Comparison Study of Achievement of a Group of Second Grade Students Experiencing Instruction on Bio-Ecosystems Indoors and a Group of Second Grade Students Experiencing Instruction on Bio-Ecosystems Out-of-Doors

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University of North Florida

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UNIVERSITY OF NORTH FLORIDA
JACKSONVILLE, FLORIDA
COLLEGE OF EDUCATION

COMPARISON STUDY OF ACHIEVEMENT OF A GROUP OF SECOND GRADE STUDENTS EXPERIENCING INSTRUCTION ON BIO-ECOSYSTEMS INDOORS AND A GROUP OF SECOND GRADE STUDENTS EXPERIENCING INSTRUCTION ON BIO-ECOSYSTEMS OUT-OF-DOORS

THESIS SUBMITTED TO THE DEPARTMENT OF ELEMENTARY AND SECONDARY EDUCATION IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF EDUCATION.

DECEMBER, 1980

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Abstract

The purpose of this study was to investigate the difference in the achievement levels of second grade students when twenty-one students experienced instruction on the bio-ecosystems where the learning activities were primarily outdoors along a nature trail and a comparable group of twenty-three students experienced instruction on the same bio-ecosystems where the learning activities were located indoors. An emphasis on literature approach was utilized to teach a set of sixteen objectives centering around an environmental theme. Each group received instruction for 45 minutes daily for a period of three weeks and experienced equivalent "hands-on" learning activities.

A gain score was determined by computing the difference between each student's pre-test and post-test achievement raw scores. A t test score of 1.31 resulted and it was concluded that there was no significant difference in achievement levels of a group of comparable students receiving instruction on bio-ecosystems outdoors and a group of students experiencing the same instructions indoors.
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Chapter I
Introduction

Problem Statement: Is there a difference in a group of second grade students who have experienced instruction on bio-ecosystems where the learning activities were primarily out of doors and a comparable group of second grade students who have experienced instruction on the same bio-ecosystems where the learning activities were located indoors with respect to how well these students achieved the following goals:

To create an awareness of the natural materials and processes occurring within the child's local and regional environment.

To relate local and regional environmental crisis and long-term problems with ecological concepts and principles.

To promote the respect of natural processes and interrelationships which affect daily living rather than viewing them as obstructions to human "development."

To promote appreciation and respect for the dependence of human beings on natural resources and processes, emphasizing the importance of conservation, or using natural resources wisely. (Science & Children 1980, pps. 7-8)

The objectives and goals of education are frequently adjusted to the changes which occur in society. "In 1938, NEA's Educational Policies Commission listed the goals of education in terms of four categories of aims: the objectives of self-realization, human relationships, economic efficiency, and civic responsibility." L. B. Sharp & E. DeAlton Partridge believe that "modern conditions of living have increased the need for outdoor education." (1947, p. 15-17)
As outlined in Public Law 95-516, it is the teacher's responsibility to instill in their students an awareness of the problems our society faces. Through the mass media, the message of energy crisis and economic concern are heard throughout the nation. The environmental issues must be dealt with daily in order to assure the students of today a bright future. Arthur H. Hirshorn believes that "outdoor-based ecological educators may provide the vehicle for intellectual and behavioral changes which may carry the next generation through the current environmental crisis." (1980, p. 8)

An extension of the classroom is readily accessible through the use of the outdoors. L. B. Sharp states that "we find the three essentials - teacher, learner, and the presence of the thing to be learned - operate very effectively under the open sky. It is out-of-doors that the greatest integration occurs in the process of learning. Sooner or later everything relates itself to everything else."

Frequently the classroom teacher is challenged to design methods of motivating his students; especially the high achievers and the less academically inclined students. Molly Harrison states that "instruction may be part of education but education is far more than instruction. The less academically inclined the pupil, the more this is true. Instruction contributes to education only inasmuch as it is necessary to devise learning situations in which the pupils can work out answers in their own way." (1970)
If the classroom teacher is going to provide the students with opportunities to develop the skills necessary to achieve the objectives of self-realization, human relationships, economic efficiency, and civic responsibility he can readily do so through outdoor education. John J. Kirk believes that outdoor education enhances the goals of conservation by enabling students to develop a reverence for life through an ecological exploration of the interdependence of living things and assists them in developing a land ethic which illustrates man's temporary stewardship of the land. (1967, p. 3)

Molly Harrison, in Out of School, says that a major contribution to educational retardation is social and intellectual deprivation. One of the more powerful antidotes is experience. (1970) Experiences outdoors would leave a lasting impression on students and provide them with opportunities to develop self-realization, human relationships, economic efficiency, and civic responsibility. Through education the students should be provided with experiences which would help them develop the concept that the world belongs to all living things. Through environmental education, students should develop a desire to protect earth's future through conservation of natural resources.

M. A. Gabrielsen believes that "outdoor education provides for total community planning and the use of resources and leadership found therein. Planning for outdoor education and the flexibility of its administrative procedures provides for maximum use of many of the educational resources of the community." (1950, p. 541)
Chapter II
Review of Related Literature

Outdoor education sparked the imagination of educators as a curriculum innovation over forty years ago according to William M. Hammerman, a strong advocate for outdoor education. He explains that "outdoor education was first conceived as a means of acquainting children with the natural environment, enriching the school curricula, and teaching more effectively those outdoor-related subjects that were already part of the curricula. The movement was ahead of its time in its stress on those things best taught outdoors - the interrelationships of living things to each other and to the environment. Only recently have people in general been alerted to the importance of this principle and made ecology a household word. Educators have increasingly explored the rich possibilities of the outdoor setting for education." (1973, p. 7)

As early as 1952, L. B. Sharp observed that "in many schools throughout the country, groups were learning through actual experience about protection of the soil, filling in ditches to keep the soil from washing away, planting trees, making shrubbery piles for game birds, protecting feeding stations for song birds, studying planting and harvesting of crops, and understanding contour farming. At the same time they are having a chance to see wild flowers and animals in their natural habitat, to experience the hills, valleys and streams, and to gain a respect for the land." (1952, p. 19-22) Mr. Sharp believed that it is through experiences
that students are insured of a genuine understanding about conservation of natural resources.

In the 1970's the legislature called the people's attention to the nation's environmental problems by passing a law that mandated schools to deal with environmental issues in their curriculum.

President Nixon signed into law the Environmental Education Act on October 30, 1970. Wilhelmina Hill, an Environmental Education Specialist in the U. S. Office of Education, in the journal *Keeping up with Elementary Education* states that...

"environmental education is defined as "the educational process dealing with man's relationship with his natural and manmade surroundings, and includes the relation of population, pollution, resource allocation and depletion, conservation, transportation, technology, and urban and rural planning to the total environment.""

"While each teacher or other curriculum worker should develop his own objectives in terms of his students, local environment and community, the following objectives are offered for his assistance:

. Provide learning experiences which will result in awareness of environmental quality and problems.
. Develop an understanding of EEE knowledge and concepts, with attention to relationships, especially to man.
. Help individuals gain knowledge and assume responsibility for the protection and preservation of natural resources. This includes the prevention or reduction of pollution (air, water, landscapes, noise, etc.)."

"The new Environmental/Ecological Education includes the urban as well as rural environments. It places special emphasis on the
quality of man's environment for living. For elementary school children, it may focus on the school grounds, the neighborhood, the community, a watershed, a nature center or trail, or a shore area." (1970, pps. 6-9)

Some people are convinced that a real lasting type of learning can more effectively be taught in the classroom. Gregor A. Ramsey and Robert W. Howe (1969) have analyzed research relating to instructional procedures in elementary school science and do not view outdoor science education as having an advantage over indoor science education.

Studies which support Howe's and Ramsey's views are found in Ronald Clarence Wise' study and in a study conducted by Thomas Richard Howie.

Ronald Clarence Wise conducted a study "to assess and compare achievement of students who were taught science by three different approaches: direct experience, outdoor classroom, and indoor classroom." Mr. Wise wanted to find evidence that would help him answer the following questions:

1. Do students acquire more scientific knowledge, more comprehension, and greater retention when taught by the direct experience approach than when taught by the outdoor or indoor classroom approaches?

2. Do more students make observations of the outdoor environment when taught by the direct experience approach than when taught by the other two approaches?

From the data collected and analyzed, Mr. Wise "concluded that the gains were not significant among the three treatments."

Thomas Richard Howie concluded from his study "that it appears that environmental education programs should be built as an extension
of the classroom and not as a unique experience. If conceptualization is a desired objective of environmental education, the students need extensive and structured programs of advanced organization. This finding is contrary to the spontaneous discovery method used in the outdoor-only phase of this program, an approach that is supposed to ultimately produce conceptualization.

"From the knowledge, or cognitive base, students can gain appreciation and values that are necessary if one is to preserve and improve his current environmental standard of living on the planet Earth."

Thomas Richard Howie conducted a study in the spring of 1972 "to determine the effect of an outdoor environmental education program as compared to one that was conducted completely indoors. The focus of his research was on the cognitive facet of environmental education. The classroom treatment was structured in the form of verbal mediation where concepts or definitional ideas were introduced before the application type of content was considered. The outdoor treatment was structured to provide the guided discovery of the concepts presented in the classroom set of advanced organizers." (1974, p. 32)

Students from fifth grade classrooms in Prince George's County, Maryland Public Schools (N=438) were randomly assigned by classroom groups to four experimental conditions.

The Treatment One Group (X₁), classroom only activities, was tested the day after the completion of instruction in the ten sub areas of environmental education as spelled out in the teacher's guide provided for them.
The Treatment Two Group ($X_2$), outdoor only activities, was tested the day after completion of their outdoor experiences at the Ferguson Environmental Study Center.

The Treatment Three Group ($X_3$), indoor and outdoor activities, was tested the day after completion of their outdoor experiences at the Ferguson Environmental Center.

The Treatment Four Group ($X_0$), no environmental education activities, was tested one week prior to any activities related to environmental education activities.

Thomas Richard Howie concluded from his study "that there was very little advantage or disadvantage among treatments concerning the development of application skills. Clearly, the students in the two treatment groups that were provided advanced organization information were better able to conceptualize than those students who did not receive the formal preparation. There was also an overall significant advantage after providing advanced organization prior to the outdoor experience as indicated."

Thomas Richard Howie believes "that the most effective program must have four phases. These phases would involve teacher in service training followed by classroom development of advanced organization. Next the classes would be ready to profit significantly from an outdoor experience. After these initial steps, follow-up in the classroom with further application and conceptualization would promote useful lasting knowledge."

Researchers such as Beker (1960), Blomberg (1967), Hammerman and Hammerman (1964), Sharp (1952), and Brown (1961) have emphasized the effectiveness of using the outdoor, natural environment, setting when conducting learning activities centering around an environmental theme. J. W. Smith has said "learning takes place
most effectively through direct experience - beginning with concrete activities and letting useful abstractions follow." (1963, p. 29) In an outdoor setting, first-hand information can be found. Examples of studies that show evidence to support the philosophy of outdoor education can be found in studies conducted by William Chrouser (1970), Eugene S. McNamara and H. Seymour Fowler (1975) and Jefferson Joseph DeBlanc (1973).

William Harvey Chrouser conducted a study "to investigate and compare the effects of two laboratory approaches in biology upon prospective elementary teachers in their understanding of the social aspects of science, achievement in selected biological principles, understanding of science as a process, and ability in critical thinking." Students at Colorado State College were administered a pre-test and a post-test in each of the areas of concern. The tests included the Social Aspects of Science, Understanding of Selected Biological Principles: An Examination; Methods and Procedures of Science: An Examination; and the Watson-Glaser Critical Thinking Appraisal.

The results of Chrouser's study led him "to suggest that when it is feasible and appropriate, the outdoors should be utilized as a laboratory and as a classroom not only because of the effect on society and the affective domain, but also because of the effect on the cognitive domain."

Eugene S. McNamara and H. Seymour Fowler conducted a study "to investigate the difference in learning of eighth and ninth grade earth science students, one-half of the students experiencing laboratory investigations in an indoor environment using
pre-packaged materials and the other half experiencing laboratory investigations in the outdoor environment using available natural resources. The study attempted to discover if there were significant differences in achievement, critical thinking and preference for the environment between those experiencing the laboratory investigations in the indoor environment and those experiencing the laboratory investigations in the outdoor environment." (School Science and Mathematics, Vol. 5, June, 1975, p. 413-414)

From this study data was analyzed and interpreted as follows:

Hypothesis 1. The outdoor laboratory method contributed to significantly greater achievement as measured by gain scores on the ESCP Achievement Test - Unit One.

Hypothesis 2. The outdoor laboratory method contributes to significantly greater gain scores in critical thinking as measured by the Cornell Critical Thinking Test.

Hypothesis 3. The outdoor laboratory method contributes to significantly greater gain scores as measured by the McNamara Indoor-Outdoor Preference Appraisal.

Hypothesis 4. Outdoor laboratory investigations contribute to greater achievement on all individual concepts as measured by the Concepts Tests.

It was concluded from this study that "(a)Concepts that are an integral part of the student's environment are best learned in the out-of-doors environment; (b)If parts of the concept can be related to the student's immediate environment, the concept has a better chance of being understood, regardless of whether the concept is concrete or abstract; (c)Critical thinking is enhanced in the out-of-doors environment. This is especially true for the
average to below average student; (d) Investigations in the out-of-doors environment increases the student's desire for that environment; (e) The lower ability student tends to prefer the environment in which he is exposed. To develop an appreciation for the out-of-doors, experiences should be developed and carried out in that environment." Eugene S. McNamara and Seymour Fowler (1975, p. 417)

Jefferson Joseph DeBlanc conducted a study that had as its focus "the science academic mean performance differences between senior high school pupils who have taken part in an outdoor educational center and those senior high school pupils who have not." An attempt was made to associate these differences with pupils participating in an outdoor educational center's offering. In his study, 285 senior high school science pupils were in the experimental group and 194 senior high school science pupils from a different school was used as the control group.

Both groups were pre-tested and post-tested using the same instrument. The treatment was 12 short science courses which were conducted in an outdoor educational center. Mr. DeBlanc's study revealed "students having outdoor education achieved a significant gain over science pupils not exposed to these programs. Whites appear to gain more in terms of science achievement than non-whites when involved in outdoor education."

Mr. DeBlanc recommends, based on findings from his study, that more consideration should be given to the inquiry role approach as a method for teaching science concepts. This "approach presented in an outdoor educational environment seems to produce more student
involvement and contributes to academic gains among below average science pupils."

Environmental interest groups are banding together to bring pressure to the state and national lawmakers to preserve natural resources. Many students are being exposed to environmental educational objectives through classroom lessons or outdoor experiences such as nature walks, field trips and even school camps which last from one day to even a week. Organizations such as the 4-H and garden clubs are contributing toward education of students in the areas of conservation and litter control by sponsoring summer camps and junior garden clubs in the schools. Funds to promote environmental education are available through the department of education. Funds are distributed through mini-grants to the schools for projects dealing with conservation. Departments such as Agriculture and Forestry are offering their services to the schools. They are endeavoring to educate the young of today and to help them develop an awareness that every individual plays an important role in determining the future of planet earth.

Summary

The review of related literature reveals that there have been two major theories in the educational philosophy regarding the teaching of science. Some are convinced that a real lasting type of learning can just as effectively be taught in the classroom while others believe that learning activities centering around an environmental theme must be conducted in an outdoor setting because first-hand information can be found and experiencing learning develops a better understanding.
Many groups of people have organized in order to put forth a concerted effort to educate the youth of today and to help them to develop the skills necessary, as future leaders, to deal with the environmental issues in order to assure the conservation of planet earth. Whether the education for an individual should be conducted indoors or outdoors continues to be a controversy between the advocates of indoor education and advocates of outdoor education.
Procedure

Two groups of second grade students were involved in this study. Twenty-three of the students were enrolled in the researcher's class and twenty-two were enrolled in another teacher's class at the same school. The heterogeneously grouped students were assigned to the classes by the school's principal at Hendricks Avenue Elementary School in Jacksonville, Florida. Hendricks Avenue draws students from low to middle socio-economic areas with the largest proportion of students in the middle socio-economic level. Approximately 30% of the students came from culturally disadvantaged environments. All the students in both classes (25 in the researcher's class and 25 in the other class) participated in the studies on bio-ecosystems. A few students from both classes were absent because of sickness and were not included in the study.

The researcher and the other teacher team - teach. The researcher teaches one class in the morning (one-half day or 3½ hours) and teaches the other class in the afternoon (one-half day or 3½ hours). Each group received instruction on the same objectives on bio-ecosystems.

Each group of students was pre-tested on the objectives (See Appendix) before instruction was begun. The instrument for measuring achievement was constructed by the researcher and consisted of 72 multi-choice items (See Appendix). The mean of the raw achievement score for the indoor group (morning class) of students was 34 and the mean of the raw achievement score for
the outdoor group (afternoon class) of students was 35. Data obtained from the test scores was organized and analyzed by determining a difference in the mean of the pre-test and post-test achievement scores of the indoor and outdoor group of students.

**Data Analysis**

A t- pool statistic was used to test the following null hypothesis:

$$H_0: \text{The mean of post-test/pre-test gain scores of the } "\text{indoor}" \text{ group} = \text{the mean of the post-test/pre-test gain scores of the } "\text{outdoor}" \text{ group}$$

$$\left( \alpha = .05 \right).$$

**Overview of Activities**

The indoor (morning) and outdoor (afternoon) groups were read to daily. Some of the books selected as examples of good children's literature (Richard Brice, 1970) were *The Biggest Bear*, *The Big Snow*, *A Time of Wonder*, *Over in the Meadow* and *The Beaver Pond*. The books were used as a springboard to elicit class discussion and develop the students' awareness of their environment. Large pictures served as a medium to inspire verbalization by the students. The students read stories and poems about nature from supplementary reading texts (Young America Level 6, 7, and 8). They discussed the readings in detail. Filmstrips and tape recordings were utilized to reinforce concepts previously introduced.

The outdoor group of students was taken outdoors daily to experience learning primarily along a nature trail and wildlife
sanctuary which is presently being established on the schoolgrounds. This group was given directions as to what to do prior to entering the area to be explored. The students used magnifying glasses to observe living and non-living things. They planted a vegetable garden, made a compost pile, put food and water out for wild birds, collected litter, and collected specimens such as insects and seeds as well as samples of polluted water for the indoor group to study.

The indoor group observed specimens brought indoors and participated in activities such as classifying leaves and observing a colony of ants make tunnels in a gallon jar. They were responsible for feeding and watering the gerbils, setting up an aquarium, planting mini-gardens, and making rubbings of bark and a cross section of a small tree trunk. They also observed the effects of soil erosion by pouring water over a model of barren land and a model of grassed land. The students used samples of material to show the procedure for making a compost pile.

The indoor and outdoor group of students spent 45 minutes daily receiving instruction and experiencing equivalent "hands-on" learning activities centering around an environmental theme. Sixteen objectives were taught for a three week period.
Chapter IV
Results and Analysis of Findings

The achievement test was administered to 23 second grade students in the indoor group and 21 second grade students in the outdoor group at the beginning of a study on bio-ecosystems. The same achievement test was administered to the same students at the end of the three week study. The raw scores on the pre-test and post-test were computed and the gain $t$ scores for each student were determined.

<table>
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<th>n</th>
<th>$\bar{x}$</th>
<th>s</th>
<th>SEM</th>
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<tr>
<td>outside</td>
<td>21</td>
<td>13.62</td>
<td>7.12</td>
<td>1.55</td>
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<td>inside</td>
<td>23</td>
<td>11.26</td>
<td>4.70</td>
<td>0.98</td>
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The difference between the two sets of group scores for achievement was 1.31. The application of the .05 level to a sample of 21 and 23 students yields a level of significance at 2.021. The score of 1.31 indicates that there is no significant difference in the students' achievement. Therefore, the null hypothesis which stated that the mean of post-test/pre-test gain scores of the "indoor" group = the mean of the post-test/pre-test gain scores of the "outdoor" group is supported.

The Kuder-Richardson 21 reliability coefficient, alpha, for the achievement test was 0.820. This reliability coefficient was obtained by using the groups in the samples in Table 1 and 2. The statistics were checked by the computer. The mean of the test scores was 46.80 and the variance of the scores was 85.75. The standard deviation of the scores was 9.26 and the standard error of measurement was 3.92.
### Table 1

**Indoor Group Achievement Scores**

<table>
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<th>Student</th>
<th>Pre-test</th>
<th>Post-test</th>
<th>Gain</th>
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</thead>
<tbody>
<tr>
<td>1. Huard</td>
<td>57</td>
<td>60</td>
<td>3</td>
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<tr>
<td>2. Leanne</td>
<td>46</td>
<td>53</td>
<td>7</td>
</tr>
<tr>
<td>3. Ara</td>
<td>45</td>
<td>53</td>
<td>8</td>
</tr>
<tr>
<td>4. Julie</td>
<td>44</td>
<td>52</td>
<td>8</td>
</tr>
<tr>
<td>5. Hank</td>
<td>43</td>
<td>53</td>
<td>10</td>
</tr>
<tr>
<td>6. David</td>
<td>43</td>
<td>57</td>
<td>14</td>
</tr>
<tr>
<td>7. Jennifer</td>
<td>42</td>
<td>54</td>
<td>12</td>
</tr>
<tr>
<td>8. Latrelle</td>
<td>42</td>
<td>56</td>
<td>14</td>
</tr>
<tr>
<td>9. Cody</td>
<td>41</td>
<td>55</td>
<td>14</td>
</tr>
<tr>
<td>10. Barry</td>
<td>38</td>
<td>49</td>
<td>11</td>
</tr>
<tr>
<td>11. Susan</td>
<td>35</td>
<td>46</td>
<td>11</td>
</tr>
<tr>
<td>12. Marti</td>
<td>34</td>
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<td>19</td>
</tr>
<tr>
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<td>14. Wendy</td>
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<tr>
<td>15. Vontrice</td>
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<td>20. Matthew</td>
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<td>21. Carolyn</td>
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<td>22. Latosha</td>
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<td>23. Alicia</td>
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\[ \bar{x} = 11.26 \quad s = 4.70 \quad SEM = 0.98 \]
Table 2
Outdoor Group Achievement Scores

<table>
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<th>Student</th>
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<td>4. John</td>
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<td>5. Sarah</td>
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<td>6. Michelle</td>
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<td>7. Cheryl</td>
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<td>8. Heather H.</td>
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<td>9. China</td>
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<td>13</td>
</tr>
<tr>
<td>18. Melissa</td>
<td>28</td>
<td>37</td>
<td>9</td>
</tr>
<tr>
<td>19. Daniel</td>
<td>28</td>
<td>50</td>
<td>22</td>
</tr>
<tr>
<td>20. Larry</td>
<td>26</td>
<td>46</td>
<td>20</td>
</tr>
<tr>
<td>21. Elizabeth</td>
<td>25</td>
<td>32</td>
<td>7</td>
</tr>
</tbody>
</table>

$\bar{x} = 13.62 \quad s = 7.12 \quad SEM = 1.55$
Chapter V
Conclusions and Recommendations

Students' achievement did not show a significant difference at the 0.5 level based on the results of the t-tests. The application of the 0.5 level, using 21 and 23 degrees of freedom, yields a level of significance at 1.31. The difference between the mean of the two sets of scores obtained for the variable, achievement, did not favor outdoor education over indoor education.

The effectiveness of future studies in this area can be enhanced through the testing of achievement of variables such as critical thinking and values pertaining to environmental education.

Limitation of This Study

The achievement test consisting of 72 multi-choice items was too long for second graders. Instead of testing the students' achievement on sixteen objectives, the study could have been conducted using about one-half of the objectives.

A study of this nature should be conducted over a longer period of time and when the weather isn't windy and cold as it was in late November and December. This type of weather is not conducive to outdoor education.

Ad Hoc Analysis

It would appear that the results of this study indicate that there is no significant advantage to using the outdoors as a classroom. Many factors might have contributed to the outdoor groups' mean score not being significantly higher. The outdoor group was tested at the end of the day, the office interrupted
the testing three times and a teacher from across the hall came in to announce that she thought there was an eagle outside her window. The researcher stopped the testing and investigated the teacher's findings. Upon viewing a huge hawk sitting with a pigeon in his claws, the researcher brought her class over to observe the hawk. After a few minutes the excited class returned to the room to complete the testing. Many students were very upset with what they had observed. The testing was postponed for a few minutes to explain the predator and prey role in the food chain.

The outdoor group was observed showing more enthusiasm for the nature study than the indoor group. Students who had previously been discipline problems exhibited acceptable behavior and stayed on task during the study. Many students asked to take supplementary reading texts home so they could reread the nature stories that they had read in class.
References


APPENDIX

BEHAVIORAL OBJECTIVES

AND

PRE/POST ACHIEVEMENT TEST
Social Science Objectives

Second Grade

1. The student will identify ways that seeds are dispersed.
   Question 58, 59

2. The student will distinguish between poisonous and non-poisonous plants.
   Question 63, 64

3. The student will develop an awareness of environmental effects on seeds or plants.
   Question 56, 57

4. The student will identify products of plants.
   Question 54, 55

5. The student will demonstrate his understanding of the life cycle of plants.
   Question 33, 34, 35, 36

6. The student will demonstrate his understanding of the role that trees play in keeping nature in balance.
   Question 1, 2, 3, 4, 5

7. The student will develop an awareness of conservation of natural resources.
   Question 10, 11, 12, 13, 14, 15, 16, 17, 19

8. The student will develop an awareness of ways to stop pollution.
   Question 6, 7, 8, 9

9. The student will demonstrate his understanding of long-term environmental crisis.
   Question 70, 71, 72

10. The student will develop the skill of classifying when grouping animals according to their environment.
    Question 27, 28, 29

11. The student will demonstrate his understanding of some behavioral changes in animals that accompany the onset of winter.
    Question 59, 60, 61, 62

12. The student will develop an awareness that birds aid man by eating insects and harmful rodents and that birds should not be harmed.
    Question 52, 53
13. The student will identify some of the places where hibernating adult animals might spend the winter.
   Question 27, 28, 29, 30, 31

14. The student will demonstrate his understanding of animal behavior.
   Question 32, 37, 38, 39, 42, 43, 44, 45

15. The student will demonstrate that he knows the names of some animals that help man.
   Question 18, 24, 25, 26

16. The student will identify needs of animals.
   Question 20, 21, 22, 23, 51, 65, 66, 67, 68, 69
SECOND GRADE SOCIAL SCIENCE TEST

Directions: The teacher will read each question to you. You are to select the best answer for each question. Circle only 1 answer. a, b, c, or d

Trees play an important role in keeping nature in balance. How do trees help nature?

1. a. by providing homes for birds and other animals  
   b. by growing tall  
   c. by being green  
   d. by being big

2. a. by growing tall  
   b. by being green  
   c. by being big  
   d. by purifying the air

3. a. by being big  
   b. by conserving water  
   c. by being green  
   d. by being tall

4. a. by being green  
   b. by being tall  
   c. by adding beauty to the landscape  
   d. by being big

How many trees should a town have for each person?

5. a. 1  
   b. 10  
   c. 6  
   d. 3

What is one way everybody can help America be beautiful?

6. a. by throwing trash on the ground.  
   b. by putting trash in a garbage can.  
   c. by cutting down trees  
   d. by reading books about litter.

7. a. by convincing a friend not to throw paper down.  
   b. by throwing trash on the ground.  
   c. by pulling up plants.  
   d. by picking flowers.

8. a. by reading a book on pollution.  
   b. by driving a car to the store several times during the day.  
   c. by car pooling or riding the bus.  
   d. by buying a new car every year.
9. a. by planting a tree.
b. by looking at books about trees.
c. by telling a friend about your plans to plant a tree.
d. by coloring a picture showing how trees help nature.

When a heavy rain comes, soil is sometimes washed away. What can be done to prevent this from happening?

10. a. by watching the soil and rain.
b. by putting the soil back where it came from.
c. by reading about soil erosion.
d. by planting trees and grass.

Each year the people in the U.S.A. waste our natural resources. What are two things people can do to conserve natural resources?

11. a. by writing on one side of your writing paper and drawing on one side of your art paper.
b. by telling a friend about recycling.
c. by collecting aluminum for recycling and by collecting newspapers for recycling.
d. by writing a story about recycling and reading stories about recycling to a friend.

People can conserve energy by making a compost pile. How can the farmer benefit from a compost pile?

12. a. by making a compost pile.
b. by mulching the garden with the soil made from the compost pile.
c. by putting vegetables and fruit peelings on the compost pile.
d. by learning about how to make a compost pile.

What things are recycled by being put into a compost pile?

13. a. aluminum 
   b. bottles 
   c. grass  
   d. seeds

14. a. vegetable/fruit peelings  
   b. aluminum  
   c. bottles  
   d. tin

15. a. bottles 
   b. tin 
   c. aluminum  
   d. leaves
What can the farmer use to prevent weeds from growing in his garden and to keep from having to water the plants so much?

16. a. by fertilizing. c. by reading a book about weeds.  
   b. by chopping the weeds. d. by mulching around his plants.

17. a. by covering the area between the rows with plastic.  
   b. by reading a book about weeds.  
   c. by chopping the weeds.  
   d. by fertilizing.

Leaves, grass and other matter is broken up into small particles by an animal. What is the name of the animal that helps make compost?

18. a. ladybugs  
   b. praying mantis  
   c. centipedes  
   d. earthworms

When the wind blows, soil is sometimes carried away. How can people help prevent soil from being blown away by the wind?

19. a. by watering the soil. c. by planting a screen of trees and by planting grass.  
   b. by cutting the grass. d. by watching the wind.

Earthworms need what kind of soil in which to live?

20. a. sandy and dry c. warm and moist  
   b. wet and sandy d. moist and cold

Earthworms are food for what animal?

21. a. dogs c. squirrels  
   b. cats d. fish

22. a. spiders c. butterflies  
   b. birds d. people

Earthworms feed on dead _________ material.

23. a. animal c. plant and animal  
   b. plant d. none of the above
Birds aid man by eating which of the following?

24. a. seeds  
   b. insects  c. plants  d. butterflies

25. a. caterpillars  c. butterflies  
   b. seeds  d. plants

26. a. plants  c. butterflies  
   b. seeds  d. harmful rodents

What places might hibernating adult animals spend the winter?

27. frog  a. in the grass  c. in the mud  
   b. in a house  d. in a tree

28. snake  a. in soil or between rocks  c. in the street  
   b. in a can  d. in the mud

29. ladybug beetle  a. in a birdhouse  c. in a plant  
   b. in a tree  d. under bark or stone

30. chipmunk  a. in the meadow  c. in the grass  
   b. in the ground  d. in a lake

31. bear  a. in a meadow  c. in a cave  
   b. in a forrest  d. in a barn

What is the reason why animals that hibernate (sleep) during the winter do not die?

32. a. because they live on stored fat  
   b. because they are wise  
   c. because they are smart  
   d. because they are skinny
Some animals do not spend the winter as adults. What is an example of one of these animals?

33. a. geese  
   b. snakes  
   c. praying mantis  
   d. bees

34. a. spiders  
   b. birds  
   c. horses  
   d. dogs

35. a. chipmunk  
   b. lizard  
   c. frogs  
   d. Chinese mantis

36. a. frogs  
   b. deer  
   c. ladybug  
   d. butterfly

TEN MINUTE BREAK - LET STUDENTS REST/EXERCISE

Why do some animals have difficulty getting food in the winter?

37. a. food is scarce  
   b. the days are shorter  
   c. the days are longer  
   d. it is too hot

38. a. it is too hot  
   b. the days are too long  
   c. the days are too short  
   d. it is too cold

What is one animal that migrates (moves) to a new place to live during the winter?

39. a. houseflies  
   b. birds  
   c. bears  
   d. snakes

Some animals will not live through the winter. But, their eggs will. These eggs will hatch in the spring. What would happen if none of the eggs hatched?

40. a. The animals would become extinct.  
    b. The animals would migrate.  
    c. The animals would hibernate.  
    d. The animals would reproduce.

Some animals eat a lot of food during the winter and get very fat before they hibernate in the winter. What would probably happen to the animals if they didn't prepare for winter?
41. a. They would look for food.
b. They would get help from their friends.
c. They would probably die.
d. They would stay awake all winter.

Some animals migrate to a warmer climate in the winter. What would probably happen if they decided to remain at home and try to endure the severe climate?

42. a. They would have a great time.
b. They would find a warm place to live.
c. They would survive.
d. They would die.

Write the letter that is beside the phrase that tells how each animal spends the winter.

a. by moving about and eating.
b. by hiding and resting.
c. by not being an adult.
d. by people helping it live in winter.

42.  

43.  

44.  

45.  

Bear

Pigeon

Turtle

Butterfly

How do people prepare for winter?

46. a. by going on vacation.
b. by buying warm clothes.
c. by having fun.
d. by buying swimsuits.

47. a. by canning or freezing foods.
b. by staying inside.
c. by talking to their friends.
d. by reading books.
48. a. by making sure their homes are air conditioned.
   b. by working all day.
   c. by going home.
   d. by making sure their homes are heated.

49. a. some people hide.
   b. some people stop working.
   c. some people migrate to a warmer climate.
   d. some people freeze.

Choose and write the following animal names in the category if it belongs there.

bear deer butterfly ant frog dog bird
praying mantis snake beaver

50. Migrates in Winter
    Hibernates in Winter

What is the reason for these animals being grouped together?

snakes toads frogs
bears chipmunks

51. a. they are small animals.
   b. they are big animals.
   c. they hibernate in winter.
   d. they migrate in winter.

Why should birds not be harmed?

52. a. they are beautiful
   b. they have pretty songs
   c. they eat harmful insects
   d. they are colorful

53. a. they eat harmful rodents
   b. they are beautiful
   c. they are colorful
   d. they have pretty songs

What are some foods that are made from seeds?
54. a. ice cream  c. margarine  
b. orange juice   d. peanut butter  

55. a. bread    c. spinach  
b. pudding     d. lettuce  

Why do many seeds never grow into plants?

56. a. many things do not happen to them.  
b. many seeds do want to sprout.  
c. many seeds are planted.  
d. many things happen to seeds.  

Some plants do not grow into plants because of which of the following?

57. a. they get too much moisture  c. they get enough sunlight.  
b. they get too big.  d. they get enough food.  

Seeds are carried from one place to another by which of the following?

58. a. by animals  c. by frogs  
b. by flowers  d. by snakes  

59. a. by flowers  c. by snakes  
b. by frogs  d. by the wind  

What are some animals that eat and store seeds to eat in the winter?

60. a. elephant and giraffe  c. cat and dog  
b. horse and pig  d. birds and squirrels  

61. a. men and women  c. owls and eagles  
b. sheep and goats  d. cats and dogs  

62. a. turtle and rabbit  c. mice and chipmunk  
b. cow and chicken  d. fish and birds  

Which of the following plants is non poisonous?

63. a. purple queen  c. azaleas  
b. English Ivy  d. tomato leaves  

Which of the following plants is poisonous?

64. a. corn  c. oleander  
b. mustard  d. turnip  

-8-
Some animals eat plants. They are called herbivores. Which of
the following animals is not herbivores?

65. a. birds  c. cow
    b. goldfish  d. earthworms

Write the following animal names in the correct category.

<table>
<thead>
<tr>
<th>fish</th>
<th>cow</th>
<th>horse</th>
</tr>
</thead>
<tbody>
<tr>
<td>squirrels</td>
<td>snail</td>
<td>birds</td>
</tr>
<tr>
<td>earthworms</td>
<td>monkey</td>
<td>rabbit</td>
</tr>
<tr>
<td>giraffe</td>
<td>ants</td>
<td>toads</td>
</tr>
</tbody>
</table>

66. Animals that live in water.

67. Animals that live in the trees.

68. Animals that live in the ground.

69. Animals that live on land.

What would happen if man cut down all the trees and didn't plant new ones?

70. a. there'd be a lot of forest.
    b. there'd be a lot of forest fires.
    c. there'd be few wooden houses.
    d. there'd be few brick houses.
What would happen if man did nothing to stop the pollution of water?

71. a. the water would be pure.
   b. the water would be polluted.
   c. the water would be clean.
   d. the water would not be safe to drink.

What would happen if man did nothing to control the pollution of the air?

72. a. people would be healthy.
   b. people would jog a lot.
   c. people would become ill.
   d. people would enjoy the outdoors.