

Rowan University

## Rowan Digital Works

---

Theses and Dissertations

---

6-30-2004

# The effect of graphic organizers on the academic achievement of fourth grade students

Stephanie Kirschbaum  
*Rowan University*

Follow this and additional works at: <https://rdw.rowan.edu/etd>



Part of the [Elementary Education and Teaching Commons](#)

---

### Recommended Citation

Kirschbaum, Stephanie, "The effect of graphic organizers on the academic achievement of fourth grade students" (2004). *Theses and Dissertations*. 1177.  
<https://rdw.rowan.edu/etd/1177>

This Thesis is brought to you for free and open access by Rowan Digital Works. It has been accepted for inclusion in Theses and Dissertations by an authorized administrator of Rowan Digital Works. For more information, please contact [graduateresearch@rowan.edu](mailto:graduateresearch@rowan.edu).

THE EFFECT OF GRAPHIC ORGANIZERS ON THE ACADEMIC  
ACHIEVEMENT OF FOURTH GRADE STUDENTS

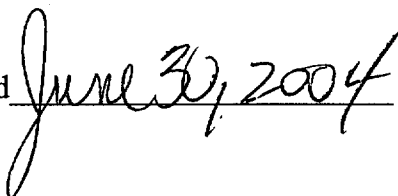
by  
Stephanie Kirschbaum

A Thesis

Submitted in partial fulfillment of the requirements of the  
Master of Science in Teaching Degree  
of  
The Graduate School  
at  
Rowan University  
June 30, 2004

Approved

Date Approved

  
June 30, 2004

© June 30, 2004 Stephanie Kirschbaum

## ABSTRACT

Stephanie Kirschbaum  
THE EFFECT OF GRAPHIC ORGANIZERS ON THE ACADEMIC  
ACHIEVEMENT OF FOURTH GRADE STUDENTS

2003/04

Dr. Randall Robinson  
Master of Science in Teaching

The purpose of this study was to determine the effect that graphic organizers have on the academic achievement of fourth grade students. The sample was a fourth grade classroom in an elementary school in southern New Jersey. The researcher taught the students two different social studies chapters. The researcher collected data by giving the students two tests for each of the two chapters taught. There were a total of four tests given. These tests were similar in that they were the exact same difficulty level. However, in each chapter there was one test that was constructed using graphic organizers, and a second test that was constructed using a question-answer format. The researcher then compared the four data sets to determine if the students scored higher on the tests that were constructed using graphic organizers. The researcher concluded that graphic organizers do not have a significant effect on the academic achievement of fourth grade students.

## ACKNOWLEDGEMENTS

I would like to thank the students who participated in this study and the Michelle Greene, my cooperating teacher, for providing her assistance. I would like to thank my advisor, Dr. Robinson, for his insight and assistance during the thesis process. I would like to thank my mother who has supported and encouraged me throughout my academic, professional, and personal life. I would also like to thank Sagy Langer, for his patience and understanding. Without him, the completion of this thesis would have seemed unlikely.

## Table of Contents

	Page
Acknowledgements.....	iii
List of Tables.....	vi
Chapter	
1. Scope of the Study	
Introduction.....	1
Statement of the Problem.....	2
Hypothesis.....	3
Limitations of the Study.....	3
Definitions of Selected Terms of the Study.....	4
2. Review of the Literature	
Introduction.....	6
The Need for Graphic Organizers.....	6
Use of Graphic Organizers.....	7
Graphic Organizer Implementation.....	8
Methods of Effective Graphic Organizer Implementation.....	11
3. Proposed Data Collection Methodology	
Introduction.....	13
Description of the Subjects.....	13
Procedure.....	14
Description of the Instrument.....	14

4. Analysis of Findings	
Introduction.....	16
Analysis of Data.....	16
5. Summary, Conclusions and Recommendations	
Introduction.....	21
Summary of Problem.....	21
Summary of the Hypothesis.....	22
Summary of Procedures.....	22
Summary of Findings.....	23
Conclusions.....	24
Recommendations and Implications.....	24
Bibliography.....	26
Appendices	
Appendix A.....	27
Appendix B.....	43
Appendix C.....	45
Appendix D.....	48
Appendix E.....	50

## List of Tables

Table	Page
4.1 Student Test Scores for Graphic Organizer Test 1 and Non-Graphic Organizer Test 1.....	17
4.2 Student Test Scores for Graphic Organizer Test 2 and Non-Graphic Organizer Test 2.....	18
4.3 Mean Scores and Statistical Significance When Comparing Tests.....	20

## Chapter 1

### Scope of the Study

#### Introduction

There have been numerous studies that have concluded that the use of graphic and other visual organizers help students understand new and difficult concepts about literacy. They do this by helping students understand inter-concept relationships by presenting the information spatially. If educators can use graphic organizers to depict the whole picture rather than separate facts, the students may better see the importance of what is being taught and how the information is connected. Information needs to be presented in a way that is meaningful to learners, and the use of graphic organizers is one way of doing this (Merkley, 2000). Researchers Alvermann and Boothby (as cited in Merkley, 2000) suggested that student understanding and comprehension of the material is greater when the graphic organizer is constructed by the student as a during-reading or post-reading activity. Novak (as cited in Merkley, 2000) also found that student-constructed concept maps reflect the students' understanding of the concepts more than traditional forms of taking notes. According to Novak and Gowin (as cited in DiCecco, 2002, p. 308), "...the graphic organizer is a powerful pedagogical tool because it allows students to visualize concepts and hierarchical relationships between them." As a result, using graphic organizers may help students become independent learners; thus feeling more comfortable and successful in school. There is very little information about using graphic organizers in the content area of social studies. However, there is an abundance of information about using graphic organizers in reading comprehension.



This can relate to social studies because it is a subject that requires reading and comprehending what is read (Robinson, 1998).

Comprehension is a major issue in education today (Robinson, 1998). According to Merkley (2000), students can often comprehend material from narrative texts, but many students have difficulty effectively comprehending and recalling expository material. Expository material is different from narrative material in that its primary intent is to present facts, ideas, and information.

In 1960, David Ausubel theorized that a primary process in learning is subsumption in which new material is related to relevant ideas in the existing cognitive structure on a substantive, non-verbatim basis. In Ausubel's subsumption theory, he argued that "the most important single factor influencing learning is what the learner already knows" (Merkley, 2000, p. 351). According to Ausubel, learning will be enhanced if students associate new meanings with previously learned information. Cognitive structures represent the residue of all learning experiences; forgetting occurs because certain details get integrated and lose their individual identity. As a result of his research, Ausubel developed the advanced organizer. He hypothesized that the advanced organizer will strengthen the student's existing cognitive structure.

Graphic organizers, as they are now called, are visual representations that clarify information for learners by linking new concepts to existing related ideas. By providing the learner with a visual representation, the graphic organizer makes information more meaningful for learners because it allows them to visualize concepts and the hierarchical relationships between them (Griffin, 1995).

#### Statement of the Problem

What can teachers do to improve students' comprehension? DiCicco and Gleason (2002) believed that students must attend to learning, attach learning to previous learning, actively engage in learning, construct meaning, and demonstrate their learning. Educators want learners to be able to organize, store, and retrieve skills." Many students often ask, "Why do we have to know about this? If students can attach their prior life experiences to what they are learning they will be able to comprehend the material much more easily. If educators can use graphic organizers to depict the whole picture rather than separate facts, then the students may see the importance of what is being taught and how information is being connected. What is the effect of the implementation and the use of social studies graphic organizers on students' information retention, and as a result have an effect on student grades?

### Hypothesis

The following hypothesis was proposed for this study:

- Fourth grade students will score significantly higher on social studies tests that are constructed completely of graphic organizers, than they will score on social studies tests that are constructed without any graphic organizers.

### Limitations of the Study

The following were limitations of this study regarding the efficacy of graphic organizers:

One limitation was that some graphic organizers are confusing and may do more harm than good. In existing research, there has been a "lack of consistency concerning the format of graphic organizers. For instance, some studies use matrices while others use tree diagrams" (Robinson, 1998, p. 90). There is inconsistency in the conclusions of studies on graphic organizers. In addition, Alvarez, Dinnel and Glover, Graves and

Penn (as cited in Robinson, 1998, p. 87) found that some studies show evidence that graphic organizers facilitate learning; while others do not (Barnes & Clawson, 1978, Hartley & Davies, 1976; Mayer, 1979).

Another limitation was that the test scores did not reflect the style of the different tests, but rather that the information in one chapter is greater in difficulty than another chapter. Also, the variation in test scores may be due to the method of teaching. As a result, the students' test scores may be inconclusive. Therefore, in this study the researcher did everything possible to ensure the difficulty level, the time on task, the time of day that the material is taught, the method of delivery, and the method of reinforcement were exactly the same. Therefore, the only difference in the material taught was the different tests.

Finally, test scores may not be the only indicator of the students' understanding of the material. The students' knowledge was not necessarily reflected in the student's test scores. This can be due to the fact that this student is a bad test taker, or possibly that the student could have had a bad day. The researcher for the proposed study allowed for these circumstances by focusing on the test scores as a whole, rather than examining individual test scores. When considered together, these limitations influenced either the internal validity of this study, the external validity, or both.

### Definitions of Selected Terms of the Study

For the purposes of this study, the following definitions were provided to ensure understanding:

**Graphic organizer:** A visual communication tool that uses visual symbols to express ideas and concepts, and to convey meaning. It provides a visual of facts, ideas, relationships, and patterns.

**Relational knowledge:** Knowledge that the learner acquires that is connected to the material that is currently being presented;

**Expository information:** Information that is intended to convey facts, ideas, and information to explain what is difficult to understand;

**Student achievement:** A student's comprehension and mastery of the material being presented to them in the unit. This knowledge and understanding is reflected in the student's test scores.

## Chapter 2

### Review of the Literature

#### Introduction

Comprehension is a major issue in education today (Robinson, 1998). According to Merkley (2000), students can often comprehend material from narrative texts, but many students have difficulty effectively comprehending and recalling expository material. Expository material is different from narrative material in that its primary intent is to present facts, ideas, and information.

David Ausubel developed the graphic organizers, or visual representations that clarify information for learners by linking new concepts to existing related ideas. By providing the learner with a visual representation, the graphic organizer makes information more meaningful for learners because it allows them to visualize concepts and the hierarchical relationships between them (Griffin, 1995). This study hypothesized that fourth grade students will score significantly higher on social studies tests that are constructed completely of graphic organizers, than they will score on social studies tests that are constructed without graphic organizers.

#### The Need for Graphic Organizers

In recent years, advances in computer software have made it possible for those with limited knowledge of text material to construct graphic organizers that will increase student understanding of textbook material. Robinson (1998) stated:

“Students’ difficulties in comprehending content area textbooks is an educational problem that has received much attention in recent years.”

According to Robinson (1998),

“Text comprehension involves learning concepts, defining attributes, recognizing defining attributes when presented with a range of examples, learning hierarchal and coordinate relations among concepts, and finally transferring knowledge by correctly identifying concepts given in new examples.” (p. 86)

Robinson (1998) also noted that students are sometimes hindered because of the textbooks they are using. Many textbooks have poor organization or structure that may inhibit learning important concept relationships. Educators need to improve a student’s comprehension. Banikowski (1999) believed “Educators must ensure that students must attend to learning, attach new learning to previous learning, construct meaning, and demonstrate their learning. Educators want learners to be able to organize, store, and retrieve knowledge and skills” (p. 1).

#### Use of Graphic Organizers

According to DiCecco and Gleason (2002),

“Graphic organizers are one method that might achieve what textbooks failed to do. Graphic organizers are visual portrayals or illustrations that use special arrangements, geometric shapes, lines, and arrows to portray the content structure and to depict relationships among key concepts taken from the learning task” (p. 307).

Once those relationships are understood by the learner, it will be easier for them to grasp the concepts. Graphic organizers can be instrumental in addressing the problem of content area text comprehension by making the information more explicit. They will provide meaning to the information presented by showing the students how the information connects. They allow students to visualize concepts and the hierarchical relationships between them (DiCecco, 1999). In other words, if students can “see” how the information is connected, then they will be able to understand it better. Graphic organizers do this by taking what a student already knows and creating a

framework that provides a basis to attach new information to the existing schemata (Dunston, 1992).

“Having prior knowledge or experience with current learning enhances memory. What we already know determines to a great extent what we will pay attention to, perceive, learn, remember, and forget”  
(Bandikowski, 1999, p. 9).

A graphic organizer allows the student to remember what he already knows by generating what is already known about the topic. After remembering what is already known, learners generate what they want to know- which is an excellent way to establish a purpose for learning. Then, the students formulate what they have learned, which will compare prior unclear knowledge with new and accurate knowledge (Bandikowski, 1999).

#### Graphic Organizer Implementation

Recently, there have been reviews of graphic organizers that have concluded that they do aid in a student's comprehension of text material. Many researchers have stressed the importance of using graphic organizers (Robinson, 1998). Researchers have indicated that graphic organizers increase student achievement in reading comprehension, application, retention and understanding of science or social studies content, and greater organization within written compositions (Baxendell, 2003). “Researchers should no longer question ‘if’ organizers work, but how and when they work” (Dunstan, 1992, p. 58).

An in-depth study conducted by Griffin and Malone in 1995 examines two questions related to graphic organizer instruction in five classrooms of normal achieving fifth grade students. This study explored the following questions; (a) Does graphic organizer instruction facilitate comprehension, recall, and transfer of information contained in an expository textbook? And (b) What degree of explicit

instruction is necessary for an independent generation and use of graphic organizers by students? Each classroom was assigned one of the following treatment conditions: (a) explicit graphic organizer instruction, (b) explicit instruction no graphic organizer, (c) implicit graphic organizer instruction, (d) implicit instruction no graphic organizer, and (e) traditional basal instruction which used the teacher's manual of the district adopted handbook. The graphic organizers were designed to reflect the hierarchy of information and the relationships of this information within the hierarchy. The purpose of the graphic organizer was to highlight the important information in the text. The results indicated that the students receiving the explicit graphic organizer instruction (they received detailed instructions for identifying the important information in the text and constructing graphic organizers) had the highest mean scores on both the immediate post-test and the immediate recall measure. Griffin and Malone also point out that those students had the added demands of not only learning the content but also the procedures to construct a graphic organizer. Even with those added demands, the explicit instruction and graphic organizer were vital in the students' understanding of the text. The study concluded that graphic organizers do facilitate comprehension, recall, and transfer of information in an expository textbook as long as explicit instruction is provided.

A study done by DiCecco and Gleason (2002), examines the effects of using graphic organizers to attain relational knowledge from expository text in students with learning disabilities. They conducted this study because they believed teachers do not aid students in the comprehension process, and they believed graphic organizers will link concepts together to aid the students in comprehending the material from the expository text. Students with mild disabilities were assigned to either graphic organizer instruction or no graphic organizer instruction. The results indicated that



graphic organizers do teach relational knowledge to students with learning disabilities. The results show that those students using graphic organizers provided more relational knowledge statements and were able to recall more information than those students not using the graphic organizer.

Teachers have used graphic organizers as a result of the research that indicates that they increase student comprehension. Moore and Readence (as cited in DiCecco, 2002, p. 310) analyzed 23 studies qualitatively. They concluded that when teaching content material, teachers feel more confident using graphic organizers. They perceive themselves as “being better organized, more in control of the learning activity, and more sensitive to the demands of the learning task.” One example of this is a teacher who designed a writing instruction model to make her students better writers. Using graphic organizers, the teacher was able to provide explicit instruction in the writer’s workshop. The students were instructed to brainstorm ideas for their chosen topic on an idea “light bulb”. Next, the students used a color-coded organizer to outline and organize their main ideas. After the nine weeks of instruction, the students’ post-tests were drastically improved from their pretest scores, which can be attributed to the use of graphic organizers (James, 2001).

There has been a lot of research done on how graphic organizers should be constructed in order for them to be effective by facilitating student learning. According to Baxendell (1999), they must be used consistently, by incorporating them in similar situations across all subject areas. They must be used coherently, by limiting the ideas covered, making all relationships clear, and minimizing directions. Lastly, they must be creative, by adding illustrations, including them in homework and test review, and implementing the graphic organizer in pairs of students.

### Methods of Effective Graphic Organizer Implementation

Merkeley and Jefferies (1999) provide five methods of effective graphic organizer implementation. The teacher should verbalize relationships among the concepts expressed by the visual, which will clarify to students that the graphic organizer provides an overview of the material that is being presented. The teacher should provide opportunity for student input to ensure the students' understanding of the material being presented. The teacher should connect new learning to past learning by reviewing the information the students learned in the previous weeks. The teacher should make references to the upcoming text and reinforce with students that using the graphic organizer should be used as a supplement to the text rather than instead of the text. Finally, teachers should seize opportunities to reinforce decoding and structural analysis, for example relevant phonics generalizations.

Egan (1999) also offers suggestions to teachers to use graphic organizers effectively so students understand the material. She recommends that before teachers use the organizer with their students, they should use it themselves. This preparation allows teachers to activate schema, decide what works and what doesn't, and reflect upon questions that may arise. She also suggests that teachers should encourage students to work cooperatively using graphic organizers, so they can raise and test each other's ideas. She also suggests that teachers use graphic organizers only when it is appropriate to the objective of the lesson. Finally, she suggests to expand the use of the graphic organizer other than the text, for example to use it with class discussion, film, and video.

Student comprehension is a focal problem in education today. One method that may aid student comprehension is the graphic organizer. "Using a graphic organizer, students will better be able to see how information is connected, so it will be easier to

comprehend the material (Bandikowski, 1999, p.9).” This review of the literature has shown a number of studies that have been conducted that indicate that graphic organizers facilitate student learning.

## Chapter 3

### Design of the Study

#### Introduction

This was a quantitative study that determined if the variables, graphic organizer constructed tests, increased student comprehension. Research has shown that graphic organizers do make concepts clearer for students by allowing them to visualize concepts, which makes information more meaningful (Griffin, 1995). The researcher believed that graphic organizers help facilitate student learning by being an excellent addition to the textbook. Graphic organizers clarify information to students by linking concepts together, which makes information more meaningful (Griffin, 1995). It was hypothesized that fourth grade students will score significantly higher on social studies tests that are constructed completely of graphic organizers, than they will score on social studies tests that are constructed without any graphic organizers.

#### Description of the Subjects

The sample was a fourth grade classroom in an elementary school in southern New Jersey. The sample was selected because it was the classroom in which the researcher was assigned as a student teacher. The sample was selected there to fulfill the researcher's need to teach student material, to use graphic organizer constructed tests, as well as question-answer tests. The size of the sample was twenty-five 10 year-old students, consisting of 14 boys and 11 girls. The sample consisted of students that varied in their reading ability levels. The ability levels ranged from accelerated readers to

special needs students that have difficulty reading. The sample consisted of twenty-four Caucasian students, and one Afro-American student.

### Procedure

The researcher taught the students two different social studies chapters, the first called *The Geography of New Jersey*, and the second called *The Regions of New Jersey*. The students read the section of material in their New Jersey books, New Jersey Yesterday and Today, for homework the night before. The following day, the class discussed and took notes on the material the class read. The researcher taught the two chapters every day for a half a hour in the morning (see appendix A for lesson plans). The two chapters were taught using an overhead projector and a transparency of teacher-made notes on the content of each section. The first day of each chapter a fun activity was used to introduce the chapter to the students. This first day also helped them understand why the information was important for them to learn. The second day of each chapter the students were given a list of the vocabulary. They were asked to define the vocabulary words on the list and to hand in the list to be graded. The following day the researcher taught using the transparency of teacher-made notes on the first section of material. After every two sections of material there was a brief review in order that the students could prepare for the test. Four tests were then given throughout the two chapters.

### Description of the Instrument

The researcher collected data by giving the students two tests for each of the two chapters taught. There were a total of four tests given. These tests were similar in that

they were the exact same difficulty level. However, in each chapter there was one test that was constructed using graphic organizers, and a second test that was constructed using a question-answer format. The researcher then compared the four data sets to determine if the students scored higher on the tests that were constructed using graphic organizers (see appendix B-E for New Jersey Tests 1-4).

## Chapter 4

### Analysis of Findings

#### Introduction

Studies have concluded that the use of graphic organizers and other visual organizers help students understand difficult concepts. They do this by making information meaningful for learners allowing them to visualize concepts to see how the information is being connected (Griffin, 1995). It was hypothesized that fourth grade students will score significantly higher on social studies tests that are constructed completely of graphic organizers, than they will score on social studies tests that are constructed without any graphic organizers.

#### Analysis of Data

There were four sets of data that were collected. There were four tests given throughout the course of this study. The first test given was a non-graphic organizer test, and the second a graphic organizer test. The scores of each test were analyzed using a Post Hoc Test to determine if the differences in their scores were statistically significant. The range of scores for these two tests was 9-100. The mode score for the non-graphic organizer test was an 83. The mode score for the graphic organizer test was an 82. The mean score for the non-graphic organizer test was a 79. The mean score for the graphic organizer test was a 73 (see table 1 for a complete list of test scores).

table 1

Student Test Scores for Graphic Organizer Test 1 and Non-Graphic Organizer Test 1

---

<u>Non GO 1</u>	<u>GO 1</u>
50	91
58	91
83	9
42	55
83	82
83	73
83	64
83	64
100	82
100	82
100	91
83	82
92	73
83	73
83	82
75	82
83	91
100	91
92	82



100	73
100	82
100	91
58	45
67	91

---

The third and fourth tests were also analyzed using a Post Hoc Test to determine if the differences in their scores were statistically significant. The third test was a non-graphic organizer test, and the fourth test was a graphic organizer test. The range of scores for these two tests was 8-100. The mode score for the non-graphic organizer test was a 67. The mode score for the graphic organizer test was also a 67. The mean for the non-graphic organizer test was a 70. The mean score for the graphic organizer test was a 57 (see table 2 for a complete list of test scores).

table 2

Student Test Scores for Graphic Organizer Test 2 and Non-Graphic Organizer Test 2

---



---

<u>Non GO 2</u>	<u>GO 2</u>
75	67
75	50
67	8
67	42
58	50

67	50
58	33
92	75
83	67
100	92
67	58
67	67
67	17
67	67
50	42
83	75
67	67
92	42
83	67
100	67
75	75
83	100
42	67
67	75

---

The researcher found that the scores were not statistically significant when comparing the graphic organizer test scores to the non-graphic organizer test scores. The mean score

when comparing non-graphic organizer test 1 to graphic organizer test 1 was 6.04. This was not found to be statistically significant with  $p = .715$ . The mean score when comparing non-graphic organizer test 2 to graphic organizer test 2 was 15.77. This also was not found to be statistically significant with  $p = .053$ . The mean score when comparing non-graphic organizer test 1 with graphic organizer test 2 was 24.47. This was found to be statistically significant with  $p = .000$ . This indicates that the students scored statistically significantly more on non-graphic organizer test 1 than they did on graphic organizer test 2. The mean score when comparing graphic organizer test 1 and non-graphic organizer test 2 is 2.66. This was not found to be statistically significant with  $p = .970$  (see table 3 for mean scores and statistical significance).

table 3

Mean Scores and Statistical Significance When Comparing Tests

	<u>Mean</u>	<u>Statistical Significance</u>
Non GO 1 to GO 1	6.04	.715
Non GO 2 to GO 2	15.77	.053
Non GO 1 to GO 2	24.47	.000
GO 1 to Non GO 2	2.66	.970

## Chapter 5

### Summary, Conclusions and Recommendations

#### Introduction

Comprehension is a major issue in education today (Robinson, 1998). Graphic organizers have been found to clarify information for learners by linking new concepts to existing related ideas. By providing the learner with the visual representation, the graphic organizer makes information more meaningful for learners because it allows them to visualize concepts and the hierarchical relationships between them (Griffin, 1995).

#### Summary of Problem

Teachers need to find a way to improve students' comprehension. According to Merkley (2000), students can often comprehend material from narrative texts, but many students have difficulty effectively comprehending and recalling expository material. Expository material is different from narrative material in that its primary intent is to present facts, ideas, and information.

DiCicco and Gleason (2002) believed that "students must attend to learning, attach learning to previous learning, actively engage in learning, construct meaning, and demonstrate their learning. Educators want learners to be able to organize, store, and retrieve skills." If students can attach their prior life experiences to what they are learning they will be able to comprehend the material much more easily. If educators can use graphic organizers to depict the whole picture rather than separate facts, then the

students may see the importance of what is being taught and how information is being connected.

#### Summary of the Hypothesis

It was hypothesized that fourth grade students will score significantly higher on social studies tests that are constructed completely of graphic organizers, than they will score on social studies tests that are constructed without any graphic organizers.

#### Summary of Procedures

The researcher taught the students two different social studies chapters, the first called *The Geography of New Jersey*, and the second called *The Regions of New Jersey*. The students read the section of material in their New Jersey books, New Jersey Yesterday and Today, for homework the night before. The following day, the class discussed and took notes on the material the class read. The researcher taught the two chapters every day for a half a hour in the morning (see appendix A for lesson plans). The two chapters were taught using an overhead projector and a transparency of teacher-made notes on the content of each section. The first day of each chapter a fun activity was used to introduce the chapter to the students. This first day also helped them understand why the information is important for them to learn. The second day of each chapter the students were given a list of the vocabulary. They were asked to define the vocabulary words on the list and to hand in the list to be graded. The following day the researcher taught using the transparency of teacher-made notes on the first section of material. After

every two sections of material there was a brief review in order that the students could prepare for the test. Four tests were then given throughout the two chapters.

### Summary of Findings

There were four sets of data that were collected. There were four tests given throughout the course of this study. The first test given was a non-graphic organizer test, the second a graphic organizer test, the third a non-graphic organizer test, the fourth test a graphic organizer test. The scores of each test were analyzed using a Post Hoc Test to determine if the differences in their scores were statistically significant. The range of scores was 0-100 on each test. The researcher found that the scores were not statistically significant when comparing the graphic organizer test scores to the non-graphic organizer test scores. The mean score when comparing non-graphic organizer test 1 to graphic organizer test 1 was 6.04. This was not found to be statistically significant with  $p = .715$ . The mean score when comparing non-graphic organizer test 2 to graphic organizer test 2 was 15.77. This also was not found to be statistically significant with  $p = .053$ . The mean score when comparing non-graphic organizer test 1 with graphic organizer test 2 was 24.47. This was found to be statistically significant with  $p = .000$ . This indicated that the students scored statistically significantly more on non-graphic organizer test 1 than they did on graphic organizer test 2. The mean score when comparing graphic organizer test 1 and non-graphic organizer test 2 is 2.66. This was not found to be statistically significant with  $p = .970$  (see table 1 for a complete list of test scores).

## Conclusions

The statistical analysis of the data collected was contrary to what the researcher predicted. The analysis revealed that the use of graphic organizers did not improve student achievement. The research actually revealed that students achieved better on the first test in a chapter or a unit, and as the chapter progressed, student achievement decreased. The students were motivated to achieve when taking the first test, and as a result the scores for the first test were significantly higher than the remaining tests. As the tests progressed, the scores got lower despite whether it was a graphic organizer test or not. The students achieved the highest scores in the first non-graphic organizer test. They achieved the next highest scores on the second test which used graphic organizers. They achieved the third highest scores on the third test which did not use graphic organizers. Finally, the lowest scores were on the last test which did use graphic organizers. Therefore, it can be concluded that graphic organizers do not influence student achievement positively or negatively.

## Recommendations and Implications

As a result of this study, graphic organizers did not influence student achievement positively or negatively. In addition, the results of this study indicated that graphic organizers do not harm test scores. The researcher believes that some students may still benefit from using them. Therefore, using them in conjunction with the other resources available can only benefit the students. Therefore, the researcher recommends that graphic organizers continued to be used during lessons.

It was concluded that student achievement was higher in the beginning of the unit and decreased as the unit of material progressed. The researcher believes teachers should find a way to keep the material interesting throughout the unit. One way to do this may be to add incentives to the learning process other than grades. One example of this could be more free time, if student achievement progresses as the unit progresses, because each test is of equal value, teachers and parents also need to find a way to keep the students motivated enough to study for more than simply the first test.



## Bibliography

Baxendall, B. (2003). Consistent, coherent, creative: The 3 C's of graphic organizers [Electronic version]. The Council for Exceptional Children, 35 (3), 46- 49.

Brunn, M. (2002). Teaching ideas [Electronic version]. Reading Teacher, 55 (6), 522- 526.

DiCecco, V., & Gleason, M. (2002). Using graphic organizers to attain relational knowledge from expository text [Electronic version]. Journal of Learning Disabilities, 35 (4), 306-321.

<http://www.dinah.com>

Egan, M. (1999). Reflections of effective use of graphic organizers [Electronic version]. Journal of Adolescent & Adult Literacy, 42 (8), 641-646.

Griffin, C, & Malone, D. (1995). Effects of graphic organizer instruction on fifth-grade students [Electronic version]. Journal of Educational Research, 89 (2), 98-108.

Hyerle, D. (1995/1996). Thinking maps: Seeing is understanding [Electronic version]. Educational Leadership, 53 (4), 85-89.

<http://www.inspiration.com/productinfo/kidspiration/index.cfm>

James, L., Abbott, M., & Greenwood, C. (2001). How Adam became a writer [Electronic version]. The Council for Exceptional Children, 33 (3), 30-37.

Keller, C. (2002). A new twist on spelling instruction for elementary school teachers [Electronic version]. Intervention in School & Clinic, 42 (8), 3-8.

Merkley, D.M., & Jefferies, D. (2000). Guidelines for implementing a graphic organizer [Electronic version]. Reading Teacher, 54 (4), 350-358.

<http://www.ncrel.org/sdrs/areas/issues/students/learning/lr1grorg.htm>

Pettus, A., & Blosser, M. (2002). Fun and learning with recall [Electronic version]. Science Activities, 38 (4), 10-16.

Orlando, F., & Levy, L. (2000). Technology for teachers (2<sup>nd</sup> ed.). Dubuque: Kendall/ Hunt Publishing Company.

<http://www.smcps.k12.md.us/mbms/writing/graphorg.html>

**Appendix A**  
**(Lesson Plans for Unit)**

Stephanie Kirschbaum  
New Jersey Lesson Plan  
Day 1  
4<sup>th</sup> Grade  
April 14, 2004

1. Objective: Students will be able to locate New Jersey on a map, and be able to locate states that touch New Jersey, the state capital, the ocean that touches New Jersey, the county we are located in, and the location of their school, and ten cities in New Jersey and fill that information in correctly on a blank map of New Jersey.
2. Procedure:
  - a. Anticipatory Set/ Purpose  
Tell students we will be starting a unit on New Jersey, today. Using the overhead projector, show students a transparency of a map of the world and ask them if they know where the United States is on the map. Then show students a transparency of a map of United States on overhead, and ask them to tell me where New Jersey is located on the map.
  - b. Input and Modeling  
Give students a blank map of New Jersey. Then, show students map of New Jersey transparency, and ask students what states touch New Jersey. I will locate the states New Jersey touches and fill that in on the map on the overhead. The students will then fill in their own maps with the states that touch New Jersey. I will repeat this procedure for the ocean that New Jersey touches, the state capital, the county we are located in, and the location of Gloucester Township Elementary School.
  - c. Checking for Understanding  
I will check to see if every student has their map of New Jersey properly filled in.
  - d. Guided Practice  
Students will use their books to locate at least ten more cities in New Jersey and fill them in on their maps.
  - e. Independent Practice  
There is no independent practice for this lesson.
3. Materials:
  - Overhead Projector
  - Map of world transparency
  - Map of United States transparency
  - Blank map of New Jersey for transparency
  - Copies of blank maps for students
  - New Jersey Yesterday and Today* books

Standards:  
6.5B4

Stephanie Kirschbaum  
New Jersey Lesson Plan  
Day 2  
4<sup>th</sup> Grade  
April 15, 2004

1. Objective: The students will be able to correctly define all of the vocabulary words in Chapter 3 and write definitions for each word on a piece of paper.
2. Procedure:
  - a. Anticipatory Set/ Purpose  
Students will look through the chapter by looking at the pictures, maps and charts, to get a brief understanding of what they will be reading about in the chapter.
  - b. Input and Modeling  
Students will be given a Chapter 3 vocabulary list. Students will look through the book and define vocabulary words on the paper where the words are listed.
  - c. Checking for Understanding  
We will go over the list as a class and students will read their definitions of the words.
  - d. Guided Practice  
I will explain to the students the project they will complete during the unit. The students will be broken up into groups of 5. Each group will be given a different topic about New Jersey. The students will have two weeks to gather information about their topic and make a poster about their topic as well as trace and cut out a big blank map of New Jersey and find some form of locating their topic on their map. In addition, the students will be given a New Jersey packet that they must also complete by using the book and researching on the Internet, over the next two weeks.
  - e. Independent Practice  
Students will begin reading Chapter 3, The Geography of New Jersey, in their *New Jersey Yesterday and Today* books pp.50-57.

3. Materials:  
Vocabulary list  
*New Jersey Yesterday and Today* books

Standards:  
6.5B4

Stephanie Kirschbaum  
New Jersey Lesson Plan  
Day 3  
4<sup>th</sup> Grade  
April 16, 2004

1. Objective: The students will be able to know key facts about the geography of New Jersey and be able to orally discuss them in class.

2. Procedure:

- a. Anticipatory Set/ Purpose  
We will review as a class the vocabulary words in Chapter 3.
- b. Input and Modeling  
Using an overhead projector and pre-made transparencies, students will begin to take notes on New Jersey's geography.
- c. Checking for Understanding  
We will discuss as a class the information on the transparency and in the book on New Jersey's geography.
- d. Guided Practice  
Students will use the remaining time to work with their group on their projects as well as complete the New Jersey packet.
- e. Independent Practice  
Students will read Chapter 3, pp. 58-61.

3. Materials:

Overhead projector  
Transparencies  
Notebooks  
New Jersey packets  
*New Jersey Yesterday and Today* books

Standards:  
6.5B4

Stephanie Kirschbaum  
New Jersey Lesson Plan  
Day 4  
4<sup>th</sup> Grade  
April 19, 2004

1. Objective: The students will be able to identify the four natural resources of New Jersey and be able to orally discuss information about them in class.

2. Procedure:

- a. Anticipatory Set/ Purpose  
We will review as a class the geography of New Jersey.
- b. Input and Modeling  
Using an overhead projector and pre-made transparencies, students will begin to take notes on New Jersey's natural resources.
- c. Checking for Understanding  
We will discuss as a class the information on the transparency and in the book about New Jersey's natural resources.
- d. Guided Practice  
Students will use the remaining time to work with their group on their projects as well as complete the New Jersey packet.
- e. Independent Practice  
Students will study for quiz.

3. Materials:

Overhead projector  
Transparencies  
Notebooks  
New Jersey packets  
*New Jersey Yesterday and Today* books

Standards:  
6.5B4

Stephanie Kirschbaum  
New Jersey Lesson Plan  
Day 5  
Question-Answer Quiz #1  
4<sup>th</sup> Grade  
April 20, 2004

1. Objective: Students will be able to complete a question answer quiz about the geography of New Jersey and the four natural resources of New Jersey.

2. Procedure:

a. Introduction

Students look over their notes and *New Jersey Yesterday and Today* books as a review for the quiz.

b. Developmental Activities

Students take question-answer quiz #1.

c. Conclusion

When finished quiz, students take out a book to read, while waiting for the remaining students to complete the quiz.

3. Materials:

Teacher-made quiz

*New Jersey Yesterday and Today* books

Student notes

Books

Standards:

6.5B1

6.5B4

Stephanie Kirschbaum  
New Jersey Lesson Plan  
Day 6  
4<sup>th</sup> Grade  
April 21, 2004

1. Objective: The students will be able to explain the difference between climate and weather and describe the climate of New Jersey, and discuss those topics as a class.

2. Procedure:

- a. Anticipatory Set/ Purpose  
We will discuss the weather outside that day. We will discuss how the weather outside compares to the weather everyday and how they relate.
- b. Input and Modeling  
Using an overhead projector and pre-made transparencies, students will begin to take notes on New Jersey's climate.
- c. Checking for Understanding  
We will discuss as a class the information on the transparency and in the book about New Jersey's climate.
- d. Guided Practice  
Students will use the remaining time to work with their group on their projects as well as complete the New Jersey packet.
- e. Independent Practice  
Students will read Chapter 4 pp. 68-69.

3. Materials:

Overhead projector  
Transparencies  
Notebooks  
New Jersey packets  
*New Jersey Yesterday and Today* books

Standards:

6.5B4



Stephanie Kirschbaum  
New Jersey Lesson Plan  
Day 7  
4<sup>th</sup> Grade  
April 22, 2004

1. Objective: The students will be able to correctly define all of the vocabulary words in Chapter 4 and write definitions for each word on a piece of paper.
2. Procedure:
  - a. Anticipatory Set/ Purpose  
Students will look through the chapter by looking at the pictures, maps and charts, to get a brief understanding of what they will be reading about in the chapter.
  - b. Input and Modeling  
Students will be given a Chapter 4 vocabulary list. Students will look through the book and define vocabulary words on the paper where the words are listed.
  - c. Checking for Understanding  
We will go over the list as a class and students will read their definitions of the words.
  - d. Guided Practice  
Students will use the remaining time to work with their group on their projects as well as complete the New Jersey packet.
  - e. Independent Practice  
Students will begin reading Chapter 3, The Geography of New Jersey, in their *New Jersey Yesterday and Today* books pp.50-57.
3. Materials:  
Vocabulary list  
*New Jersey Yesterday and Today* books

Standards:  
6.5B1

Stephanie Kirschbaum  
New Jersey Lesson Plan  
Day 8  
4<sup>th</sup> Grade  
April 23, 2004

1. Objective: The students will be able to name New Jersey's four regions and discuss them in class.
2. Procedure:
  - a. Anticipatory Set/ Purpose  
We will review New Jersey's climate.
  - b. Input and Modeling  
Using an overhead projector and pre-made transparencies, students will begin to take notes on the regions of New Jersey.
  - c. Checking for Understanding  
We will discuss as a class the information on the transparency and in the book about the regions of New Jersey
  - d. Guided Practice  
Students will use the remaining time to work with their group on their projects as well as complete the New Jersey packet.
  - e. Independent Practice  
Students will study for quiz.
3. Materials:  
Overhead projector  
Transparencies  
Notebooks  
New Jersey packets  
*New Jersey Yesterday and Today* books

Standards:  
6.5B1  
6.5B4

Stephanie Kirschbaum  
New Jersey Lesson Plan  
Day 9  
Graphic Organizer Quiz #1  
4<sup>th</sup> Grade  
April 26, 2004

1. Objective: Students will be able to complete a graphic organizer quiz about the weather and climate of New Jersey and the four regions of New Jersey.
2. Procedure:
  - a. Introduction  
Students look over their notes and *New Jersey Yesterday and Today* textbooks as a review for the quiz.
  - b. Developmental Activities  
Students take graphic organizer quiz #1.
  - c. Conclusion  
When finished quiz, students take out a book to read, while waiting for the remaining students to complete the quiz.
3. Materials:
  - Teacher-made quiz
  - New Jersey Yesterday and Today* textbooks
  - Student notes
  - Books
4. Independent Practice:  
For homework, students will read pgs. 71-73 in textbook.

Standards:

6.5B1

6.5B4

Stephanie Kirschbaum  
New Jersey Lesson Plan  
Day 10  
4<sup>th</sup> Grade  
April 27, 2004

1. Objective: The students will be able to name and locate two parts of New Jersey's Atlantic Coastal Plain and discuss them in class.
2. Procedure:
  - a. Anticipatory Set/ Purpose  
We will discuss what people do for a living and for fun on the Atlantic Coastal Plain.
  - b. Input and Modeling  
Using an overhead projector and pre-made transparencies, students will begin to take notes on the Atlantic Coastal Plain of New Jersey.
  - c. Checking for Understanding  
We will discuss as a class the information on the transparency and in the book about the Atlantic Coastal Plain of New Jersey
  - d. Guided Practice  
Students will use the remaining time to work with their group on their projects as well as complete the New Jersey packet.
  - e. Independent Practice  
Students will read Chapter 4, pp.74-76.
3. Materials:  
Overhead projector  
Transparencies  
Notebooks  
New Jersey packets  
*New Jersey Yesterday and Today* books

Standards:  
6.5B1

Stephanie Kirschbaum  
New Jersey Lesson Plan  
Day 11  
4<sup>th</sup> Grade  
April 28, 2004

1. Objective: The students will be able to name and locate the Piedmont region and discuss it in class.
2. Procedure:
  - a. Anticipatory Set/ Purpose  
We will review the Atlantic Coastal Plain.
  - b. Input and Modeling  
Using an overhead projector and pre-made transparencies, students will begin to take notes on the Piedmont region.
  - c. Checking for Understanding  
We will discuss as a class the information on the transparency and in the book about the Piedmont region.
  - d. Guided Practice  
Students will use the remaining time to work with their group on their projects as well as complete the New Jersey packet.
  - e. Independent Practice  
Students will study for quiz.
3. Materials:  
Overhead projector  
Transparencies  
Notebooks  
New Jersey packets  
*New Jersey Yesterday and Today* books

Standards:  
6.5B1

Stephanie Kirschbaum  
New Jersey Lesson Plan  
Day 12  
Question-Answer Quiz #2  
4<sup>th</sup> Grade  
April 29, 2004

1. Objective: Students will be able to complete a question answer quiz about the New Jersey's Atlantic Coastal Plain and Piedmont regions.

2. Procedure:

a. Introduction

Students look over their notes and *New Jersey Yesterday and Today* books as a review for the quiz.

b. Developmental Activities

Students take question-answer quiz #2.

c. Conclusion

When finished quiz, students take out a book to read, while waiting for the remaining students to complete the quiz.

3. Materials:

Teacher-made quiz

*New Jersey Yesterday and Today* books

Student notes

Books

4. Independent Practice

For homework, students will read pgs. 77-78 in textbook.

Standards:

6.5B1

Stephanie Kirschbaum  
New Jersey Lesson Plan  
Day 13  
4<sup>th</sup> Grade  
April 30, 2004

1. Objective: The students will be able to name and locate the Highlands region and discuss it in class.
2. Procedure:
  - a. Anticipatory Set/ Purpose  
We will discuss what brings people to the Highlands.
  - b. Input and Modeling  
Using an overhead projector and pre-made transparencies, students will begin to take notes on the Highlands region.
  - c. Checking for Understanding  
We will discuss as a class the information on the transparency and in the book about the Highlands region.
  - d. Guided Practice  
Students will use the remaining time to work with their group on their projects as well as complete the New Jersey packet.
  - e. Independent Practice  
Students will read Chapter 4 pp. 79-80.
3. Materials:
  - Overhead projector
  - Transparencies
  - Notebooks
  - New Jersey packets
  - New Jersey Yesterday and Today* books

Standards:  
6.5B1

Stephanie Kirschbaum  
New Jersey Lesson Plan  
Day 14  
4<sup>th</sup> Grade  
May 3, 2004

1. Objective: The students will be able to name and locate the Ridge and Valley region and discuss it in class.
2. Procedure:
  - a. Anticipatory Set/ Purpose  
We will review what brings people to the Highlands.
  - b. Input and Modeling  
Using an overhead projector and pre-made transparencies, students will begin to take notes on the Ridge and Valley region.
  - c. Checking for Understanding  
We will discuss as a class the information on the transparency and in the book about the Ridge and Valley region.
  - d. Guided Practice  
Students will use the remaining time to work with their group on their projects as well as complete the New Jersey packet.
  - e. Independent Practice  
Students will study for quiz.
3. Materials:  
Overhead projector  
Transparencies  
Notebooks  
New Jersey packets  
*New Jersey Yesterday and Today* books

Standards:  
6.5B1



Stephanie Kirschbaum  
New Jersey Lesson Plan  
Day 15  
Graphic Organizer Quiz #2  
4<sup>th</sup> Grade  
May 4, 2004

1. Objective: Students will be able to complete a graphic organizer quiz about the Highlands and Ridge and Valley regions of New Jersey.
2. Procedure:
  - a. Introduction  
Students look over their notes and *New Jersey Yesterday and Today* textbooks as a review for the quiz.
  - b. Developmental Activities  
Students take graphic organizer quiz #2.
  - c. Conclusion  
When finished quiz, students take out a book to read, while waiting for the remaining students to complete the quiz.
3. Materials:
  - Teacher-made quiz
  - New Jersey Yesterday and Today* textbooks
  - Student notes
  - Books

Standards:  
6.5B1

**Appendix B**  
**(New Jersey Quiz 1)**

Name \_\_\_\_\_

Date \_\_\_\_\_

### **New Jersey Quiz #1**

**Circle the correct answer.**

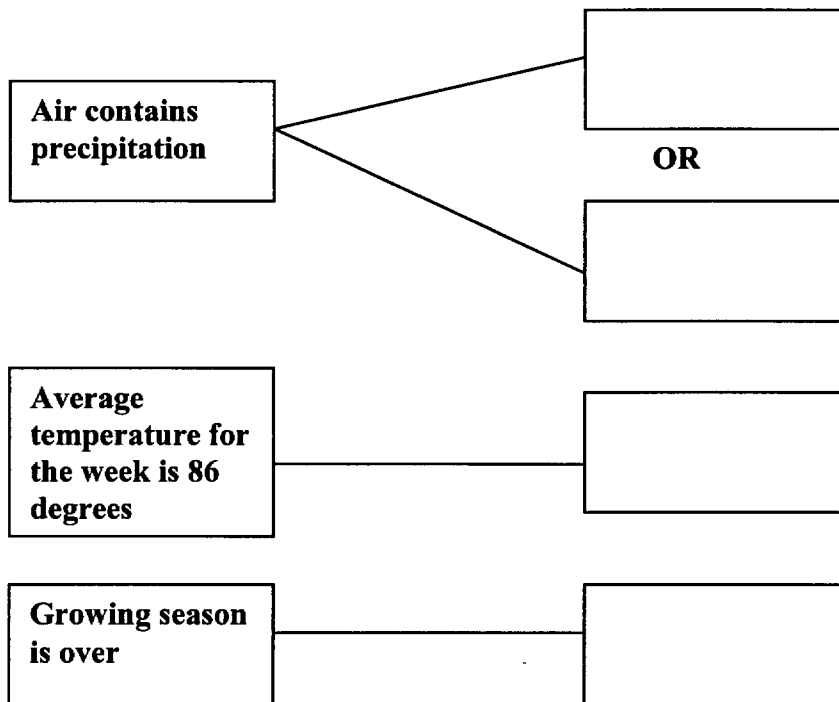
1. New Jersey is larger in area than  
A. 4 states    B. New York    C. Pennsylvania    D. 6 states
2. New Jersey has a population of more than  
A. 9 million    B. 17 million    C. 7 million    D. 90 million
3. New Jersey's population density is the  
A. lowest of all states    B. highest of all states  
C. lower of 5 states    D. higher of 5 states
4. The largest city in New Jersey is  
A. Trenton    B. Camden    C. Elizabeth    D. Newark
5. New Jersey has this many counties  
A. 20    B. 10    C. 21    D. 6
6. The largest lake in New Jersey is  
A. Hopatcong    B. Kittatinny    C. Appalachian    D. Swamp
7. Important natural resources in our state are  
A. water, minerals, forests, soil    B. agriculture  
C. reservoirs    D. dairy cows, beef cattle, and chickens
8. One of the minerals found in New Jersey is  
A. iron ore    B. forests    C. soil    D. water
9. The most important minerals found in New Jersey are  
A. zinc    B. iron and copper  
C. stone, sand, and gravel    D. oil and natural gas
10. More than one third of the state is covered by  
A. prairie    B. farms    C. water    D. forests
11. New Jersey is the second largest producer of  
A. dairy foods    B. blueberries  
C. beef cattle    D. roses and orchids
12. The most important rivers in New Jersey are the Hudson and  
A. Delaware    B. Raritan    C. Maurice    D. Hopatcong

**Appendix C**  
**(New Jersey Quiz 2)**

Name \_\_\_\_\_  
Date \_\_\_\_\_

### New Jersey Quiz 2

If \_\_\_\_\_ Then what kind of weather will we have tomorrow



### Word Bank

Mountains  
Hot

Lakes  
Cold

Rain  
Moraines

Snow

Glaciers

**We started with...**

**then nature  
shaped the lands**

**and formed  
this**

**Snow**

**Got deeper  
and deeper  
and formed  
thick sheets of  
ice**

**Glaciers**

**Left piles of  
rocks, sand  
and soil in  
ridges**

**Earthquakes**

**Left huge  
cracks in the  
land**

**Mountains  
Hot**

**Lakes  
Cold**

**Word Bank**

**Rain**

**Snow**

**Glaciers**

**Moraines**

Appendix D  
(New Jersey Quiz 3)

Name \_\_\_\_\_

Date \_\_\_\_\_

### **New Jersey Quiz #3**

**Circle the correct answer.**

1. The Atlantic Coastal Plain runs from New Jersey to  
A. Maine      B. Georgia      C. Florida      D. Pennsylvania
2. The most populated city in the inner coastal plain is  
A. Trenton      B. Newark      C. Camden      D. Atlantic City
3. The Pine Barrens are located on the  
A. Inner Coastal Plain      B. Piedmont  
C. outer coastal plain      D. Highlands
4. The seashore is part of the  
A. Pine Barrens      B. outer coastal plain  
C. inner coastal plain      D. Highlands
5. The place where the Atlantic Coastal Plain meets the Piedmont is called  
A. Fall Line      B. inner coastal plain      C. Highlands      D. foothills
6. The northernmost city on the Fall Line is  
A. Camden      B. Trenton      C. Vineland      D. Newark
7. The Piedmont has  
A. good farmland      B. poor and rocky soil  
C. long winters      D. too little rain
8. The greatest part of New Jersey's industry is located in the  
A. Atlantic Coastal Plain      B. Piedmont  
C. Highlands      D. Ridge and Valley Region
9. Another name for the Piedmont is the  
A. Appalachian Mountains      B. Fall Line      C. foothills      D. suburbs
10. Agriculture would not be possible without  
A. soil      B. reservoirs      C. iron ore      D. minerals
11. Two of the oldest seashore resorts in the country are Long Branch and  
A. Asbury Park      B. Ocean City  
C. Atlantic City      D. Cape May
12. Today, many people call the Pine Barrens the  
A. resorts      B. Atlantic Coastal Plain  
C. Piedmont      D. Pinelands

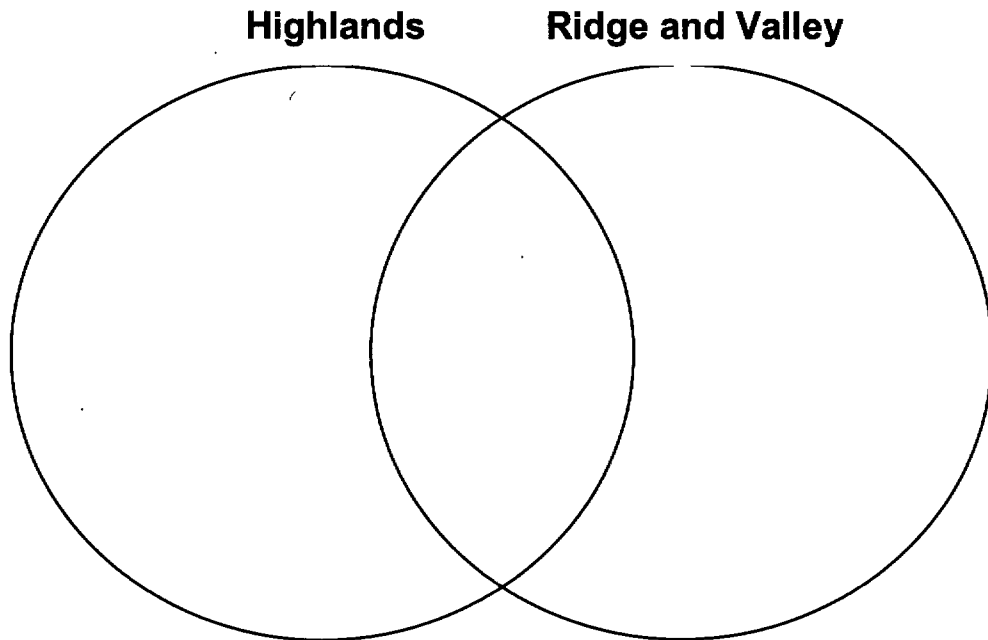


**Appendix E**  
**(New Jersey Quiz 4)**

Name \_\_\_\_\_  
Date \_\_\_\_\_

### New Jersey Quiz 4

Please put the correct number inside its region



1. Located on the Appalachian mountain chain
2. Contains the highest point in New Jersey
3. Many companies have their headquarters here
4. Contains many dairy farms
5. The pretty and peaceful scenery attracts tourists
6. Many dams and reservoirs are located here
7. Many farmers live here all year.
8. Contains growing suburbs
9. Contains the Delaware Water Gap
10. Contains most of New Jersey's lakes
11. Contains iron ore, a very important mineral resource
12. The land was once covered by glaciers

