



The effects of an outdoor school experience on the cohesion of a 7th grade science class
by Carl Johnston Graves II

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Education
Montana State University

© Copyright by Carl Johnston Graves II (1987)

Abstract:

This study investigated the effects of an outdoor school experience on the cohesiveness of a 7th grade science class. The outdoor school experience consisted of a three day field trip to Yellowstone National Park.

A total of 22 students in two classrooms made up the populations of the study, with the control group consisting of the students in the 8th grade class at Monforton School, Bozeman, Montana, and the experimental group consisting of the students in the 7th grade class at Monforton School.

Five null hypotheses were formulated. Dependent and independent t-tests were used to determine 1) if the groups were equivalent, 2) if an increase in cohesion could be demonstrated immediately after the outdoor school experience, and 3) if a sustained increase in cohesion could be demonstrated over the course of the year.

The major conclusions made in this study were: 1. There was little research information in the area of group, cohesiveness as it is applied to junior high aged students.

2. The assessment tools used to measure group cohesiveness were inadequate for junior high aged students.

3. The experimental group and the control group demonstrated equality for the purposes of use as sample populations for this study.

4. The experimental group demonstrated no difference in cohesion as a result of the outdoor school experience.

5. An increase in cohesion over the course of the year as a result of the outdoor school experience was not demonstrated.

Although not substantiated through the statistical data from this study, the researcher maintains a conviction that the phenomenon of increased group cohesiveness has been observed through increased positive behaviors and writing by students who have participated in outdoor school experiences, and the need exists for further study in this area..

THE EFFECTS OF AN OUTDOOR SCHOOL EXPERIENCE ON THE
COHESION OF A 7TH GRADE SCIENCE CLASS

by

CARL JOHNSTON GRAVES II

A thesis submitted in partial fulfillment
of the requirements for the degree

of

Master of Education

MONTANA STATE UNIVERSITY
Bozeman, Montana

August 1987

MAIN LIB
N378
G-7835
Cop. 2

ii

APPROVAL

of a thesis submitted by

Carl Johnston Graves II

This thesis has been read by each member of the thesis committee and has been found to be satisfactory regarding content, English usage, format, citations, bibliographic style, and consistency, and is ready for submission to the College of Graduate Studies.

Aug. 14, 1987
Date

Henry L. Walton
Chairperson, Graduate
Committee

Approved for the Major Department

Aug. 21, 1987
Date

Donald L. Ross
Head, Major Department

Approved for the College of Graduate Studies

8-25-87
Date

W. B. Malone
Graduate Dean

STATEMENT OF PERMISSION TO USE

In presenting this thesis in partial fulfillment of the requirements for a master's degree at Montana State University, I agree that the Library shall make it available to borrowers under the rules of the Library. Brief quotations from this thesis are allowable without special permission, provided that accurate acknowledgment of source is made.

Permission for extensive quotation from or reproduction of this thesis may be granted by my major professor, or in her absence, by the Director of Libraries when, in the opinion of either, the proposed use of the material is for scholarly purposes. Any copying or use of the material in this thesis for financial gain shall not be allowed without my written permission.

Signature Carl Johnston Graves^{IV}

Date July 27, 1987

ACKNOWLEDGEMENTS

This study was possible due to continued support and assistance from many people. In particular, I express sincere gratitude to Dr. Sherry Walton, my advisor, who provided constructive criticism and encouragement on a continual basis. I also express sincere thanks to Dr. Larry Ellerbruch and Dr. Bob Moore for being willing to serve on my committee, and especially for enduring the last minute rush to finalize this thesis.

I thank Bruce Walton, dedicated educator and exceptional friend, for the many miles he ran with me, offering the therapy needed to keep all things in perspective.

I thank Kathy Pattee, principal of Monforton School, for her dedication to excellence and for allowing programs such as MOSSY to be a reality for the students of her school. In addition, I thank Mike Pierre and Carol Lark, two master teachers with whom I have had the pleasure to be associated.

Most especially I express eternal gratitude to my wife, Barbara, for her support, encouragement, and love freely given during this past year. Finally, a special thank you is extended to my daughters Megan, Alison, and Shauna.

TABLE OF CONTENTS

	Page
APPROVAL PAGE	ii
STATEMENT OF PERMISSION TO USE	iii
ACKNOWLEDGEMENTS	iv
LIST OF TABLES	vii
ABSTRACT	viii
CHAPTER	
1. IDENTIFICATION OF THE PROBLEM	1
Definitions	2
General Procedures	3
Limitations of This Study	4
2. REVIEW OF THE LITERATURE	6
3. METHODS . . . . .	.13
Instrumentation . . . . .	.14
Experimental Procedure and Data Collection. . . . .	.15
Analysis. . . . .	.17
Collection and Organization of Data . . . . .	.18
Statistical Hypotheses . . . . .	.19
Significance of Proposed Research . . . . .	.20
4. ANALYSIS OF DATA . . . . .	.22
Measurement . . . . .	.24
5. SUMMARY. . . . .	.34
Conclusions . . . . .	.34
Personal Observations . . . . .	.35
Recommendations . . . . .	.38
REFERENCES CITED . . . . .	.42
APPENDICES . . . . .	.45
APPENDIX A - Letter to Parents and Schedule of MOSSY: Monforton Outdoor School- Style Yellowstone . . . . .	.46

TABLE OF CONTENTS--Continued

	Page
APPENDIX B - Test Instruments for Measurement.	.49
APPENDIX C - Samples of Students' Writing after an Outdoor Experience . . . . .	.53

LIST OF TABLES

Table	Page
1 Equivalence of Groups	25
2 Effect of Experimental Variable	26
3 Increase in Cohesion as a Result of the Treatment	27
4 Cohesion Over Time - Control Group	28
5 Cohesion Over Time - Experimental Group	29
6 Wilcoxon Matched-Pairs Signed-Ranks Test - Control Group	31
7 Sociogram Ranking of Pre-trip, Post-trip 1, and Post-trip 2 - Control Group	31
8 Wilcoxon Matched-Pairs Signed-Ranks Test - Experimental Group	33
9 Sociogram Ranking of Pre-trip, Post-trip 1, and Post-trip 2 - Experimental Group	33

ABSTRACT

This study investigated the effects of an outdoor school experience on the cohesiveness of a 7th grade science class. The outdoor school experience consisted of a three day field trip to Yellowstone National Park.

A total of 22 students in two classrooms made up the populations of the study, with the control group consisting of the students in the 8th grade class at Monforton School, Bozeman, Montana, and the experimental group consisting of the students in the 7th grade class at Monforton School.

Five null hypotheses were formulated. Dependent and independent t-tests were used to determine 1) if the groups were equivalent, 2) if an increase in cohesion could be demonstrated immediately after the outdoor school experience, and 3) if a sustained increase in cohesion could be demonstrated over the course of the year.

The major conclusions made in this study were:

1. There was little research information in the area of group cohesiveness as it is applied to junior high aged students.
2. The assessment tools used to measure group cohesiveness were inadequate for junior high aged students.
3. The experimental group and the control group demonstrated equality for the purposes of use as sample populations for this study.
4. The experimental group demonstrated no difference in cohesion as a result of the outdoor school experience.
5. An increase in cohesion over the course of the year as a result of the outdoor school experience was not demonstrated.

Although not substantiated through the statistical data from this study, the researcher maintains a conviction that the phenomenon of increased group cohesiveness has been observed through increased positive behaviors and writing by students who have participated in outdoor school experiences, and the need exists for further study in this area..

CHAPTER 1

IDENTIFICATION OF THE PROBLEM

Many schools utilize an outdoor experience for their classes. These experiences may range from a 10 minute walk on the school playground to a week-long experience at a residential style facility away from school. Some of these experiences occur at the end of the school year as a culminating activity for a particular course of study. Other experiences are held for one or more days during the school year. Students look forward with anticipation to these events and usually find the experiences very rewarding, often making new friendships and strengthening old ones. The research base in the area of outdoor experiences points to the overall effectiveness of the programs.

Another element of outdoor experiences has come to light--that of a special, unique camaraderie that exists after such an experience in the fall of the year. The groups the researcher has worked with in outdoor settings seem to possess a heightened degree of cohesiveness. Since very little research exists to substantiate this observation of added group cohesiveness, this study was undertaken in the fall of

1986 to determine if classes that had an outdoor experience were more cohesive as a result of the experience and more able to maintain that cohesiveness throughout the remainder of the school year than classes without the fall experience. The research hypothesis was:

Students who participated in an outdoor school experience as a class in the fall would initially exhibit a high degree of group cohesiveness, and that heightened degree of cohesiveness would be maintained over the course of the school year.

Definitions

Activity-based Instruction: Instruction that is hands-on, utilizing tangible objects rather than a strict lecture/textbook format. Example: using rock samples to study minerals.

Environmental: Pertaining to the surroundings and conditions that affect natural processes and the growth and development of living things.

Environmental Education: Learning experiences that promote the acquisition of environmental knowledge and the development of behaviors that will reflect a concern for the health of the total environment. Environmental Education is an extension of the regular classroom curriculum, with emphasis on inter-disciplinary studies.

Group Cohesion: The bonding that exists between members of a group, members and the leader of the group, and members and the group itself.

Outdoor School: A three day field trip to Yellowstone National Park as an extension of 7th grade life science class. Students received instruction in various aspects of the environment: wildlife, trees and plants, geothermal features, and history.

General Procedures

The general procedures that were followed are listed below.

1. An extensive review of the literature was completed. Specifically, the review concentrated on literature that was related to outdoor education and group cohesion.
2. Students in the 7th and 8th grades at Monforton School, Bozeman, Montana, were selected to participate in this study. The 7th graders, designated the experimental group, attended a three-day Outdoor School field trip in Yellowstone Park in September 1986. The 8th grade class, which remained at Monforton, served as the control group.
3. Both the experimental and the control groups were given pretests one week prior to the Outdoor

School experience. The results of the pretest were used to determine the equivalence of the groups. Post tests were administered to both groups the first school day following the Outdoor School and again in May 1987. The instruments used for evaluation were the Behavior Ratings Profile and a researcher-designed sociogram.

4. The treatment was the outdoor field trip experience by the 7th grade class. While participating in the Outdoor School, the students were involved in a variety of activities including animal and plant studies, water and aquatic insect studies, geothermal investigations, and compass skills.

Limitations of This Study

There were several limitations to this study. These included a small sample population, characteristics unique to this population, the testing instrument, and the use of self-reporting by junior high aged students. Ideally, study populations should be larger, but the class sizes at Monforton School were especially low the year this study was conducted. In addition, the historically small class sizes at Monforton School and the closeness of students and teachers may act to increase cohesion above that of other classes in other schools, resulting in an environment in which a heightened degree of cohesion

may already exist. Another element of limitation was the availability of an adequate testing instrument. Insufficient research was discovered in the area of cohesion among 7th and 8th grade students to have produced a quality instrument for measuring cohesion among younger students. While the BRP measured aspects of cohesion, it did not fully assess all cohesion areas deemed necessary by the definition according to research information. In addition, self-reporting assessment tools rely solely on the moods, attitudes, and general feelings of the students, opening wide avenues of considerable variation of results.

CHAPTER 2

REVIEW OF THE LITERATURE

For the purposes of this study, a review of the various definitions of environmental education, EE/outdoor education, was necessary. Smith, et.al., define outdoor education as "learning in and for the outdoors." Smith continues by saying:

"...it is a means of curriculum extension and enrichment through outdoor experiences. It is not a separate discipline with prescribed objectives, like science and mathematics, it is simply a learning climate offering opportunities for direct laboratory experiences in identifying and resolving real-life problems, for acquiring skills with which to enjoy a lifetime of creative living, for building concepts and developing concern about man and his natural environment, and for getting us back in touch with those aspects of living where our roots were once firm and deep" (1972, p.20).

The International Union for the Conservation of Nature and Natural Resources has developed a definition that reads:

"Environmental Education is the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture and his bio-physical surroundings. Environmental Education also entails practice in decision making and the self-formulation of a code of

behavior about issues concerning environmental quality" (Hurry, 1982).

Another aspect of the environmental education definition that has recently been documented is that EE programs should not be unique experiences, but rather should be extensions of regular classroom instruction (Howie, 1974). Thus, the following definition of Environmental Education or Outdoor Education is offered.

Environmental Education is learning that leads to the acquisition of environmental knowledge and the development of behaviors which will reflect a concern for the health of the total environment. Environmental Education is an extension of the regular classroom curriculum, with emphasis on inter-disciplinary studies.

Over the past several decades, the emphasis on environmental education has increased dramatically. Today, schools, as well as other institutions such as residential camps, churches, and youth organizations, provide opportunities for environmental education. The need for EE has grown out of societal needs. Smith, et.al., cite several reasons our society has placed importance on EE. These reasons include:

1. the deterioration of the environment
2. urbanization
3. the frenzied tempo of modern living
4. mechanization, automation, and computerization
5. sedentary living
6. abstractions
7. materialism.

They state that these characteristics and trends of today's mechanized society call for outdoor education, that it is needed to enrich and vitalize education (1972, pp.7-10).

The history of EE has its roots in several developments of the educational system over the past century. After World War I, there was considerable concern for the physical fitness of our nation's youth, and health and physical education grew out of that concern (Smith, 1972, p.19). The Educational Policies Commission established seven famous cardinal objectives of education, including health and the wise use of leisure (Smith, 1972, p.19). Furthermore, Smith states that "most of the early efforts in outdoor education can be traced to health, physical education, and recreation departments in colleges, universities, and state departments of education" (1972, p.20).

Although Environmental Education grew out of concerns for physical fitness, over the years it has expanded to impact a broader range of educational experiences. One of the reasons for this is that EE contains an aspect of learning that causes it to be unique among educational experiences--it is activity-based. Donnellan and Roberts (1985) found that mixed-race students in activity-based science programs showed significant improvement in achievement.

Kyle, et.al., (1985) discovered that students prefer activity-based science instruction to more traditional textbook taught science. In making this choice, the students chose the method that most closely parallels the way in which scientists learn. In addition, Kyle states that activity-based instruction improves students' general science achievement, process skills, analytic skills, and related skills such as language arts and mathematics.

Koballa and Rice determined strategies for successful science programs and concluded that one of those strategies was to "take advantage of social and ENVIRONMENTAL influences" (1985, pp.32-34). Much of EE is activity-based; students are outdoors, interacting with tangible objects rather than just looking at pictures and reading. Koballa and Rice continue by mentioning that students need to be involved with, rather than talking about, science. EE allows them the opportunity to be involved. Others have found that EE programs are successful in additional ways as well. Fletcher (1973) reports that 5-day programs for students caused groups to 1) become more self-reliant and self-confident, and 2) show improvement in cooperation. Fletcher also demonstrated that students liked the program and wanted to return. The success of environmental programs has been well documented: they

are activity-based, students enjoy the experience, and significant gains in achievement and social skills have been documented.

Another element of importance to this study was the existence of group cohesion as a result of an outdoor school experience. Attempts to define cohesion have been frustrated due to poorly understood phenomena, such as the lack of consistency in the definition and measurement of the concept (Drescher, et.al., 1985, p.5). However, various definitions for cohesion have been offered. Pellegrino defines group cohesiveness in psychotherapy as "the process that incorporates the multi-factors that establish and maintain members in the therapy group" (1984). One of the most widely accepted definitions is by Festinger, et.al., that states, "cohesion is the total field of forces which act on members to remain in the group" (1950, p.164). Recently, the discussion has centered on the differences in the interpretation of the data as to whether cohesion is members' attraction to each other or members' attraction to the group (Drescher, et.al., 1985): The resulting research points to a definition of cohesion as being a composite of three aspects: member-member, member-therapist, and member-group relationships (Drescher, 1985).

Regardless of the on-going search for a solid definition, studies have documented the occurrence of degrees of cohesion among groups. Harris (1982) found in a programmed laboratory setting that cooperative group effort caused an increase in socialization, communication, and morale. Brower and Brower (1980) found that the group experience in camping created an environment in which groups influenced behavior and enhanced mental health of the participants. In a study for the training of Resident Assistants at Pennsylvania State University, Cook (1980) discovered that a 3-day outdoor adventure was effective in developing and sustaining group cohesiveness and that this cohesiveness was sustained over time.

Cohesion has been assessed using such measurements as teacher observations, sociograms, and questionnaires. The instruments are chosen and designed to assess each individual's actions or reactions, relevant to cohesion (Drescher, 1985, p.9). One of the difficulties with cohesion measurements has been that results cannot be generalized. Even though generalization is desirable in many fields, lack of generalization does not detract from the value of this study. Each study conducted concerning group cohesiveness contributes more information to the research base. A gradual buildup of information in

this area will hopefully contribute to a widely
accepted definition of group cohesiveness and its value
in education.

CHAPTER 3

METHODS

The purpose of this study was to determine if an outdoor school experience in the fall of the year by a group of 7th grade science students would result in an increase in group cohesion.

This study was conducted with the 7th and 8th graders at Monforton School, a K-8 rural school located five miles west of Bozeman, Montana. The 7th grade class served as the the experimental group and the 8th grade class, which had never participated in an outdoor school experience, served as the control. The student population school-wide was nearly 200 students, with 7th and 8th grade populations of 10-12 students. The school atmosphere was unique, in that the relatively small class sizes afforded closer student/teacher relationships than in larger districts. This variable of small class sizes was constant throughout the school and was not a determining factor in this study.

The independent variable in this study was the experimental treatment. The dependent variable was group cohesiveness. Constants for the study were the teacher and the school.

Instrumentation

Each student was measured for group cohesiveness using two instruments. The first was the Behavior Rating Profile, composed of 60 true/false responses that yielded a measure of student, peer, and school environment behaviors. For the purposes of this study, only measures of peer and school environment behaviors were utilized (Appendix B). The documentation for the BRP reported measures for both internal consistency and test-retest reliability. The internal consistency reliability was derived by the Kuder-Richardson formula Number 20. At the 6th/7th grade level, tests from 50 students were used for the peer and behavior scales. The reliability for the peer rating scale was .83, and the behavior rating scale was .74. At the 8th/9th grade level, tests from 25 students resulted in a reliability of .78 for the peer rating and .81 for the behavior rating scale. The test-retest reliability was established by administering the profile to 36 normal high school students in Indiana. There were approximately two weeks between the administration of the first and second tests. Reliability for the peer test was .86, and for the behavior scale the reliability was .83. Although the researcher recognized the weakness of the reliabilities reported,

the decision was made to use the BRP because of the inadequacies of existing cohesion measurements for junior high school aged students. This decision was based on arguments by Nunnally (1978) and Helmsteadter (1964). Nunnally argued that a .80 reliability was acceptable for tests used in research. Helmsteadter indicated that values ranging from .70 to .90 were acceptable.

The degree of cohesion of each class was determined by scores on the peer and school rating scales. In addition, a class sociogram was administered at the time of each evaluation. This researcher-developed instrument indicated the formation or lack of cliques, social isolates, and general cohesion trends within each class. Each student was asked to choose three students with whom he or she would most like to work and least like to work on a special science project. The number of times each student was chosen was then used as a rating for the sociogram.

Experimental Procedure and Data Collection

In September, 1986, the Behavior Rating Profile was administered to the students in the experimental group and the students in the control group. Both groups also responded to questions used to develop

sociograms for each class. The experimental group then participated in a three-day outdoor school in Yellowstone National Park. The Yellowstone Outdoor School was conducted by C.J. Graves, 8th grade teacher and 6th/7th grade science teacher at Monforton School. The students were chaperoned by parent volunteers, in addition to the classroom teacher. The curriculum was an extension of the 7th grade life science program, which focused on many life science skills such as habitat types, competition among animal species, adaptations of animals, aquatic life studies, compass skills, and an investigation of the hydrothermal features of Yellowstone National Park. During their time in Yellowstone Park, the students worked in small study groups of 5-6 students each, completing exercises in a teacher-designed field study notebook. The students performed such tasks as recording animal observations, geothermal activity, and soil and water temperature, in addition to journal writing. Study group sessions were approximately 2-3 hours in length and were supervised by the teacher or a parent volunteer. The students slept in tent groups and participated in the campfire activities of singing in groups and presenting skits for the rest of the class. Preparation for much of the academics of the trip began in the spring of the students' 6th grade year.

The control group remained at school under the supervision of the 7th grade teacher, who was also the 8th graders' mathematics instructor. Both groups were evaluated before the trip, immediately after the trip, and again the following May.

Analysis

The results of the school and peer rating scales in the BRP were analyzed to determine group cohesiveness. The measurements are referred to as Pre-trip, Post-trip 1, and Post-trip 2. Post-trip 1 was administered immediately upon return from the trip and Post-trip 2 was the May measurement. Independent t-tests were used with the 7th and 8th grade Pre-trip measurements to determine equivalence. Two-tailed probabilities were reported because, prior to the analysis, equivalency of groups was unknown, and no directionality was implied. Independent t-tests were used on the 7th and 8th grade Post-trip 2 measurements to test for the effect of the experimental variable. A dependent t-test was used on 7th grade Pre-trip and Post-trip 1 scores to determine increase in cohesion as a result of the experimental variable. Dependent t-tests were used on the 7th Pre-trip and Post-trip 2 scores to evaluate the existence of long-term cohesion. A dependent t-test was used on 8th grade Pre-trip and

Post-trip scores to test for cohesion that might have occurred without the treatment. One-tailed probabilities were reported for the tests described above, because directionality was implied with the experimental group assumed to have the greater gain in mean scores. Finally, a ranking of students based on the sociogram scores was analyzed using the Wilcoxon Matched-pairs Signed-rank test, producing a z score and two-tailed probability. The analyses were done at Montana State University at Bozeman, Montana, using the SPSS-X (Statistical Package for the Social Sciences, revised) using a Honeywell computer system.

Collection and Organization of Data

The students in the experimental and control groups were administered the test battery one week prior to the Outdoor School experience, immediately following the experience, and once again the following May. Each student received a raw score rating for the school scale, the peer scale, and the sociogram. Based on information from the BRP manual, the raw scores were converted to scale scores for analysis. The sociogram was scored based on the number of positive choices a student received, added to the number of negative choices received. For example, if a student was chosen by 5 others as being preferred for the project and by 2

others as not being preferred, the student received a score of +3. If a student received 2 positive choices and 5 negative choices, the raw score was -3. Based on raw scores, each student was assigned a ranking. If two or more students had the same raw score, the ranking of each student was determined by calculating the average of his or her score. For example, ranking might be as follows.

Student A	Raw score = +5	Ranking = 1
Student B	Raw score = +4	Ranking = 2.5
Student C	Raw score = +4	Ranking = 2.5
Student D	Raw score = -1	Ranking = 4

Data from the experimental group and the control group were recorded. The data included each student's identification number, gender, science grade average, number of years at Monforton, and both raw and scale measurement scores for the school rating, peer rating, and sociogram for the Pre-trip, Post-trip 1, and Post-trip 2 assessments.

Statistical Hypotheses

The five hypotheses listed below were generated from the research hypothesis as stated in this study (see page 2). All hypotheses were tested at the .05 level of significance.

H₀₁ - There will be no difference in cohesion between the control group and experimental group

prior to the outdoor experience.

- Ho2 - There will be no difference in cohesion between the control group and experimental group immediately following the outdoor experience.
- Ho3 - There will be no difference in cohesion for the experimental group immediately following the outdoor school experience.
- Ho4 - There will be no difference in cohesion at the beginning and end of the year for the control group.
- Ho5 - There will be no difference in cohesion at the beginning and end of the year for the experimental group.

Significance of the Proposed Research

This study was undertaken to determine 1) if an outdoor school experience significantly affected group cohesion of a 7th grade class immediately following an outdoor school experience, and 2) if sustained, increased group cohesion within the group could be demonstrated. The importance of research in this area was to show that significance in group cohesion as a result of participation in an outdoor school experience could be demonstrated. The results of the study are important in providing an explanation of the phenomenon of positively changed behaviors observed by the researcher after working with students in outdoor settings. In addition, this study was designed to

begin to fill in gaps that exist in the research literature concerning the understanding of the effects of an outdoor experience on group cohesiveness. Only as studies of this nature are conducted can progress be made in reaching an acceptable definition of cohesion. Further knowledge can only offer additional avenues of questioning, which should be the ultimate purpose of any research study.

CHAPTER 4

ANALYSIS OF DATA

The major purpose of this study was to determine if an outdoor school experience in the fall would result in an immediate heightened degree of group cohesiveness for a 7th grade class compared to a class who did have an outdoor school experience and to determine if that cohesiveness was retained over the course of the year. The study consisted of a three day outdoor school experience in Yellowstone National Park by a group of 7th grade students. The effects of the experience on group cohesion were measured using two instruments, the Behavior Rating Profile and a researcher-designed sociogram. The first administration of the assessment tests was one week prior to the outdoor school experience (referred to as Pre-trip measurement), the second was given immediately upon return from the experience (known as Post-trip 1), and the final measurement was conducted in the spring of the year (Post-trip 2).

Two instruments were used to analyze the effects of the outdoor school experience. The first was the Behavior Rating Profile, a 60 item true/false response

form measuring student perceptions and attitudes in the areas of school, peer, and home relations. Based on the definition of cohesion derived from a thorough study of research literature, only the peer and school rating forms were used for the purposes of this study. The second instrument utilized was a researcher-designed sociogram. The sociogram asked the students to choose three other classmates with whom they would most like to work on a special science project. In addition, they were to select three others with whom they would least like to work. This resulted in a ranking of students in the class. Each student received scores for the school rating, peer rating, and sociogram rating. Raw scores for each of the tests were converted to scale scores for the purposes of analysis.

Each student took the test battery three times throughout the course of this study, yielding nine pieces of data per student. Pretest scores were analyzed to determine if equality between experimental and control groups existed as a result of the testing procedure used. A t-test was used to compare the pretest means of the experimental and control groups.

To measure the effect of the experimental variable, the outdoor school experience, the scores of the experimental and control group Post-trip 1 tests

were analyzed using a t-test. The purpose of this analysis was to determine if there was a significant difference between the cohesion of the control and the experimental group as a result of the treatment.

Pre-trip scores and Post-trip 1 scores of the experimental group were analyzed using a t-test to determine if the outdoor school experience significantly affected cohesion within the experimental group.

Finally, an analysis of both groups using the Pre-trip and Post-trip 2 scores was made to determine if longevity of cohesion existed within groups and to determine if the experimental group exhibited a greater degree of cohesion than the control group. The level of significance was set at $\alpha = .05$ for all statistical tests.

Measurement

H₀₁ - There will be no difference in cohesion between the control group and the experimental group prior to the outdoor experience.

The comparison of the mean Pre-trip score of the experimental group with that of the control group was used to determine if equality existed between the two groups prior to the outdoor school experience. The mean Pre-trip score of the experimental group was 12.0

for the School scale, 11.0 on the Peer scale and 10.5 on the Sociogram. The mean Pre-trip scores of the control group were School, 12.7; Peer, 10.3; and Sociogram, 10.8. The t-test yielded a two-tailed probability of .543 for the School scale, .567 for the Peer scale, and .655 for the Sociogram scale (Table 1). The statistical ratio was not significant at the .05 level, leading to the retention of the null hypothesis.

Table 1. Equivalence of Groups

	Mean Scores	T Values	Two-tailed Probability	
School scale				
Control (*)	12.7	.65	.543	NS
Experimental	12.0			
Peer scale				
Control	10.3	-.59	.567	NS
Experimental	11.0			
Sociogram				
Control	10.8	.45	.655	NS
Experimental	10.5			

(*) For all tables, Control n=10; Experimental n=12

** = significant at the .05 level

NS = not significant

Ho2 - There will be no difference in cohesion between the control group and the experimental group immediately following the outdoor experience.

The comparison between the mean Post-trip 1 score of the students in the experimental group with that of the control group was used to determine if the experimental variable (the outdoor school experience)

resulted in a significantly greater degree of cohesion for the experimental group. The Post-trip 1 mean scores of the experimental group were as follows: School, 12.5; Peer, 11.0; and Sociogram, 10.4. The Post-trip 1 mean scores for the control group were: School, 13.8; Peer, 11.1; and Sociogram, 10.8. The t-test analyses resulted in one-tailed probabilities of: School, .155; Peer, .495; and Sociogram, .282 (Table 2). The statistical findings were not significant at the .05 level, leading to the retention of the null hypothesis.

Table 2: Effect of Experimental Variable

	Mean Scores	T Value	One-tailed Probability	
<hr/>				
School scale				
Control	13.8	1.04	.155	NS
Experimental	12.5			
<hr/>				
Peer scale				
Control	11.1	.01	.495	NS
Experimental	11.0			
<hr/>				
Sociogram				
Control	10.8	.59	.282	NS
Experimenta	10.41			

xx = significant at the .05 level

NS = not significant

Ho3 - There will be no difference in cohesion for the experimental group immediately following the outdoor school experience.

The comparison of the mean Pre-trip scores with that of the mean Post-trip 1 scores of the experimental group was used to determine if the outdoor school experience significantly affected group cohesion within the experimental group. The mean Pre-trip scores for the experimental group were: School, 12.0; Peer, 11.0; and Sociogram, 10.5. The Post-trip 1 mean scores were as follows: School, 12.5; Peer, 11.1; and Sociogram, 10.4. The t-test analyses yielded a one-tailed probability of .169 for the School scale, .440 for the Peer scale, and .388 for the sociogram scale. These statistics were not significant at .05, leading to the retention of the null hypothesis.

Table 3. Increase in Cohesion as a Result of the Treatment

	Pre-trip mean	Post-trip 1 mean	T value	One-tailed Probability	
School scale	12.0	12.5	-1.00	.169	NS
Peer scale	11.0	11.1	-.15	.440	NS
Sociogram	10.5	10.4	.29	.388	NS

** = significant at the .05 level

NS = not significant

Ho4 - There will be no difference in cohesion at the beginning and end of the year for the control group.

The comparison between the mean Pre-trip scores and the mean Post-trip 2 scores in the control group was used to determine if any significant growth in cohesion had occurred "naturally" over the course of the year. The mean Pre-trip scores for the control group were: School, 12.7; Peer, 10.3; and Sociogram, 10.8. The mean Post-trip 2 scores were: School, 13.8; Peer 9.9; and sociogram, 10.9. The results of the t-test analyses were: School, .064; Peer, .267; and Sociogram, .390 (Table 4). None of these was significant at the .05 level. This led to the retention of the null hypothesis.

Table 4. Cohesion Over Time - Control Group

	Mean Scores		T Value	Two-tailed Probability	
	Pre-trip	Post-trip 2			
School scale					
Control	12.7	13.8	-1.67	.064	NS
Peer scale					
Control	10.3	9.9	.65	.267	NS
Sociogram					
Control	10.8	10.9	-.29	.390	NS

** = significant at the .05 level

NS = not significant

Ho5 - There will be no difference in cohesion at the beginning and end of the year for the experimental group.

The comparison between the mean Pre-trip scores and the mean Post-trip 2 scores in the experimental group was used to determine if any significant change in cohesion had occurred over the course of the year as a result of the experimental treatment. The mean Pre-trip scores for the experimental group were: School, 12.0; Peer, 11.0; and Sociogram, 10.5. The mean Post-trip 2 scores were: School, 12.2; Peer, 11.5; and Sociogram, 10.6. The results of the t-test analyses were: School, .414; Peer, .169; and Sociogram, .445 (Table 5). None of these statistics was significant at the .05 level. This led to the retention of the null hypothesis.

Table 5: Cohesion Over Time - Experimental Group

	Mean Scores		T value	One-tailed Probability	
	Pre-trip	Post-trip 2			
School scale					
Experimental	12.0	12.2	-.22	.414	NS
Peer scale					
Experimental	11.0	11.5	-1.00	.169	NS
Sociogram					
Experimental	10.5	10.6	-.14	.445	NS

** = significant at the .05 level

NS = not significant

Sociogram scores were analyzed using the method described in the Behavior Rating Profile manual.

Students received a raw score based on the number of positive and negative selections made by other students. By adding the number of positive and negative responses, a raw score for each student was attained. The students were then ranked according to the raw scores. Students with the same raw scores received a ranking calculated by determining the average of their scores.

A statistical analysis of the rankings using the Wilcoxon matched-pairs signed-ranks test yielded no significant difference in the ranking of the students in the control group over the course of the three tests (Table 6). However, the sociogram ranking for the control group showed a degree of consistency of ranking for all three tests, with most students ranging no greater than 1.5 points for the three tests (Table 7). Student A demonstrated a range of 2.5 points, while student G had the greatest range with a spread of 4 points from the Pre-trip assessment to the Post-trip 1 and Post-trip 2 (Table 6). Student H clearly stands out as the isolate of the group, receiving the lowest ranking on every test. In observing the students in class during the year the study was conducted, the researcher observed the isolate nature of student H, who always preferred to work alone, never involving himself in other groups. The changes in students A

and G may be explained in terms of the addition and loss of three students throughout the year who were not included in this study.

Table 6. Wilcoxon Matched-Pairs Signed-Ranks Test - Control Group

	z score	One-tailed Probability	
Pre-trip vs. Post-trip 2	-.26	.393	NS
Post-trip 1 vs. Post-trip 2	-.40	.342	NS

** = significant at the .05 level
NS = not significant

Table 7. Sociogram Ranking of Pre-trip, Post-trip 1, and Post-trip 2 - Control Group

STUDENT	PRE-TRIP RANKING	POST-TRIP 1 RANKING	POST-TRIP 2 RANKING
A	1.5	4	4
B	9	7.5	8
C	7.5	7.5	9
D	7.5	6	6.5
E	4	2.5	3
F	6	5	6.5
G	5	9	5
H	10	10	10
I	1.5	1	2
J	3	2.5	1

A statistical analysis of the rankings of the students in the experimental group using the Wilcoxon matched-pairs signed-ranks test yielded no significant difference in the rankings from the Pre-trip test to the Post-trip 1 test, the Pre-trip to the Post-trip 2 assessment, or the Post-trip 1 to the Post-trip 2 test (Table 8). The sociogram ranking of the experimental group demonstrates a lesser degree of consistency among the members than that of the control group (Table 9). Eight members of the group ranged 3 or fewer points across the battery of tests. However, four students demonstrated a range of 6 1/2 to 7 1/2 points. Student H had a change of 6 1/2 points, students D and F demonstrated a change of 7 points, and student J showed a 7 1/2 point range of scores. Behaviors observed by the researcher during the year this study was undertaken may help to explain the changes in scores of students H, D, F, and J. Personality conflicts, lack of acceptance of responsibility, increased maturity, and increased pressures from home may have been factors contributing to the changes noted.

Table 8. Wilcoxon Matched-Pairs Signed-Ranks Test - Experimental Group

	z score	One-tailed Probability	
Pre-trip vs. Post-trip 1	-.28	.389	NS
Pre-trip vs. Post-trip 2	-.41	.339	NS
Post-trip 1 vs. Post-trip 2	-.40	.342	NS

** = significance at the .05 level
NS = not significant

Table 9. Sociogram Ranking of Pre-trip, Post-trip 1, and Post-trip 2 - Experimental Group

STUDENT	PRE-TRIP RANKING	POST-TRIP 1 RANKING	POST-TRIP 2 RANKING
A	9	12	11.5
B	5	6	6.5
C	12	11	11.5
D	1	1.5	8
E	9	8	6.5
F	5	9.5	2.5
G	5	3	2.5
H	2.5	4	9
I	7	6	5
J	9	6	1.5
K	11	9.5	10
L	2.5	1.5	1.5

CHAPTER 5

SUMMARY

The purpose of this study was to determine whether or not a fall outdoor school experience by a class of 7th grade students would increase the cohesive nature of the class and then sustain the increased cohesion over the course of the year. A thorough review of the literature pertaining to outdoor education and group cohesiveness was conducted. Conclusions drawn by the researcher, based on statistical analysis and close personal, professional observations, follow.

Conclusions

The statistical analyses of Chapter 4 are the basis for the following conclusions:

1. The experimental group and the control group demonstrated equality for the purposes of use as sample populations for this study. This conclusion was based on findings of no significant difference in the Pre-trip scores of these groups.
2. The experimental group and the control group showed no difference in cohesion as a result of the outdoor school experience. This conclusion was based

on findings of no significant difference in the Post-trip 1 scores of these groups.

3. The experimental group demonstrated no increase in cohesion as a result of the fall outdoor school experience. This conclusion is based on the findings of no significant difference in the Pre-trip scores and Post-trip 1 scores of the experimental group.

4. Neither the experimental group nor the control group demonstrated significantly increased cohesion over the course of the year. This conclusion was based on the findings of no significant difference in the Pre-trip scores and Post-trip 2 scores for each group.

Personal Observations

Based on personal observations, as well as an additional eight years of experience with classroom students in outdoor settings, the researcher has reason to believe that the fall outdoor experience did have a positive cohesive effect.

Since the statistical data did not support this result, the difference between statistics and personal observation needs to be accounted for. The following analysis is offered:

1. One of the major drawbacks to this study was the small sample size which severely limited the

possibility of obtaining statistically significant results. In order to acquire enough data to be effectively analyzed, sample sizes must be significantly greater than the ones used in this study. One possible method of achieving a larger sample size would be to conduct the study over a period of several years, gathering and saving data to be analyzed at a later time.

2. The measurement instruments used for this study were another possible area of question. Among the available assessment tools, there were very few cohesiveness assessment tools that were appropriate for use with younger students. As a result, the chosen instruments may not have been ideal.

3. The results of the sociogram were inconclusive. The Wilcoxon Ranking test demonstrated no difference in ranking over the course of the three tests. However, four of the students in the experimental group demonstrated extremely wide range changes of ranking. In observing those students over the course of the year, the researcher noted several factors that may have influenced the wide range. One of the students, who was ranked high in early assessment and much lower in the May assessment, displayed a marked degree of lack of responsibility during the second half of the year. This was displayed

in falling grades as well as inattentive behavior in class and poor study habits concerning homework assignments. This may have contributed to the poorer ranking in May. The student who demonstrated a rise in ranking performed much better as a student during the second half of the year. The student was involved throughout the year in group counselling sessions, as well as participation in karate, a program after school hours that requires a minimum standard of performance of grades in order to remain active in the club. The combination of counselling received and the added positive benefits of accountability to the karate club may have resulted in the rise in ranking on the Post-trip 2 assessment.

4. The lack of substantial conclusions from this study strengthens the conviction of the researcher that a study of this nature is valid. As a teacher involved with students who have been exposed to outdoor experiences, the researcher cannot disregard the observable behavioral changes of individual students and classes as a whole after participation in outdoor experiences. Perhaps the changes noted are not a direct result of the experience; however, the common denominator seemed to be the outdoor experience. Students often displayed behavior changes that indicated a maturity of self and group, were generally

more confident, and often spoke and wrote positively concerning their experience (Appendix C).

Recommendations

The research problem posed in Chapter 1 was:

Students who participated in an outdoor school experience as a class in the fall would initially exhibit a high degree of group cohesion and that heightened degree of cohesion would be maintained over the course of the school year.

The results of this study were not able to substantiate a relationship between an outdoor school experience and group cohesiveness. However, it is the opinion and observation of the researcher that the study did indeed have value, and further, that there is clear indication of a need for additional controlled studies of similiar nature, in order to arrive at more definitive results. It should be taken into account that:

1. The literature base for group cohesiveness is extremely limited in general and most especially void when discussing younger students. Over the course of the twelve months in which this study was conducted, no new research in the area of group cohesiveness among younger students was discovered by the researcher. Because of the lack of research in this area, studies

such as this one are essential to begin to fill in some of the gaps that exist.

2. Another limiting factor of the study lies in the fact that the outdoor school emphasis is "trendy." Fewer research articles in outdoor education, as well as group cohesiveness, over the past year were found. In addition, over the past few years, many of the nation's school districts have been faced with operating on reduced budgets. Programs like outdoor schools were often eliminated. When this happens, fewer teachers and researchers are gathering data related to outdoor schools, which may explain why very few literature sources concerning outdoor education have been available the past twelve months.

3. There exists the need for group cohesiveness assessment tools that are appropriate to use with younger students. Such measurement instruments may be valuable for assessing other endeavors and programs often undertaken by upper elementary and junior high/middle school educators.

The indications are clearly for further controlled experimental data gathering. Given the physical limitations of a controlled, short-term study at Monforton School, recommendations for a continuation of this study follow:

1. Use the 6th grade class as the control group, instead of the 8th grade students.

2. Continue to explore literature relative to group cohesiveness assessment for younger students that would be appropriate for use with this study. If no assessment tools are found to be useful, a researcher-designed tool should be developed that would take into account the elements in the definition of group cohesion.

3. Set a minimum population sample of 100 students for both the experimental and control groups, with the realization that it may require several years to reach the established minimum population sampling size.

4. Gather additional data in the form of students' personal writing after the outdoor school experience.

5. Explore the possibility of conducting a qualitative research study in the area of cohesiveness as it may be related to an outdoor school experience. The use of trained, outside observers recording the existence or lack of behaviors that indicate group cohesion may be yet another method to consider.

This study did not demonstrate statistically significant gains in group cohesion as a result of an outdoor school experience. It was able, however, to

more clearly define elements of the study that are in need of further exploration. Those areas include a clearer definition of group cohesion, a testing instrument for cohesion among junior high aged students, and the exploration of other possible methods to conduct a study of this nature. It has become evident to the researcher that the process does not terminate here, but should proceed, because only through continued controlled research can a definite conclusion be drawn as to the validity of the original hypothesis.

REFERENCES CITED

- Brower, Robert, and Brower, Mary. Group Experience: The Essence of Camping. An Occasional Paper. Chicago, Il.: ERIC Document Reproduction Service, Ed 216 849, 1980.
- Cook, Keith Vincent. The Effectiveness of an Outdoor Adventure Program as a Training Method for Resident Assistants. A Thesis in Recreation and Parks. Pennsylvania State University: ERIC Document Reproduction Service, ED 210 142, 1980.
- Donnellan, Kathleen M., and Roberts, Gary J. "Activity-Based Elementary Science: A Double Bonus." Science and Children, January 1985, pp.119-121.
- Drescher, Stuart; Burlingame, Gary; and Fuhriman, Addie. "Cohesion: An Odyssey in Empirical Understanding." Small Group Behavior, Vol. 16, No. 1, February 1985, pp. 3-30.
- Festinger, L.; Schacter, S.; and Back, K. Social Pressures in Informal Group: A Study of Human Factors in Housing. Stanford, Ca.: Stanford University Press, 1950.
- Fletcher, Sarah Ann. A Comparison of Affective Changes Between Economically Disadvantaged Sixth Graders at a Resident Outdoor Education Program. Indiana University, Bloomington, In.: ERIC Document Reproduction Services, ED 129 549, 1973.
- Harris, Alan H. Group Formation, Cohesiveness, and Morale in a Residential Laboratory Environment. Baltimore, Md.: ERIC Document Reproduction Service, ED 223 951, 1982.
- Hemsteadter, B.C. Principles of Psychological Measurement. New York: Appleton-Century-Crofts, 1964.
- Howie, Thomas R. "Indoor or Outdoor Environmental Education?" Journal of Environmental Education. (Summer 1974): pp. 32-36.

- Hurry, Thomas R. Directions for Environmental Education and Their Implications for the Training of Primary School Teachers in Transvaal: Towards a Synthesis. University of South Africa: ERIC Document Reproduction Service, ED 234 991, 1982.
- Koballa, Jr., Thomas R. and Rice, Dale R. "Six Strategies for Improving Attitudes Toward Science." Science and Children, March 1985, pp. 32-34.
- Kyle, Jr., William C.; Bonnstetter, Ronald J.; McCloske, Sylvia; and Fults, Betty Ann. "Science Through Discovery: Students Love It." Science and Children, October 1985, pp. 39-41.
- Nunnally, J.S. Psychometric Theory. New York: McGraw-Hill, 1978.
- Pellegrino, Joseph C. Effective Development of Sequential Stages of Group Cohesiveness. Alfred Adler Institute of Chicago: ERIC Document Reproduction Service, ED 254 798, 1984.
- Smith, Julian W.; Carlson, Reynold E.; Donaldson, George W.; and Masters, Hugh B. Outdoor Education. pp.6-10,20. Englewood Cliffs, NJ.: Prentice Hall, Inc., 1972.
- SPSS, Inc. SPSS-X User's Guide. Chicago: SPSS Inc., 1983.
- Webb, Noreen M. and Cullian, Linda K. Group Process as the Mediator Between Aptitudes and Achievement: Stability over Time. Los Angeles, Ca.: ERIC Document Reproduction Service, ED 209 601, 1981.

APPENDICES

APPENDIX A

Letter to Parents and Schedule of MOSSY:
Monforton Outdoor School - Style Yellowstone

Fr: Mr. Graves
To: Parents of 7th grade students
Re: Monforton Outdoor School--Style Yellowstone :
MOSSY
September 8, 1986

Parents:

Last year, the 6th grade students did not participate in the outdoor school program BEEP. We felt that a better program could be offered for our students utilizing the resources of Yellowstone National Park. As a result, the MOSSY program will be held for the first time this year, with the target dates of September 24, 25, and 26. A parent meeting will be held Thursday, September 11, at 8:00 pm, in the 8th grade classroom, to present an overview of the program and answer any question that you may have. Please review the enclosed information before the meeting, and note any questions or concerns that you may have. In addition, there will be a need for several parent volunteers to go with the class on the trip and for one parent to drive a support vehicle. Please give these possibilities some thought, also. For those parents unable to attend the meeting, a summary of information will be sent home on Friday, September 12.

We are looking forward to a valuable experience for the students. Thank you for your support in this effort.

Sincerely,



John Graves, Science Teacher

MOSSY

PROPOSED ITINERARY FOR MOSSY ** MONFORTON OUTDOOR
SCHOOL--STYLE YELLOWSTONE **

PROPOSED DATES: SEPTEMBER 24,25,26, 1986

WEDNESDAY

8:30	-	9:00	LEAVE SCHOOL
12:00			ARRIVE MADISON CAMPGROUND
12:00	-	1:30	LUNCH AND SET UP CAMP
2:00	-	5:00	STUDY STATION AT OLD FAITHFUL
5:30	-	6:30	DINNER
7:30	-	9:00	CAMPFIRE RANGER TALK
10:00			LIGHTS OUT

THURSDAY

7:00	-	7:30	GET UP
8:00	-	8:30	BREAKFAST
9:00	-	11:00	STUDY STATION (WILDLIFE/PLANTS; TREES; WATER/SOIL/AQUATICS)
12:00	-	1:00	LUNCH
1:00	-	3:30	STUDY STATIONS (SWITCH FROM MORNING)
3:30	-	5:30	ORIENTEERING
5:30	-	6:00	DINNER
7:30	-	9:00	CAMPFIRE RANGER TALK
10:00			LIGHTS OUT

FRIDAY

7:00	-	7:30	GET UP
8:00	-	8:30	BREAKFAST
9:00	-	10:00	BREAK CAMP
10:00	-	1:00	GEOLOGY HIKE STUDY STATION
1:00	-	1:30	LUNCH
1:30			LEAVE FOR MONFORTON
3:30	-	4:00	ARRIVE AT MONFORTON

** CAMPING WILL BE DONE IN TENTS WITH A TOTAL OF 4
TENT GROUPS MAXIMUM

** SUPPORT PERSONNEL: MR. GRAVES, MR. MARTIN (STUDENT
TEACHER), 2 PARENT COOKS, 2 ADDITIONAL PARENTS. 2
RANGERS AT OLD FAITHFUL, 2 RANGERS FOR CAMPFIRE TALKS,
2 RESOURCE PEOPLE FOR STUDY STATIONS, 1 PARENT DRIVING
A SUPPORT VEHICLE

APPENDIX B

Test Instruments for Measurement

Behavior Ratings Profile Test page 1

- | TRUE | FALSE | |
|--------------------------|--------------------------|---|
| <input type="radio"/> | <input type="radio"/> | 1. My parents "bug" me a lot. |
| <input type="radio"/> | <input type="radio"/> | 2. I don't have enough freedom at home. |
| <input type="radio"/> | <input type="radio"/> | 3. My parents treat me like a baby. |
| <input type="radio"/> | <input type="radio"/> | 4. I think about running away from home. |
| <input type="checkbox"/> | <input type="checkbox"/> | 5. My teacher often gets angry with me. |
| <input type="checkbox"/> | <input type="checkbox"/> | 6. Some of my friends think it is fun to cheat, skip school, etc. |
| <input type="checkbox"/> | <input type="checkbox"/> | 7. Other students don't like to play or work with me. |
| <input type="checkbox"/> | <input type="checkbox"/> | 8. Sometimes I get so angry at school that I yell at the teacher and want to stomp out of the room. |
| <input type="radio"/> | <input type="radio"/> | 9. I have some friends that I don't invite over to my house. |
| <input type="checkbox"/> | <input type="checkbox"/> | 10. Other kids don't seem to like me very much. |
| <input type="radio"/> | <input type="radio"/> | 11. I argue a lot with my family. |
| <input type="radio"/> | <input type="radio"/> | 12. My family doesn't do many things together, like going places or playing games. |
| <input type="checkbox"/> | <input type="checkbox"/> | 13. I get into too many arguments with people I know. |
| <input type="checkbox"/> | <input type="checkbox"/> | 14. I sometimes stammer or stutter when the teacher calls on me. |
| <input type="radio"/> | <input type="radio"/> | 15. When my parents don't let me do what I want, I get real quiet and don't talk. |
| <input type="checkbox"/> | <input type="checkbox"/> | 16. I am not interested in schoolwork. |
| <input type="radio"/> | <input type="radio"/> | 17. My parents don't spend enough time with me. |
| <input type="radio"/> | <input type="radio"/> | 18. My parents say that I am awkward and clumsy. |
| <input type="checkbox"/> | <input type="checkbox"/> | 19. Other people don't like to share things with me. |
| <input type="radio"/> | <input type="radio"/> | 20. My parents don't approve of some of my friends. |
| <input type="checkbox"/> | <input type="checkbox"/> | 21. I spend too much time playing/working by myself. |
| <input type="checkbox"/> | <input type="checkbox"/> | 22. My friends say that I am clumsy. |
| <input type="checkbox"/> | <input type="checkbox"/> | 23. The teacher doesn't choose me to run errands. |
| <input type="checkbox"/> | <input type="checkbox"/> | 24. Other kids don't listen to me when I have something important to say. |
| <input type="checkbox"/> | <input type="checkbox"/> | 25. I don't have enough friends. |
| <input type="checkbox"/> | <input type="checkbox"/> | 26. I can't seem to concentrate in class. |
| <input type="checkbox"/> | <input type="checkbox"/> | 27. My teachers don't listen to me. |
| <input type="checkbox"/> | <input type="checkbox"/> | 28. Usually, I am not interested in what my teachers have to say to me. |
| <input type="checkbox"/> | <input type="checkbox"/> | 29. My teachers give me work that I cannot do. |
| <input type="checkbox"/> | <input type="checkbox"/> | 30. Other kids say I act like a baby. |

Behavior Ratings Profile Test page 2

- | TRUE | FALSE | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | 31. I seem to get into a lot of fights. |
| <input type="checkbox"/> | <input type="checkbox"/> | 32. It is hard for me to make new friends. |
| <input type="checkbox"/> | <input type="checkbox"/> | 33. I have lots of nightmares and bad dreams. |
| <input type="checkbox"/> | <input type="checkbox"/> | 34. I get real angry with the way other kids treat me. |
| <input type="checkbox"/> | <input type="checkbox"/> | 35. My parents expect too much of me. |
| <input type="checkbox"/> | <input type="checkbox"/> | 36. I sometimes play "hooky." |
| <input type="checkbox"/> | <input type="checkbox"/> | 37. I have difficulty sitting still in class. |
| <input type="checkbox"/> | <input type="checkbox"/> | 38. Often, I think about getting sick so I won't have to go to school. |
| <input type="checkbox"/> | <input type="checkbox"/> | 39. My parents won't let me spend the night away from home. |
| <input type="checkbox"/> | <input type="checkbox"/> | 40. I don't like it when the teacher tells me what to do. |
| <input type="checkbox"/> | <input type="checkbox"/> | 41. Teachers are often unfair to me. |
| <input type="checkbox"/> | <input type="checkbox"/> | 42. I get teased a lot by the other kids. |
| <input type="checkbox"/> | <input type="checkbox"/> | 43. I rarely get to spend the night with my friends at their homes. |
| <input type="checkbox"/> | <input type="checkbox"/> | 44. People think I'm unattractive. |
| <input type="checkbox"/> | <input type="checkbox"/> | 45. I am dissatisfied with my progress in school. |
| <input type="checkbox"/> | <input type="checkbox"/> | 46. I don't like to do chores in the classroom, like erasing the board or running errands. |
| <input type="checkbox"/> | <input type="checkbox"/> | 47. I often break rules set by my parents. |
| <input type="checkbox"/> | <input type="checkbox"/> | 48. I never get my way at home. |
| <input type="checkbox"/> | <input type="checkbox"/> | 49. I am shy around my parents' friends. |
| <input type="checkbox"/> | <input type="checkbox"/> | 50. Occasionally, I get so upset at things that happen at school that I get sick. |
| <input type="checkbox"/> | <input type="checkbox"/> | 51. At home I'm always trying to get out of my chores. |
| <input type="checkbox"/> | <input type="checkbox"/> | 52. I do a lot of daydreaming in class. |
| <input type="checkbox"/> | <input type="checkbox"/> | 53. I don't tell anybody how I feel. |
| <input type="checkbox"/> | <input type="checkbox"/> | 54. I am rarely invited to a friend's home to eat or play. |
| <input type="checkbox"/> | <input type="checkbox"/> | 55. I can't seem to stay in my desk at school. |
| <input type="checkbox"/> | <input type="checkbox"/> | 56. Other kids are always picking on me. |
| <input type="checkbox"/> | <input type="checkbox"/> | 57. I don't listen when my parents are talking to me. |
| <input type="checkbox"/> | <input type="checkbox"/> | 58. When at home, I spend too much time daydreaming. |
| <input type="checkbox"/> | <input type="checkbox"/> | 59. The things I learn in school are not as important or helpful as the things I learn outside of school. |
| <input type="checkbox"/> | <input type="checkbox"/> | 60. Some people think I am dumb. |

Researcher-Designed Sociogram

Which of the students in your class would you most like to have work with you on a special science project?

1. _____ 2. _____ 3. _____

Which of the students in your class would you least like to have work with you on a special science project?

1. _____ 2. _____ 3. _____

APPENDIX C

Samples of Students' Writing after an Outdoor
School Experience

Sample of Student's Writing--Student 1

Last week our class went to Yellowstone National Park for three days. While we were there we studied the environment around us. This study had to do with reports we had written or were writing. It was well coordinated and I learned a lot.

The first day we went to Mammoth and studied hot springs. I had a good understanding of them already because I did my report on them first. It helped to be able to apply this knowledge to the facts I was learning.

The ranger took the temperature as far out as he could and got 130 degrees. He guessed that in the center it was probably in the 170's. Near the spring it smelled like sulphur.

The springs are constantly changing. New formations are being created and old ones are being built up and eroded away. New springs are forming or finding new outlets, often abandoning old ones.

As we approached the first hot spring the ranger read some of the witches scene from Shakespeare's *Macbeth*. Indeed, there were bowls that looked like cauldrons bubbling and steaming away.

Different types of plant life existed in the springs, mostly algae or bacteria. Many trees had been choked off by the springs, but one live tree stood in the middle of a stream of water coming from one of them.

The second day we climbed Specimen Ridge and learned about petrified trees. Near the top of the peak were two of them. One looked like a large stone pillar, and the other was big but broken off right at the base. We went under the big one and saw the petrified roots, proving it was once a tree.

The new ranger explained how trees petrify. They are covered up, usually with ash, and slowly minerals replace the wood. Sometimes new trees will grow in the ash and repeat the process, making layers of petrified trees.

He told us that the trees were redwoods and that most people want to know how he can tell. When a scientist wants to know what kind of tree it is he/she can dissolve the rock in acid, leaving wood fibers behind. Then all he/she has to do is examine and identify these.

The third day we climbed Bunsen Peak and learned to identify the different types of pine trees. We did such things as counting needles in a group, looking at the bark, and examining the outer twigs.

We also tested the surrounding conditions. We described the location of the tree, noting where it was in relation to the other types of trees. We also used thermometers to check the air and soil temperature and used kits to determine the soil's pH.

Over all, it was a very good trip. I actually learned something and had a good time too. I really enjoyed the trip. Thanks Mr. Graves!

