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# The effectiveness of paired study versus individual study in social studies

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Bixby, L. M., et al.  
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BOSTON UNIVERSITY  
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Thesis

THE EFFECTIVENESS OF PAIRED STUDY VERSUS INDIVIDUAL STUDY  
IN SOCIAL STUDIES

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In Partial Fulfillment of Requirements for  
the Degree of Master of Education

1958

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CHAPTER I  
STATEMENT OF THE PROBLEM  
AND  
REVIEW OF THE RESEARCH

1. Statement of the Problem

It is the intent of this study to discover the effectiveness of paired study versus individual study in social studies. The data will be analyzed for the following purposes:

1. To find if there is more retention when pupils study in pairs.
2. To find if there is more retention when pupils study alone.
3. To find if there is more retention when an enrichment program follows study when pupils study in pairs.
4. To find if there is more retention when an enrichment program follows study when pupils study alone.
5. To correlate, using the total population of the study, the Intelligence Quotient of each individual with his average score on two weekly tests.
6. To indicate the attitude of the pupils toward paired study.

## 2. Review of Research

There seems to be little statistical research available on the effectiveness of paired or team learning versus individual study, but many educators have felt that there are great advantages in having children work together. One of the most pertinent studies in this field was that of Klugman<sup>1/</sup>. His study, carried on in arithmetical problem solving, was to determine whether children in the fourth to the sixth grades worked better alone or in pairs. The children were equated for sex, race, grade, age, (within three months) and intelligence (within four points). His results showed a critical ratio of 3.5 in favor of paired study. He comments on his findings:

"... that when children worked in pairs they earned reliably higher scores than when they worked independently. However, while the scores were higher it took them a reliably longer time. This longer time was primarily due to the presentation, discussion, rejection and acceptance of a greater number of possible answers which occurred when the children worked in pairs."

In the classroom paired learning can be utilized in many ways. In his article on pupil study teams, Durrell<sup>2/</sup> wrote:

"Children like to work in pairs or in small groups. . . . Team study seems to offer many advantages to

<sup>1/</sup>Samuel F. Klugman, "Cooperative versus Individual Sufficiency in Problem Solving", Journal of Educational Psychology, (February, 1944), 35:91-100.

<sup>2/</sup>Donald D. Durrell and Viola A. Palos, "Pupil Study Teams in Reading", Education, (May, 1946), 76:552.

learning, especially in view of the wide differences in ability among pupils in a classroom. It permits adjustment to team differences in level and learning rates; rapid learners may advance faster or use more difficult material; slow learners may use easier material or more detailed study guides and progress at a suitable pace. It should give the opportunity for specific practice to overcome weaknesses common to the team. Even when a uniform assignment is required of the entire class, study teams permit the use of different levels of study guides and offer far richer opportunities for individual recall and reaction to the material read. Certainly team study provides greater security in learning, especially when pupils check their knowledge with each other at frequent intervals in the study period. Teamwork obviously provides experiences in social development and group responsibilities."

<sup>1/</sup>  
Jameson, in her study to determine how children prefer to carry out assignments, and to discover ways children enjoy working in order to take advantage of interest as a motivating force for more effective planning, came to the following conclusions: (1) In almost all cases the differences between partner participation and group participation is slight, but most of the groups prefer partner participation; (2) Individual participation is chosen least of all by all the groups; (3) The groups with below average Mental Age and high Mental Age of each grade show variations, i.e. children with a low Mental Age prefer guidance rather than independence, and children with high Mental Ages for a grade prefer to work independently or in larger groups.

1/Vivian Jameson, Children's Preferences in Types of Assignments, Unpublished Master's Thesis, Boston University, 1951.

The inter-play of ideas, the give-and-take of working together<sup>1/</sup> . . . makes possible the maximum of pupil development inherent in the social and democratic group process used."

It has also been felt that children learn more of the actual subject material when they study and read the material together. As Gray<sup>2/</sup> has said;

"Experience shows clearly that pupil development cannot always be achieved most effectively as the child works alone. Of great importance is the stimulus and added insight which result when he works co-operatively with others in achieving common goals."

Educational opportunity for all means bringing all the children of all the people into schools. The pupil of today is a product of many entirely different environments. Today's pupils represent a wide variety of inherent abilities and interest.

In her study on group work, Waite<sup>3/</sup> says:

"Through the greater variety of materials that can be used in group work, we can better serve the varying abilities and interests of individual children. For the superior child who is so frequently neglected we have the opportunity to provide activities that will challenge and stimulate and a program that is virtually unlimited in scope. For the slow and less able we can provide experiences of success, a sense of belonging, and a renewed feeling of personal worth."

<sup>1/</sup>Noble Lee Garrison, "Changing Concepts in Methods of Teaching", Elementary School Journal, (December, 1951), 52:197-206.

<sup>2/</sup>William S. Gray, Comp. and Ed., Classroom Techniques in Improving Reading, University of Chicago Press, Chicago, 1949, pp.23

<sup>3/</sup>Dorothy C. Waite, "Children Like Working in Groups", National Elementary Principal, (September, 1952) 32:169-173.

Because the children have a chance to participate more frequently, have a chance to discuss all the material, their retention and understanding of the material should be much better when they work in pairs. In this regard, Durrell<sup>1/</sup> has written in his book:

"Studying a lesson is often a lonesome and insecure task for a child. Both the insecurity and lonesomeness may be removed by the use of graded study guides with the pupils working in study teams of two or more. Teachers who have been using a single textbook with silent individual study followed either by pupils' answers to oral questions or by pupils' written answers to questions on the board will find a marked improvement in pupil interest and achievement when study teams replace individual study."

Methods of starting group work are discussed in an article on social studies by Stewart<sup>2/</sup> in which she states:

"Teachers often hesitate to carry on group work within the classroom because they do not understand how to plan activities for group learning. They are held back by the fear of a disorganized classroom and the fact that their children may not measure up to expected standards. Many feel that class work is less work for the teacher. Results are not obtained in group work in a short time. It must be started at the first grade level where children must be taught to work together, to make plans and look for information together. This working together must be carried on right through the grades . . .

When a class is ready for group work the teacher must first help the children get started . . .

The children should always have definite material to look up and definite jobs assigned to them and above all know what they are trying to find . . .

<sup>1/</sup>Donald D. Durrell, Improving Reading Instruction, World Book Company, Yonkers-on-Hudson, 1956, pp. 387.

<sup>2/</sup>Dorothy Stewart, "Social Studies and Group Work", Social Education, (October, 1946), 10:259-600.



Both the exceptional and slow child will have a chance to express himself . . . The class should be tested to see how much of the essential material is retained."

Working in groups is interesting in its own right and many individuals have characteristics they can impose on the group members. For instance, group standards may keep an overly aggressive individual in check, and, in turn, make a withdrawn child spontaneous and confident.

To show the importance of socialized learning, Morrow<sup>1/</sup> stated:

"Let us create an environment for our children that shall make it possible for them to discover life in its social relationships, giving rise to problems that shall make them develop a thinking process through which they may arrive at logical conclusions. Let us foster those traits which give rise to a normal and natural unfolding. It is within our power to shape a child into an undernourished, nervous, selfish, and disagreeable individual or one that is well nourished, thoughtful, social and unselfish."

As a child grows older, he comes in contact with more and more people. He comes to reach out to the street, to the school and to the community, and he must learn to get along in these larger groups. In his article on cooperation, Kregol<sup>2/</sup> has said:

"The purpose for the learning of the process of co-operation should not be neglected . . . Children should go through the experience of working together for

<sup>1/</sup>Mildred Morrow, "Beginnings of Social Adjustment", Childhood Education, (April, 1929) 5:424-7

<sup>2/</sup>Luvella J. Kregol, "Teaching Co-operation As a Practical Ideal", Educational Methods, (January, 1930), 9:227.

the good of their group as well as for themselves individually . . . and through give-and-take situations connective thinking is developed as well as sympathy, and understanding for other members of the group."

No matter how important it is for the child to be treated as an individual, it is equally important for the individual to become part of a group and work with others.



## CHAPTER II

Audrey Tavitian

### EFFECTIVENESS OF PAIRED STUDY VERSUS INDIVIDUAL STUDY IN FOURTH GRADE SOCIAL STUDIES

#### 1. Statement of the Problem

It is the intent of this study to discover the effectiveness of paired study versus individual study in fourth grade social studies. The data will be analyzed for the following purposes:

1. To find if there is more retention when pupils study in pairs.
2. To find if there is more retention when pupils study alone.
3. To find if there is more retention when an enrichment program follows study when pupils study in pairs.
4. To find if there is more retention when an enrichment program follows study when pupils study alone.
5. To correlate, using the total population of the study, the Intelligence Quotient of each individual with his average score on two weekly tests.
6. To indicate the attitude of the pupils toward pupil-paired study in the terms of the following criteria:

- a. Whether pupils liked working together.
  - b. Whether pupils liked working alone.
  - c. Whether pupils liked discussing material with the teacher and the class.
  - d. Whether pupils liked discussing the material in study teams.
  - e. Whether pupils thought using the study guides helped in remembering important facts.
  - f. Whether pupils understood the directions of the study guides and the teacher.
  - g. Whether pupils thought the noise was bothersome.
  - h. What pupils liked about studying in this manner.
  - i. What pupils disliked about studying in this manner.
7. To indicate informal teacher observations.

## 2. Plan of the Experiment

Description of the Materials.-- In order for the reader to understand better the results obtained, an explanation of the construction of the instruments used in this study is given. The items of major significance are construction and organization of pupil study guides, the organization of experimental classrooms in pairs, the arrangement of pupils within the classroom, and construction and distribution of testing instruments for measuring the effectiveness of working in pairs or individually after each experimental lesson.

Textbook.-- The materials in this study came from the Ginn and Company textbook, "Your People and Mine",<sup>1/</sup> a fourth grade social studies book. As this text was being used by both fourth grade experimental groups, a new unit in the text was chosen which neither class had studied as yet. The study guides were designed from the material contained on pages 148-185.

Study Guides.-- The study guides used in this study are purely original and were produced to meet the needs of this particular experimental group. They are used in conjunction with materials already at hand, namely the textbook and workbook. However, they bear more significance to the child as they are a tool which he can manipulate easily.

Basically, what a study guide does is to capitalize on the material in a text, for instruction can not be limited to one textbook.

It certainly is to the advantage of the pupil to read material that is accompanied by questions and answers. If the details are made obvious, the understanding can be tied in later by means of critical thinking. These accompanying questions are especially essential to the slow child, but also useful to the excellent reader.

In this experiment, study guides were used which

<sup>1/</sup>Josephine Mackenzie, Your People and Mine, Ginn and Company, Boston, 1955.

emphasized the important material in the text. The study guides consisted of a series of questions in the left-hand column of a sheet of paper with the answers attached on the right-hand side. The guide was folded down the middle. As the child read a question and answered it to the best of his ability, he could turn out the answer to see if he was correct. If he was unable to answer a question, he referred to his textbook and then checked with his answer column. To enable the child to take out only the answer to the question on which he was working, dotted lines separated each answer. These dotted lines were cut by the child before he proceeded to study. The child was to understand that he might take out only the answer to the question he was studying.

The guides followed much the same pattern of organization as the text. Each chapter in the text was divided into sections, each having a title in heavy black type. These titles were included on the study guides with corresponding questions below each. In this way, each child read a section and studied the questions for that section and then went on to the next.

Directions as to text pages of study and procedure of use were given at the top of each guide. The number of questions on the guides in this study ranged from 18 to 20.

Tests.-- Objective tests were given on Friday of each week for each of the four experimental weeks. The tests

DIRECTIONS: Read pages 141-149 starting with "Free Land" and ending where it reads "—rain that falls." As you read each section, study the questions on the study guide which go with that section, each time unfolding only the answer to the question on which you are working.

<u>QUESTIONS</u>	<u>ANSWERS</u>
<u>Section I--Free Land.</u>	
1. Why do crops grow better in Seattle than in Illinois?	1. Because the climate is milder.
2. What was one good thing about the land?	2. It was free.
3. What is meant by "free land"?	3. Anyone can own land by living on it and using it for four years.
4. What do we call land which people got in this way?	4. A homestead.
5. Which part of our country was homesteaded rather than bought?	5. Western Part.
<u>Section II--The Trail to Oregon.</u>	
1. How did the people get to Oregon?	1. Covered wagon
2. What river did they cross going West?	2. Mississippi River
3. Why did they follow rivers?	3. To get water and wood for campfires.
4. In what parts do trees grow only beside streams?	4. Where rainfall is light.
5. What mountains do you cross going West?	5. Rocky Mountains
6. What broad river flows into the Pacific Ocean?	6. Columbia River.
<u>Section III--The Beginnings of Seattle.</u>	
1. How long and wide is Puget Sound?	1. 80 miles long and 5 miles wide
2. Where did they get the name Seattle?	2. It was an Indian chief's name.
3. What does Seattle mean?	3. "Many Waters"
4. What is one reason why the city has grown so large?	4. The many waters around it.
<u>Section IV--Climate Too Has Helped Seattle To Grow.</u>	
1. What do the winds do for the climate of Seattle?	1. They keep it warm in winter and cool in summer.
2. Is there much difference in the temperature there between June and December?	2. No, very little
<u>Section V--Washington, the Ever-green State.</u>	
1. What does Seattle lie between?	1. Two walls of high mountains.
2. What happens to the warm wet winds which blow from the Pacific?	2. They are forced up over the mountains and cooled.
3. What results from this?	3. Rain falls in the summer and snow in the winter.
4. How many inches of rain falls each year?	4. 33 inches

DIRECTIONS: Use pages 103-104 starting with "How Rainfall is Measured" and ending where it reads "the big saws". As you read each section, study the questions on the study guide which go with that section, each time unfolding only the answer to the question on which you are working.

<u>QUESTIONS</u>	<u>ANSWERS</u>
<u>Section I--How Rainfall Is Measured.</u>	
1. How is rainfall measured?	1. The rain is caught in a gauge.
2. How do they know how much rain fell during the year?	2. The weathermen add together all the inches of rain which fell during the year.
3. In what kind of climate do trees grow well?	3. Wet climates which are mild.
4. What are the slopes of the mountains between which Seattle lies covered with?	4. Thick forests.
<u>Section II--Why Seattle is the Youngest of Our Large Cities.</u>	
1. Why is Seattle the youngest of our large cities?	1. Because during the lifetime of one man, Seattle grew from a single cabin to one of our largest cities.
<u>Section III--The First Logs Were Sold.</u>	
1. What did they start to sell in Seattle?	1. Logs.
2. What started to buzz along Puget Sound?	2. 14 sawmills
<u>Section IV--Logging.</u>	
1. What do we call cutting down trees and getting them out of the forest?	1. Logging.
2. How high and how thick are the trees of the Northwest?	2. 250 feet high and 12 feet thick.
3. What do we call the workmen of the lumbercamps?	3. Lumberjacks.
4. What is the first step in cutting the tree?	4. To decide which way the tree shall fall.
5. What do they cut on that side?	5. A big gash.
6. What do two men do on the opposite side of the gash?	6. Work a saw.
7. What do they do when the tree is on the ground?	7. Trim off the branches.
8. What do they do to the tree which is left?	8. Cut it into shorter logs.
9. In the old days, how did they get the logs to the sawmills?	9. Oxen pulled them, or they were sent down chutes into the water.
10. How do logs get to the sawmills today?	10. They are dragged by tractors, or swung high overhead from tree to tree on steel ropes.
11. What do we call manufacturing the log into lumber?	11. Milling.
12. Where is this work done and how?	12. In sawmills by machines.
13. How do they get the log into the mill?	13. It is pulled up a long chute from the mill pond.
14. What happens as it travels up the chute?	14. Water washes it clean.



PART I--DIRECTIONS

Read each of the following questions to yourself carefully. Answer each one as briefly as possible by writing a single word, or two or three words on the lines provided at the end of each question. Example: Who discovered America?  
Columbus

1. In what state is Seattle? \_\_\_\_\_
2. What is the name of the narrow finger of the ocean off the coast of Seattle? \_\_\_\_\_
3. What do we call land which people own simply by living on it and using it for four years? \_\_\_\_\_
4. What long river did they cross going West? \_\_\_\_\_
5. What is the name of the long river which flows into the Pacific Ocean from Seattle? \_\_\_\_\_
6. How long is Puget Sound? \_\_\_\_\_
7. What does the name Seattle mean? \_\_\_\_\_
8. What business is carried on in Seattle? \_\_\_\_\_
9. In what section (direction) of our country is Seattle? \_\_\_\_\_
10. Is Seattle on a large harbor of deep water which is well protected?  
 (Yes or No) \_\_\_\_\_

PART II--DIRECTIONS

Read each question carefully to yourself. One of the answers below each question is true. Choose the answer which you think is correct and write the letter of that answer on the blank line provided to the right of the question. In cases where more than one answer is correct mark as many letters as are asked for on the lines provided.

11. Crops grow better in Seattle than in Illinois for what reason?
  - a. Because it is a shipping center
  - b. Because the climate is milder
  - c. Because sugar cane is raised there
  - d. Because much gold has been mined there. 11
12. At first, what was the good thing about the land in Seattle?
 

a. It was old	d. It was rocky
b. It was free	e. It was near the Mississippi

13. "Free land" is what kind of land?  
a. Land on a harbor  
b. Land given away by men  
c. Land anyone can own by living on it for 4 years  
d. Land taken from others 13
14. Which section of our country was homesteaded rather than bought?  
a. Southern c. Eastern  
b. Western d. Northeastern 14
15. On what did the people travel to Oregon?  
a. train c. covered wagon  
b. steamship d. horseback 15
16. For what TWO reasons did the people follow rivers going West?  
a. To get fresh water.  
b. To get wood for campfires. 16  
c. It was easier to travel.  
d. It led them in the right direction. 16
17. Why do trees grow only beside streams in some places?  
a. Because land is rocky  
b. Because rainfall is light  
c. Because much gold has been mined there  
d. Because it looks better 17
18. Which group of mountains are crossed going West?  
a. Rocky Mountains c. High Mountains  
b. White Mountains d. Black Hills 18
19. After whom did they name Seattle?  
a. An Indian chief c. A family  
b. The President d. A body of water 19
20. Why did they give this land the name Seattle?  
a. Because the name means "many waters".  
b. Because they liked the name.  
c. Because it is near the Mississippi.  
d. Because it was a fine place. 20
21. What has helped the city to grow so large?  
a. Location on many harbors.  
b. Many people.  
c. High Mountains.  
d. Sugar cane. 21
22. How do the winds help the climate of Seattle?  
a. They never blow.  
b. They change the temperature.  
c. They keep it warm in winter and cool in summer.  
d. They blow over the mountains. 22
23. How much difference is there in the temperature between June and December?  
a. None c. A great deal  
b. Very little d. 200 degrees 23



24. Between what does Seattle lie?  
 a. Two walls of high mountains  
 b. Two oceans  
 c. Two lakes  
 d. Two cities 24
25. What happens to the warm wet winds which are forced over the mountains?  
 a. They blow away. c. They are warmed.  
 b. They are cooled. d. They blow harder. 25
26. As these winds are cooled what TWO things happen to the weather?  
 a. Rain falls in summer.  
 b. Tornadoes come. 26  
 c. Snow falls in winter.  
 d. It gets very hot. 26
27. Each year, how many inches of rain falls in Seattle?  
 a. 200 inches c. 33 inches  
 b. 1 inch d. 100 inches 27
28. What good does this amount of rainfall do?  
 a. It gives many people work.  
 b. It keeps the fish alive.  
 c. It keeps land dry.  
 d. It keeps everything fresh and green. 28
29. What is Puget Sound like?  
 a. A large lake  
 b. A giant harbor of deep water  
 c. An ocean  
 d. A dam 29
30. By what other name is Washington known?  
 a. The "Sugar Bowl" c. The Evergreen State  
 b. The "Cotton Bowl" d. The Skyline State 30
31. What tool do they use to measure rain?  
 a. Thermometer c. A compass  
 b. A gauge d. A barometer 31
32. What do they do to know how much rain fell during the year?  
 a. Count the drops of rain.  
 b. Measure the wet ground.  
 c. Catch it in a pail.  
 d. Add together all the inches that fell during the year. 32
33. Trees grow well in what kind of climate?  
 a. Dry climates which are cold  
 b. Hot climates  
 c. Wet climates which are mild  
 d. Dry climates which are hot 33
34. With what are the slopes of the mountains between which Seattle lies covered?  
 a. Thick forests c. Beautiful flowers  
 b. Huge rocks d. Many houses 34

35. For what reason do we say Seattle is the youngest of our large cities?  
a. Because it is 4 years old  
b. Because it grew during the lifetime of one man  
c. Because many salmon are caught near there  
d. Because it is a great shipping center 35
36. What kind of business took place when there were only two houses?  
a. Selling of logs  
b. Selling of sugar cane  
c. Selling of cotton  
d. Manufacturing 36
37. Within 2 years, what started to buzz along Puget Sound?  
a. Sawmills                      c. Factories  
b. Bees                              d. Spinning wheels 37
38. Why did so many trees have to be cleaned from the hills beside Puget Sound?  
a. So skyscrapers could be built.  
b. So crops could be planted.  
c. So fish could be caught.  
d. So gold could be mined. 38
39. What do we call cutting down trees and getting them out of the forest?  
a. Milling                      c. Logging  
b. Manufacturing              d. Mining 39
40. Some of the giant trees are often how many feet high?  
a. 250 feet high              c. 3 feet high  
b. 1 foot high                  d. 20 feet high 40
41. How many feet thick are some of the giant trees?  
a. 1 foot thick                  c. 12 feet thick  
b. 200 feet thick              d. 2 feet thick 41
42. What was one bad thing about such big trees?  
a. The saw wouldn't go through.  
b. They couldn't be moved.  
c. They rotted inside.  
d. They were harder to cut. 42
43. What didn't the first settlers have that we have today to do the work?  
a. Animals                      c. Large saws  
b. Strong men                  d. Tools 43
44. What are the workmen of the lumber camps called?  
a. Workers                      c. Draggers  
b. Lumberjacks                  d. Fishermen 44
45. What is the first thing to do in cutting down a tree?  
a. Cut a gash.  
b. Saw away at the bottom.  
c. Drag the logs to the sawmill.  
d. Decide which way the tree shall fall. 45
46. When they decide on which side the tree shall fall, what do they do?  
a. Saw the tree down.              c. Wash it clean  
b. Cut a big gash.                  d. Haul it to the mill. 46

47. On the opposite side of the gash what do two men do?  
a. Work a saw.  
b. Trim the branches.  
c. Chop with an axe.  
d. Take off the bark. 48
48. When the tree is on the ground, what do the men do?  
a. Trim off the branches.  
b. Chop with an axe.  
c. Cut it in half.  
d. Take off the bark. 48
49. After the branches are trimmed, what is done?  
a. They drag it to the mills.  
b. They cut it into shorter logs.  
c. They wash it clean.  
d. They cut a big gash. 49
50. In early days, what TWO ways did they use to get the logs to the sawmills?  
a. By subways  
b. Sent down chutes to water 50  
c. Oxen pulled them  
d. By train 50
51. Today, in what TWO ways are logs taken out of the forest?  
a. Dragged by tractor  
b. Pulled by horses 51  
c. Swung high overhead from tree to tree on ropes  
d. By airplane 51
52. What carries the logs to the sawmills?  
a. Trucks or flatcars  
b. Busses  
c. Wagons  
d. Airplanes 52
53. What name do we give to manufacturing the log into lumber?  
a. Logging c. Mining  
b. Milling d. Fishing 53
54. Where is the milling done?  
a. In a factory  
b. In a sawmill  
c. In a barn  
d. On the wharf 54
55. How is the work done in the sawmills?  
a. By rollers  
b. By machines  
c. Children help do it  
d. People do it by hand 55
- 56.

56. How do they get the logs into the mill?  
a. It is pulled up a long chute from the mill pond.  
b. Men drag it in.  
c. Oxen drag it in.  
d. It is carried on ropes over head. 56
57. What happens as the log travels up the chute?  
a. Bark is torn off.  
b. Water washes it clean.  
c. It is painted.  
d. It is cut into boards. 57
58. Why is the log washed as it travels up the chute?  
a. So that dirt won't clog, or dull, the saws.  
b. So it will look nice.  
c. So it won't rot.  
d. So it will be lighter. 58
59. Which TWO of the following would go under milling?  
a. Logs are pulled up chutes from mill ponds.  
b. The direction in which the tree shall fall is planned. 59  
c. The tree falls to the ground.  
d. The logs are washed. 59
60. Which TWO of the following would go under logging?  
a. A big gash is cut on one side of the tree.  
b. The tree falls to the ground.  
c. The logs are washed.  
d. Logs are pulled up chutes from the mill pond. 60

consisted of the multiple-choice, simple recall, multiple response, and sequence type of items. The material upon which the test items were based was the same as that used for the study guides of Monday and Tuesday of that same week. The effectiveness of paired study as compared to individual study was measured from these tests.

#### . Method of Study

The purpose of this experiment was an endeavor to discover the effectiveness of paired study in comparison with individual study. The experiment was extended over four consecutive weeks. Each week, Monday, Tuesday and Friday, the experimental group followed the same general procedure of using the study guides alone and in pairs (alternating each day between the two classes), concluding with final testing. In other words, of the two classes, one acted as the experimental group and one the control group, alternately on Monday and Tuesday.

On Monday of each week, copies of the study guides were distributed to the pupils of Class A, which had been grouped at random into pairs. Directions were read and discussed to the point where everyone had complete understanding. Following this, one partner of the pair folded the study guide down the middle and proceeded to separate the answers by cutting along the dotted line. Everyone commenced to read and study at the same time. The children were instructed to divide the asking of the questions amongst themselves. As the study guides were divided into sections much like their text, this

was easily done.

At the conclusion, the teacher asked "Where", "Why", and "For what reason" type of questions to induce critical thinking. This was done only on the third and fourth week of experiment.

On that same day, pupils of Class B were issued copies of the same study guides and, in this instance, each pupil had his own copy. The same general procedure was followed with one exception. The pupils were instructed to read and study their guides individually.

On Tuesday of each week, pupils of Class B were grouped into pairs and studied cooperatively, while Class A pupils studied individually. Again leading questions, to induce critical thinking, followed study guide use.

The sixty-item objective test was administered on Friday of each week. The test instrument, being made up of more than one type of test item, was divided into parts which were preceded by ample directions. These directions were clarified carefully.

Each week each class worked at two study guides and one test, making a total of eight study guides and four tests for the four weeks. The time element for each lesson was approximately 45 minutes, which is the usual social studies time allotment. Needless to say, many finished previous to the conclusion of that time.



Table 1 shows the method of study, in brief, used during the experimental period. This is the weekly organization of the two classes into experimental and control groups.

Table 1. Plan of Experiment

Day of Week	Material	Class A	Class B
(1)	(2)	(3)	(4)
Monday	Study Guide	Pairs	Alone
Tuesday	Study Guide	Alone	Pairs
Friday	Test	Individual	Individual

Study Guide Procedure.-- The study guides were administered during the regular social studies period of the school day. The experiment was conducted for a period of four weeks with use of study guides on Monday and Tuesday of each week. A total of eight study guides were used. The experimental group consisted of the pupils from two fourth grade classrooms which will be called Class A and Class B.

On Monday of each week, Class A was given its study guides to be studied in pairs, while Class B, on the same day, studied the same guides individually. On Tuesday of the same week, Class B was given a new set of study guides which it studied in teams of two. On that same day, Class A was given the same study guides as Class B, only they studied them alone. This same procedure was carried on throughout

the four weeks.

During the first two weeks of experiment, the study guides were issued and studied and the tests were administered with no enrichment before, during or after. It was decided to include enrichment during the last two weeks of experiment. (See Tables 6 and 7)

Aside from making certain that directions were well understood, the teacher remained in the background inconspicuously, but alert to the activity going on. Observations were recorded during the lessons as to their worth or deficiencies.

The novelty of using study guides and the act of working in pairs served as motivators of interest and appeal.

Paired Study. --In order to determine whether the pupils learn and retain more when they study alone or in pairs, the children alternately worked on the same material in pairs and alone. The children were not paired according to intelligence or ability; however, in the event that a child of high intelligence was paired with a slow learner, a change was made. After pairing, the teacher scanned the group to determine whether two children with high and low intelligences respectively were seated together. Also she determined whether two children of very low ability were paired together. In instances such as these, she re-paired them. In summation of this point-the teacher was



responsible for grouping only where the need arose.

On the second and fourth week of the experiment, the children were allowed to choose their partners. Again, only in situations where the need arose did the teacher intervene. These situations being so few make this point insignificant in the pairing.

Immediately following the pairing of the groups, a study guide was given to each of the pairs. After the answers were separated by cutting along the dotted line, directions were clarified and the children began to study. Both members of the pair read the selections and then, alternately, asked the questions of each other.

Individual study.-- On Monday of each week the members of Class B studied alone the material on the same study guides that Class A studied in pairs. On Tuesday, this situation was reversed. It is important to point out here that all members of the entire experimental group had the opportunity to be the experimental group and the control group.

The study guides were distributed, one to each pupil. Each child folded his guide down the middle and separated the answers by cutting along the dotted lines. The directions were made more readily understandable and then each child was instructed to work on his study guide alone. In actuality, this meant that he would read the selections to himself and then study the questions. When he had completed reading the selections and studying the guide questions, he reviewed

them briefly.

Testing Procedure.-- In order to measure the effectiveness of paired study versus individual study in this fourth grade, a testing program was constructed to be administered at the conclusion of each week's use of study guides.

The weekly concluding testing program consisted of four tests, one being administered at the conclusion of each of the four experimental weeks. The four testing selections consisted of approximately sixty items taken from the text, "Your People and Mine", a social studies text used in this fourth grade. (See Sample Test on following pages). It must be noted that the material included in the tests was also included on the study guides of that same week.

The principal types of objective test items used in these tests included the following: the recall type, in which the child had to write the answer to a direct question; the multiple-choice type, which is made up of questions followed by three or four responses, only one of which is correct or definitely better; the multiple-response type of test item which is made up of questions followed by four or more responses, more than one of which is correct; and the rearrangement, or sequence type of item whereby the child was to arrange in correct order six or seven factual happenings. Precautions were taken to restate and rearrange the questions so that they would not be the same as those on the study guide. This was another check on whether there was

understanding. Ample directions were given preceding each different sections of the test.

In order to measure the effectiveness of working in pairs or alone, the test was divided at its midpoint, the first half of the items being taken from the pages of the text which were covered on Monday's study guide and the last half of the items taken from the pages covered on Tuesday's study guide. To elaborate further, on a sixty item test, Class A had studied the material for the first thirty items in pairs, while Class B had studied the same material alone. In turn, Class B had studied the material for the last thirty items in pairs, while Class A studied that alone.

By doing this, tabulations were easily made of paired study and individual study.

Method of Conducting the Testing Program.-- The tests were administered by the classroom teacher. These tests were administered on Friday of each experimental week during the regular social studies period. The general procedure for administering this test was as follows;

1. Each child was handed a test booklet on which he signed his name and date.
2. The directions were read carefully and clarified so no child had any doubt as to what he was to do.
3. Each child began on the signal of "go".
4. Any questions which arose during the test were answered by the teacher, provided they did not pertain

to the answer of a test item.

5. All test booklets were collected at once when the teacher was sure that most children were through and extra time for the others would be to no avail.

Scoring.-- The tests were scored by marking the number right and wrong. As the test was divided into items from material studied in pairs and items from material studied alone, tabulations were easily made by counting the number right in pairs and alone. Following this, distributions of raw scores were made and the data analyzed. (See Section 4, Analysis of Data).

### 3. Population of the Study

Background of the Population.-- The maximum number of pupils in this experimental group was 65, while the minimum number was 57. The population in this study was taken from two fourth grades in the West Wing Elementary School in the town of Abington, Massachusetts. The town, small and residential, has a population of 10,000 people who would probably be classed in the middle of the socio-economic scale. The children are of approximately equal socio-economic backgrounds.

Distribution of the I.Q.-- A frequency distribution of the Intelligence Quotients and Mental Ages as determined by the Lorge-Thorndike Intelligence Test of the children involved in the study, is given in Tables 2 and 3.

Table 2. Frequency Distribution of Intelligence Quotients of the Fourth Grade Population of the Study

Intelligence Quotient	Frequency
(1)	(2)
130-135 . . . . .	1
125-129 . . . . .	2
120-124 . . . . .	4
115-119 . . . . .	2
110-114 . . . . .	5
105-109 . . . . .	13
100-104 . . . . .	7
95-99 . . . . .	5
90-94 . . . . .	6
85-89 . . . . .	3
80-84 . . . . .	1
75-79 . . . . .	4
70-74 . . . . .	1

The mean I.Q. for this group was 102.5 and the standard deviation was 13.7. The number of I.Q.'s included in this table was 54.

**Table 3. Frequency Distribution of the Mental Ages of the Fourth Grade Population.**

Mental Age (Months)	Frequency
(1)	(2)
136-140 . . . . .	4
131-135 . . . . .	4
126-130 . . . . .	4
121-125 . . . . .	5
116-120 . . . . .	10
111-115 . . . . .	9
106-110 . . . . .	5
101-105 . . . . .	3
96-100 . . . . .	3
91-95 . . . . .	2
86-90 . . . . .	3
81-85 . . . . .	1
76-80 . . . . .	1

The mean of the Mental Ages of this group is 114.11 months, and the standard deviation is 14.6 months. The number of Mental Ages included in this table was 54.

#### 4. Analysis of Data

Before test scores or other quantitative data can be comprehended and interpreted, it usually is necessary to summarize them. It was the purpose of this study to discover the effectiveness of paired study as compared to individual study in fourth grade social studies. The data will be analyzed for the following purposes;

1. To find if there is more retention when pupils study in pairs.

2. To find if there is more retention when pupils study alone.
3. To find if there is more retention when an enrichment program follows study when pupils study in pairs.
4. To find if there is more retention when an enrichment program follows study when a pupil studies alone.
5. To indicate the attitude of the pupils toward paired study and individual study.
6. To indicate informal teacher observations.

Achievement of Pupils Working Alone and in Pairs.-- The following tables are comparisons of the achievement of pupils working in pairs and alone. These results were obtained from the weekly tests which were given on Friday of each experimental week. Also included are two tables comparing the results when working in pairs and alone with enrichment following study and with no enrichment following study.

Table 4. First Week - Achievement of Pupils Working Alone and in Pairs.

Group	N.	Mean	S.D.	S.E. M.	Diff. M.	S.E. Diff.	C.R.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Pairs	64	15.9	5.6	.70	.6	.94	.64
Alone	64	16.8	4.8	.60			



During the second week of study guide use in pairs and individually, these results were obtained from the testing. Table 5 shows the mean score of those working in pairs to 18.9 compared to 18.4 for those working alone. The difference between the means of .5 was in favor of those working in pairs. Again, however, the critical ratio of .42 shows this difference to be insignificant statistically.

Table 5. Second Week - Achievement of Pupils Working Alone and in Pairs.

Group	N.	Mean	S.D.	S.E. M.	Diff. M.	S.E. Diff.	C.R.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Pairs	58	18.9	6.1	.80			
Alone	58	18.4	6.7	.88	.5	1.19	.42



After the third week of study guide use, the children were again tested for results. Table 6 compares the results of those working in pairs with those working alone. The mean score for those working in pairs was 22.4 as compared to 20.4 for those working alone. The difference between the means of 2.0 was in favor of those working in pairs. There is a slightly higher critical ratio during the third week. However, this is still statistically insignificant.

Table 6. Third Week - Achievement of Pupils Working Alone and in Pairs.

Group	N.	Mean	S.D.	S.E. M.	Diff. M.	S.E. Diff.	C.R.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Pairs	57	22.4	6.1	.80	2.0	1.21	1.7
Alone	57	20.4	6.9	.91			

After the fourth and final week of grouping in pairs and working alone on study guides, the following results were obtained from the final test. Table 7 shows the mean score of those studying alone to be 23.6 while those studying in pairs had a mean score of 22.9. The mean difference was .7 in favor of those working alone. Again, a critical ratio of .74 shows this difference to be statistically insignificant.

Table 7. Fourth Week - Achievement of Pupils Working Alone and in Pairs

Group	N.	Mean	S.D.	S.E. M.	Diff. M.	S.E. Diff.	C.R.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Pairs	65	22.9	5.4	.66			
Alone	65	23.6	5.5	.68	.7	.95	.74

At the offset of this study it was planned to exclude enrichment of any kind. For the initial two weeks of this study the children were introduced to the material, given their study guides to study in pairs or alone, and finally tested as to effectiveness. There was no critical thinking whatsoever. After the first two weeks of experiment, enrichment was included before issuing the study guides and after the study guides were collected previous to testing.

This was in the form of questions which would help the children tie together and give meaning to the factual data of the study guides. This system of critical thinking gives meaning and significance to the data studied.

The following tables compare the results of the tests with no enrichment, to the results of the tests with enrichment. Table 8 compares the results of the first week's test with no enrichment after study, to the fourth week's test with enrichment after study for those who studied alone.

The mean score of pupils who studied alone with enrichment after study was 23.6 as compared to 16.8 for pupils who studied alone with no enrichment after study. The mean difference of 6.8 was in favor of those pupils who studied alone with enrichment after study. The critical ratio of 7.5 shows this difference to be statistically significant.

Table 8. Achievement of Pupils Working Alone with Enrichment and without Enrichment

Group	N.	Mean	S.D.	S.E. M.	Diff. M.	S.E. Diff.	C.R.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Alone (no enrichment)	64	16.8	4.8	.60			
					6.8	.91	7.5
Alone (enrichment)	65	23.6	5.5	.68			

Table 9 compares the results of the first week's test, with no enrichment after study, to the fourth week's test with enrichment after study for those who studied in pairs.

The mean score of those working in pairs with enrichment after study was 22.9 as compared to 15.9 for pupils who studied in pairs with no enrichment after study. The difference of 7.0 between the two means was in favor of those working in pairs followed by enrichment. The critical ratio of 7.3 shows this difference to be significant statistically.

Table 9. Achievement of Pupils  
Working in Pairs with  
Enrichment and without  
Enrichment

Group	N.	Mean	S.E.	S.E. M.	Diff. M.	S.E. Diff.	C.R.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Pairs (no enrichment)	64	15.9	5.6	.70			
Pairs (enrichment)	65	22.9	5.4	.66	7.0	.96	7.3

Pupils' Evaluation of Methods and Materials.--- The intent of this study was to measure the effectiveness of paired study as compared to individual study. Through the use of study guides and test tools, results were obtained on the performance of the children. However, an instrument

had to be used to measure pupil attitude toward and interest in working in pairs or alone.

Questionnaire.-- At the end of the experiment, a questionnaire, covering a miscellaneous assortment of items, was distributed and answered by the pupils. Through this questionnaire, evaluations of techniques and procedures were made and some insight as to improvements, variations and changes was obtained.

Table 10 tabulates their preferences in percentages. The results shown in this table indicate that not only do the children prefer paired study, but that they are aware of the benefits of this type of study.

Table 10. Pupil Questionnaire

Did you like -	Total	%
(1)	(2)	(3)
1. using the Study Guides?		
Yes . . . . .	55	88.7
No . . . . .	7	11.3
2. studying with a partner rather than alone?		
Yes . . . . .	47	75.8
No . . . . .	15	24.2
3. discussing it with the teacher after you finished reading?		
Yes . . . . .	51	82.3
No . . . . .	11	17.7

Name \_\_\_\_\_ School \_\_\_\_\_

Put "yes" or "no" in front of each question:

Did you like:

1. \_\_\_\_ using the Study guides?
2. \_\_\_\_ studying with a partner rather than alone?
3. \_\_\_\_ discussing it with the teacher after you finished reading?
4. \_\_\_\_ asking each other questions?
5. \_\_\_\_ choosing your own partner?

Did you think:

6. \_\_\_\_ you learned more studying with a partner?
7. \_\_\_\_ you learned easier and quicker with a partner?
8. \_\_\_\_ you learned more when you wrote the answers?
9. \_\_\_\_ the Study Guides helped you remember the important materials?
10. \_\_\_\_ the Study Guides were easy to understand?
11. \_\_\_\_ the teacher's directions were easy to understand?
12. \_\_\_\_ the noise bothered you when you were studying together?
13. \_\_\_\_ it helped to discuss it as a class?
14. \_\_\_\_ you would like to work together more often?
15. \_\_\_\_ Is there anything you did not like about working together?  
(If yes, tell why)  
\_\_\_\_\_  
\_\_\_\_\_
16. \_\_\_\_ Is there anything you did not like about working alone?  
(If yes, tell why)  
\_\_\_\_\_  
\_\_\_\_\_
17. \_\_\_\_ Is there anything you did not like about the Study Guides?  
(If yes, tell why)  
\_\_\_\_\_  
\_\_\_\_\_
18. \_\_\_\_ What did you enjoy most about the lessons during the past four weeks?  
\_\_\_\_\_





Table 10. (Cont.)

Did you think-	Total	%
(1)	(2)	(3)
13. it helped to discuss it as a class?		
Yes . . . . .	57	91.9
No . . . . .	5	8.1
14. you would like to work together more often?		
Yes . . . . .	47	75.8
No . . . . .	15	24.2
15. Is there anything you did not like about working together?		
Yes . . . . .	17	27.4
No . . . . .	45	72.6
16. Is there anything you did not like about working alone?		
Yes . . . . .	32	51.6
No . . . . .	30	48.4
17. Is there anything you did not like about Study Guides?		
Yes . . . . .	5	8.1
No . . . . .	57	91.9

Analysis of Pupil Questionnaire.-- The following results of pupil attitude and interest was revealed from the questionnaire. Such items as lesson preferences, likes and dislikes, as well as the social element were shown.

1. It was noted that the percentage of pupils which did not like using the study guides consisted of, slow learners, for the most part.

2. Question 2 found that over 75% of the children preferred working with a partner. Those who did not enjoy working with a partner were also those who received no pleasure from using the study guides. In relation to this, the highest percentage shown from the questionnaire was for those preferring to choose their own partner.
3. Over 75% of the children felt that paired study insured their learning more and in an easier and quicker fashion.
4. In this section of the study, the experimental group did not experiment with writing the answers to the questions on the study guide. Therefore, question 8 was omitted for this group.
5. It was noted that a seemingly higher percentage of children were disturbed by the noise when studying in pairs. However, it is apparent that this should be so, since it was their initial experience with this type of study.
6. In spite of the fact that the results of this study were statistically insignificant, the fact, that over 75% of the pupils would like to work in pairs more often, is strongly in favor of paired study. It would seem that in such instances appeal would yield some benefits.

7. The following comments were noted in regard to question 15 which asked if there was anything they did not like about working together. These points of dislike were from the 24% which answered "yes", and appeared three or more times:

"The persons in front bothered me."

"There were too many disagreements."

"The partners I had were in a hurry."

"Sometimes my partner was smarter than I."

"There was too much noise."

8. Question 16 asked if there was anything they did not like about working alone. Over 51% answered "yes", while 48% answered "no". The following are a few of the children's comments, appearing four or more times, as to what they did not like:

"It was not fun."

"I didn't learn as much and it was boring."

"It was hard to judge if you were right or wrong."

"When you are alone you let yourself cheat."

"You couldn't check with anyone."

9. Question 17 asked if there was anything they did not like about the study guides. The following were the comments of the 8.1% of the children who had a dislike. These comments appeared two or more times:

"Sometimes I pulled out the wrong answer."

"It would be better if they came already cut."

10. The last question, which asked what they enjoyed most about the lessons of the previous four weeks, brought the following comments which appeared more than five times:

"The tests and working together."

"I liked best the study guides with the answers."

"It was a lot of fun."

"I liked everything."

"I got better marks and was glad."

"I think I learned more than before because I do not like social studies very much, but now I do."

Teacher's Observations.-- The teacher should observe closely and frequently the pupil's performances in study and testing. Through such observations, many important items of information can be gathered such as deficiencies and achievements, which can not all be shown through testing.

The observations of this study were entirely objective. By supplementing these observations with relative information from the questionnaire, the following items of interest have been compiled.

It was noticed by the observer that the children greatly enjoyed the use of the study guides and working in pairs. It appeared that this type of study kept them vigorously at work with a great deal of added interest. One point of illustration is the sitting position of the children when working

with a partner. When working alone, many of the children slouched or straddled their chairs. When working with a partner, they sat in a good position, full of vigor and life. (Photographs on the following page.)

Another point of interest noticed by the observer was the way in which the pupils attacked unfamiliar words, because it was so important for comprehension of that sentence or question. The teacher's assistance was needed here.

It was also noticed that the slow learners were finishing much too quickly when working alone. This would lead to the assumption that they were not studying carefully but were looking at the answer column before they had thoroughly read the material and tried to answer the question independently.

The children attacked the weekly tests with great anticipation. They seemed anxious to see how many they could answer correctly.

In conclusion, it must be pointed out that they enjoyed tremendously having the opportunity of working with another child toward a similar goal.



WORKING ALONE



WORKING IN PAIRS



WORKING ALONE



WORKING IN PAIRS

## CHAPTER III

Margaret McElroy

### EFFECTIVENESS OF PAIRED STUDY VERSUS INDIVIDUAL STUDY IN FOURTH GRADE SOCIAL STUDIES

#### 1. Statement of the Problem

It is the intent of this study to discover the effectiveness of paired study versus individual study in Grade 4B social studies. The data will be analyzed for the following purposes:

1. To find out if there is more retention when pupils study in pairs.
2. To find out if there is more retention when pupils study alone.
3. To find out if there is more retention when an enrichment program follows the pupils studying in pairs.
4. To find out if there is more retention when an enrichment program follows pupils studying alone.
5. To correlate, using the total population of the study, the Intelligence Quotients of each individual with his average score on two weekly tests.
6. To indicate the attitudes of the pupils toward paired study in terms of the following criteria:



- a. Whether pupils liked working together.
- b. Whether pupils liked working alone.
- c. Whether pupils liked discussing the material covered on the study guides with the teacher and class.
- d. Whether the pupils liked discussing the material with their partners.
- e. Whether the pupils thought using the study guides helped in remembering important facts.
- f. Whether the pupils understood the directions of the study guides and the teacher.
- g. Whether pupils thought the noise was bothersome.
- h. What the pupils liked about studying in pairs.
- i. What the pupils disliked about studying in pairs.

7. To indicate informal teacher observations.

## 2. Plan of the Experiment

Description of the Materials.--Textbooks.-- The reading material for this study came from two fourth grade social studies books. The material used for the first three weeks of the study was taken from Silver Burdett Company's, "Our Big World"<sup>1/</sup>. The material used for study during the last week of the study was taken from the Iroquois', "People of Other

<sup>1/</sup> Harlan H. Barrows, Edith P. Parker and Clarence W. Sorenson, Our Big World, Silver Burdett Company, New York, 1946, pp. 25-49

Lands"<sup>2/</sup>. The former, being the basic text of the particular group being used; the latter, being a supplementary text for the same group.

Study Guides.-- Study guides were constructed which pointed out the important facts covered in the reading material. These guides were made up of a series of questions with attached answers. The questions were divided under the subject headings given in the text. These questions demanded single word or phrase answers. The study guide page is set up in such a way that the answers are to the right of each question. The answer portion of the page was treated in two ways. The answers were concealed in some manner. On three groups of study guides, the answers were folded back and cut individually. On one group of study guides, the answer portion of the paper was retained by the teacher while the children wrote the answers. As each study guide page was finished, the children were given the answer portion with which to check their answers.

Tests.-- An objective test was prepared to check the material covered by the study guides. This comprehensive check was in reality two tests combined and presented to the children in the form of one test. One section of the test checked the material covered in pairs and the other section checked the material covered individually.

<sup>2/</sup> G.R.Bodley, People of Other Lands, Iroquois Publishing Company, New York, 1947, PP.25-27

Directions: After you read the section silently, use the study guide to help you remember. Decide on an answer for each question. Check your answer by unfolding the cut paper opposite each question.

A. In an Eskimo settlement

- |   |  |
|---|--|
| 1. On what coast of Alaska do most of the Eskimos live?       | 1. north-western                               |
| 2. What kind of weather do they have there during the summer? | 2. strong winds, heavy rains and thick fogs.   |
| 3. What kind of weather do they have during the winter        | 3. bitter winds and snow                       |
| 4. What are the older houses of an Eskimo village made of?    | 4. sod   |
| 5. What are <u>most</u> of the houses made of?                | 5. logs  |
| 6. Where are the trees that grow in this land?                | 6. Trees grow back along the banks of streams. |
| 7. Why is the entrance room of the log house so important?    | 7. It keeps out wind and rain.                 |
| 8. How many rooms are there in one of these houses?           | 8. two   |
| 9. What do the Eskimos use for cooking heat?                  | 9. whale oil lamps                             |
| 10. What do the Eskimos live in during the summer?            | 10. tents                                      |
| 11. Why do the Eskimos move around in the summer?             | 11. Looking for fish, rounding up reindeer.    |

B. Kayaks, umiaks and sleds

- |   |                                   |
|---|-----------------------------------|
| 1. How do the Eskimos travel during the summer? | 1. by boat                        |
| 2. Where do they travel?                        | 2. along the coast and on streams |

Eskimoland (continued)

2.

- |   |  |
|---|--|
| 3. What are the hunting canoes used by the Eskimos called?          | 3. kayaks  |
| 4. What are these canoes made of?                                   | 4. driftwood and sealskin                            |
| 5. How does a man get in the kayak?                                 | 5. through an opening in the center                  |
| 6. How does the Eskimo make the kayak move through the water?       | 6. double paddle                                     |
| 7. It takes a great deal of _____ to handle a kayak in rough water. | 7. skill or practice                                 |
| 8. What does an Eskimo keep fastened on top of his kayak?           | 8. weapons   |
| 9. How many people travel in a kayak?                               | 9. one, the paddler                                  |
| 10. What are the bigger boats used by the Eskimos called?           | 10. umiaks   |
| 11. What is a umiak big enough to carry?                            | 11. a whole family and its supplies                  |
| 12. What are umiaks made of?  | 12. walrus skin and driftwood                        |
| 13. How do the Eskimos travel in winter?                            | 13. dog sled   |
| 14. How many dogs make up a team?                                   | 14. seven to thirteen                                |
| 15. Who is the most important member of the team?                   | 15. lead dog   |
| 16. How is a lead dog chosen?                                       | 16. The eskimo chooses one who understands commands. |
| 17. How does an Eskimo protect his dogs against ice? rough weather? | 17. putting sealskin boots on dog's feet             |
| C. <u>Around the year</u>   |  |
| 1. What are the two most important jobs of the Eskimos?             | 1. fishing and hunting                               |
| 2. What kind of fish do the Eskimos catch in summer?                | 2. salmon  |

Eskimoland (continued)

5.

- |   |  |
|---|--|
| 3. What happens to the reindeer in August of each year?                               | 3. driven from hills into pens         |
| 4. What happens to the reindeers while they are in the pen?                           | 4. some killed                         |
| 5. What do the Eskimos get from the reindeer?   | 5. food and clothing                   |
| 6. What part of the reindeer is used for clothing?                                    | 6. skins                               |
| 7. How do the Eskimos fix the skins?  | 7. scrape and dry                      |
| 8. What do the Eskimos use for thread?  | 8. sinews                              |
| 9. What animals do the Eskimos hunt in winter?  | 9. seal and walrus                     |
| 10. What kind of supplies do the Eskimos lay in during the fall and winter?           | 10. meat, blubber, whale oil and skins |
| 11. The Eskimos are skillfull enough to get everything they need for _____ and _____. | 11. clothing and shelter               |

Directions: After you read the section silently, use the study guide to help you remember. Decide on the answer for each question. Check your answer by unfolding the cut paper opposite each question.

A. A City in Alaska

- |   |                                    |
|---|------------------------------------|
| 1. What is the name of the city shown in the picture?                       | 1. Juneau                          |
| 2. Where is this city located?  | 2. Alaska                          |
| 3. What coast is this city on?  | 3. southeastern                    |
| 4. Around the city of Juneau, the _____ are close to the sea?               | 4. homes or houses                 |
| 5. Therefore, many homes in Juneau are built on the side of the _____.      | 5. mountain                        |
| 6. What valuable rock is found inside the mountain?                         | 6. rock that contains gold         |
| 7. What covers the lower slopes of the mountain?                            | 7. evergreen trees                 |
| 8. Besides mining, what other job do the people of Juneau work at?          | 8. working in the sawmill          |
| 9. What makes the little "penninsula" shown in the picture?                 | 9. waste rock from a gold mine     |
| 10. What kind of sidewalks do they have in Juneau?                          | 10. wooden plank sidewalks         |
| 11. What is nailed crosswise on the sidewalks of steep streets?             | 11. narrow strips of wood          |
| 12. How do these special sidewalks help the people?                         | 12. They won't slip on rainy days. |
| 13. Who makes many of the gifts sold to tourists?                           | 13. Indians                        |
| 14. What are many of these gifts made of?                                   | 14. wood                           |
| 15. What other work do the many men of Juneau work at?                      | 15. fishing                        |
| 16. What kind of fish is caught?  | 16. salmon                         |
| 17. What happens to the fish after it is caught and brought back to Juneau? | 17. It is canned in factories.     |

The Cool Herth p. 162-164 (continued)

B. Hundreds of miles of mountains, coast and forest

- |  |  |
|--|--|
| 1. In the forests south of Juneau around the boundary between Canada and the United States, the trees are _____. | 1. large or tall   |
| 2. What do they call the men who cut down trees?   | 2. lumberjacks   |
| 3. Why do the men have to be careful when a tree falls?  | 3. So the falling tree won't harm any other trees.                                 |
| 4. What are the branches of the tree sawed into?   | 4. logs  |
| 5. What are three things would you see, if you were flying over a city near the forests?                         | 5. 1. piles of lumber<br>2. ships that carry lumber<br>3. fishing boats            |
| 6. Name five places where the people of the coast work?  | 6. 1.) forests<br>2.) fishing boats<br>3.) farms<br>4.) mills<br>5.) trading ships |
| 7. What is the weather along the coast like?   | 7. cold and rainy  |



Name \_\_\_\_\_

Date \_\_\_\_\_

1. Kayaks are made of driftwood and \_\_\_\_\_  
a. sealskin c. walrus skin  
b. canvas d. whale skin
2. Umiaks are sometimes used to carry the \_\_\_\_\_  
a. reindeer c. lumber  
b. family d. gold
3. In summer, the Eskimos often live in tents made of \_\_\_\_\_  
a. canvas c. nylon  
b. cotton d. wool
4. The few trees that grow in the far north are found \_\_\_\_\_  
back from the  
a. stream c. river  
b. coast d. mountain
5. Which word tells about the kind of winds that blow \_\_\_\_\_  
in northern Alaska during the winter?  
a. bitter c. cool  
b. warm d. gentle
6. Umiaks are made of driftwood and \_\_\_\_\_  
a. sealskin c. whale skin  
b. walrus skin d. canvas
7. The Eskimo gets into the kayak through an opening \_\_\_\_\_  
in the  
a. underneath c. end  
b. side d. center
8. In northern Alaska, what kind of weather don't they \_\_\_\_\_  
have during the summer?  
a. strong winds b. warm breezes  
b. heavy rains d. thick fogs
9. In the summer the Eskimos catch \_\_\_\_\_  
a. herring c. seals  
b. cod d. salmon
10. In August, the Eskimos herd the reindeer from the \_\_\_\_\_  
hills to the  
a. pasture c. mountains  
b. pens d. coast
11. The valuable rock found inside the mountains of \_\_\_\_\_  
of Juneau contains  
a. tin c. lead  
b. gold d. steel
12. The lower slopes of the mountains of Juneau are \_\_\_\_\_  
covered with  
a. snow c. roads  
b. trees d. ice

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Kayaks are made of driftwood and \_\_\_\_\_  
a. sealskin c. walrus skin  
b. canvas d. whale skin
2. Umiaks are sometimes used to carry the \_\_\_\_\_  
a. reindeer c. lumber  
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hills to the  
a. pasture c. mountains  
b. pens d. coast
11. The valuable rock found inside the mountains of \_\_\_\_\_  
of Juneau contains  
a. tin c. lead  
b. gold d. steel
12. The lower slopes of the mountains of Juneau are \_\_\_\_\_  
covered with  
a. snow c. roads  
b. trees d. ice

13. The streets of Juneau are very  
 a. flat c. wide  
 b. steep d. crooked 13. \_\_\_\_\_
14. Because the streets of Juneau are so hard to climb  
 the people have built special  
 a. sidewalks c. elevators  
 b. cars d. shoes 14. \_\_\_\_\_
15. Gifts to sell the tourists are made by the  
 a. fishermen c. hunters  
 b. Eskimos d. Indians 15. \_\_\_\_\_
16. Some of the men of Juneau work in factories that  
 a. corn c. cedar  
 b. salmon d. wood 16. \_\_\_\_\_
17. Juneau is located right on the  
 a. boundary c. highway  
 b. coast d. island 17. \_\_\_\_\_
18. In Juneau, special sidewalks are built so that the  
 people won't  
 a. walk c. crawl  
 b. run d. slip 18. \_\_\_\_\_
19. When a tree falls in the forest, the men are  
 especially  
 a. careless c. careful  
 b. happy d. sad 19. \_\_\_\_\_
20. Around Juneau, the mountains are close to the  
 a. lake c. river  
 b. sea d. stream 20. \_\_\_\_\_

II. Complete the sentence by writing the correct word on the blank to the left.

1. The Eskimo that handles a kayak must have a great  
 deal of 1. \_\_\_\_\_
2. The kayaks are used mostly for 2. \_\_\_\_\_
3. On the top of the kayak, the paddler carries his 3. \_\_\_\_\_
4. The trees that grow in the far north are found along  
 the banks of 4. \_\_\_\_\_
5. Most of the houses in the Eskimo villages are made  
 of 5. \_\_\_\_\_
6. Name two reasons that explain why the Eskimos move  
 in the summer 6. \_\_\_\_\_
7. What are the two most important jobs of the Eskimo 7. \_\_\_\_\_

8. What are two animals that the Eskimos hunt in winter? 8. \_\_\_\_\_
9. What are two things the Eskimos get from the reindeer? 9. \_\_\_\_\_
10. Many of the homes in Juneau are located on the 10. \_\_\_\_\_
11. The sidewalks of Juneau are made of 11. \_\_\_\_\_
12. What is nailed across the sidewalks of Juneau? 12. \_\_\_\_\_
13. In the forests south of Juneau the trees are very 13. \_\_\_\_\_
14. Trunks of these trees are sawed into 14. \_\_\_\_\_
15. If you were flying over a city near the boundary 15. \_\_\_\_\_  
between the United States and Canada ( along the  
coast), what might you see? List two things.
16. List three things the men of the coast, near the 16. \_\_\_\_\_  
boundary of the United States, work at.

## IV. Matching

## Column I

1. threads
2. boats
3. Juneau
4. Understands commands
5. cold and rainy
6. Eskimo home
7. cut trees
8. fishing
9. whale oil lamps
10. waste rock
11. tourists

## Column II

- a. two rooms
- b. cooking heat
- c. kayaks
- d. lead dog
- e. ainews
- f. lumberjack
- g. city
- h. wooden gifts
- i. coastal weather
- j. "peninsula"



1. Put an x on the NORTHWESTERN coast of Alaska.
2. Put an A on Alaska.
3. Put a B on the boundary of the United States and Canada.
4. Put a J where you think Juneau is located.
5. Put a C on Canada.
6. Use the map to help you complete these sentences.
6. Juneau is located on the coast of \_\_\_\_\_.
7. Canada is located between the United States and \_\_\_\_\_.

## 1. Method of Study

Study Guide Procedure.-- In order to make a comparison of two manners of study, it was necessary to use the following procedure. Two groups of children were involved, both using the same study guides. The children used the study guides on Monday and Tuesday of each week and were tested on the material covered, on Friday of the same week. The material covered on Monday's study guide was used in pairs in one group at the same time this study guide was being used individually by the other group. On Tuesday, this plan was reversed, the paired group of Monday becoming now the alones of Tuesday and the alones of Monday becoming the Tuesday pairs.

Paired Study.-- Each group was involved once each week in paired study. The children used the study guides with the social studies text while working in pairs. The teacher set the group up into pairs. She took these factors into consideration - (1) children prefer working with a partner they like, and (2) children prefer working with a partner of the same sex. In some cases, where an odd number of children were present, a group of three would be formed. No effort was made by the teacher to create a paired pattern. Each child had a variety of partners.

The children were directed to read the material under each subject heading, silently. When both were finished, they would take turns reading the questions. As each question was read, it would be discussed until the best



answer was decided upon. They were instructed to refer to the text. The children were also instructed to check each answer immediately if they were not writing them. Each child worked with a partner.

Individual Study.-- Children used the same study guide as the paired group. They were also instructed to read the material under each subject heading, silently, and when they had finished, do the corresponding study guide questions. After the child decided upon an answer, he was instructed to check it unless the answer was to be written. The whole study guide was completed in this manner. Each child worked individually.

Testing Procedure.-- The tests were given to the children on Friday of each week of the study. Each test consisted of sixty questions on the material covered on Monday and Tuesday. These tests were constructed in a particular way in order to form a basis for the comparisons made in this study. The test given to the children on Friday was, in reality, a combination of two separate tests. Each question was keyed; either it was an item that tested Monday's material or an item that tested Tuesday's material, assuming the study guides and the material to be of equal difficulty. When the test was scored, two results were received for each child for that week. One score was considered to be the individual's achievement when he worked alone and the other score would be the individual's achievement when he worked

with a partner. Three types of items were used throughout the series of tests. A map question was included in each test. The three types of items used were - multiple choice, completion and matching.

### 3. Population of the Study

Background of the Population.-- Sixty children were involved in the study at various times over the four week period. Absenteeism caused the actual working number used each week to be somewhat lower. The highest number involved was fifty-four cases and the lowest number was forty-seven cases. The children participating in the study were all attending the South School in Hingham, Massachusetts. The population might be said to come from a fairly high socioeconomic level. All the children were in grade four - thirty in each of the two class groups used. There were thirty-four female children and twenty-six male children.

Distribution of the I.Q.-- The I.Q.'s of the children, as of October 1st of the year immediately preceding this study, ranged from a high of 146 to a low of 81. The measuring instrument used was the California Test of Mental Maturity, Intermediate Form S. The total I.Q. score was used.

Table 11. Frequency Distribution of  
Intelligence Quotients of  
the Fourth Grade Population  
of the Study

Intelligence Quotient	Frequency
(1)	(2)
144-146	1
141-143	0
138-140	0
135-137	0
132-134	3
129-131	1
126-128	6
123-125	2
120-122	4
117-119	4
114-116	4
111-113	4
108-110	6
105-107	7
102-104	6
99-101	4
96-98	3
93-95	2
90-92	2
87-89	0
84-86	0
81-83	1

Mean - 111.75      Standard Deviation - 11.92  
Number of I.Q.'s - 60

Distribution of the Mental Ages.-- The mental ages of these children was computed as of October 1st, using the California Test of Mental Maturity given at that time. Mental ages ranged from a high of 154 months to a low of 101 months or from a high of 12.10 years to a low of 8.5 years.

Table 12. Frequency Distribution of the Mental Ages of the Fourth Grade Population.

Mental Age (Months)	Frequency
(1)	(2)
154-152 . . . . .	2
149-151 . . . . .	1
146-148 . . . . .	2
143-145 . . . . .	2
140-142 . . . . .	2
137-139 . . . . .	1
134-136 . . . . .	4
131-133 . . . . .	4
128-130 . . . . .	5
125-127 . . . . .	4
122-124 . . . . .	6
119-121 . . . . .	3
116-118 . . . . .	9
113-115 . . . . .	3
110-112 . . . . .	7
107-109 . . . . .	1
104-106 . . . . .	2
101-103 . . . . .	2

Mean - 124.45 months or 10 yr, 4 months

Standard Deviation - 12.77 months      Number of Mental Ages included - 60.

#### 4. Analysis of Data

The data is to be analyzed for the following purposes:

1. To find out if there is more retention when pupils study in pairs.
2. To find out if there is more retention when pupils study alone.
3. To find out if there is more retention when an enrichment program follows the pupils' study in pairs.
4. To find if there is more retention when enrichment follows pupils' study alone.
5. To indicate the attitudes of the pupils toward paired study in terms of the following criteria -
  - a. Whether pupils liked working together.
  - b. Whether pupils liked working alone.
  - c. Whether pupils liked discussing the material covered on the study guides with the teacher and the class.
  - d. Whether the pupils liked discussing the materials with their partners.
  - e. Whether the pupils thought using the study guides helped in remembering important facts.
  - f. Whether the pupils understood the directions of the study guides and the teacher.
  - g. Whether the pupils thought the noise was

bothersome.

h. What the pupils liked about studying in pairs.

i. What the pupils disliked about studying in pairs.

6. To indicate informal teacher observations.

Table 13. First Week - Achievement of Pupils Working Alone and in Pairs.

Group	N.	Mean	S.D.	S.E. M.	Diff. M.	S.E. Diff.	C.R.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Pairs	54	22.43	4.32	.588			
Alones	54	23.02	3.83	.521	.59	.785	.75

This table shows the results of the initial week. No enrichment was given. Examination of the means shows a .59 difference in favor of the alones, with a critical ratio of .77.

Table 14. Second Week - Achievement of Pupils Working Alone and in Pairs.

Group	N.	Mean	S.D.	S.E. M.	Diff. M.	S.E. Diff.	C.R.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Pairs	51	22.05	4.92	.689	.43	.934	.46
Alones	51	22.48	4.50	.630			

This table shows the results of the study carried on during the second week. No enrichment was given. The means show a difference of .43, with a critical ratio of .46 in favor of the alones.

Table 15. Third Week - Achievement of Pupils Working Alone and in Pairs

Group	N.	Mean	S.D.	S.E. M.	Diff. M.	S.E. Diff.	C.R.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Pairs	52	24.04	3.74	.518	.19	.757	.25
Alones	52	24.32	3.98	.552			

This table shows the results of the third week of the study. During this week, two different aspects of the study were introduced, the answers were written and the material enriched through class discussion. The means were 2.00



higher than the means of the previous two weeks study. There was a .19 difference between the means in favor of the alones with a critical ratio of .25.

Table 16. Fourth Week - Achievement of Pupils Working Alone and in Pairs

Group	N.	Mean	S.D.	S.E. M.	Diff M.	S.E. Diff.	C.R.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Pairs	47	20.27	5.52	.805			
Alones	47	19.07	5.08	.740	1.20	1.09	1.1

This last week of the study concerned the smallest number of children. Enrichment was given through discussion. The mean of the pairs showed a difference in their favor of 1.20 with a critical ratio of 1.1.

Table 17. Showing the Effect of  
Enrichment on Pupils  
Studying in Pairs Through  
a Comparison of the Results  
of the First Week and the  
Third Week

Group	N.	Mean	S.D.	S.E. M.	Diff M.	S.E. Diff.	C.R.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Pairs I	54	22.43	4.32	.588	1.61	.784	1.9
Pairs III	52	24.04	3.74	.518			

This table shows a critical ratio of 1.9 in favor of the enriched paired study. The means exhibit a 1.61 difference favoring the enriched pairs.

Table 18. Showing the Effect of  
Enrichment on Pupils  
Studying Individually  
Through a Comparison of  
the Results of the First  
Week and the Third Week

Group	N.	Mean	S.D.	S.E. M.	Diff. M.	S.E. Diff.	C.R.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Alones I	54	23.02	3.83	.521	1.30	.759	1.7
Alones III	52	24.32	3.98	.552			

The mean of the third week of an individual study showed a 1.30 difference in favor of the enriched plan of study. The critical ratio is 1.7.

Questionnaire.-- At the conclusion of the four-week study, a questionnaire was presented to the children and their individual reactions to the total study were collected and totaled. The seventeen questions answered reflected their attitudes toward several aspects of the entire study.

Table 19. Pupil Questionnaire

Questions	Total	% Yes
(1)	(2)	(3)
1. Did you like using the study guides?	56	98%
2. Did you like studying with a partner rather than alone?	47	82
3. Did you like discussing it with the teacher after you finished reading?	45	79
4. Did you like asking each other questions?	43	75
5. Do you think you learned more studying with a partner?	41	72
6. Do you think you learned easier and quicker with a partner?	40	70
7. Do you think you learned more when you wrote the answer?	33	58
8. Do you think the study guides helped you remember important material?	54	95
9. Do you think the study guides were easy to understand?	51	89
10. Do you think the teacher's directions were easy to understand.	56	98
11. Do you think the noise bothered you when you were studying together?	7	22

Name \_\_\_\_\_ School \_\_\_\_\_

Put "yes" or "no" in front of each question:

Did you like:

1. \_\_\_\_ using the Study guides?
2. \_\_\_\_ studying with a partner rather than alone?
3. \_\_\_\_ discussing it with the teacher after you finished reading?
4. \_\_\_\_ asking each other questions?
5. \_\_\_\_ choosing your own partner?

Did you think:

6. \_\_\_\_ you learned more studying with a partner?
7. \_\_\_\_ you learned easier and quicker with a partner?
8. \_\_\_\_ you learned more when you wrote the answers?
9. \_\_\_\_ the Study Guides helped you remember the important materials?
10. \_\_\_\_ the Study Guides were easy to understand?
11. \_\_\_\_ the teacher's directions were easy to understand?
12. \_\_\_\_ the noise bothered you when you were studying together?
13. \_\_\_\_ it helped to discuss it as a class?
14. \_\_\_\_ you would like to work together more often?
15. \_\_\_\_ Is there anything you did not like about working together?  
(If yes, tell why)  
\_\_\_\_\_  
\_\_\_\_\_
16. \_\_\_\_ Is there anything you did not like about working alone?  
(If yes, tell why)  
\_\_\_\_\_  
\_\_\_\_\_
17. \_\_\_\_ Is there anything you did not like about the Study Guides?  
(If yes, tell why)  
\_\_\_\_\_  
\_\_\_\_\_
18. \_\_\_\_ What did you enjoy most about the lessons during the past four weeks?  
\_\_\_\_\_

Table 19. (Cont.)

Questions	Total	% Yes
(1)	(2)	(3)
12. Do you think it helped to discuss it as a class?	49	86
13. Do you think you would like to work together more often?	45	79
14. Is there anything you did not like about working together? (if yes, tell why)	10	18
Some of the negative remarks the children made about working together were: I do not like working together because one person could read faster than the other person; You can think better alone; I went too slow alone; I think I can do it quicker when I do it alone; noise and commotion of partners disturb me; They kept on telling me it was wrong when it was really right.		
15. Is there anything you did not like about working alone? (if yes, tell why)	21	37
Some of the specific remarks the children made about working alone were: I think I learn more when someone helps me; I could not discuss it with my partner; you could not discuss your work with anyone; I went too slow alone; it seems a little bit harder than working together; I do not like to work alone because I like to have a partner; you could not discuss the problems; I think its better working together because you can find better things together and get better marks.		
16. Is there anything you did not like about the study guides? (if yes, tell why)	2	4
17. What did you enjoy most about the lessons during the past four weeks?		

In answer to 17, every child responded. There was a great deal of variety in the comments recorded. A very general tally shows the more repeated comments to be;

	<u>No. mentioning</u>
I liked working in partners	16
It was fun	5
You learn more in partners	6
It was interesting	6
Liked the study guides	6
I liked to work alone	3
Liked writing the answers	4
Liked the test.	2
Liked finding the answers	3

The following remarks were among the most interesting ones: I enjoyed it most when someone was helping me; Seeing what you got wrong or right; I learned a lot with the study guides and a partner and hope we can do it again; It helped me learn more about the subject. I also can remember it longer; I liked the study guides best and working alone; Reading the book and doing it together and helping each other; It was very interesting; Having a partner to study with and doing the study guides; I learned about different things working with a partner; Working together and it was fun.

Teacher Observations - General. -- The value of the statistics presented in this study are dubious, since a complexity of influencing factors were present. Two

different teachers participated, the writer and one other teacher. Both teachers directed their own classes. Though the materials and directions given were identical in each class, some aspects of the study could not be completely controlled. Motivation, subject matter and miscellaneous interruptions were among these uncontrollable factors. The motivation given by the teacher and reflected in the children's attitude toward the task, would differ in the two classes because of personalities involved. The required text of the grade which was used in the study was not written in a factual manner and therefore did not lend itself very well to study guide form. The various interruptions which crop up in any school day influenced choice and amount of actual working time.

Enrichment.-- During the first two weeks, no enrichment was given. The study guide was presented with a very brief introduction and absolutely no discussion or illustrations were given, after the study guides were used. The material was never mentioned again until the test was given on Friday of the same week.

During the last two weeks of the study, the material was enriched through discussion. This discussion took place on Wednesday and Thursday. On Wednesday, the material covered on Tuesday's study guide was discussed. This class discussion involved the understandings presented factually in the study guide material. It was a teacher-led type discussion with



the greater part of the class contributing. Twice the opaque projector was used in illustrating the map study, which went along with the study guides.

Grouping.-- During both manners of study, the teachers observed the children closely as they worked in pairs and individually. For the most part, the children worked industriously on the study guides.

When the children worked in pairs they appeared to be more engrossed and less affected by the ordinary distractions. Even the noise of the other pairs did not seem to bother them. On very few occasions was it necessary for the teachers to admonish a pair not working on the material; that was more likely to be the case when the children worked alone. Pairing also seemed to aid the poorer reader; verbalizing on the material seemed to facilitate comprehension of the material being covered. The poorer reader matched with a better reader, as long as both were at about the same level of understanding, would be greatly aided by a partner. At the same time the partner would be reaching a fuller understanding of the material he was discussing.

Study Guides.-- As stated previously, the text used did not lend itself very well to study guide building. Study guides are used best with factual material; the text was not factual. The supplementary text used as a basis for the fourth week's study was factual.

Study guides were used in this study because they could

be used in the same way in pairs and alone. It was impossible to match the difficulty of the study guides with each other and the test. It would appear though that this factor would balance itself out over the four weeks.

## CHAPTER IV

Catherine Needham

### EFFECTIVENESS OF PAIRED STUDY VERSUS INDIVIDUAL STUDY IN FIFTH GRADE SOCIAL STUDIES

#### 1. Statement of the Problem

It is the intent of this study to discover the effectiveness of paired study versus individual study in fifth grade social studies. The data will be analyzed for the following purposes:

1. To find if there is more retention when pupils study in pairs.
2. To find if there is more retention when pupils study alone.
3. To find if there is more retention when an enrichment program follows study when pupils study in pairs.
4. To find if there is more retention when an enrichment program follows study when pupils study alone.
5. To indicate the attitude of the pupils toward paired study in terms of the following criteria:
  - a. Whether pupils liked working together.
  - b. Whether pupils liked working alone.
  - c. Whether pupils liked discussing material with the teacher and the class.
  - d. Whether pupils liked discussing the material in study teams.

- e. Whether pupils thought using the study guides helped in remembering important facts.
  - f. Whether pupils understood the directions of the study guides and the teacher.
  - g. Whether pupils thought the noise was bothersome.
  - h. What pupils liked about studying in this manner.
  - i. What pupils disliked about studying in this manner.
6. To indicate informal teacher observations.

## 2. Plan of the Experiment

This section will explain the materials, including the method of studying, and the weekly tests which were used in the experiment.

Description of the Materials - Textbook.-- The materials in this study came from the Ginn and Company textbook, "Your Country and Mine"<sup>1/</sup>, a fifth grade social studies book. This book was being used by both the fifth grades involved in the study, so a new unit was chosen which neither class had studied.

Study Guides.-- Study guides were used which emphasized the important material in the text. The study guides consisted of a series of questions with attached answers. The questions were primarily factual and involved little or no interpretation. Each question was typed to within two inches

<sup>1/</sup>Gertrude Stephens Brown, Your Country and Mine, Boston, Ginn and Company, 1951.

### Portugal Claims Brazil

1. Who was Cabral?
2. For what was he looking?
3. Where did he land?
4. How did the Portuguese plan to have as slaves?
5. What happened?
6. How did the work in the fields?

1. A Portuguese explorer.
2. A short route to India.
3. Brazil.
4. The Indians.
5. The Indians refused.
6. African negroes.

### A King and queen flee to Brazil

1. Why did the king and queen of Portugal flee?
2. To what country did the king flee?
3. Where did the king land?
4. What kind of city did he find?
5. What did the king plant?
6. How does it happen there are so many now?
7. Why did most of the people become unhappy?
8. Who was left behind? Why?

1. Napoleon's armies were trying to conquer Europe.
2. Brazil.
3. Rio de Janeiro.
4. Modern, up-to-date.
5. Royal coconut palms.
6. The people stole seeds.
7. They disliked having a king tell them what to do.
8. The king's son, Pedro, to rule Brazil.

### Brazil gains its freedom without guns

1. What did King John try to do?
2. Did he succeed?
3. What did the Brazilians then do?

1. Make his son go back to Portugal.
2. No.
3. Declared their independence and crowned Pedro emperor.

### Pedro leaves his son to rule

1. What kind of ruler was Pedro?
2. What became of him?
3. Whom did he leave behind?

1. A cruel, selfish dictator.
2. He left for Portugal.
3. His son.

### A fifteen year old boy...

1. When was Don Pedro crowned?
2. What kind of ruler was he?
3. Why did the plantation owners dislike him?
4. What kind of government does Brazil have now?
5. What is the official language?

1. When he was fifteen.
2. Kind and friendly.
3. He had freed the slaves.
4. A republic, with a president.
5. Portuguese.

A Look at the map of Brazil

1. Which is the biggest country in So. America?
2. How big is Brazil?
3. Which countries do not border Brazil?
4. How long is its coastline?
5. What area is in the north?
6. Who lives there?
7. What is south of this area?
8. What sort of area is this?
9. What is in this area?
10. Where are Brazil's cities located?
11. Find the Amazon Basin, The Uplands on your map.
12. What do tourists enjoy seeing?

Rio de Janiro is Brazil's capital...

1. What does Rio de Janiro mean?
2. How large is Rio de Janiro?
3. Where is it located?
4. What is Sugar Leaf?

Other Brazilian Cities

1. What is different about Sao Salvador?
2. What is another seaport city?

Gold and diamonds

1. What precious minerals are mined here?
2. What do they use the diamonds for?
3. What other minerals are found here?

Manufacturing in Brazil

1. What do some of the factories in the larger cities manufacture?

Brazil helps its people

1. What is Brazil doing to improve transportation?
2. What is it teaching its people?

Brazil's snake farms

1. For what purpose do they raise snakes?

1. Brazil.

2. It covers 1/2 of So. Am. and is bigger than U.S.
3. Chile and Equador.
4. 4000 miles.
5. Amazon Basin.
6. Indians and government workers.
7. The Uplands.
8. Plateaus, hills, mountains.
9. Cattle, cities on the east.
10. On the plains which lie between the Uplands and the Atlantic Ocean.

12. Ignassu Falls.

1. River of January.
2. The second largest city of So. America.
3. On a coastal plain.
4. A mass of rock above the city.

1. Elevators carry people around the town.
2. Belim.

1. Gold and diamonds.
2. For jewels and for manufacture of tools.
3. Iron and manganese.

1. Textiles, leather goods, clothing, meat packing.

1. Building railroads and airlines.
2. Farming and health.

1. To get the serum to use to help a person after he has been bitten.

School \_\_\_\_\_

Name \_\_\_\_\_

Match Column B with Column A

A

B

\_\_\_\_ Cabral  
\_\_\_\_ Negroes  
\_\_\_\_ Napoleon  
\_\_\_\_ King John  
\_\_\_\_ Rio de Janiro  
\_\_\_\_ Dom Pedro  
\_\_\_\_ Brazil  
\_\_\_\_ Emperor Pedro  
\_\_\_\_ Plantation owners  
\_\_\_\_ Palm trees

1. slaves  
2. explorer  
3. village  
4. modern city  
5. conqueror  
6. republic  
7. revolution  
8. dictator  
9. kind ruler  
10. king of Portugal  
11. unhappy  
12. King John

Circle the answer which most correctly completes the sentence.

1. Cabral was searching for

a. gold.  
b. a new world.

c. a new route to India.  
d. America.

2. The Portuguese could not make slaves of

a. the Indians.  
b. the farmers.

c. the Negroes.  
d. The Americans.

3. The king moved his court to

a. France.  
b. Portugal.

c. Brazil.  
d. India.

4. Rio de Janiro was

a. a splendid city.  
b. a slum.

c. jungle.  
d. a village.

5. King John was most proud of

a. his palm tree.  
b. the birds.

c. his library.  
d. Portugal.



6. Brazil gained her independence

- a. eafter many battles.
- b. easily.

- c. because of a kidnapoing.
- d. after a short war.

7. Emperor Pedro went back to

- a. Portugal.
- b. Spain

- c. Brazil.
- d. Rio de Janiro.

8. The last ruler was

- a. mean and cruel.
- b. considerate of the poor.

- c. a dictator.
- d. popular all the time.

9. He was forced to leave because

- a. the land owners disliked him.
- b. he made everyone pay taxes.

- c. the Indians revolted.
- d. his father made him.

10. The full name of the country is

- a. the Union of Brazil.
- b. the United States of Brazil.

- c. Brazil.
- d. Brazil of So. America.

Fill in the blanks:

1. King John left behind his \_\_\_\_\_.

2. Emperor Pedro acted like a \_\_\_\_\_.

3. Emperor Pedro left behind his son, \_\_\_\_\_.

4. The people got the palm seeds by \_\_\_\_\_.

5. The 1876, Dom Pedro visited \_\_\_\_\_.

6. The last king became emperor when he was \_\_\_\_\_.

7. The last king opened his palace to \_\_\_\_\_.

8. The head of the government now is a \_\_\_\_\_.

9. Brazil is now a \_\_\_\_\_.

10. The language of Brazil is \_\_\_\_\_.

Match Column B with Column A.

A

B

Amazon Basin

1. northern Brazil

Brazilian Uplands

2. elevators

Iguassu Falls

3. Niagra Falls

Rio de Janiro

4. serum

Minas Geraes

5. plateaus and hills

Snake farms

6. River of January

Sugar Loaf

7. cities and seaports

Sao Salvador

8. 40000 miles

Coastal plains

9. solid rock

Coastline

10. gold

11. southern Brazil

12. schools

Circle the answer which most correctly completes the sentence.

1. Brazil is

- a. a small country.
- b. the largest country in So. America.

- c. smaller than the United States.
- d. the size of Portugal.

2. In the Amazon Basin live

- a. no one
- b. many people

- c. Indians and workers.
- d. Negroes.

3. In the Uplands are raised

- a. fruit
- b. cattle

- c. snakes
- d. nothing

4. Rio is

- a. the second largest city.
- b. the largest city.

- c. a small city.
- d. a village.

5. In one city elevators are used

- a. because they are new.
- b. because they are quicker.

- c. to move from the lower to the upper level.
- d. to help older people.

6. Many diamonds are used in industry for

- a. cutting.
- b. beauty.

- c. their cheapness.
- d. no reason.

7. Brazil has encouraged the building of

- a. amusement parks.
- b. beaches.

- c. railroads.
- d. submarines.

8. Brazil is trying to

- a. educate its people.
- b. rule South America.

- c. free its slaves.
- d. do nothing for its people.

9. Rio is

- a. a modern, beautiful city.
- b. still very backward.

- c. very poor.
- d. cold most of the time.

10. Serum is manufactured to

- a. prevent snake bites.
- b. cure snake bites.

- c. kill the snakes.
- d. educate people.

Fill in the blanks:

1. Brazil is touched by <sup>all</sup> the countries except \_\_\_\_\_ and \_\_\_\_\_.
2. All the important cities are on or near the \_\_\_\_\_.
3. Beside diamonds, two minerals found here are \_\_\_\_\_ and \_\_\_\_\_.
4. Brazil manufactures \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.
5. Two of the reasons for education in Brazil are to teach people to care for their \_\_\_\_\_ and \_\_\_\_\_.

of the right hand margin of the page. The corresponding answer was typed to the margin. The answers were then folded back and kept from sight until needed.

The questions covered a complete section of a unit of the text. As the length of these sections varied, so did the length of the guides. The guides were planned to take the students from twenty to thirty minutes.

Each paragraph heading in the book was used on the guides and questions were listed under them. The part of the page containing the answers was similarly divided, except that after each series of questions, the page was cut so that just the answers to a particular section could be checked at one time.

Tests.-- Objective tests were given on Friday of each week over the material studied at the beginning of the week. The tests were divided in two parts, the first part testing the material studied on Monday, the second part testing the material studied on Tuesday.

## 2. Method of Study

For the purpose of the study, two fifth grades, A and B, were used. The study guides were used on Monday and Tuesday of each week and tests were administered on Friday. These classes were used alternately as a control and an experimental group.

On Monday the children in room A would work in pairs using the guides and on Tuesday would work alone using the guides. On Monday the children in room B would work alone using the guides and on Tuesday would work in pairs using the guides. The diagram below explains this more graphically:

Table 20. Weekly Plan of Study for  
Two Fifth Grades, A and B,  
Working in Pairs and Alone

Day of the Week	Grade A	Grade B
(1)	(2)	(3)
Monday	Pairs	Alone
Tuesday	Alone	Pairs
Friday	Tests	Tests

Each class covered the same material each day by using the same study guide. The study was carried on for four weeks.

Study Guide Procedure.-- The children were each instructed to read silently, the material under each paragraph heading in their book. This usually included three or four paragraphs. They were then to read the questions on the study guides and to try to answer them. If they did not know, or were unsure of the answer, they were to go back and check in their texts. To check the accuracy of their answers, they

were to unfold the answers corresponding to the material they had studied. They proceeded in like manner for the rest of the study guide.

Paired Study.-- The children were allowed to choose the person with whom they wished to study. Each one used his own book, but shared a study guide. They were instructed to read the material silently, under a paragraph heading. When both had finished reading, one child was to take the study guide and ask the other child questions. If there was any doubt about the correctness of the answer in the mind of the questioner, the answer was to be discussed and checked. It was impressed on the children that they were to discuss the question between them and arrive at a single answer, if possible, before unfolding the answer sheet.

After the children had finished the questions under one paragraph heading, they were to each read, silently, the material under the next heading. When they had finished reading, the person who had first asked the questions would do most of the answering this time. They alternated this way throughout the study guide.

Individual Study.--The children worked completely alone in this part of the study. They were each given a study guide and instructed to read the material under a paragraph heading. They were then to look at the study guide and try to answer the questions under the corresponding paragraph heading. If the child did not know, or was unsure of the answer, he was

to check in his textbook before unfolding the answers on the study guide. When the child had finished questioning himself and checking his answers, he was to go on to the next paragraph heading in his book. He continued in like manner for the rest of the study guide.

Enrichment.-- For the first two weeks of the study, the pupils studied in the manner previously described, with no additional help from the teacher. For the last two weeks of the study, an enrichment program followed the study time. This consisted of a quick review of the material on the study guides, of map work, of vocabulary used in the selection, of comparison and contrasts with material previously learned and of general discussion.

Testing Procedure.-- In order to measure the amount of learning which took place individually and in pairs, tests were given to the pupils on Friday of each of the four weeks.

The tests were in two sections. The first section covered the material studied on Tuesday. Each section of the test consisted of thirty questions, making a total of sixty questions over the material studied the previous Monday and Tuesday.

The same format was used with all of the tests. The first ten questions were matching; the next ten questions were multiple choice, and the last ten were "fill-ins".

### 3. Population of the Study

This section will explain the background of the population



of the study. It will include a frequency distribution of the Mental Ages and the Intelligence Quotients of the children who took part.

Background of the Population.-- This part of the study took place in Groton, Massachusetts, a small, semi-rural, semi-surburban community, located about forty miles northwest of Boston. The Elementary School, where one-half of the fifth grade experimental group was located, is composed of children who are in a high socio-economic group. Most of their parents are professional and business people. The Tarbell School, where the other half of the experimental group was located, is of a lower socio-economic background. Most of their parents are mill workers or laborers.

A frequency distribution of the Intelligence Quotients and Mental Ages, as determined by the Otis Quick-Scoring Mental Ability Tests of the children involved in the study, is given in Tables 21 and 22.

Table 21. Frequency Distribution of  
I.Q.'s of Fifth Grade  
Population of the Study

Intelligence Quotient	Frequency
(1)	(2)
130-135 . . . . .	1
125-129 . . . . .	0
120-124 . . . . .	1
115-119 . . . . .	6
110-114 . . . . .	4
105-109 . . . . .	9
100-104 . . . . .	16
95-99 . . . . .	5
90-94 . . . . .	3
85-89 . . . . .	1
80-84 . . . . .	1

N - 47  
M - 105.37  
S.D. - 9.15

Table 22. Frequency Distribution of  
Mental Ages of Fifth Grade  
Population of the Study

Mental Ages (Months)	Frequency
(1)	(2)
150 and over . . . . .	1
146-149 . . . . .	4
142-145 . . . . .	3
138-141 . . . . .	7
134-137 . . . . .	6
130-133 . . . . .	7
126-129 . . . . .	8
122-125 . . . . .	5
118-121 . . . . .	1
114-117 . . . . .	4
110-113 . . . . .	1

N - 47  
M - 132.68  
S.D. - 9.64

#### 4. Analysis of Data

In this section, the data will be analyzed for the following purposes:

1. To find if there is more retention when pupils study in pairs.
2. To find if there is more retention when pupils study alone.
3. To find if there is more retention when an enrichment program follows study when pupils study in pairs.

4. To find if there is more retention when an enrichment program follows study when pupils study alone.
5. To indicate the attitude of the pupils toward paired study in terms of the following criteria:
  - a. Whether pupils liked working together.
  - b. Whether pupils liked working alone.
  - c. Whether pupils liked discussing material with teacher and the class.
  - d. Whether pupils liked discussing the material in study teams.
  - e. Whether pupils thought using the study guides helped in remembering important facts.
  - f. Whether pupils understood the directions of the study guides and the teacher.
  - g. Whether pupils thought the noise was bothersome.
  - h. What pupils liked about studying in this manner.
  - i. What pupils disliked about studying in this manner.
6. To indicate informal teacher observations.

Table 23 shows the results of the first week of paired study. The mean score for those who studied alone was 13.76 compared to 15.56 for the pairs. The difference was 1.80 in favor of those who studied in pairs. The critical ratio of 1.67 shows this to be statistically insignificant.

Table 23. First Week - Achievement of Pupils Working Alone and in Pairs

Group	N.	Mean	S.E. M.	S.E. M.	Diff. M.M. 1 2	S.E. Diff.	C.R.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Alone	46	13.76	.78	5.31	1.80	1.14	1.67
Pairs	46	15.56	.83	5.61			

Table 24 shows the results of the second week of paired study. The mean score for those who studied alone was 15.4 compared to 16.33 for the pairs. The difference was .93 in favor of those who studied in pairs. The critical ratio of .715 shows this to be statistically insignificant.

Table 24. Second Week - Achievement of Pupils Working Alone and in Pairs.

Group	N.	Mean	S.E. M.	S.D. M.	Diff. M M 1 2	S.E. Diff.	C.R.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Alone	45	15.4	.91	6.1			
Pairs	45	16.33	.93	6.21	.93	1.30	.715

Table 25 shows the results of the tests for the third week. The mean score for those who studied alone was 15.53 compared to 18.29 for those who studied in pairs. The difference was 2.76 in favor of those who studied in pairs. The critical ratio of 2.55 shows this to be statistically insignificant.

Table 25. Third Week - Achievement of those Working Alone and in Pairs

Group	N.	Mean	S.E. M.	S.D.	Diff M M 1 2	S.E. Diff.	C.R.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Alone	45	15.53	.81	5.55			
Pairs	45	18.29	.72	4.92	2.76	1.08	2.55



Table 26 shows the results of the tests for the fourth week. The mean score for those who studied alone was 16.89 compared to 16.40 for those who studied in pairs. The difference was .49 in favor of those who studied alone. The critical ratio of .22 shows this to be statistically insignificant.

Table 26. Fourth Week - Achievement of those Working Alone and in Pairs

Group	N.	Mean	S.E. M.	S.D.	Diff. $M_1M_2$	S.E. Diff.	C.R.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Alone	45	16.89	.94	6.33			
Pairs	45	16.40	.90	6.06	.49	.71	.22

Table 27 compares the results of the first week's test with no enrichment after study to the fourth week's test with enrichment after study for those who studied alone. The mean score for those who studied without enrichment was 13.76 compared to 16.89 for those who studied with enrichment. The difference was 3.13 in favor of those who studied with enrichment after study. The critical ratio of 2.56 shows this to be statistically insignificant.

Table 27. Results of the Tests of the First Week with no Enrichment and the Fourth Week with Enrichment for those who Studied Alone

Group	N.	Mean	S.E. M.	S.D.	Diff M M 1 2	S.E. Diff.	C.R.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Alone (no enrichment)	46	13.76	.783	5.31			
Alone (enrichment)	45	16.89	.943	6.33	3.13	1.22	2.56

Table 28 compares the results of the first week's test with no enrichment after study, to the fourth week's test with enrichment after study, for those who studied in teams. The mean score for those who studied without enrichment was 15.56 compared to 16.40 for those who studied with enrichment. The difference was .84 in favor of those who studied with enrichment after study. The critical ratio of .69 shows this to be statistically insignificant.

Table 28. Results of the tests of the First Week with no Enrichment and the Fourth Week with Enrichment for those who Studied in Pairs

Group	N.	Mean	S.E. M.	S.D.	Diff M M 1 2	S.E. Diff.	C.R.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Pairs (no enrichment)	46	15.56	.83	5.61			
					.84	1.22	.69
Pairs (enrichment)	45	16.40	.90	6.06			

Name \_\_\_\_\_ School \_\_\_\_\_

Put "yes" or "no" in front of each question:

Did you like:

1. \_\_\_\_\_ using the Study guides?
2. \_\_\_\_\_ studying with a partner rather than alone?
3. \_\_\_\_\_ discussing it with the teacher after you finished reading?
4. \_\_\_\_\_ asking each other questions?
5. \_\_\_\_\_ choosing your own partner?

Did you think:

6. \_\_\_\_\_ you learned more studying with a partner?
7. \_\_\_\_\_ you learned easier and quicker with a partner?
8. \_\_\_\_\_ you learned more when you wrote the answers?
9. \_\_\_\_\_ the Study Guides helped you remember the important materials?
10. \_\_\_\_\_ the Study Guides were easy to understand?
11. \_\_\_\_\_ the teacher's directions were easy to understand?
12. \_\_\_\_\_ the noise bothered you when you were studying together?
13. \_\_\_\_\_ it helped to discuss it as a class?
14. \_\_\_\_\_ you would like to work together more often?
15. \_\_\_\_\_ Is there anything you did not like about working together?  
(If yes, tell why)  
\_\_\_\_\_  
\_\_\_\_\_
16. \_\_\_\_\_ Is there anything you did not like about working alone?  
(If yes, tell why)  
\_\_\_\_\_  
\_\_\_\_\_
17. \_\_\_\_\_ Is there anything you did not like about the Study Guides?  
(If yes, tell why)  
\_\_\_\_\_  
\_\_\_\_\_
18. \_\_\_\_\_ What did you enjoy most about the lessons during the past four weeks?  
\_\_\_\_\_

Table 29 shows pupil attitudes toward working in teams with study guides.

Table 29. Tabulation of Responses of  
44 Pupils to Interest Questionnaire

<u>Did you like -</u>	Per cent of 44 Pupils Answering <u>Yes</u>
(1)	(2)
1. using the Study Guides? . . . . .	84%
2. studying with a partner rather than alone?	86
3. discussing it with the teacher after you finished reading? . . . . .	77
4. choosing your own partner . . . . .	93
5. asking each other questions? . . . . .	100
<u>Did you think -</u>	
6. you learned more studying with a partner?	77
7. you learned easier and quicker with a partner?	80
8. you learned more when you wrote the answers?	43
9. the Study Guides helped you remember the important material? . . . . .	91
10. the Study Guides were easy to understand?	73
11. the teacher's directions were easy to understand? . . . . .	91
12. the noise bothered you when you were study- ing together? . . . . .	34
13. it helped to discuss it as a class? . .	82
14. you would like to work together more often?	82

Table 2 9.1(Cont.)

Question	Per cent of 44 Pupils Answering <u>Yes</u>
(1)	(2)
15. Is there anything you did not like about working together? .....	20%
16. Is there anything you did not like about working alone?	50%

Summaries of Opinion.-- In response to question 15, the most common reason given for not enjoying working together was that the noise was bothersome. The other two reasons which were given only twice were that their partner was not satisfactory and that it took longer.

In response to question 16, ninety per cent of the pupils answering "yes", felt that they didn't learn as much when they studied alone. The other reasons, listed once or twice, were that it was "too lonesome", "too confusing", "too easy to cheat", and "not as much fun".

Question 18 asked the pupils what they had enjoyed most about the lessons during the four weeks. The responses were many and varied. Most of the reasons are tabulated below:

Responses	No. Responding
"Working together"	26

<u>Responses</u>	<u>No. Responding</u>
"Having the study guides"	5
"Learning more"	4
"Talking over the answers"	3
"Going through the book fast"	1
"All of it"	2

Teacher Observations.-- The children were overwhelmingly in favor of the team work. This was especially noticeable when they waited anxiously to be told whether it was their day to work alone or in pairs. If it were their day to work together, the pleasure was easily discernible.

The children followed the directions on the study guides easily after the preliminary explanation. The length of time the lessons took varied from twenty to thirty minutes and the enrichment lasted from ten to fifteen minutes. Many of the slower readers had to be granted extra time. It generally took the children about five minutes longer to complete the lesson when they worked in pairs.

Enrichment.-- The enrichment was not formal, but consisted primarily of further explanation of the material read. This involved map work, discussion of terms and uniting concepts. For example, after the children read about the formation of the Argentinian Republic, Argentina was found on the map, the names of the cities were pronounced



and located, and a brief explanation of the current political situation in the country was given. Several children brought in stamps and coins which were discussed and passed around.

Grouping.-- As much as possible, the children worked in groups of two. If there was an extra child, then there would be a group of three. No attempt was made by the teacher at equalizing partners, as the children worked very well with those whom they chose. In most cases they were very close in ability. There did not seem to be any restlessness evident when the faster of the two readers finished reading and had to wait a moment for his partner.

Study Guides.-- As the questionnaire indicates, the children reacted favorably to the study guides whether working alone or in pairs. Many of them made it an informal game to see who would do the most accurate work. Asking each other questions and having the answers available for an immediate check kept the interest high.

## CHAPTER V

Lodema M. Bixby

### EFFECTIVENESS OF PAIRED STUDY VERSUS INDIVIDUAL STUDY IN SIXTH GRADE SOCIAL STUDIES

#### 1. Statement of the Problem

It is the intent of this study to discover the effectiveness of paired study versus individual study in sixth grade social studies. The data will be analyzed for the following purposes:

1. To find if there is more retention when pupils study in pairs.
2. To find if there is more retention when pupils study alone.
3. To find if there is more retention when an enrichment program follows study when pupils study in pairs.
4. To find if there is more retention when an enrichment program follows study when pupils study alone.
5. To indicate the attitude of the pupils toward paired study in terms of the following criteria:
  - a. Whether pupils liked working together.
  - b. Whether pupils liked working alone.
  - c. Whether pupils liked discussing material

with the teacher and the class.

- d. Whether the pupils liked discussed the material in study teams.
- e. Whether pupils thought using the study guides helped in remembering important facts.
- f. Whether pupils understood the directions of the study guides and the teacher.
- g. Whether pupils thought the noise was bothersome.
- h. What pupils liked about studying in this manner.
- i. What pupils disliked about studying in this manner.
6. To indicate informal teacher observations.
7. To correlate, using the total population of the study, the I.Q.'s of each individual with his average score of two weekly tests.

## 2. Plan of the Experiment

Description of the Materials - Textbook.-- The material in this study came from the Ginn and Company textbook, "Your World and Mine"<sup>1/</sup>, a sixth-grade social studies book. This book was being used by both sixth grades involved in the study, so a new unit was chosen which neither class had studied. However it was a unit which followed the plan

<sup>1/</sup>G.S. Dawson, E.W. Tiegs, T. Adams, "Your World and Mine", Ginn and Company, 1954.

Study Guide--Monday  
Facing the Atlantic Pages 221-226.

The Low Countries

- |  |   |
|--|---|
| 1. What three industrial and commercial nations face the Atlantic? | 1. Holland, Belgium, and France.                |
| 2. Holland and Belgium were originally called what?                | 2. The Netherlands or Low Countries.            |
| 3. The official name for Holland at the present is _____.          | 3. The Netherlands.                             |
| 4. Like Scandinavia, what type of government do they have?         | 4. A kingdom, which is democratically governed. |

The Netherlands is the home of the Dutch.

- |   |   |
|---|---|
| 1. How could you explain the size of the Netherlands?                     | 1. It is about the size of Maine and Connecticut combined.  |
| 2. What are dikes?  | 2. Dikes are hard banks of firmly packed gravel or clay.  |
| 3. Why did the Dutch build dikes?   | 3. The land in the western part is below sea level so they built dikes to hold back the sea & rivers. |
| 4. How did they remove the water left in the low fields?                  | 4. They pumped it out with windmills.   |
| 5. What makes this land such fertile farming country?                     | 5. The silt brought down by the rivers.   |
| 6. What is the Zuider Zee?  | 6. It is an inland lake, with the sea cut off by a dike.  |
| 7. Name three rivers that run through the Netherlands.                    | 7. Rhine, Meuse, and Schelt Rivers.   |
| 8. Why are there so many canals to travel on in the Netherlands?          | 8. The country has so many to drain the fields and they may be used for travel.                       |
| 9. How has modern engineering made the work of removing the water easier? | 9. Electricity runs the pumps which remove the water from the land, and lower canals.                 |
| 10. Farming is an important occupation of these people. What is another?  | 10. Fishing and exporting fish.   |

11. The grains are important crops to Holland what are some others?

12. What are polders and how are they built?

13. Holstein Cattle come from Holland. What are some milk products which are also famous.

14. Holland is famous for its flower festivals. what flowers are raised in abundance?

15. Is the land to the east of Holland of any value.

11. Oats, rye, flax, potatoes, and sugar beets.

12. New fields at the edge of the sea which are built when the farmers erect small dikes to keep out the tides.

What are  
13. Butter, cheese, condensed milk.

14. Tulips, narcissuses, and daffodils.

15. Yes, they grow potatoes, wheat, barley, oats, sugar beets, and pasture cattle there.

Commerce is more important to the Netherlands than Agriculture.

1. What makes the Netherlands such an important industrial country?

2. Why is Rotterdam such an important port?

3. What makes it possible for great ships to come to Rotterdam even though it is 15 miles from the sea?

4. What method do they use to transport imports up the Rhine River?

5. Rotterdam has other important industries. Name three.

6. What are some raw products prepared for market by people of the Netherlands.

7. How is Amsterdam different from any city we have. How?

1. It is located on rivers running from Germany to the sea.

2. It is the port for the Netherlands and also for the Ruhr district of Germany.

3. A deep canal.

4. They are loaded onto barges which go upstream to the large cities.

5. Shipbuilding, manufacturing of cigars, rope, leather, paints and sugar refining.

6. Sugar, vegetable oils, coffee, cocoa, petroleum.

7. It is grained by canals which divide it into many islands.

8. What is the capital of the Netherlands?

8. The Hague.

9. Is it also the largest city?

9. No, Amsterdam is the largest.

10. What are some products that the Netherlands has to import?

10. Iron and steel, grain for cattle, poultry and cotton.

Belgium is a beehive of industry.

- |  |  |
|--|--|
| 1. What two things have made Belgium a center of industry?                             | 1. Its location and abundance of coal.   |
| 2. Belgians import raw materials and export many manufactured products. What are some? | 2. Iron and steel goods, machinery, steel rails, locomotives, chemicals and cloth. |
| 3. What city is the largest textile center?  | 3. Ghent.  |
| 4. What is the capital city?   | 4. Brussels.   |
| 5. Lacemaking is an important industry of what city?                                   | 5. Bruges.   |

Belgium is made up of two very different parts.

- |  |   |
|--|---|
| 1. Where will you find the best farm lands?                                    | 1. The Northern Part.   |
| 2. How does this land resemble Holland?  | 2. It is below sea level and dikes have been built.                 |
| 3. Can you tell what products are raised in the Northern part?                 | 3. Wheat, barley, oats, potatoes, rye, and fruits, Brussel sprouts. |
| 4. How is the land different in the southeast from the north?                  | 4. The land is hilly, the people speak French.                      |
| 5. Why is the section near the French border a great manufacturing center?     | 5. Rich coal fields, and mineral deposits.                          |
| 6. What type of manufacturing is carried on?                                   | 6. Heavy machinery, cotton and woolen, chemical, and glasswork.     |
| 7. What is the center of the steel industry?                                   | 7. Liege.   |
| 8. Why does Belgium import coal when it has so much of its own?                | 8. It does not have the right type of coal for manufacturing.       |
| 9. What crops are important to southern Belgium? What animals are raised here? | 9. Wheat, and sugar beets. Cattle, sheep and horses.                |



10. Brussels, the capital, is a very old city. What two types of work are important here?

11. What is the largest port?

12. Ships coming to Antwerp must first pass through territory belonging to what country?

13. How are many cities of Belgium connected?

14. What is a buffer state?

10. Trade and all types of industry.

11. Antwerp.

12. Holland.

13. Canals.

14. A small country with little military power located between two stronger countries.

## Weekly Test on Facing the Atlantic

Circle the correct answer.

1. Holland, Belgium and France are called the  
a. Low countries    b. Dike countries    c. Lake countries
2. All three are important countries for  
a. Industry    b. Mining    c. Sheep raising
3. Holland and Belgium were originally called  
a. Balkan countries    b. Netherlands    c. Inland countries
4. Holland is about the size of  
a. France    b. The United States    Massachusetts & Connecticut
5. Dikes were built to hold back  
a. The sea    b. The land    c. The canals
6. The land in Holland is fertile because of  
a. The glacier    b. Silt left from rivers    c. Rivers
7. The capital of the Netherlands is  
a. The Hague    b. Amsterdam    c. Rotterdam
8. New fields built at the edge of the sea with dikes to hold back the water are  
a. Buffer fields    b. Rhur district    c. Polders
9. The Dutch people have many  
a. Dairy farms    b. Sheep ranches    c. Cotton fields
10. The Zuider Zee is a  
a. Large river    b. Canal    c. Inland lake

### Completion

1. A large river that runs through the Netherlands and Germany is the \_\_\_\_\_.
2. Broad banks of firmly packed gravel or clay are called \_\_\_\_\_.
3. Like Scandinavia, the Netherlands is a democratically controlled \_\_\_\_\_.
4. The largest city of the Netherlands is \_\_\_\_\_.
5. Another important seaport is \_\_\_\_\_.
6. The government buildings for the Netherlands are found at \_\_\_\_\_.
7. The Netherlands is an important industrial country because it is located \_\_\_\_\_.

8. Two products that the Netherlands has to import are \_\_\_\_\_ and \_\_\_\_\_.
9. Holland is famous for its dairy products, two important ones are \_\_\_\_\_ and \_\_\_\_\_.
10. Flowers raised in abundance in Holland are \_\_\_\_\_ and \_\_\_\_\_.

True and False

1. The Netherlands at one time included Belgium.
2. The Rhine, Meuse, and Scheldt Rivers are rivers that run through Holland.
3. Commerce is more important to the Netherlands than agriculture.
4. The Hague is the capitol of the Netherlands.
5. The Netherlands has to import much grain for cattle.
6. Shipbuilding, the manufacturing of cigars, and rope are important industries of Rotterdam.
7. Fishing is not important to the people of Holland.
8. The canals in the Netherlands were built for the people to travel on.
9. The eastern part of the Netherlands is used for growing potatoes, grains, and sugar beets.
10. The Dutch are skilled at making beautiful pottery.

## Belgium

Circle the correct answer.

1. The largest textile city in Belgium is  
a. Calais    b. Ghent    c. Delft.
2. The capital city of Belgium is  
a. Brussels    b. Bruges    c. Brittany
3. The best farm land is found in which part of Belgium?  
a. Southern part    b. Middle    c. Northern part.
4. The land in the \_\_\_\_\_ part is hilly.  
a. Northern    b. Southern    c. Middle
5. Here people talk  
a. Spanish    b. French    c. Dutch
6. Lacemaking is an important occupation in the city of  
a. Brussels    b. Bruges    c. Brittany
7. Belgium is first of all a  
a. Big country    b. A backward country    c. Industrial country.
8. The largest seaport of Belgium is  
a. Rotterdam    b. Antwerp    c. Amsterdam
9. A small country located between two stronger countries which has little military power is called  
a. Buffer state    b. Forder    c. Neutral country
10. Ships coming to Antwerp must pass through territory belonging to  
a. Germany    b. France    c. Netherlands

## Completion

1. Belgium is a country of industry because of its \_\_\_\_\_.
2. Machinery, locomotives, and chemicals are some of Belgium's \_\_\_\_\_.
3. Belgium has also built \_\_\_\_\_ to keep back the water.
4. Near the French border you find rich \_\_\_\_\_.
5. The best farmlands are found in the \_\_\_\_\_ part of Belgium.
6. Two products raised here are \_\_\_\_\_ and \_\_\_\_\_.
7. Although Belgium has much coal it still \_\_\_\_\_ much more because it does not have the right kind.
8. Many cities of Belgium are connected by \_\_\_\_\_ the same as the Netherlands.

9. Belgium, a buffer state, is located between \_\_\_\_\_ and \_\_\_\_\_.
10. Because of the supply of coal and sand an important occupation of Charleroi, Belgium is \_\_\_\_\_.

True and False

1. Antwerp and Brussels are very old cities.
2. The center of the steel industry is Liege.
3. Wheat and sugar beets are important crops raised in southern Belgium.
4. Friendly cooperation is very important to the people of Holland and Belgium.
5. The Germans occupied and fought on the Belgian soil during World War I.
6. The Scheldt River runs through Belgium as well as the Netherlands.
7. Brussel sprouts, potatoes, and fruits are raised in northern Belgium.
8. Belgium does not need or have dikes like the Netherlands.
9. Belgium is an absolute monarchy where the king has all the ruling power.
10. Belgium like the Netherlands is an important trading center.

of study in the text.

Study Guides.-- Study guides were used which emphasized important material in the text. The study guides consisted of a series of questions on the assigned reading in the text. The answers accompanied each question but were folded back when the child received them. They were separated by cutting, so that, as a child read a question, he could check his answer with the one given without seeing the answer to the next question. Each study guide had a varying number of questions, but was made to be used in a social study period of approximately thirty minutes.

Tests.-- The tests were constructed to include the material given on the study guides for that week. They were divided into three parts containing different types of items so that all the pupils could have an equal opportunity for answering. These were also built to be given in a thirty-minute period.

#### . . Method of Study

Study Guide Procedure .-- Two sixth grades participated in the experiment. The study guides were given on Monday and Tuesday; the weekly tests on Friday. This experiment extended over a four-week period. Both grades used the same study guides, rotating between working in pairs and alone.

Table 30. Plan of Rotation for  
Study Guides

Day of the Week	Grade 6R	Grade 6L
(1)	(2)	(3)
Monday	Alone	Pairs
Tuesday	Pairs	Alone
Friday	Test	Test

This plan was carried on for four weeks. Each week the alternating class would work alone on Monday so that there would be the same space of time between testing the results of the pupils studying alone and the pupils studying in pairs.



For example, the second week would be set up as follows:

Table 31. Plan of Rotation for Study Guides

Day of the Week	Grade 6R	Grade 6L
(1)	(2)	(3)
Monday	Pairs	Alone
Tuesday	Alone	Pairs
Friday	Test	Test

Enrichment with the Study Guides.-- For the first two weeks there was absolutely no enrichment to the guide sheet. The only discussion was when pupils studied in pairs. The only map work was that included in the study guide. After two weeks of no enrichment with the study, the pattern of study was changed.

The guide sheets were given on Monday and Tuesday and were used either alone or in pairs. The answers were written as before. However, on Wednesday, the questions on the guide sheet were discussed as a class, bringing out important and interesting information. The large wall maps were used, as well as smaller individual maps, for locating

cities, rivers, mountains and seas. In one class, a large product map was begun.

On Friday, the test was given as before.

Paired Study.-- Pupils were put into pairs, as much as possible, according to their reading ability. Two pupils were used for the most part, but if there were an odd number, occasionally the team consisted of three pupils.

They were instructed to each read from his own text book, the assigned paragraphs. After he had read the section outlined on the study guide, he was to write the answers to that section on a piece of paper. When the two pupils of the team had finished writing the answers to that section, they would ask each other the questions. Their answers were checked with the answers on the guide sheet and, if necessary, corrected on the paper. If they needed to refer back to the book it was rather easy at this point.

When one section of the study guide was finished and the answers checked, they would read the next section in the text book and continue with the same method.

After the whole daily study guide was completed, they could ask each other the complete list of questions on the guide and check to see if they could answer them without their papers.

Individual Study.-- The procedure was about the same for individual study as for paired study. The pupil was

instructed to read one section, as outlined on the study guide. He would then read the questions and write the answers for that section. After the answers were written, he was to check his answers with those on the guide sheet.

When one section was finished, he was to proceed with the rest of the study guide in the same fashion. After he had completed the list of questions, he could go back and review the complete paper.

Weekly Tests.-- The weekly tests were made up from the material covered on the study guides and the reading from the text book for that week. An even number of questions was used for each test. There were sixty items on it; thirty were made up from the study guide used on Monday, and thirty from the study guide used on Tuesday. In this way it was possible to check the results of paired study versus individual study.

Both parts of the test were of equal proportions, as much as possible. Each group of thirty questions was divided into three sections of ten items each.

These tests were built to include;

1. Multiple choice questions
2. Detailed questions
3. Completion statements.

### 3. Population of the Study

Background of the Population.-- The two sixth grades participating in this experiment are from the Elementary School, located in Groton, Massachusetts. A varying number of children have been used, as there were many absentees at that particular time. If a child was in school one week to participate in the whole experiment, he was used. Therefore, each week a different number of cases has been used, varying from fifty to sixty cases.

Table 32. Frequency Distribution of  
I.Q.'s of Sixth Grade  
Population of the Study

Intelligence Quotient	Frequency
(1)	(2)
133-129 . . . . .	5
128-124 . . . . .	4
123-119 . . . . .	4
118-114 . . . . .	10
113-109 . . . . .	6
108-104 . . . . .	9
103-99 . . . . .	5
98-94 . . . . .	8
93-89 . . . . .	3
88-84 . . . . .	2
83-79 . . . . .	1
78-74 . . . . .	2
73-69 . . . . .	0
68-64 . . . . .	1
<hr/>	
N - 60	Mean - 107.35      S.D. - 14.80

Table 33. Frequency Distribution of  
Mental Ages of Sixth Grade  
Population of the Study

Mental Ages (Months)	Frequency
(1)	(2)
188-184 . . . . .	3
183-179 . . . . .	7
178-174 . . . . .	1
173-169 . . . . .	3
168-164 . . . . .	3
163-159 . . . . .	8
158-154 . . . . .	2
153-149 . . . . .	2
148-144 . . . . .	5
143-139 . . . . .	1
138-134 . . . . .	9
133-129 . . . . .	7
128-124 . . . . .	1
123-119 . . . . .	1
118-114 . . . . .	2
113-109 . . . . .	0
108-103 . . . . .	2

N - 60      Mean - 149.75 months      S.D.- 22.25

#### 4. Analysis of Data

In this section, the data will be analyzed for the following purposes:

1. To evaluate the effectiveness of paired practice as contrasted to individual study, when there is no enrichment.

2. To evaluate the effectiveness of paired practice as contrasted to individual study when there is enrichment.
3. To evaluate the attitude of the pupils toward working in pairs in terms of the following criteria;
  - a. Whether pupils prefer working together.
  - b. Whether pupils prefer working alone.
  - c. Whether pupils prefer discussing the material with the teacher and the class.
  - d. Whether pupils prefer discussing the material with each other.
  - e. Whether the pupils prefer using study guides for help in remembering important facts.
  - f. Whether pupils understood the directions of the study guides and the teacher.
  - g. Whether pupils thought the noise was bothersome.
  - h. What the pupils enjoyed about studying in this manner.
  - i. What the pupils disliked about studying in this manner.
4. To indicate informal teacher observations.

Table 34 shows the results of the first weeks tests. The mean score of the pupils working alone was 18.20 compared to a score of 18.80 for the pupils working in teams. The mean difference was .60 in favor of the pupil study teams. The critical ratio of .57 shows this difference to be statistically insignificant.

Table 34. First Week - Achievement of Pupils Working Alone and in Pairs

Group	N.	Mean	S.E. M.	S.D.	Diff	S.E. Diff.	C.R.
					M M 1 2		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Pairs	50	18.80	.77	5.49	.60	1.07	.57
Alone	50	18.20	.67	4.80			

Table 35 shows the results of the second weeks tests. The mean score of the pupils working in teams was 21.59 compared to the score of 17.99 for the pupils working alone. The mean difference was 3.60 in favor of the pupil study teams. The critical ratio of 2.97 shows this difference to be statistically insignificant.

Table 35. Second Week - Achievement of Pupils Working Alone and in Pairs

Group	N.	Mean	S.E. M.	S.D.	Diff		S.E. Diff.	C.R.
					M <sub>1</sub>	M <sub>2</sub>		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
Pairs	55	21.59	.93	6.96				
Alone	55	17.99	.63	4.71	3.60		1.21	2.97



Table 36 shows the results of the third weeks tests. The mean score of the pupils working in a team was 21.50 compared to the score of 21.32 for the pupils working alone. The mean difference was .18 in favor of the study teams. The critical ratio of .28 shows this difference to be statistically insignificant.

Table 36. Third Week - Achievement of Pupils Working Alone and in Pairs

Group	N.	Mean	S.E. M.	S.D.	Diff.	S.E. Diff.	C.R.
					M M 1 2		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Pairs	60	21.50	.59	4.62	.18	.63	.28
Alone	60	21.32	.62	4.83			

Table 37 shows the results of the fourth weeks tests. The mean score of the pupils working in a team was 24.38 compared to the score of 22.55 for the pupils working alone. The mean difference was 1.83 in favor of the study teams. The critical ratio of 2.12 shows this difference to be statistically insignificant.

Table 37. Fourth Week - Achievement of Pupils Working Alone and in Pairs

Group	N.	Mean	S.E. M.	S.D.	Diff.	S.E.	C.R.
					M M 1 2	Diff.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Pairs	60	24.38	.67	5.22			
Alone	60	22.55	.50	3.90	1.83	.86	2.12

Table 38 compares the first tests, without enrichment after study, to the fourth week's tests, with enrichment after study, for those who studied in pairs.

The mean score of the pupils for the fourth week, with enrichment, was 24.38 compared to 18.80 for the first week. The mean difference was 5.58 in favor of the enrichment program after study. The critical ratio of 4.57 shows this difference to be statistically significant.

Table 38. Comparison of First and Fourth Week's Tests while Working in Pairs with Enrichment and without Enrichment

Group	Weeks	M.	S.E. M.	S.D.	Diff.	S.E. Diff.	C.R.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Pairs (Without Enrichment)	1	18.80	.77	5.49			
Pairs (With Enrichment)	4	24.38	.67	5.22	5.58	1.22	4.57

Table 39 compares the first tests without enrichment after study to the fourth week's tests with enrichment after study, for those who studied alone.

The mean score of the pupils for the fourth week, with enrichment, was 22.55 compared to 18.20 for the first week. The mean difference was 4.35 in favor of the enrichment program after study. The critical ratio of 5.06 shows this difference to be statistically significant.

Table 39. Comparison of First and Fourth Week's Tests while Working alone with Enrichment and without Enrichment

Group	Weeks	M.	S.E. M.	S.D.	Diff	S.E. Diff.	C.R.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Alone (Without Enrichment)	1	18.20	.67	4.80			
Alone (With Enrichment)	4	22.55	.50	3.90	4.35	.86	5.06

Name \_\_\_\_\_ School \_\_\_\_\_

Put "yes" or "no" in front of each question:

Did you like:

1. \_\_\_\_\_ using the Study Guides?
2. \_\_\_\_\_ studying with a partner rather than alone?
3. \_\_\_\_\_ discussing it with the teacher after you finished reading?
4. \_\_\_\_\_ asking each other questions?
5. \_\_\_\_\_ choosing your own partner?

Did you think:

6. \_\_\_\_\_ you learned more studying with a partner?
7. \_\_\_\_\_ you learned easier and quicker with a partner?
8. \_\_\_\_\_ you learned more when you wrote the answers?
9. \_\_\_\_\_ the Study Guides helped you remember the important materials?
10. \_\_\_\_\_ the Study Guides were easy to understand?
11. \_\_\_\_\_ the teacher's directions were easy to understand?
12. \_\_\_\_\_ the noise bothered you when you were studying together?
13. \_\_\_\_\_ it helped to discuss it as a class?
14. \_\_\_\_\_ you would like to work together more often?
15. \_\_\_\_\_ Is there anything you did not like about working together?  
(If yes, tell why)  
\_\_\_\_\_  
\_\_\_\_\_
16. \_\_\_\_\_ Is there anything you did not like about working alone?  
(If yes, tell why)  
\_\_\_\_\_  
\_\_\_\_\_
17. \_\_\_\_\_ Is there anything you did not like about the Study Guides?  
(If yes, tell why)  
\_\_\_\_\_  
\_\_\_\_\_
18. \_\_\_\_\_ What did you enjoy most about the lessons during the past four weeks?  
\_\_\_\_\_

Table 40. Tabulation of Responses of  
Pupils to Interest  
Questionnaire

Questions	Per cent of Pupils Answering <u>Yes</u>
(1)	(2)
1. Did you like using the Study Guides?	96%
2. Did you like studying with a partner rather than alone?	93
3. Did you like discussing the material with the teacher after the study guide was finished?	91
4. Did you like asking each other questions?	86
5. Did you like choosing your own partner?	76
6. Did you think that you learned easier and quicker with a partner?	83
7. Did you think you learned more when you wrote the answers?	86
8. Did you think using the study guides helped you remember important material?	98
9. Did you think the study guides were easy to understand?	90
10. Did you think the noise bothered you when you studied together?	8
11. Did you think it helped to discuss it as a class?	85
12. Do you think you would like to work together more often?	88

Table 40. (Cont. )

13.	Is there something you disliked about working together?	25%
14.	Is there something you disliked about working alone?	44
15.	Is there something you disliked about the study guides?	5

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Summaries of Opinion.-- What pupils disliked about working together:

	No.
1. My partner can't read fast enough	3
2. Partner doesn't help	2
3. Some partners looked at answers	2
4. Partners didn't always agree even if it was the right answer.	1
5. If your partner reads faster than you he disturbs you.	2
6. Too noisy and hard to work	1
7. We didn't discuss it enough sometimes.	1
8. Don't like to discuss it with partner.	1
9. Not enough room on desk for two people.	1
10. Sometimes you get a lazy partner.	1

What pupils disliked about working alone.

	<u>No.</u>
1. Didn't learn as much because didn't discuss it.	13
2. Can't ask questions of each other.	4
3. Harder to learn alone.	2
4. Didn't learn as much alone.	2
5. Didn't understand as much when studied alone.	1
6. You work faster together.	1
7. Couldn't talk it over before writing the answer.	1
8. Teacher thinks you should finish faster working when you work alone.	1
9. Couldn't find all the answers working alone.	1

What pupils disliked about the study guides.

1. Questions were too easy.	1
2. Sometimes the answers were confusing.	2

What pupils enjoyed most about the sessions for the last four weeks.

1. Working together.	45
2. Working together and at the same time learning things.	14
3. When the teacher talked it over with us	2



4. Correcting our own study work when we found our mistakes.	<u>No.</u> 5
5. Having the correct answer on the guide.	6
6. Having a weekly test.	2
7. Working faster together and remembering more.	3
8. Studying was fun.	1

Teacher Observations.-- The first week that the guides were used they were very new to the pupils. Neither group had ever used them before. It took about five minutes to give the directions to the class. Even then, they were not fully understood and the teacher had to go around and explain more fully to some pupils or groups.

After this explanation, the first week, it was simply a matter of passing out the guide sheets and everyone proceeded without further question, on the following weeks of study.

In all lessons, the fast and average readers finished ahead of the slower readers and it took much longer than the approximate thirty minutes, for the slower readers.

In all exercises, the slower readers were allowed as much time as they needed to finish the work, and the better readers were allowed to go on to another type of work.

Grouping.-- As was previously stated, each class alternated between working in pupil teams and individually. Neither group had worked very much in pupil teams, and the idea was very new to them. For the most part, they were in groups of two, but occasionally, if there were an uneven number, there were three in a group. As they were paired according to reading ability, as much as possible, the boys and girls were mixed in their pairs.

During the first lesson under this experiment, there was much excitement over working together. The boy and girl team was much more business-like than either the strictly girl team or strictly boy team. The boys seemed sillier working together than the girls.

The teams with three pupils did not work as well as the two per team. In some instances, no matter how carefully the pupils were grouped, some would suffer because they would finish ahead of their partners.

Writing the Answers.-- While working in pupil teams or individually, the pupils wrote the answers to the questions on the study guide. Only one wrote the answers when they worked in teams. However, most of the pupils took turns writing the answers and they seemed to enjoy it more this way because all had a feeling of working and participating.

Enrichment.--Earlier in this report, it was stated that there was no enrichment of the material for the first two weeks.

For the next two weeks, the study guides were followed by class discussion and map work.

There was much participation in the discussion by pupils who seldom offer any answers. In the oral work, it was very evident which questions had been studied in pairs and alone for that week. The slower readers and the slower students took and active part in the discussion covering paired study. They also, through the help of the study guides, participated more than usual in the activities. It was a lively and self-confident class during the discussion, locating places on the wall map and building a large product map.

#### 5. Relationship of the I.Q.'s with Achievement

It is the intent of this section to correlate, using the total population of the study, the I.Q. of each individual with his average score on two weekly tests.

Table 41 shows the results of the pupils with I.Q.'s

below 100. The mean score of the pupils working in teams was 19.00 compared to the score of 17.82 for the pupils working alone. The mean difference was 1.18 in favor of the paired study. The critical ratio of 1.23 shows this to be statistically insignificant.

Table 41. Paired Learning for Pupils  
Below 100 I.Q.

Group	N.	Mean	S.E. M.	S.D.	Diff. $M_1 M_2$	S.E. Diff.	C.R.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Alone	54	17.82	.71	5.22	1.18	.96	1.23
Pairs	54	19.00	.65	4.88			

Table 42 shows the results of the pupils with I.Q.'s from 100 to 110. The mean score of the pupils working in teams was 20.68 compared to the score of 19.16 for the pupils working alone. The mean difference was 1.52 in favor of the paired study. The critical ratio of 2.07 shows this to be statistically insignificant.

Table 42. Paired Learning for Pupils  
Between 100 and 110 I.Q.

Group	N.	Mean	S.E. M.	S.D.	Diff. $M_1M_2$	S.E. Diff.	C.R.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Alone	8 2	19.16	.50	4.56	1.52	.54	2.07
Pairs	8 3	20.68	.54	4.94			

Table 43 shows the results of the pupils with I.Q.'s from 111 to 120. The mean score of the pupils working in teams was 23.23 compared to the score of 23.78 for the pupils working alone. The mean difference was .05 in favor of those working alone. The critical ratio of .06 shows this to be statistically insignificant.

Table 43. Paired Learning for Pupils  
Between 111 and 120 I.Q.

Group	N.	Mean	S.E. M.	S.D.	Diff. $M_1M_2$	S.E. Diff.	C.R.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Alone	41	23.78	.56	3.56	1.05	.83	.06
Pairs	41	23.23	.66	3.98			

Table 44 shows the results of the pupils with I.Q.'s of 121 and over. The mean score of the pupils working in teams was 26.32 compared to the score of 25.5 for the pupils working alone. The mean difference was 1.44 in favor of those working in pairs. The critical ratio of 1.00 shows this to be statistically insignificant.

Table 44. Paired Learning for Pupils  
Above 121 I.Q.

Group	N.	Mean	S.E. M.	S.D.	Diff. $M_1M_2$	S.E. Diff.	C.R.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Alone	34	25.50	.45	2.64			
Pairs	34	26.32	.89	5.20	.44	.45	1.00

## CHAPTER VI

### FINDINGS AND INTERPRETATIONS

In this chapter, the findings from the individual studies will be summarized. The study involved a total of 232 children working a total of 16 weeks in the fourth, fifth and sixth grades in three different towns.

It was the intent of this study to measure the effectiveness of paired study versus individual study, specifically:

1. To find if there was more retention when pupils studied in pairs.
2. To find if there was more retention when pupils studied alone.
3. To find if there was more retention when an enrichment program followed study when pupils studied in pairs.
4. To find if there was more retention when an enrichment program followed study when pupils studied alone.

Paired Study.-- Of a total of sixteen trials, ten were reported to be in favor of the paired study. There were no statistically significant critical ratios reported.



Individual Study.--Of a total of sixteen trials, six were reported to be in favor of the individual study. There were no statistically significant critical ratios.

Effect of Enrichment on Paired and Individual Study.--Enrichment consisted of discussion, map work, current events, and displays. When enrichment directly followed recall practice, test results were improved on both paired and individual study. However, this rests on the assumption of equality of difficulty of materials and tests which was not controlled. Although the enrichment appeared to produce good results, there is a need for further testing.

Study Guides.--As the questionnaire indicates, the children reacted favorably to the study guides, whether working alone or in pairs. Many of them made it an informal game to see who would do the most accurate work. Asking each other questions and having the answers available for an immediate check, kept the interest high.

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