.0	5.7
Average	116	6.6	6.5	5.9	6.1	7.3	6.0	6.4

A comparison of Tables 21 and 22 shows that the average achievement in arithmetic fundamentals and arithmetic problems was the same for both groups. Group B exceeded Group A in average achievement in comprehension, vocabulary, English, and spelling. This comparison shows, in general, that ten-year-old girls of normal or better intelligence are not favored by either of the two methods of grouping.

Table 23 shows the achievement of the nine eleven-year-old girls in Group A. Seven girls made below the norm in reading comprehension, seven in vocabulary, seven in

TABLE 23

ACHIEVEMENT STANDING IN READING, ARITHMETIC, ENGLISH, AND  
SPELLING OF GROUP A GIRLS, ELEVEN YEARS OLD,  
WITH INTELLIGENCE QUOTIENTS 97-112

Pupil No.	I.Q.	Reading		Arithmetic		Eng.	Spell.	Total
		Comp.	Voc.	Fund.	Prob.			
1. . . . .	112	7.1	6.8	5.3	5.7	6.5	5.3	6.1
2. . . . .	110	5.3	5.8	5.2	4.9	6.7	4.2	5.4
3. . . . .	109	5.0	5.2	5.4	4.9	6.1	5.1	5.2
4. . . . .	109	5.5	5.7	6.8	7.5	7.0	5.3	6.3
5. . . . .	108	7.1	6.3	6.2	6.0	6.6	5.8	6.3
6. . . . .	105	5.6	5.1	4.8	4.2	5.9	4.1	4.9
7. . . . .	100	5.2	5.6	5.2	5.2	6.4	5.5	5.5
8. . . . .	98	5.0	5.4	4.9	4.4	5.1	4.8	5.1
9. . . . .	97	5.6	4.7	4.7	4.2	5.0	4.0	4.7
Average	105	5.7	5.6	5.4	5.2	6.2	4.9	5.5

arithmetic fundamentals, seven in arithmetic problems, and two in English. All nine girls made below the norm in spelling. Three of the girls surpassed the norm in average total achievement. The highest average was made in English and the lowest in spelling. The total average achievement of the group was 5.5 as compared with 5.7 of the eleven-year-old boys of Group A.

The achievement standing of the eleven-year-old girls in Group B is shown in Table 24. Five girls made below the norm in reading comprehension, four in vocabulary, six in arithmetic fundamentals, seven in arithmetic problems, one in English, and three in spelling. The highest score was made in English and the lowest in arithmetic problems.



TABLE 24

ACHIEVEMENT STANDING IN READING, ARITHMETIC, ENGLISH, AND  
SPELLING OF GROUP B GIRLS, ELEVEN YEARS OLD,  
WITH INTELLIGENCE QUOTIENTS 97-112

Pupil No.	I.Q.	Reading		Arithmetic		Eng.	Spell.	Total
		Comp.	Voc.	Fund.	Prob.			
1. . . . .	112	6.9	6.3	5.7	5.7	6.7	5.3	6.1
2. . . . .	110	7.1	6.7	5.8	4.3	7.2	7.3	6.4
3. . . . .	109	5.4	6.3	5.3	5.0	7.3	6.0	5.9
4. . . . .	109	7.2	7.2	6.8	7.4	6.5	6.1	6.9
5. . . . .	108	6.0	6.1	6.3	5.8	6.4	5.1	6.0
6. . . . .	105	5.1	5.5	5.7	5.4	6.1	6.7	5.8
7. . . . .	100	5.0	5.7	5.5	5.7	6.7	4.7	5.6
8. . . . .	98	4.9	5.6	5.1	4.6	5.8	6.3	5.4
9. . . . .	97	5.3	5.6	6.1	6.4	7.6	6.1	6.2
Average	105	5.8	6.1	5.8	5.5	6.7	5.9	6.0

Five of the nine girls made above the norm in total average achievement, and the group as a whole reached the norm.

The girls surpassed the eleven-year-old boys of Group B by three months in total average achievement.

A comparison of Tables 23 and 24 shows that the eleven-year-old girls in Group B did better than the eleven-year-old girls in Group A in all subjects and surpassed them in average total achievement by five months.

Table 25 shows the achievement standing of the twelve- and thirteen-year-old girls in Group A. Only one girl achieved the norm in vocabulary, one in arithmetic problems, and three in English. The highest average was made in English and the lowest in spelling. The twelve- and thirteen-year-old girls in Group A did better in all subjects except

TABLE 25

ACHIEVEMENT STANDING IN READING, ARITHMETIC, ENGLISH, AND SPELLING OF GROUP A GIRLS, TWELVE AND THIRTEEN YEARS OLD, WITH INTELLIGENCE QUOTIENTS 93-112

Pupil No.	I.Q.	Age	Reading		Arithmetic		Eng.	Spell.	Total
			Comp.	Voc.	Fund.	Prob.			
1. . . .	112	12	5.3	5.2	5.6	5.4	6.3	5.0	5.5
2. . . .	104	12	5.5	5.6	5.9	6.3	6.6	5.0	5.5
3. . . .	99	12	5.3	6.1	4.4	4.0	4.3	5.9	5.0
4. . . .	95	12	5.1	5.4	5.0	4.4	5.6	3.5	4.8
5. . . .	93	13	4.9	4.7	5.5	4.4	6.3	4.2	5.0
Average	100	12	5.2	5.4	5.3	4.9	5.8	4.6	5.2

arithmetic problems than the same age boys in Group A. This fact may be accounted for by the nine points difference in average I.Q.'s. The thirteen-year-old boy did better by four months than the thirteen-year-old girl.

Table 26 shows the achievement standing of the twelve- and thirteen-year-old girls in Group B. Three girls achieved the norm in reading comprehension, three in vocabulary, one in arithmetic fundamentals, one in arithmetic problems, five in English, and none in spelling. One girl achieved the norm in total average achievement. The twelve- and thirteen-year-old girls in Group B did much better than the twelve- and thirteen-year-old boys in Group B in all subjects except arithmetic fundamentals and arithmetic problems. The highest average was made in English and the lowest in spelling, arithmetic fundamentals, and arithmetic problems.

TABLE 26

ACHIEVEMENT STANDING IN READING, ARITHMETIC, ENGLISH, AND SPELLING OF GROUP B GIRLS, TWELVE AND THIRTEEN YEARS OLD, WITH INTELLIGENCE QUOTIENTS 93-112

Pupil No.	I.Q.	Age	Reading		Arithmetic		Eng.	Spell.	Total
			Comp.	Voc.	Fund.	Prob.			
1. . . .	112	12	6.6	7.1	5.1	5.0	7.3	5.8	6.1
2. . . .	104	12	6.3	6.2	5.0	4.8	6.8	4.6	5.6
3. . . .	99	12	6.1	6.3	5.0	5.4	6.8	5.5	5.9
4. . . .	95	12	5.9	5.4	6.2	6.0	6.9	4.8	5.9
5. . . .	93	13	5.5	5.4	5.0	5.0	6.9	5.3	5.5
Average	100	12	6.0	6.0	5.2	5.2	6.9	5.2	5.8

A comparison of Tables 25 and 26 shows that the older girls of Group B did much better than the older girls of Group A in all subjects except arithmetic fundamentals. Group B girls surpassed Group A girls in total average achievement by six months, a further indication that older students do better when grouped heterogeneously.

#### Summary

The following statements, concerning the students included in this study, summarize the findings discussed in this chapter:

1. Girls of higher intelligence did better when grouped heterogeneously.

2. Boys of higher intelligence did better when grouped homogeneously.

3. Girls of normal intelligence did better when grouped heterogeneously.

4. Boys of normal intelligence did better when grouped heterogeneously.

5. Girls of lower intelligence did better when grouped heterogeneously.

6. Boys of lower intelligence did equally well in both groups.

7. Ten- and eleven-year-old boys did equally well in both groups.

8. Ten- and eleven-year-old girls did better when grouped heterogeneously.

9. Twelve- and thirteen-year-old boys and girls did better when grouped heterogeneously.

10. Students with the highest intelligence quotients in the group generally made the highest average scores in the group.

11. In both groups, the highest average scores were made in English and the lowest in spelling.

## CHAPTER IV

### CONCLUSIONS AND RECOMMENDATIONS

#### Conclusions

In light of the data presented, the following conclusions, although not infallible, seem to be justified:

1. Students of the same age, sex, and intelligence quotients, grouped according to achievement test records, do not stand higher in achievement than students grouped heterogeneously when the results are measured by standardized tests.

2. Students in the intermediate grades of the Hobbs schools make higher scores in English than in any other subject.

3. Students in the intermediate grades of the Hobbs schools make lower scores in spelling than in any other subject.

4. The practice of segregating students in so-called homogeneous sections for instructional purposes does not carry with it a guarantee of superior achievement.

5. Parents of the Hobbs Elementary School pupils are not informed as to the effects that the grouping of students has upon the achievement of the pupils.

6. Hobbs Elementary School teachers are of the opinion

that students in the intermediate grades should not be grouped for instructional purposes and believe that intelligence and achievement tests are a poor basis for segregation when it is done to bring about improvement in instruction.

#### Recommendations

After an analysis of the findings of this study and in keeping with the above conclusions, the following recommendations are made:

1. The grouping of students on the basis of past achievement test records should not be practiced in the intermediate grades of the Hobbs Municipal Schools.

2. Inasmuch as there is some evidence to be found favoring grouping, further experimental studies should be made in an effort to determine whether or not the Hobbs schools would be benefitted by any plan which has to do with the grouping of pupils for instructional purposes.

3. In order that the school and home be brought closer together, parents should be kept informed of educational practices carried on in the school and their effect upon the child, home, and community.

4. Because of the poor achievement in spelling found in the Hobbs schools, an effort should be made to determine the factors influencing spelling achievement within the school and corrective measures taken to bring about improvement.

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