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A Study to Determine what Difference, If Any, Exist when Comparing the Achievement Scores of Two Groups of Second Grade Students, One Grouped Homogeneously and One Grouped Heterogeneously, in Three Skill Areas--Reading, Math and Spelling--As Measured by the Standford Achievement Tests

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THE UNIVERSITY OF NORTH FLORIDA

COLLEGE OF EDUCATION

A STUDY TO DETERMINE WHAT DIFFERENCES, IF ANY, EXIST WHEN COM-
PARING THE ACHIEVEMENT SCORES OF TWO GROUPS OF SECOND
GRADE STUDENTS, ONE GROUPED HOMOGENEOUSLY AND ONE
GROUPED HETEROGENEOUSLY, IN THREE SKILL AREAS--
READING, MATH AND SPELLING--AS MEASURED
BY THE STANFORD ACHIEVEMENT TESTS.

By
CHRISTINE BOYETT

A study submitted to the
Elementary and Secondary
Education Department in
fulfillment of the re-
quirements for a Masters
degree in Elementary
Education.

Approved by:

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May, 1977

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CHAPTER I

INTRODUCTION

For economic reasons, tax-supported education has had to settle for instruction in groups of various sizes rather than the ideal of a one-to-one ratio of one teacher to one child.¹ Therefore, educators have sought ways to meet the individual needs of each student while coping with the demands of mass public education. One of these ways is through grouping. We group in hopes of narrowing the range within a particular classroom and achieving more similarity among the students and thus achieving teachability in a given classroom.

Through the years educators have experimented with various grouping methods for meeting the diverse needs of individuals in our society. Methods of grouping are designed to meet the individual differences by placing the learner in a situation best suited to his learning capabilities and providing more effective learning and teaching. The problem of grouping pupils in the classroom for academic instruction has always aroused keen interest. As the one-room school has been superseded by the multi-class school, the question of grouping greater and greater numbers of children from different social, economic, racial and cultural backgrounds has become a pressing one for the educational

¹George Weber, "Why is the Idea Even Questioned?" Southern Education Report, (December, 1966).

community.

One major organizational pattern for grouping children for instruction in the elementary school was selected for study in this paper--homogeneous grouping. This type of grouping was selected because it is already being widely implemented in many elementary grades, as well as in the secondary school.

In this discussion, homogeneous grouping is defined as the practice of grouping children according to assumptions regarding similarities in their academic ability so that the proper academic instruction can be administered to raise each individual from his present level of achievement towards a higher level of achievement in skill, knowledge and understanding.

STATEMENT OF PROBLEM

The purpose of this study is to determine what differences, if any, exist in reading, math and spelling achievement scores as measured by the Stanford Achievement Tests of the second grade students who were grouped homogeneously (i.e., were assumed to have similar academic abilities) and the second grade students who were heterogeneously grouped (i.e., were grouped according to no particular criteria) when compared to their first grade scores.

These two groups of second graders, each consisting of four classes with approximately twenty-five students in each class, provide an excellent opportunity for research study for the purpose stated above because they were all exposed to the same four teachers, similar methods and materials. All of these students involved in this experiment attended the same school in the first grade and most of them attended the same school in kindergarten.

HYPOTHESIS

For the purpose of this study, the following hypothesis was indited:

When compared to their first grade scores, there will be no significant differences in reading, math and spelling achievement levels as measured by the Stanford Achievement Tests of the second grade students who were grouped homogeneously for the first time and those who were grouped heterogeneously in a Southern, urban, middle-class elementary school.

The null hypothesis was postulated because the majority of the studies in the literature showed no significant difference in gains made by children that had been grouped homogeneously in comparison with gains made by those grouped heterogeneously.

ASSUMPTIONS

Both groups of children were exposed to the same teachers. Therefore, it was assumed that the teaching methods for both groups were similar. That is, each of the teachers used basically the same instructional format with their two groups.

It was assumed that the environmental conditions were the same for both groups. The children were all in the same building with rooms having the same physical features. Therefore, all physical facilities which influence learning were assumed to be similar in quality and that any differences existing did not significantly affect reading, math and spelling achievement levels.

As a consequence, it was assumed that the grouping technique was the only factor that varied significantly between the groups of children whose reading, math and spelling scores were studied.

DEFINITION OF TERMS

Homogeneous Grouping--as used in this research, an approach to grouping where students are grouped according to achievement levels on a standardized test. They have similar levels of achievement in reading, math and spelling.

Heterogeneous Grouping--an approach to grouping where students are assigned randomly and not according to achievement levels on standardized tests. They have varied levels of achievement.

Grouping--the assemblage of students for instructional purposes.

Independent Variable--grouping based on similar levels of achievement.

Dependent Variable--the change in reading, math and spelling achievement scores was measured for a homogeneous group of second graders in April, 1976 and in April, 1977; and for a heterogeneous group of second graders in April, 1975 and in April, 1976. The Stanford Achievement Battery was used in three skill areas--reading, math and spelling.

Controlled Variables--the students' age, students' sex, teaching methods, and physical environment.

Change in achievement scores (increase or decrease of achievement)--the comparison of the Stanford Achievement Test scores of students at the end of second grade with their Stanford Achievement Test scores at the end of first grade. This was determined for students in both the homogeneous and heterogeneous groups.

CHAPTER II

REVIEW OF RELATED LITERATURE

Ever since the nineteenth century when the graded elementary school became common in American education, classroom teachers have been perplexed by the problem of grouping children from varied social, economic, racial and religious backgrounds. Homogeneous grouping, based on academic ability, was one of these plans. It was most widely employed during the 1920's but decreased in popularity during the 1930's and 1940's. At present, its use appears to be once more increasing.²

For several reasons, we need to examine the principal findings of ability grouping research. First, the incidence of homogeneous ability grouping in American education is considerable. Data recently reviewed indicate that in thousands of elementary and secondary school classrooms across the nation, homogeneous grouping is a predominant method of organizing students into instructional units. In addition, large school systems tend to employ this pattern of organization more frequently and in higher proportion than do small school systems, and further, the practice is more and more prevalent as students proceed through the educational system and is likely to be more widespread in the near future.

²Anne Morgenstern, Grouping in the Elementary School (New York: Pitman Publishing Corporation, 1966), pp. 16-20.

Second, related issues suggest that the implementation of various ability grouping schemes in relatively desegregated school settings conflicts with the principle of equal educational opportunity. A technical review of ability grouping research indicates that few studies have considered the educational relevance of ethnic and socio-economic status in the placement of children into ability groups or curricular tracks, and that few have examined the social, economic and political consequences of grouping schemes with respect to ethnic and socio-economic separation of children. Rather, the placement of children usually is based upon academic achievement, I. Q. scores, and reading achievement levels, while the consequences of grouping schemes are examined with respect to academic achievement, attitude, and personality development.³

Finally, a third reason concerns the achievement of specific educational objectives. The question can be posed whether certain patterns of organization facilitate the attainment of specific educational objectives more than others.

In view of the above, George Weber, Director of the Council for Basic Education, feels that a conflict does not exist with the principle of educational opportunity by providing various ability grouping in the schools. He states that grouping in the upper grades and in high school is a very important help in desegregation. Most of the children have had extremely

³Dominick Esposito, "Homogeneous and Heterogeneous Grouping: Principal Findings and Implications of a Research of the Literature, : Teachers College, Columbia University (New York, N. Y., 1971).

poor education in deprived areas and tossing them at random into previously all white schools is about on a par with throwing an infant into six feet of water. He feels it is kinder and more effective to assign children to classes more nearly compatible with their achievement levels, enabling them to proceed along the general and uniform curriculum.⁴

After a careful study made by Goldberg on "The Effects of Ability Grouping," she believes that ability grouping, synonymous with homogeneous grouping, is inherently neither good nor bad. It is neutral. Its value depends upon the way in which it is used. In situations in which it is used without close examination of the specific learning needs of various pupils and without recognition that it must follow the demands of carefully planned variations in curriculum, grouping can be at best ineffective. Also, it may become dangerous when it leads teachers to underestimate the learning capacities of pupils at the lower ability levels. It can also be damaging when it is inflexible and does not provide channels for moving children from one level to another, either from subject to subject or within any one subject, as their performance at various times in their school careers dictates.⁵

The debate between proponents of heterogeneous grouping and the proponents of homogeneous ability grouping has been, in

⁴Weber, "Why is the Idea Even Questioned?" Southern Education Report, (December, 1966).

⁵M. L. Goldberg, The Effects of Ability Grouping. (New York: Teachers College Press, Columbia University, 1966).

effect, over the issue of which grouping plan results in better conditions for instruction. The literature suggests that the theoretical rationale for homogeneous grouping, not necessarily based on research findings, typically includes the following points:

1. Homogeneous grouping takes individual differences into account by allowing students to advance at their own rate with others of similar ability, and by offering them methods and materials geared to their level.
2. More individual attention from teachers is possible.
3. Students are challenged to do their best in their group, or to be promoted to the next level, within a realistic range of competition; and it is easier to teach to and provide materials for a narrower range of ability.

Alternately, the usual arguments offered for heterogeneity include these:

1. Homogeneous grouping is undemocratic and affects the self-concept of all children adversely by placing a stigma on those in lower groups, while higher-group children develop an inflated sense of their own worth.
2. Most adult life experiences do not occur in homogeneous settings, and students must learn to work with a wide range of people.
3. Students of lesser ability may profit from learning with those of greater ability.
4. It is impossible to achieve truly homogeneous grouping, even along a single achievement variable, since test

data are not generally reliable or valid enough for this type of distinction.

5. Homogeneous grouping may provide less sensitivity to individual differences by giving the teacher the false sense that students are similar in social needs, achievement, and learning style, while heterogeneity permits different patterns of abilities and needs to emerge within a group of children.
6. Finally, homogeneous ability grouping tends to segregate children along ethnic and socio-economic lines, as well as in terms of intellectual abilities.

At this point, let us examine some additional assumptions that underlie the acceptance of ability grouping. The assumption that speed in learning is the most important characteristic of learning ability needs further study. Alexander Frazier calls attention to increased knowledge and understanding about literature, making a special point of a faulty assumption that speed in learning is necessarily the most distinguishing characteristic in learning ability. Frazier says:

Learning is multidimensional....How fast or how slow a learner performs is no more indicative to us of his power than many other qualities....his capacity for insight, his ability to relate what he learns to what he already knows, his skill in bringing new knowledge to bear on new problems, his willingness to confront the unfamiliar and stay with it long enough to make sense out of it.⁶

These and many other dimensions, now recognized as a part of intelligence, help us to realize the serious limitations

⁶Alexander Frazier, Needed: A New Vocabulary for Individual Differences. (August, 1960, Workshop for Principals and Consultants), p. 4.

of traditional approaches to testing intelligence and relying on test results in classifying children according to ability.

A second assumption is that if a child's abilities and attributes have been accurately assessed and if he has been placed in the ability group most appropriate for him, he will probably retain the attribute that governed his placement in the group in the first place. However, this is not supported by scientific evidence. Harold Shane reports:

The uneven growth patterns of individual children make grouping hazardous. One is never completely certain that a given child will long retain the personal and academic attribute governing his placement in a group.⁷

A third assumption, that learning takes place more effectively if the range of differences in pupil activity is materially reduced, is questionable. Although the range of mental age scores may be somewhat less than the average range at the time when children are assigned to a group, the relative rates of growth are not likely to be the same. Unless the children are seriously deprived, the most likely result is movement toward increased heterogeneity.

And lastly, the fourth assumption, that grouping children according to ability enhances the development of positive self-concepts, is not supported by evidence. Although studies in this area examining attitudes and self-concepts are too limited to make definitive conclusions, much of the evidence does not seem to support the generalization that grouping children according to

⁷Harold G. Shane, "Grouping in the Elementary School," Phi Delta Kappan, XII (April, 1960), p. 313.

ability contributes to the development of desirable attitudes and healthy self-concepts, especially among slow learners.⁸

Looking at some further arguments, both pro and con, we find, for example, that ability grouping for the gifted has been attacked by Bruno Bettelheim. He maintains that it may be harmful because the superior child needs to be associated with all types of children. After all, society is not grouped and children are being prepared to function in society.⁹

"Grouping is the best way" says Kenneth Mott, who supports the idea of ability grouping. He thinks that the research studies measuring progress made by ability grouped students are very significant. He says that where children have certain "gifts" in common, they should be allowed to work and study together.¹⁰

The major findings of ability grouping research can be categorized into four segments as follows:

1. Homogeneous ability grouping as currently practiced shows no consistent positive value for increasing students' scholastic achievement. The slight gains favoring high ability students are more than off-set by evidence of unfavorable effects on the learning of

⁸Anne Morgenstern, Grouping in the Elementary School (New York: Pittman Publishing Corporation, 1966), pp. 16-20.

⁹Bruno Bettelheim and Kenneth Mott, "Grouping the Gifted," National Education Association Journal, LIV (March, 1965), pp. 8-11.

¹⁰Ibid.

students of average and below average ability, particularly of the latter.

2. The findings regarding the impact of homogeneous ability grouping on affective development are essentially unfavorable. Whatever the practice does to build or inflate the self-esteem of children in the high ability groups is outweighed by evidence of some unfavorable effects of stigmatizing those placed in average and below average ability groups as inferior and incapable of learning.
3. Homogeneous ability grouping, by design, is a separative educational policy, ostensibly according to students' test performance ability, but from some respects according to students' socio-economic status and to a lesser, but observable, degree, according to students' ethnic status.
4. In cases where homogeneous or heterogeneous ability grouping is related to improved scholastic performance, the curriculum is subject to substantial modification of teaching methods, materials and other variables which are intrinsic to the teaching-learning process. Therefore, these modifications may well be the causative factors related to academic development, wholly apart from ability grouping per se. Similarly, with respect to social development, there is evidence which points to variables other than ability grouping which tend to relate substantially to children's personal growth or lack of growth.

The issue of whether ability grouping tends to enhance or reduce the school learning experience is of particular educational significance. If grouping students for instruction on the basis of performance on standardized tests tends to enhance the nature and quality of learning that can be facilitated in the classroom, then the practice should be initiated or continued in the interest of maintaining quality education. However, if evidence suggests that ability grouping tends to restrict the nature and quality of learning that can be facilitated in the classroom, then this kind of practice fosters an unsound environment for the education of children and should be discontinued.

CHAPTER III

RESEARCH DESIGN AND PROCEDURES

This study was designed to measure and compare changes in reading, math and spelling achievement scores between two groups of students in the three mentioned skill areas as measured by the Stanford Achievement Tests. No attempt was made to measure personality factors, attitudes or self-concepts.

GENERAL DESIGN

A static group comparison, assuming control of teachers and school environment, was necessary in this study because two sets of data were collected and compared to determine the level of significance of changes in achievement scores in the previously mentioned three skill areas by second graders in the homogeneous groups when compared to score changes of second graders in the heterogeneous groups.

This design was adequate for the study because the testing procedures were not altered. Classroom procedures were not modified because teachers were not aware of this study.

DATA AND POPULATION

As a part of the regular testing program in this area of Southern, urban schools, students in grades kindergarten

through five are given the Stanford Achievement Tests in the early Spring of each year. The Stanford Achievement Tests measure the academic levels of students in several skill areas.

Not all grades in this particular school are homogeneously grouped in specific areas. However, for those that are grouped in specific areas, the general organizational design used in grouping the students for academic instruction depends on the achievement test scores of the previous year and teachers' judgments to determine the placement of students in this kind of setting.

The subjects used in this study were second grade students in a Southern, urban, middle-class school. There were two groups of second graders--one homogeneous group with sixty-eight students and one heterogeneous group with eighty-five students. The scores obtained for the homogeneous group were taken from the 1976 and 1977 Stanford Achievement Tests; the heterogeneous group's scores were taken from the 1975 and 1976 Stanford Achievement Tests. The differences in raw scores were tabulated so that the gain or loss for each student in each area could be analyzed.

CHAPTER IV

ANALYSIS OF DATA

The data collected to be used in this study consisted of scores from the Stanford Achievement Tests in three skill areas--reading, math and spelling--for a heterogeneous group and a homogeneous group.

Two scores were used to determine each child's gain or loss in achievement in each of the three skill areas--reading, math and spelling. The Stanford Achievement scores resulting from tests administered at the end of the first grade were subtracted from the scores of Stanford Achievement Tests which were administered at the end of the second grade. The difference represented gain or loss during the second grade.

Data during the one year period were collected, compiled and used in this study. The differences were set up in table form comparing the gain or loss of each student in Group A, the homogeneous group, and Group B, the heterogeneous group.

To determine the level of significant difference between the gains or losses in achievement when the two groups were compared, the "t" test was used. A "t" test is a statistical test that allows one to compare two means to determine the probability that the difference between the means is a real difference rather than a chance difference.

Six tables were constructed to show the data in a concise form. The tables compare the scores of each group in reading, math and spelling--Group A comprises Tables I, II, and III and Group B comprises Tables IV, V, and VI-- and show the difference in the gains and the difference squared to be used in calculating the "t" value in each area. The six tables follow:

TABLE I

The Individual Differences in the Stanford Achievement Test Scores for the Years of 1976 and 1977 of the Homogeneous Group (Group A) in Total Reading.

1977 Scores	1976 Scores	Difference	Difference ²
98	93	5	25
93	93	0	0
143	136	7	49
141	140	1	1
121	78	43	1849
109	86	23	529
125	105	20	400
127	117	10	100
128	106	22	484
137	141	- 4	16
139	143	- 4	16
98	121	-23	529
113	74	39	1521
86	86	0	0
138	108	30	900
134	133	1	1
94	83	11	121
121	93	28	784
118	84	34	1156
130	117	13	169
137	120	17	289
129	122	7	49
102	87	15	225
134	94	40	1600
90	69	21	441
50	67	-17	289

1977 Scores	1976 Scores	Difference	Difference ²
89	83	6	36
102	73	29	841
118	82	36	1296
55	56	- 1	1
121	113	8	64
124	137	-13	169
153	142	11	121
87	94	- 7	49
122	138	-16	256
106	91	15	225
132	75	57	3249
112	99	13	169
138	110	28	784
74	82	- 8	64
105	82	23	529
75	67	8	64
113	98	15	225
120	117	3	9
146	132	14	196
119	77	42	1764
123	118	5	25
115	119	- 4	16
108	123	-15	225
134	111	23	529
148	142	6	36
97	96	1	1
126	129	- 3	9
147	121	26	676
99	84	15	225
102	66	36	1296
83	94	-11	121
49	75	-26	676
83	77	6	36
135	127	8	64
53	46	7	49
126	141	-15	225
139	132	7	49
135	85	50	2500
49	64	-15	225
140	142	- 2	4
57	63	- 6	36
129	102	27	729
		<u>722</u>	<u>29,406</u>

TABLE II

The Individual Differences in the Stanford Achievement Test
Scores for the Years of 1976 and 1977 of the Homo-
geneous Group (Group A) in Total Math.

1977 Scores	1976 Scores	Difference	Difference ²
73	53	20	400
65	44	21	441
86	61	25	625
72	43	29	841
49	26	23	529
60	44	16	256
76	52	24	576
87	51	36	1296
67	50	17	289
94	57	37	1369
75	44	31	961
78	43	35	1225
64	40	24	576
36	28	8	64
90	46	44	1936
79	51	28	784
68	45	23	529
78	47	31	961
86	46	40	1600
62	50	12	144
92	61	31	961
87	46	41	1681
63	44	19	361
68	50	18	324
57	42	15	225
55	28	27	729
75	49	26	676
51	34	17	289
57	33	24	576
40	38	2	4
93	52	41	1681
89	48	41	1681
95	53	42	1764
68	41	27	729
77	58	19	361
52	36	16	256
65	28	37	1369
58	44	14	196
75	47	28	784

1977 Scores	1976 Scores	Difference	Difference ²
57	41	16	256
41	33	8	64
43	30	13	169
53	41	12	144
35	26	9	81
74	50	24	576
54	29	25	625
69	44	25	625
73	54	19	361
66	51	15	225
66	44	22	484
85	54	31	961
48	33	15	225
54	35	19	361
72	42	30	900
53	50	3	9
37	23	14	196
45	36	9	81
31	20	11	121
55	50	5	25
76	50	26	676
44	23	21	441
45	33	12	144
80	52	28	784
58	35	23	529
50	33	17	289
82	60	22	484
40	21	19	361
54	33	21	441
		<u>1523</u>	<u>40,687</u>

TABLE III

The Individual Differences in the Stanford Achievement Test
Scores for the Years of 1976 and 1977 of the Homo-
geneous Group (Group A) in Spelling.

1977 Scores	1976 Scores	Difference	Difference ²
32	5	27	729
29	12	17	289
34	23	11	121
38	18	20	400
30	9	21	441
33	6	27	729
29	22	7	49
39	24	15	225
28	13	15	225
39	23	16	256
41	25	16	256
31	11	20	400
33	12	21	441
29	13	16	256
30	23	7	49
35	24	11	121
32	19	13	169
30	18	12	144
31	20	11	121
40	18	22	484
32	19	13	169
30	21	9	81
28	15	13	169
39	16	23	529
28	11	17	289
22	2	20	400
28	7	21	441
29	15	14	196
29	12	17	289
28	3	25	625
33	19	14	196
32	23	9	81
40	27	13	169
29	10	19	361
36	18	18	324
29	11	18	324
35	19	16	256
33	9	24	576
35	13	22	484

1977 Scores	1976 Scores	Difference	Difference ²
25	10	15	225
25	9	16	256
19	7	12	144
31	14	17	289
35	21	14	196
34	23	11	121
36	8	28	784
31	15	16	256
35	25	10	100
33	6	27	729
41	22	19	361
39	20	19	361
29	16	13	169
36	24	12	144
32	18	14	196
31	18	13	169
21	2	19	361
27	6	21	441
17	4	13	169
23	12	11	121
39	23	16	256
18	2	16	256
41	25	16	256
37	26	11	121
31	8	23	529
27	1	26	676
37	23	14	196
19	1	18	324
38	14	24	576
		<u>1134</u>	<u>20,646</u>

TABLE IV

The Individual Differences in the Stanford Achievement Test Scores for the Years of 1975 and 1976 of the Heterogeneous Group (Group B) in Total Reading.

1976 Scores	1975 Scores	Difference	Difference ²
155	142	13	169
129	121	8	64
100	87	13	169
82	84	- 2	4
82	90	- 8	64
124	128	- 4	16
58	67	- 9	81
72	70	2	4
83	87	- 4	16
111	109	2	4
65	77	-12	144
54	61	- 7	49
89	94	- 5	25
148	116	32	1024
87	89	- 2	4
130	116	14	196
117	95	22	484
132	141	- 9	81
133	118	15	225
131	135	- 4	16
134	103	31	961
111	118	- 7	49
101	102	- 1	1
95	107	-12	144
143	142	1	1
140	141	- 1	1
150	138	12	144
67	60	7	49
124	107	17	289
115	124	- 9	81
69	47	22	484
116	90	26	676
93	88	5	25
90	86	4	16
55	55	0	0
65	71	6	36
76	75	1	1
81	79	2	4

1976 Scores	1975 Scores	Difference	Difference ²
-------------	-------------	------------	-------------------------

64	71	- 7	49
59	65	- 6	36
145	139	6	36
126	123	3	9
43	59	-16	256
109	99	10	100
86	87	- 1	1
103	69	34	1156
122	78	44	1936
54	43	11	121
123	131	- 8	64
149	129	20	400
140	145	- 5	25
71	58	13	169
133	103	30	900
73	67	6	36
148	141	7	49
146	143	3	9
149	143	6	36
155	144	11	121
92	57	35	1225
74	112	-38	1444
101	108	- 7	49
117	121	- 4	16
77	81	- 4	16
67	84	-17	289
95	102	- 7	49
136	115	21	444
110	100	10	100
116	122	- 6	36
70	95	-25	625
132	128	4	16
69	67	2	4
84	88	- 4	16
72	84	-12	144
52	64	-12	144
135	128	7	49
146	134	12	144
136	141	- 5	25
130	96	34	1156
122	89	33	1089
155	146	9	81
56	52	4	16
106	105	1	1
117	112	5	25
144	121	23	529
63	94	-31	961

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20,003

TABLE V

The Individual Differences in the Stanford Achievement Test
Scores for the Years of 1975 and 1976 of the Hetero-
geneous Group (Group B) in Total Math.

1976 Scores	1975 Scores	Difference	Difference ²
84	48	36	1296
71	46	25	625
51	48	3	9
44	35	9	81
52	37	15	225
79	59	20	400
55	31	24	576
65	46	19	361
44	22	22	484
69	56	13	169
43	33	10	100
34	22	12	144
46	32	14	196
68	51	17	289
40	46	- 6	36
61	42	19	361
75	53	22	484
87	49	38	1444
71	50	21	441
72	48	24	576
49	34	15	225
66	47	19	361
75	49	26	676
56	38	18	324
76	53	23	529
82	49	33	1089
75	49	26	676
45	27	18	324
55	33	22	484
56	38	18	324
52	25	27	729
57	41	16	256
59	41	18	324
74	46	28	784
45	31	14	196
60	26	34	1156
62	34	28	784
33	27	6	36
46	26	20	400

1976 Scores	1975 Scores	Difference	Difference ²
36	34	2	4
63	44	19	361
64	39	25	625
38	24	14	196
76	46	30	900
61	37	24	576
47	40	7	49
56	44	12	144
42	30	12	144
78	53	25	625
54	42	12	144
80	58	22	484
46	26	20	400
72	40	32	1024
54	24	30	900
78	57	21	441
67	48	19	361
77	43	34	1156
89	62	27	729
28	26	2	4
38	45	- 7	49
56	36	20	400
65	38	27	729
66	39	27	729
43	28	15	225
61	46	15	225
77	43	34	1156
63	50	13	169
72	47	25	625
48	36	12	144
54	31	23	529
24	31	- 7	49
51	35	16	256
50	37	13	169
34	32	2	4
56	44	12	144
60	46	14	196
77	47	30	900
73	44	29	841
49	44	5	25
90	54	36	1296
40	22	18	324
55	43	12	144
75	51	24	576
79	45	34	1156
32	37	- 5	25
		<u>1592</u>	<u>38,326</u>

TABLE VI

The Individual Differences in the Stanford Achievement Test Scores for the Years of 1975 and 1976 of the Heterogeneous Group (Group B) in Spelling.

1976 Scores	1975 Scores	Difference	Difference ²
37	23	14	196
37	18	19	361
28	21	7	49
19	18	1	1
31	20	11	121
34	20	14	196
26	16	10	100
30	20	10	100
29	9	20	400
34	19	15	225
22	17	5	25
18	9	9	81
30	22	8	64
38	21	17	289
25	21	4	16
36	22	14	196
29	22	7	49
36	20	16	256
31	22	9	81
31	18	13	169
29	17	12	144
37	20	17	289
29	25	4	16
30	19	11	121
41	17	24	576
36	20	16	256
36	24	12	144
23	20	3	9
38	21	17	289
30	20	10	100
21	9	12	144
34	16	18	324
26	22	4	16
26	19	7	49
23	17	6	36
20	15	5	25
31	12	19	361
32	10	22	484
27	17	10	100

1976 Scores	1975 Scores	Difference	Difference ²
29	14	15	225
39	19	20	400
39	18	21	441
21	8	13	169
32	21	11	121
28	24	4	16
24	14	10	100
32	19	13	169
20	10	10	100
33	22	11	121
30	23	7	49
35	19	16	256
24	16	8	64
31	18	13	169
21	17	4	16
38	25	13	169
42	21	21	441
37	24	13	169
40	24	16	256
20	14	6	36
32	21	11	121
30	21	9	81
34	14	20	400
29	17	12	144
34	17	17	289
31	23	8	64
32	16	16	256
27	20	7	49
27	23	4	16
13	14	- 1	1
27	12	15	225
12	10	2	4
29	12	17	289
23	13	10	100
22	15	7	49
33	20	13	169
38	8	30	900
37	20	17	289
30	14	16	256
31	19	12	144
39	23	16	256
25	7	18	324
28	24	4	16
33	22	11	121
36	24	12	144
33	16	17	289
		<u>1017</u>	<u>14,941</u>

The preceding tables provided a great deal of information about the individual comparisons in each subject area.

The data revealed that there was a greater total raw score gain made by the homogeneous group in the area of reading. This unusually high achievement gain in raw scores is puzzling. Could teacher expectation be a factor in this area? Although teacher expectation was not being evaluated in this study, it was observed by the investigator that three out of the four teachers were anticipating a greater student achievement gain in all three areas--reading, math and spelling--due to the degree of teachability that is offered through grouping.

There was a slight gain made by the homogeneous group in the total raw score in the subject area of spelling. However, the total raw score in math revealed a loss by the homogeneous group. The investigator does not see this as a loss when comparing the total raw score of sixty eight (68) students in the homogeneous group to eighty-five (85) students in the heterogeneous group.

The following "t" value information indicates that there were significant differences made in gains in all three subject areas--reading, math and spelling--by the homogeneous group in comparison to the heterogeneous group.

Reading - Mean for the Homogeneous Group 10.61
Mean for the Heterogeneous Group 4.09
"t" ratio equals 2.45

The mean was significant at the .02 level.

Math - Mean for the Homogeneous Group 22.39
Mean for the Heterogeneous Group 18.72
"t" ratio equals 2.25

Significant at the .05 level.

Spelling - Mean for the Homogeneous Group -16.67
Mean for the Heterogeneous Group-11.95
"t" ratio equals 5.28

Significant at the .001 level.

The positive "t" ratio indicates that the homogeneous group did better than the heterogeneous group. Statistically all three subject areas were significant at the .05 level with spelling being significantly greater at the .001 level.

The major conclusion derived from the findings was that for a selected homogeneous group of second grade students, for a period of one year, ability grouping did seem to result in a significantly greater increase in three subject areas-- reading, math and spelling--than did the heterogeneous grouping as measured by the Stanford Achievement Tests.

CHAPTER V

SUMMARY

In this study the problem was to determine what differences, if any, existed when grouping children homogeneously when compared to heterogeneous grouping in three skill areas--reading, math and spelling.

A static group comparison design was utilized with two sets of scores used to measure or determine the differences in achievement.

The unique factor about this study was that both groups of children were exposed to the same teachers, the same methods of teaching and the same environmental conditions. The only factor that was different was the grouping. Therefore, if grouping really made a significant difference, it should have been evident in this study.

The statistical analysis of this study revealed that there were significant differences made in achievement in the three subject areas by the homogeneous group in relation to the heterogeneous group. Therefore, the statistical analysis of the data collected did cause rejection of the null hypothesis.

CONCLUSION

In view of the findings of this study, it is evident that the researcher would endorse homogeneous grouping. At the same

time, she recognizes the need for the replication of such a study using other populations. If one of the principal objectives of the American education system is to provide each child with an equal educational opportunity to maximize and develop his potential so that he may benefit himself, and thereby, more effectively contribute to the larger society, then we must provide the best instructional program so that each individual can profit or make the most achievement. This can only be done through experimental studies made by concerned educators.

It would be most interesting to do some other studies to measure the actual gain or loss in achievement made by students grouped in the low-ability grouping within a homogeneous setting as opposed to a heterogeneous setting and measure the self-concept of the same students. There is a great need for this kind of study.

Some educators, according to the related literature, believe that homogeneous grouping has more detrimental effects on the low-ability group than the upper-ability group and that homogeneous grouping provides subquality education. Indeed, additional studies are needed.

It is the considered conclusion of the researcher that there is a need for extensive studies in this area of homogeneous grouping primarily because the evidence of many of the earlier research studies is conflicting and inconclusive.

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APPENDIX

A list of the Students in Group A and Group B According to Sex and Chronological Age.

Group A				Group B			
Code No. of Student	Sex	Chron. Yrs.	Age Mo.	Code No. of Student	Sex	Chron. Yrs.	Age Mo.
A 1	M	8	3	B 1	M	8	5
A 2	F	8	3	B 2	M	8	4
A 3	M	8	3	B 3	M	8	3
A 4	F	8	2	B 4	F	8	3
A 5	M	8	2	B 5	F	8	3
A 6	M	8	2	B 6	M	8	3
A 7	M	8	2	B 7	M	8	2
A 8	M	8	2	B 8	M	8	2
A 9	M	8	1	B 9	M	8	2
A 10	F	8	1	B 10	M	8	2
A 11	M	8	1	B 11	M	8	2
A 12	M	8	1	B 12	M	8	1
A 13	M	8	1	B 13	M	8	1
A 14	F	8	1	B 14	F	8	1
A 15	M	8	1	B 15	M	8	1
A 16	M	8	0	B 16	F	8	1
A 17	M	8	0	B 17	M	8	1
A 18	F	8	0	B 18	F	8	1
A 19	F	7	11	B 19	M	8	0
A 20	F	7	11	B 20	M	8	0
A 21	M	7	11	B 21	F	8	0
A 22	M	7	11	B 22	F	8	0
A 23	F	7	11	B 23	M	8	0
A 24	M	7	11	B 24	M	8	0
A 25	M	7	11	B 25	M	7	11
A 26	M	7	10	B 26	M	7	11
A 27	M	7	10	B 27	F	7	11
A 28	F	7	10	B 28	F	7	11
A 29	M	7	10	B 29	F	7	11
A 30	F	7	10	B 30	M	7	11
A 31	F	7	9	B 31	F	7	10
A 32	F	7	9	B 32	F	7	10
A 33	M	7	9	B 33	M	7	10
A 34	F	7	9	B 34	M	7	10
A 35	M	7	9	B 35	M	7	10
A 36	M	7	9	B 36	M	7	10
A 37	M	7	9	B 37	M	7	10
A 38	F	7	8	B 38	F	7	9
A 39	F	7	8	B 39	M	7	9
A 40	F	7	8	B 40	M	7	9

A list of the Students in Group A and Group B According to Sex and Chronological Age.

Group A				Group B			
Code No. of Student	Sex	Chron. Yrs.	Age Mo.	Code No. of Student	Sex	Chron. Yrs.	Age Mo.
A 41	M	7	8	B 41	F	7	9
A 42	F	7	8	B 42	M	7	9
A 43	M	7	8	B 43	M	7	9
A 44	F	7	7	B 44	F	7	9
A 45	F	7	7	B 45	M	7	9
A 46	M	7	7	B 46	M	7	9
A 47	F	7	7	B 47	F	7	8
A 48	M	7	7	B 48	M	7	8
A 49	M	7	7	B 49	F	7	7
A 50	F	7	6	B 50	M	7	7
A 51	F	7	6	B 51	F	7	7
A 52	F	7	6	B 52	F	7	7
A 53	F	7	6	B 53	F	7	7
A 54	F	7	6	B 54	M	7	7
A 55	F	7	5	B 55	F	7	7
A 56	F	7	5	B 56	F	7	7
A 57	M	7	4	B 57	M	7	7
A 58	M	7	4	B 58	M	7	7
A 59	M	7	4	B 59	M	7	7
A 60	F	7	4	B 60	M	7	6
A 61	M	7	4	B 61	M	7	7
A 62	F	7	4	B 62	F	7	6
A 63	F	7	3	B 63	M	7	6
A 64	M	7	3	B 64	M	7	6
A 65	F	7	3	B 65	M	7	6
A 66	M	7	3	B 66	F	7	6
A 67	M	7	3	B 67	F	7	6
A 68	F	7	3	B 68	F	7	6
				B 69	M	7	5
				B 70	M	7	5
				B 71	M	7	5
				B 72	M	7	5
				B 73	F	7	5
				B 74	M	7	5
				B 75	F	7	5
				B 76	M	7	5
				B 77	F	7	4
				B 78	F	7	4
				B 79	F	7	4
				B 80	F	7	4
				B 81	M	7	4
				B 82	F	7	4
				B 83	F	7	3
				B 84	M	7	3
				B 85	F	7	3