

STUDENT ACHIEVEMENT UNDER THE  
SEMI-DEPARTMENTALIZED AND SELF-CONTAINED SCHOOL ORGANIZATION  
COMPARED AT THE SIXTH GRADE LEVEL

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Submitted in partial fulfillment of the requirements  
for the Master of Education Degree  
in the School of Education  
Montana State University  
August, 1967

THESES  
P 371  
G 318

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## ACKNOWLEDGEMENT

The undertaking and completion of this study depended on the cooperation, guidance and suggestions from others. The writer is unable to mention each by name but the writer is very grateful for the assistance given.

The writer is indebted to the chairman and the other members of his committee for their guidance and assistance in this undertaking. Special gratitude is offered Dr. Willis Vandiver for his encouragement and assistance during the final writing.

Finally to his wife, Bonnie Jean, the writer wishes to express his gratitude for her patience and understanding and for the many hours spent typing this study.

G.O.G.

ABSTRACT

The purpose of this study was to determine if the semi-departmentalized classroom or the self-contained classroom type of school organization was significantly superior to the other in regards to student achievement.

The literature was reviewed to determine what others had learned concerning the advantage of one type of school organization over another. The population chosen included students in two semi-departmentalized sixth grade classrooms at the Lewis and Clark Elementary School and students in two self-contained classrooms at the Wilkinson Elementary School, Williston, North Dakota. The students had been given the California Achievement Test as fourth graders and then were tested again as sixth graders. The amount of gain or loss for each individual was determined by the difference between the two tests. The amount of gain or loss for each student was used to determine the mean for each school on the individual tests. This mean was used in the t statistic to determine if the gain of one type of school organization over another was significant.

The study revealed that (1) significance was found in only two subtests of the California Achievement Test. The Lewis and Clark semi-departmentalized classroom had achieved more in the areas of social processes which included questions pertaining to food, clothing, shelter, transportation and communication; also in health, which dealt with eating for health and safety information. (2) In all other tests, including the composite gain of all the tests, there was no significant difference between the type of school organization and achievement. (3) Achievement in the areas of American heritage, geography, health, peoples of other lands and times, science and social processes were measured by standardized achievement tests. Therefore, not all the merits of the two types of school organization were measured.

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## CHAPTER I

### INTRODUCTION

In examining the organization of the elementary school it is found to vary in type of structure. Disciples of each type of organization were trying to help pupils achieve more in school subjects.

In the present day schools, four types of organization can be found. First, in the self-contained classroom the pupils remain in one classroom for all subjects most of the day, under one teacher. Second, the semi-self-contained classroom employs teachers specialized in the areas of art, music and physical education. Third, the semi-departmentalized classroom is one in which pupils have teachers specialized in the academic areas including science, arithmetic, social studies and English. Fourth, the departmentalized classroom organization is characterized by a different teacher specialized in teaching each of the subjects.

Sample studies have been carried out in order to determine which organization is superior. However, they have failed to prove the relative effectiveness of one type of organization over the other because of the inconclusiveness of test results measuring student achievement.

#### Definitions of terms

Elementary School: A school which has grades one through six inclusive.

Self-contained classroom: A school organization where a group of students has the same teacher and classroom for all subjects during the school day.

Semi-departmentalized classroom: A school organization where a group of students has a different teacher for some of their subjects such as science, geography and mathematics and change rooms for each of these different classes.

American Heritage: A four-part test which dealt with American exploration and colonization, the westward movement, later development of our nation and understanding of democracy.

Geography: A four-part test which dealt with geography facts: The United States, geography facts: The world, reading maps and knowledge of geography terms and effects of geography on the life of man.

Health: A three-part test which dealt with eating for health, other health information and safety information.

Peoples of Other Lands and Times: A two-part test which dealt with peoples of other lands such as Latin America, the Orient and part of Europe. Also, it dealt with peoples of other times such as early civilizations of China, Egypt and Greece.

Science: A two-part test which dealt with the world around us and man's conquest of nature.

Social Processes: A two-part test which dealt with food, clothing, shelter, transportation and communication.

#### Limitations

The population of this study consisted of students who had taken the first test as fourth graders and again as sixth graders at the Lewis and Clark and Wilkinson Elementary Schools, Williston, North Dakota.

Achievement was measured in only six areas: (1) American Heritage, (2) Geography, (3) Health, (4) Peoples of Other Lands and Times, (5) Science and (6) Social Processes.

The teachers in the study were Elementary Education majors and in their teaching positions because of choice rather than having specialized training in the measured area. There was no way the researcher could determine if differences existed in teacher skill and ability.

The period of investigation between the first test and the second test was two years.

#### Statement of the Problem

The purpose of this study was to obtain evidence as to whether the departmentalized classroom organization is superior to the self-contained classroom organization in terms of measured pupil achievement. The study was done to give some evidence in determining if student achievement was greater under the self-contained classroom or the semi-departmentalized classroom type of school organization.

#### Procedure

The study compared student achievement in a semi-departmentalized classroom organization with achievement in a self-contained classroom.

The study compared two sixth grade classes which were in a semi-departmentalized type of school organization against two sixth grade classes under the self-contained type of school organization in the Williston, North Dakota elementary school system. The teachers involved in this study were selected according to their present teaching assignments.

The population used in this study was a heterogenous group ranging from low to high ability in each group. Intelligence test scores and grades earned as third graders were compared.

Following the first test administered in the fourth grade the children were taught the same course of study in each type of school organization. In the self-contained classroom organization the teacher taught each subject except music. In the semi-departmentalized classroom the teacher taught in an interest area of either science, social studies or mathematics. The schedule then included fourth, fifth and sixth grade students in the teacher interest area. The teacher also taught spelling, penmanship, reading and English, with a special teacher for music. At the end of the sixth grade the pupils were given the same achievement test. The results of the first and second test were compared to determine the amount of achievement for each pupil on each sub-test.

The amounts of achievement were compared and given a test for significance. This test determined whether the gain or loss difference between the two populations was significant.

CHAPTER II  
REVIEW OF RELATED LITERATURE

The review of literature was made to determine what is known about pupil achievement differences in the departmentalized as opposed to the self-contained type of school organization. A brief history was studied to develop background information concerning types of school organization.

Eby(7) explained that early examples of departmentalized schools were reading and writing schools established in Boston in 1789. These two subject areas made up two departments within the school. Both departments occupied the same building and shared the same students, but each pursued its own program. The students attended both departments on alternate half days.

In 1848 Philbrick organized the Quincy Grammar School, a graded school with a self-contained classroom organization. For the next fifty years almost all schools had self-contained classrooms.(7)

Goodlad(10) through the study of historic data of types of school organization outlined a changing pattern of school organization beginning at the twentieth century. At this time there was divided opinion concerning the value of the self-contained classroom as opposed to the departmentalized classroom organization. Dunn(6) found a growing interest in departmentalization between the years 1910-1930. In the decade 1930-1940 the debate continued with each side claiming advantages for his type of organization. Prince(17) and Goodlad(10) state that in the fourth decade from 1940-1949 more schools reported departmentalization on the way out and losing favor. Many of the schools continued with a semi-departmentalization which had special teachers for art, music and physical education.

In the years 1950-1959 departmentalization seemed to be increasing and picking up advocates.(10) Although the advantages and disadvantages are argued in the 1960's, departmentalization in some form in the elementary schools is enjoying an unprecedented resurgence.(11)

In the following studies that were conducted during this period concerning what classroom organization is best some research was conducted to afford some evidence to which type of organization was most beneficial to the student. In reviewing these studies one finds advantages claimed by both sides and in some cases the same advantages being claimed by both sides.

In his book, The Dual Progress Plan Stoddard(20) pointed out a need for specialized teachers in certain areas of instruction. This need for specialized teachers he felt coming from the complexity of new materials and that it was impossible for one teacher to be an authority in all areas of curriculum.

Acherland(1) attempted to determine what elementary teachers thought of the self-contained classroom type of school organization through a questionnaire. His population consisted of three hundred and fifty eight elementary school teachers in a large eastern city in Pennsylvania. He concluded that a self-contained classroom was more suitable for student achievement in grades 1,2 and 3. However, he concluded in grades 4,5 and 6 that teachers specialized in the subjects they teach were able to realize greater pupil achievement.

Anderson(2) attempted to determine the degree of confidence of elementary school teachers in themselves for teaching all subject matter areas in their rooms. He studied two hundred and sixty elementary school teachers in East Brunswick, Illinois. He found only four of these teachers

who felt qualified to teach in all subject matter areas. Most teachers felt qualified in one or two areas and would have preferred to teach in these. He concluded that teacher specialization in departmentalized elementary schools allowed the student to achieve to a greater degree because they are apt to receive better training and will improve the quality of elementary education.

Spivak(19) attempted to determine if school organization affected student achievement. After studying students entering the ninth grade in Newark, New Jersey he reported the ninth grade students who had been in self-contained seventh and eighth grade classrooms achieved significantly more, as measured by standardized achievement tests, than students who had been in seventh and eighth grade departmentalized classrooms.

Also, pertaining to the matter of school organization, some educators believe that both types, the self-contained and departmentalized have good methods of instruction which aid in educating students. Dunn(6) for example, believes that a sound educational philosophy and organization can be derived from both types of organization or adoptions from them.

Otto and Sanders(16) in thier review of research in this area concluded that most studies which were done trying to gain conclusive evidence of one organization over the other compare only subject matter achievement.

#### Summary

A survey of the available research does not resolve the question of the superiority of one type of organization over the other and it indicated a need for further research.

### CHAPTER III

#### SPECIFIC CHARACTERISTICS OF THIS STUDY

This study was done in order to obtain evidence concerning the relative effectiveness of two types of classroom organization.

The study was conducted in order to gain more evidence to resolve which type of school organization is superior in terms of pupil achievement as measured on standardized achievement tests. The study explored pupil achievement in a self-contained classroom opposed to achievement in a semi-departmentalized classroom in the areas of American heritage, human geography, physical geography, social processes, health and science.

#### Population

This study was carried out in the community of Williston, North Dakota, a northwestern North Dakota city of approximately 15,000 people.

Two elementary schools were used. The Lewis and Clark and Wilkinson Elementary Schools. The Lewis and Clark school is located in the western part of the city while the Wilkinson school is located in the northwestern part of town, one mile apart. However, the two school areas are adjacent to each other. These two schools were selected because the students who attended them come from similar socioeconomic backgrounds. The homes in both areas are similar and show that families have an average income.

The two schools are similar in size and each had two rooms for each grade.

Lewis and Clark Elementary School had the semi-departmentalized type of school organization. There are thirteen teachers at the school

and of these, six teachers, two men and four women, were used in the study. There were a total of forty-eight sixth graders; however, only twenty-nine, thirty and thirty-one were used for the various tests.

All children not in the experiment at the schools during the two years between the tests were eliminated so that only students who had taken the pre test and the post test were used in the study.

The Wilkinson Elementary School has the self-contained type of school organization. There are thirteen teachers at the school and of these, six teachers, two men and four women, were used in the study. There were a total of fifty-two sixth graders; however, only twenty-seven, thirty-one, thirty-three and thirty-four were used for the various tests for the before mentioned reason.

Also, grades earned as third graders were converted to a numerical value to determine whether there was any significance between the two groups by means of statistics. There was no significant difference found between grades earned by the two groups. For this comparison refer to Table #8.

Furthermore, to insure relatively similar groups the intelligence quotients for the children in each group were checked. There was no significant difference between the intelligence quotients of the students in the two groups. For this comparison refer to Table #9.

#### Procedures for Collecting Data

The California Tests for achievement were used for the pre and post test in the study.

The reliability coefficients for the intermediate subjects is from .62 to .87, with a median of .76 which indicated it was in an area of

acceptance.

The tests validity was achieved by textbook and curriculum comparisons, teacher and supervisors reactions to questions on the tests compared to what was taught. The researcher felt this test measured quite well the extent to which the students mastered the curriculum used by the two types of school organization in this study.

In the Lewis and Clark and Wilkinson schools the basic textbooks used were the same and the supplementary materials were similar. The material taught between the pre and post tests was similar and followed the North Dakota course of study.

The California Achievement Test was administered by each teacher in this study in May of 1964 to grades four. These tests were corrected and the results placed on summary sheets. The tests were administered by all the teachers involved according to the instructions provided by the company. The population was given the post test in May of 1966 as sixth graders. These tests were then forwarded to the researcher for correction and summarizing.

#### Statement of the Hypothesis

The null hypothesis was that there was no significant difference in grade achievement between students in self-contained classrooms and students in semi-departmentalized classroom over the period of the study.

#### Selection of Statistical Technique

In testing the hypothesis of this study with this population it was necessary to use the t statistic.

This statistic was chosen because:

1. The size of the population.
2. It lends itself quite well to show whether the gain of one type of school organization was significant over another.
3. The sampling was assumed to be from a normal population.

#### Treatment of the Data

The grade and month levels of achievement attained as fourth graders and then as sixth graders were compared individually and a gain or loss for the period was computed.

The resulting gain or loss in achievement for each student was used in working the  $t$  statistic which was used to find if there was any significance in the gain or loss of achievement of one population over the other.

## CHAPTER IV

## ANALYSIS AND COMPARISONS OF ACHIEVEMENT TEST SCORES

In this section, the achievement test scores of students in the semi-departmentalized and self-contained classrooms in the areas of American heritage, people of other lands and times, geography, social processes, health, science and all tests were analyzed and compared.

The procedure carried out in the preparation for analysis and comparison section of this paper was to take the achievement test scores of the students in the self-contained classrooms compared to the scores of the students in the semi-departmentalized classrooms. The scores of each pupil in each sub-test area were then subtracted to indicate the amount of gain or loss that had taken place during the two school years in the tested areas. The resulting scores were then used to determine the mean gain in the various sub-test areas. The mean gains were tested for a significant difference between the two groups by using the  $t$  statistic.

On the following pages the individual sub-test areas are discussed.

## Individual Tests

The following are the results of the tests for significant difference between the gain or loss of the groups tested.

## American Heritage

The raw scores derived for each pupil in the use of the California Achievement Test, used in this study, was a composite score including scores from the four parts of the sub-test.

In order to determine the effects of a semi-departmentalized classroom against the self-contained classroom, a comparison of the mean gains was made.

TABLE 1. MEAN GAIN FOR EACH GROUP AND THEIR DIFFERENCE WITH THE  $t$  SCORE FOR THE SUB-TEST AMERICAN HERITAGE

School	Number of Students	Mean Gain	Difference	$t$ Score
Lewis and Clark	30	3.02	.07	.165
Wilkinson	33	3.09		

In an analysis of the mean gains, presented in Table 1, it was found that the semi-departmentalized classroom had a mean gain of 3.02 while the self-contained classroom had a mean gain of 3.09. The mean difference of .07 in favor of the self-contained classroom was tested by means of the  $t$  statistic and found to be .165. By reference to the proper table it was found not significant at the .05 level, therefore the null hypothesis was accepted.

## Peoples of Other Lands and Times

The raw score derived for each pupil was a composite score including scores from the two parts of the sub-test.

To determine the effects of a semi-departmentalized classroom against the self-contained classroom, a comparison of mean gains was made.

TABLE 2. MEAN GAIN FOR EACH GROUP AND THEIR DIFFERENCE WITH THE  $t$  SCORE FOR THE SUB-TEST PEOPLES OF OTHER LANDS AND TIMES

School	Number of Students	Mean Gain	Difference	$t$ Score
Lewis and Clark	29	3.49	.02	.0387
Wilkinson	27	3.51		

In an examination of the mean gains, presented in Table 2, it was found that the semi-departmentalized classroom had a mean gain of 3.49, while the self-contained classroom had a mean gain of 3.51. The mean difference of .02 in favor of the self-contained classroom was tested by means of the  $t$  statistic and found to be .0387. By reference to the proper table it was found not significant at the .05 level, therefore the null hypothesis was accepted.

## Geography

The raw score derived for each pupil was a composite score including scores from the three parts of the sub-test.

In order to determine the effects of a semi-departmentalized classroom against the self-contained classroom, a comparison of the mean gains again was made.

TABLE 3. MEAN GAIN FOR EACH GROUP AND THEIR DIFFERENCE WITH THE  $t$  SCORE FOR THE SUB-TEST GEOGRAPHY

School	Number of Students	Mean Gain	Difference	$t$ Score
Lewis and Clark	30	2.46	.47	1.26
Wilkinson	31	2.93		

In an investigation of the mean gains, presented in Table 3., it was found that the semi-departmentalized classroom had a mean gain of 2.46 while the self-contained classroom had a mean gain of 2.93. The mean difference of .47 in favor of the self-contained classroom was tested by means of the  $t$  statistic and found to be 1.26. By reference to the proper table it was found not significant at the .05 level, therefore, the null hypothesis was accepted.

## Social Processes

The raw score derived for each pupil was a composite score including scores from the two parts of the sub-test.

To determine the effects of a semi-departmentalized classroom against the self-contained classroom, a comparison of mean gains was made.

TABLE 4. MEAN GAIN FOR EACH GROUP AND THEIR DIFFERENCE WITH THE  $t$  SCORE FOR THE SUB-TEST SOCIAL PROCESSES

School	Number of Students	Mean Gain	Difference	$t$ Score
Lewis and Clark	29	3.43	1.17	3.25
Wilkinson	27	2.26		

In an analysis of the mean gains, presented in Table 4, it was found that the semi-departmentalized classroom had a mean gain of 3.43 while the self-contained classroom had a mean gain of 2.26. The mean difference of 1.17 in favor of the semi-departmentalized classroom was tested by means of the  $t$  statistic and found to be 3.25. By reference to the proper table it was found significant at the .05 level, therefore the null hypothesis was rejected for an alternate hypothesis which stated that children in a semi-departmentalized organization would achieve more than children in a self-contained classroom organization.

## Health

The raw scores derived for each pupil was a composite score including scores from the three parts of the sub-test.

In order to determine the effects of a semi-departmentalized classroom against the self-contained classroom, a comparison of the mean gains was made.

TABLE 5. MEAN GAIN FOR EACH GROUP AND THEIR DIFFERENCE WITH THE  $t$  SCORE FOR THE SUB-TEST HEALTH

School	Number of Students	Mean Gain	Difference	$t$ Score
Lewis and Clark	30	3.64	1.70	4.72
Wilkinson	33	1.94		

In an examination of the mean gains, presented in Table 5, it was found that the semi-departmentalized classroom had a mean gain of 3.64 while the self-contained classroom had a mean gain of 1.94. The mean difference of 1.70 in favor of the semi-departmentalized classroom was tested by means of the  $t$  statistic and found to be 4.72. By reference to the proper table it was found significant at the .05 level, therefore, the null hypothesis was rejected for an alternate hypothesis which stated that children in a semi-departmentalized organization would achieve more than children in a self-contained classroom organization.

## Science

The raw score derived for each pupil was a composite score including scores from the two parts of the sub-test.

To determine the effects of a semi-departmentalized classroom against the self-contained classroom, a comparison of mean gains was carried out.

TABLE 6. MEAN GAIN FOR EACH GROUP AND THEIR DIFFERENCE WITH THE  $t$  SCORE FOR THE SUB-TEST SCIENCE

School	Number of Students	Mean Gain	Difference	$t$ Score
Lewis and Clark	30	3.65	.42	.96
Wilkinson	33	3.23		

In an investigation of the mean gains, presented in Table 6, it was found that the semi-departmentalized classroom had a mean gain of 3.65 while the self-contained classroom had a mean gain of 3.23. The mean difference of .42 in favor of the semi-departmentalized classroom was tested by means of the  $t$  statistic and found to be .96. By reference to the proper table it was found not significant at the .05 level, therefore the null hypothesis was accepted.

## All Tests

The raw scores derived for each pupil in the use of the California Achievement Test, used in the study, was a composite score including scores from all of the six sub-tests.

In order to determine the effects of a semi-departmentalized classroom against the self-contained classroom, a comparison of the mean gains was carried out.

TABLE 7. MEAN GAIN FOR EACH GROUP AND THEIR DIFFERENCE WITH THE  $t$  SCORE FOR ALL TESTS

School	Number of Students	Mean Gain	Difference	$t$ Score
Lewis and Clark	31	3.20	.38	1.50
Wilkinson	34	2.82		

In an analysis of the mean gains, as presented in Table 7, it was found that the semi-departmentalized classroom had a mean gain of 3.20 while the self-contained classroom had a mean gain of 2.82. The mean difference of .38 in favor of the semi-departmentalized classroom was tested by means of the  $t$  statistic and found to be 1.50. By reference to the proper table it was found not significant at the .05 level, therefore, the null hypothesis was accepted.

### Summary

A comparison of test scores of students in the semi-departmentalized and self-contained classrooms in the areas of American heritage, people of other lands and times, geography, social processes, health and science was made.

The mean gain of each group on the various sub-test areas were tested for significance by using the t statistic.

In four of the six tests there was no significance in the mean gain of one group over another. In two test areas, social processes and health, there was significance in the amount of gain by the Lewis and Clark semi-departmentalized students. However, in the composite score from all of the six sub-tests there was no significance in the mean gain.

## CHAPTER V

## SUMMARY, CONCLUSION AND RECOMMENDATIONS

## Summary

One problem in the elementary schools of today is to determine which type of school organization is superior for the best learning situation.

There has been a long standing spirited debate between the proponents of each type of school organization, the departmentalized classroom as opposed to the self-contained classroom organization. Each proponent has claimed advantages over the other yet neither has been able to show that one is superior to the other in terms of pupil achievement as measured on standardized tests.

The researcher after comparing achievement between a semi-departmentalized type of school organization and a self-contained type of school organization found no significance in four of the sub-tests. There was significance in two sub-tests, the social processes and health.

Furthermore, the comparison of the mean gains of each students total score in the semi-departmentalized classroom compared to the self-contained classroom showed no significant difference.

The size of the population could be regarded as one of the weaknesses of this study. A larger group of students taken from different cities and schools would give a better comparison of types of school organization.

Also, the inability of the researcher to control class period length in the self-contained classroom would be another weakness. Class periods were of varied length compared to the more rigid scheduling of the semi-departmentalized classroom.

The researcher feels because of the inconclusiveness and conflicting results of the study there was not enough evidence to show that either type of school organization is superior to another.

### Conclusions

Subject to the limitations of this study the following conclusions were drawn.

1. There seemed to be no difference overall in the achievement in regards to the type of school organization.
2. According to this study the semi-departmentalized classroom organization provided for increased achievement over the self-contained classroom organization in two areas, social processes and health.

### Recommendations

The researcher upon completion of the study had some recommendations in regards to school organization.

1. Further research comparing types of school organization and their influence on achievement with a larger population and more controls is needed.
2. Because of the inconclusiveness and conflicting results of the research a recommendation cannot be made for one type over the other.

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## LITERATURE CONSULTED

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APPENDIX

Appendix A  
Formula Used

The formula used in computing the t score was as follows:

$$t = \frac{M_1 - M_2}{\sqrt{\left( \frac{\sum x^2_1 + \sum x^2_2}{N_1 + N_2 - 2} \right) \left( \frac{N_1 + N_2}{N_1 \times N_2} \right)}}$$

$M_1$  and  $M_2$  = Means of the two samples

$\sum x^2_1$  and  $\sum x^2_2$  = Sums of the squares in the two samples

$N_1$  and  $N_2$  = Number of cases in the two samples

Appendix B  
Comparison of Intelligence Quotients

TABLE 8. MEAN I.Q. SCORES FOR EACH GROUP AND THEIR DIFFERENCES WITH THE  $t$  SCORE IN RELATION TO THE SCORE NEEDED FOR SIGNIFICANCE

School	Number of Students	Mean I.Q.	Difference	$t$ Score	.05 Probability	Significant	
						Is Sign.	Not Sign.
Lewis and Clark	31	112.9	1.3	.699	1.67		X
Wilkinson	34	111.6					

Appendix C  
Comparison of Grades

TABLE 9. MEAN OF GRADES EARNED BY EACH GROUP AND THEIR DIFFERENCE WITH THE t SCORE IN RELATION TO THE SCORE NEEDED FOR SIGNIFICANCE

School	Number of Students	Mean Grade	Difference	t Score	.05 Probability	Significant	
						Is Sign.	Not Sign.
Lewis and Clark	31	6.8	.1	.213	1.67		X
Wilkinson	34	6.9					