

THE EFFECT OF AN OUTDOOR EDUCATION PROGRAM  
ON STUDENT SOCIAL RELATIONSHIPS

A Thesis  
Presented to  
the Faculty of Graduate Studies  
The University of Manitoba

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

by  
Boyd van Aggelen

August 1978



THE EFFECT OF AN OUTDOOR EDUCATION PROGRAM  
ON STUDENT SOCIAL RELATIONSHIPS

BY

Boyd van Aggelen

A dissertation submitted to the Faculty of Graduate Studies of  
the University of Manitoba in partial fulfillment of the requirements  
of the degree of

MASTER OF EDUCATION

© 1978

Permission has been granted to the LIBRARY OF THE UNIVER-  
SITY OF MANITOBA to lend or sell copies of this dissertation, to  
the NATIONAL LIBRARY OF CANADA to microfilm this  
dissertation and to lend or sell copies of the film, and UNIVERSITY  
MICROFILMS to publish an abstract of this dissertation.

The author reserves other publication rights, and neither the  
dissertation nor extensive extracts from it may be printed or other-  
wise reproduced without the author's written permission.

## ABSTRACT

The purpose of this study was to provide objective data on the effect an outdoor education program had on students' social relationships. Three dependent variables, student-student relations, student-teacher relations, and students' attitudes toward working in a group with others, were measured for change as affected by the independent variable, the type of treatment; either those students involved in an outdoor education program or those students in a control group.

Subjects participating in the study consisted of 161 seventh grade students from two public schools in the Winnipeg area. The experimental group consisted of 97 students and the control group 64 students. The experimental group received the treatment while the control group received no treatment. Both groups were tested at the beginning of the second semester and at the end of the second semester in the 1977-78 school year.

Two surveys were designed to evaluate the effect of an outdoor education program on students' attitudes toward the three areas of social living. The surveys were the semantic differential attitude inventory survey and the sociometric device. Both these measuring devices were administered on a pretest-posttest format; the semantic differential was given to both the experimental and control groups while the sociometric device was only given to the experimental group.

Results indicate that the outdoor education program did have a significant effect on student-teacher relationships and students' attitudes toward working in a group with others. The outdoor education program did not seem to have an effect on student-student relations.

## ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to Professor Stu Seim, chairman of the thesis committee, for his help, friendship and guidance throughout this study. The writer is also indebted to Dr. Lowell Andersen and Dr. David Jenkinson, members of the thesis committee, for their help and guidance.

I would also like to thank those teachers and principals who allowed me the time and patience to carry out the study in their schools.

Finally, my sincere appreciation to my wife, Trisha, without whose support and encouragement this thesis could not have been completed.

## TABLE OF CONTENTS

CHAPTER	PAGE
I. INTRODUCTION. . . . .	1
Need for the Study . . . . .	4
Definition of Terms. . . . .	8
The Problem. . . . .	9
Design of the Study and Analysis of Data . . .	10
Limitations. . . . .	13
Summary. . . . .	14
II. REVIEW OF LITERATURE. . . . .	16
Part One . . . . .	16
Part Two . . . . .	23
Summary. . . . .	30
III. EXPERIMENTAL DESIGN . . . . .	31
Design of the Study. . . . .	32
Validation and Description of the Instruments. . .	33
The Semantic Differential . . . . .	33
The Sociometric Attitude Inventory. . . . .	36
The Pilot Study. . . . .	38
Hypotheses Tested. . . . .	39
Hypothesis I. . . . .	39
Hypothesis II . . . . .	40
Statistical Treatment of Data. . . . .	40
One-Way Analysis of Variance. . . . .	41

CHAPTER	PAGE
Paired T-Test . . . . .	41
Summary. . . . .	43
IV. ANALYSIS OF RESULTS . . . . .	45
Introduction . . . . .	45
Hypothesis I . . . . .	45
Hypothesis II. . . . .	51
Summary. . . . .	52
V. DISCUSSIONS AND CONCLUSIONS . . . . .	55
Introduction . . . . .	55
Summary. . . . .	55
Discussions and Conclusions. . . . .	56
Hypothesis I. . . . .	56
Hypothesis II . . . . .	57
Discussion . . . . .	57
Recommendations. . . . .	61
To Educators. . . . .	61
For Further Research. . . . .	63
REFERENCES . . . . .	64
Unpublished documents. . . . .	67
APPENDICES	
A. Letter to Superintendent. . . . .	68
B. Concept Inventory Issued to Panel . . . . .	70
C. Summary of Concept Ranking. . . . .	73
D. Semantic Differential Attitude Questionnaire. . . . .	75

## APPENDICES

PAGE

E. Sociometric Attitude Inventory. . . . .	84
F. Summary of Pretest and Posttest Scores From the Semantic Differential Inventory (Experimental Group) . . . . .	87
G. Summary of Pretest and Posttest Scores From the Semantic Differential (Control Group). . .	92
H. Sociometric Data Inventory Pretest and Posttest Scores on the Experimental Group . . . . .	96
I. Statistical Tables. . . . .	99



LIST OF TABLES

TABLE	PAGE
1. One-Way Analysis of Variance on Hypothesis I, Variable One--Student-Student Relations. . . .	47
2. One-Way Analysis of Variance on Hypothesis I, Variable Two--Student-Teacher Relations. . . .	48
3. One-Way Analysis of Variance on Hypothesis I, Variable Three--Student's Attitude Toward Working in a Group with Others . . . . .	49
4. One-Way Analysis of Variance on Hypothesis I, Total of the Three Variables; Student- Student Relations, Student-Teacher Relations, and Student's Attitude Toward Working in a Group with Others. . . . .	50
5. Paired T-Test on Hypothesis II--Students Will be Chosen More Times by Their Friends After an Outdoor Education Program Than Prior to the Program. . . . .	53
6. Statistical Tables for One-Way Analysis of Variance on Variable One--Student-Student Relations. . . . .	100
7. Statistical Tables for One-Way Analysis of Variance on Variable Two--Student-Teacher Relations. . . . .	101

8. Statistical Tables for One-Way Analysis of Variance on Variable Three--Student's Attitude Toward Working in a Group with Others . . . . .	102
9. Statistical Tables for One-Way Analysis of Variance on Total of Three Variables-- Student-Student Relations, Student-Teacher Relations, and Student's Attitude Toward Working in a Group with Others . . . . .	103

LIST OF FIGURES

FIGURE	PAGE
1. An example of how a concept is constructed. . . .	23
2. Scores received by each concept on the attitude student-student relations . . . . .	34
3. Two group before-after experimental design, using the one-way ANOVA. . . . .	42
4. One group before-after experimental design, using the t-test statistical analysis. . . . .	43

## CHAPTER I

### Introduction

Outdoor education has been defined by Thomas Rillo (1972) as "a method, a process, a climate or setting where certain basic concepts, skills, attitudes, values, and appreciations are allowed to develop [sic] in the most favorable learning conditions and in a most effective and efficient manner" (p. 121). Rillo further discusses his concept of outdoor education by saying that outdoor education is interdisciplinary in its approach and should not be considered as a separate subject.

Extending the learning activities of the classroom into the natural environment of the outdoors provides a refreshing climate for implementing educational objectives and ideals. Today, more than ever, educators realize that educational objectives can best be accomplished by means of a direct experience or multi-sensory approach to learning which places the child in an environment which affords him the opportunity to develop his capacities through sensation and perception. Through outdoor education, the learning situation is broadened and enriched and the classroom no longer becomes restricted to the sterile environment of the four walls. Charles A. Blackman (1972) discusses the needs for outdoor education when he states:

In many ways schools provide an artificial and contrived set of conditions for learning. School buildings isolate

youngsters from "the world outside," from its sounds, its beauty, its unity. And, within the building, walls isolate one set of experiences from another, one group from another--and one individual from another. The quite artificial conditions for learning we create within schools are far removed many times from those conditions under which we'll carry on a life-time of learning (p. 216).

An outdoor education program enables the teacher and students to move regular classes to an out of school environment to carry out a program of learning activities. The late L. B. Sharp, Executive Director of the Outdoor Education Association, summed up the underlying objective of outdoor education when he stated, "That which can best be learned inside the classroom should be learned there; and that which can best be learned through direct experience outside the classroom, in contact with native materials and life situations, should there be learned" (p. 3).

William H. Freeberg (1961) explains how outdoor education is a method of education.

It involves intelligent planning by all teachers using nature and real life experiences in interpreting subject-matter areas found in the school curriculum. Through direct experiences with people, objects, things, and places and by actually "learning by doing," there is scientific evidence that "the learning process is faster,

what is learned is retained longer and there is greater appreciation and understanding for those things that are learned at firsthand" (p. 163).

Freeberg, in the above quote, is showing how outdoor education must become an integral part of each teacher's curriculum.

The basis of outdoor education includes the emphasis on the best technique for gaining knowledge. Textbook materials must be supplemented and complemented by adequate experiences so students may comprehend their work more readily. Contact with nature and real-life experiences should be an inherent part of the school curricula. Schools must realize that all subject matter areas can be made more meaningful through outdoor education.

Once a student has gathered the basic facts, the next step for the student is one of conceptualization. The facts must be put together in some sort of framework for the student to perceive. It is very important that the facts are not just mere abstractions but a clear understanding of knowledge. Perception cannot be achieved without knowledge. James Ward (1972) states, "The number and kinds of attributes that the individual pulls out from his field of perceptions will entirely depend on the knowledge framework against which he mirrors the object of perception" (p. 109).

Many classroom teachers face the problem of translating subject concepts into activities with rewarding results.

Students must be given a cognitive base and have a certain degree of familiarization with an element or an activity in order to cope with materials during the creative phase. Selection of materials is often arbitrary on the part of the teacher, and may tend to restrict performance at the affective level. In outdoor education the instruction does not follow the normal routine of a classroom situation, the students are not sitting in neat rows, blackboards are not in continual use, and the teacher becomes an integral part of the group. There is a greater fostering of student relationships and student-teacher relationships. Freeberg lends support to this:

Outdoor education is not intended to replace classroom learning. It is not a substitute for abstract teaching. Rather, it is a method that can be successfully and intelligently introduced by all subject teachers, in all subject matter areas, to supplement and complement written and oral expression (p. 163).

He goes on to say that teachers may frequently run out of material regarding a particular unit of study, but this seldom happens if the learning is directed through outdoor education experiences.

#### Need for the Study

When students reach the junior high level, peer groups begin to establish and ranking orders become definitive. Isolates as well as stars will be noticeable. If students

can learn to work together, their schooling will become more meaningful; by becoming more meaningful, students' needs will be satisfied. Needs refer to such things as group discussion and participation. The student will want to take part in group work for he now feels a need to. The student will not want to miss school because there is now a need for his presence. The student has a feeling of being wanted by his peer group. Smart and Smart (1972) support this reasoning:

Among peers, there are two main kinds of groups: crowds and cliques. . . . The crowd is usually based on the school, although neighborhood has some influence. School is the place where most social interaction takes place . . . . One of the basic functions of the crowd is to provide a group identity which separates the adolescent from the parent, a "we" feeling apart from the family. Thus the adolescent strengthens his own sense of identity by being a member of a group which defines his difference from his parents" (p. 569).

Students have definite "feelings" for each other and are either accepted or rejected by their peers. A structured classroom environment provides little chance for interaction among students. If programs could be developed which would allow for more interaction, more students would feel that their needs are satisfied and peer barriers could be changed.

Outdoor education is one area in which much interaction does occur and peer groups are usually altered by expansion,



disbandment or some other means. Through outdoor education, students learn to work and socialize with each other and the chances for positive attitudes to develop are better than in a normal classroom environment.

When educational goals are studied, it can be concluded that it is the feeling of most educators that the student needs to be educated in all three domains: the affective, the cognitive, and psycho-motor skills. In 1963, the United States Department of Education made public the Newsom Report which identified current educational aims and objectives as follows:

Boys and girls need to be helped to develop certain skills of communications in speech and in writing, in reading with understanding and in calculations involving numbers and measurement: . . . [they] need to develop, as well as skills, capacities for thought, judgement, enjoyment, and curiosity. They need to develop a sense of responsibility for their work and towards other people, and to begin to arrive at some code of morale and social behavior which is self imposed (p. 148).

What a student learns in the affective domain, however, is just as crucial an outcome of our educational system as are the academics of education. Some of Manitoba's schools' goals of education with respect to the affective domain include:

. . . the development of a sound moral character. . . ,

genuine concern for the rights of others regardless of race or creed, willingness to act in the interest of the general welfare, and a desire ever to improve in those competencies essential to effective social living (Laidlaw School Handbook 1975-76, p. 5).

. . . develop a co-operative attitude toward living and working with others.

. . . develop respect for individual worth and understanding of minority opinions and acceptance of majority decisions.

. . . develop appreciation and respect for the worth and dignity of individuals (St. Vital Divisional Policy Manual 1977-78, p. 9).

Outdoor education has been discussed as a method of education and also as a means of attaining social interaction. In a recent article by Miller (1974) outdoor education is also looked upon as being an effective curriculum change agent:

As a change agent outdoor education has three main effects. It can change people, process, and program. . . . It can help students, teachers, administrators and parents gain new perceptions of themselves and others. Outdoor education, because it takes place in real life situations, can produce opportunities to build better human relationships between people of diverse races, cultural backgrounds and experiences. It can be one of the most effective forces in the community to prevent human erosion as well

as land erosion; it can be one means of saving youngsters from the education scrap heap, of reducing human diminium (p. 104).

The present study was designed to provide some objective data on the effect of an outdoor education program on the social relationships of students at the junior high level. Students' attitudes toward three areas of social living, student-student relations, student-teacher relations and students' attitudes toward working in a group with others, are to be tested for change due to the effect of an outdoor education program. A student will also be judged by his peers on a social acceptance scale. This scale, known as a sociometric device, will measure the number of times a student was chosen by his friends to participate in various activities before and after an outdoor education program. An improvement in the sociometric scale will show if the student is being accepted or rejected by his peers or if this acceptance or rejection is strengthened or weakened. The collected data will be a measure of students' attitudes towards each other, the teacher, and the class.

#### Definition of Terms

Outdoor education. Education in the outdoors for curriculum improvement and enrichment. Outdoor education includes all learning experiences which take place outside the school building.

Social relationships. Refer to three areas of social

living:

1. student-student relations--(denotes friendship).
2. student-teacher relations--(denotes the type of interpersonal relationship existing between the student and the teacher; whether the student can relate to his teacher both socially and academically, how well the student and teacher can get along).
3. student's attitude toward working in a group with others--(denotes a student's attitude toward working, cooperating and sharing with other students while in group situations).

Semantic differential. A measuring device or technique of measurement which is adapted to the requirement of a particular research problem, concepts and scales are designed for each particular device used. The semantic differential is essentially a combination of controlled association and scaling procedures.

Sociometric device. A measuring device in which group relations and individual status positions can be measured and described. Each student is asked to name one or more of the group members with whom he would like to engage in one or more activities. Stars and isolates are identified as those students who receive the most and least number of choices, respectively, by their friends or classmates.

#### The Problem

In this study, three dependent variables (student-

student relations, student-teacher relations and student's attitude toward working in a group with others) are to be measured for changes as affected by the independent variable; an outdoor education program as opposed to a control program. The null hypothesis formulated from this is:

H0: 1.0 There will be no significant change in student social relationships due to the treatment of an outdoor education program at the .05 level of significance. This hypothesis can be further subdivided into three subhypotheses:

H0: 1.1 There will be no significant change in student-student relations, due to the treatment of an outdoor education program at the .05 level of significance.

H0: 1.2 There will be no significant change in student-teacher relations due to the treatment of an outdoor education program at the .05 level of significance.

H0: 1.3 There will be no significant change in students' attitudes toward working in a group with others, due to the treatment of an outdoor education program at the .05 level of significance.

A second hypothesis formulated is:

H0: 2.0 After an outdoor education program, there will be no significant increase in the number of times students are chosen as friends by their classmates at the .05 level of significance.

#### Design of the Study and Analysis of Data

Subjects participating in the study will consist of

junior high school students in the Winnipeg area. The students will be divided into two groups: the experimental group and the control group. The experimental group is made up of ninety seven grade seven students involved in an outdoor education program at Arthur Day Junior High School. The program is semestered, and the students have not been exposed to an outdoor education program, as defined, before. The program is compulsory for every grade seven student.

The control group is made up of sixty-four grade seven students enrolled at John Henderson Junior High School. Because the outdoor education program is compulsory at Arthur Day, it can be equated to other compulsory subjects such as math, language arts, history or science. To eliminate bias, these core subjects were placed in a hat and one was drawn randomly. The random choice was grade seven math. The math program is also semestered and the students were not exposed to the grade seven math prior to the beginning of the semester.

In order to evaluate the effect of the outdoor education program on social relationships, two instruments were thoroughly reviewed and carefully designed to fit the test structure. The first instrument is a semantic differential design with concepts structured to measure each attitude. The concepts were validated by a panel of judges to show that the concepts actually could measure the particular attitude. The attitudes were each measured by two concepts, each concept having the same number of scales. The concepts 'How I Feel

About My Friends in This Class' and 'How I Feel About My Classmates, Excluding My Friends, In This Class' were used to measure the attitude toward the area of social living entitled student-student relations. The concepts 'How I Feel About This Class' and 'How I Feel About This Teacher' were used to measure the attitude toward the area of social living entitled student-teacher relations. The concepts 'How I Feel About Working in a Group in This Class' and 'Sharing' were used to measure the attitude toward the area of social living entitled students' attitudes toward working in a group with others. The semantic differential will be administered to the control and the experimental groups on two occasions: the pre-test and post-test. The results of the attitude measurement will be analyzed using a one-way analysis of variance with repeated measures.

The second instrument to be used will be the sociometric device. This instrument will measure the number of times students were chosen by their classmates as friends. The sociometric inventory will show a clearer picture of the change in student choices. Reductions in the number of stars and isolates in a class is indicative of dispersion of friendship choices. An inventory of students' friendship choices was devised. Entitled 'Who Would You Choose?' the form lists six open ended questions. The questions were developed after careful examination of activities planned for an outdoor education program. Unlimited choice will be given the students

in choosing their classmates. The experimental group will receive the test before and after the outdoor education program. To test the hypothesis of this part of the study, data obtained from the pre- and post-tests will be analyzed using the T-test. Both instruments will be given on a pre-test post-test format. The experimental group will receive both tests while the control group will only receive the semantic differential attitude inventory. The tests will be given at the beginning of the outdoor education program and at the conclusion of the program.

#### Limitations

1. One of the basic limitations of this study is the type of outdoor education program to which the students are subjected. This program is the only outdoor education program that is made compulsory for students at the junior high level in the Greater Winnipeg area. Thus, randomness was not available in choosing the program for investigation, and the data for the study may not be representative of other existing outdoor education programs.

2. Another limitation of the study is the possibility that some of the students entering grade seven may have been exposed to a prior outdoor education experience and therefore attitudes towards the four areas of social living have already started to develop.

3. The teachers conducting the program were aware that the students were providing data for this study. A teacher's



behavior while in the course of instruction could have been influenced by this knowledge and students' attitudes towards the four areas of social living could have been affected.

4. The outdoor education program used with the experimental group is a required program and therefore students are compelled to take it.

5. The type of statistics used to analyze the data is limited because of the structure of the groups.

#### Summary

Outdoor education is one area in which much interaction does occur and peer groups are either expanded or disbanded. Through outdoor education, students learn to work and socialize with each other and with their teachers. Through this socialization, students' attitudes towards other students and their teacher show a change.

This change is sometimes observable through student behavior, but to statistically determine change, a semantic differential and a sociometric instrument has been developed and will be used in this study. Although studies have been done with regard to student attitudes and resident outdoor programs and other aspects of outdoor education, the search of the literature has failed to show work which has been done in student social relationships and an outdoor education program.

This study will provide data on the effect an outdoor education program has on student social relationships. Stu-

dents' attitudes toward three areas of social living, student-student relations, student-teacher relations and students' attitudes toward working in a group with others, are to be tested for a change due to the effect of an outdoor education program.

## CHAPTER II

### Review of Literature

The review of literature is in two parts. Part I describes research which has been done on the social aspects of outdoor education. Part II describes the development, background and types of instruments to be used in this study.

#### Part I

The literature reviewed in ERIC, periodical indices, doctoral dissertations and other relevant sources, indicates that an outdoor education program is generally accepted as being rich in character and social outcomes. An examination of the research literature on outdoor education programs and its effects on social relationships indicates that this type of program generally does produce positive changes in social relationships.

O. L. Davis, Jr. (1968) did a study on the effect of a school camp experience on friendship choices and found that after an experience of social living at a school camp, there was an increase in the number of times children are chosen by their classmates. The hypothesis was tested by treatment

of data for boys and girls separately. Subjects participated in a ten day camp experience and were pupils enrolled in the eighth grade of a campus laboratory school in the spring of 1957, a total of 16 boys and 16 girls. The results of the study indicate friendships within the class were more diffused after the outdoor experience than before. Considered separately, boys and girls were both chosen more times after camp than before. Boys were chosen more times after camp than before on six items of a sociometric inventory while girls were chosen more times after camp than before on only one item out of ten.

In a study by Ashcroft (1968), the attitudes of students toward outdoor education were measured. The study was done between the opening of school in the fall of 1956 to the middle of January 1957. The subjects studied were 1,500 Long Beach sixth grade students. The analysis of the data showed positive changes in attitudes in five different areas: personal enjoyment, personal gains, social gains, knowledge of science and conservation, and new interests. Two areas of this study by Ashcroft pertain to the present review. In the area of personal gains, over half of the students said it made them feel good to help with camp chores--that they felt they were doing something important; less than half said they didn't mind helping at camp when all shared the duties. More than half the children reported they felt camping helped them to understand their school work better. Nearly all said that

one of the best things they learned at camp was to take care of themselves; two-thirds reported that they felt more "grown up" after their camp experience. In the second area, that of social gains, Ashcroft reports that less than half the children were more friendly following the outdoor experience; and one-third thought they were getting along better with others in their class. Relationships of the students to their teachers were revealed by the response of two-thirds, who said they were glad their classroom teacher could go to camp with them and that they felt they knew the teacher better and that he knew them better; however, less than one-third seemed somewhat less enthusiastic. They said they didn't mind having him go to camp with them. That most boys and girls cooperated in doing their share of the work was reported by 1,308 students. New friends made at the experience was reported as a social gain by 1,358 girls and boys.

An evaluation report on project BACKSTOP (Better Acquisition of Cognitive Skills Through Outdoor Programming) was done in 1972-73. The actual project was a series of structured experiences in a wilderness setting. The experiences were used to generate changes in the feelings and attitudes of students and teachers. The subjects included the students and teachers from the seventh grade classes in the Battle Creek, Michigan Public School. The objectives of the project were to: (a) reverse racial separatism; (b) reduce racially related, negative black/white incidents; (c) increase teacher/

administrator/counsellor perception of black/white relationships; (d) decrease absenteeism by increasing positive black/white interpersonal relationships; (e) improve student grade point averages; and (f) increase student performance on standardized tests. In addition to measurement of the objectives, anecdotal records were submitted by teachers and a series of questionnaires were used for the purpose of overall program evaluation. Major findings were that all teachers responding found that following the experiences, tolerance levels were higher between black and white students, that there was an increase in voluntary black/white association, that the number of racially related negative incidents was reduced, but that absenteeism was not reduced.

Two studies, one by Barnes and Nowicki (1970) and the other by Barnes and Kopp (1971) dealt mainly with social relationships and elements of democratic living at the junior high level. The study by Barnes and Nowicki of 387 junior school students used the resident school situation with the belief that students will benefit from a structured outdoor experience. One of their objectives was to teach the elements of democratic living through group living, planning, and sharing. The overall attitude of the staff was to emphasize working together to accomplish goals. The results indicated that the students made more friends than they had expected to make. Evidence of improvement in the realm of interpersonal relationships was also found.

The study done by Barnes and Kopp (1971) was similar to the above mentioned. Two of their objectives were to teach the elements of democratic living through group living, planning and sharing, and to teach a pupil how to function as an individual for the sake of group unity. Activities aimed at bringing about these objectives were the ability to work toward goals. Group projects were undertaken which necessitated unity and the ability to work together. Results indicated that the students made more friends than they had expected to.

In a recent study by Irving (1976), objective data on the effects of a resident outdoor education program and student social relationships was presented. Students' attitudes toward four areas of social living, student-student relations, student-teacher relations, students' attitudes toward sharing and students' attitudes toward working in a group with others, were tested for change due to the effect of a resident outdoor education experience. Results of the study indicate that student-student relations and students' attitudes toward working in a group were significant at the .01 level and that student-teacher relations were significant at the .05 level. The resident outdoor education experience did not seem to have an effect on students' attitudes toward sharing.

Davidson (1966) investigated the relationship between two opposing school camps' curricula and measured changes in pupils' social relationships and self concepts. Two classes of fifth and sixth graders were randomly assigned to two different

philosophically oriented school camp programs: one adult centered, the other child centered. Results show that both groups produced positive changes on the self concept scale, but on entirely different items. Nevertheless, camper growth in self concepts did not vary significantly between the two different approaches. Social relationships in both groups also revealed positive changes.

These data only reaffirm what camp directors and principals of outdoor schools have always believed, mainly, that camping generally produces a social environment conducive to improved relationships between student and student and between student and adult.

Stack (1960), in her study, assessed attitudes toward selected concepts of school, teachers, self, classmates, friends, and school camping possessed by fifth and sixth grade pupils before and after a camping experience. Data was obtained from 44 boys and 44 girls who spent one week at a school camp. Findings included analysis of changes in sociometric choices and changes in attitudes. Among the conclusions were: (a) the school camp experience does provide unique opportunities for effecting social change, particularly in regard to racial cleavage; (b) teacher-pupil rapport was improved; and (c) values of associations and relationships over those of the ego-concept were increased.

In the previously mentioned studies, the emphasis has been on short term outdoor experiences of not more than two



weeks in duration. Although these studies do not show relationships through a total outdoor education program, they parallel the proposed study, for residential or camping experiences are usually part of an outdoor education program. An outdoor education program is viewed, for the purposes of this study, as being a program that continues throughout the school year. In Irving's (1976) research, he states that the study did not reveal whether or not these changes would occur over unequal number of days during regular school time. It is the objective of the proposed study to show that social relationships will change during an outdoor education program that is conducted as part of the grade seven school curriculum.

Studies involving actual outdoor education programs, as defined, have been done on a limited basis. A recent study by Benton (1976) measured the effects of an outdoor education program on the attainment of certain education goals. He found that the experimental programme had positive effects on student achievement in three educational goals investigated. The goals investigated were: (a) development of academic basic skills; (b) the development of effective study habits; and (c) the development of appropriate student attitudes to formal education and learning. Benton concludes his study by stating, "this leads to the conclusion that an Outdoor Education programme would benefit the school in the attainment of its goals, and thus is a viable alternative teaching method" (p. 48).

Part II

The semantic differential is a method of observing and measuring the psychological meaning of concepts. Osgood (1957) invented the semantic differential to measure the connotative meanings of concepts as points in what he has called "semantic space." An actual semantic differential consists of a number of scales, each of which is a bipolar adjective pair, such as good or bad, chosen from a large number of scales for a particular research purpose, together with the concepts to be rated with the scales. The scales, or bipolar adjectives, are usually seven point rating scales, the underlying nature of which has been determined empirically by Osgood. That is, each scale measures one, sometimes two, of the basic dimensions or factors that Osgood and his colleagues have found to be behind the scales: Evaluation, Potency, Activity. These factors may be called clusters of adjectives. Figure 1 shows how the semantic differential is set up.

---

My Pet

Happy \_\_\_: \_\_\_: \_\_\_: \_\_\_: \_\_\_: \_\_\_: \_\_\_: Sad

Strong \_\_\_: \_\_\_: \_\_\_: \_\_\_: \_\_\_: \_\_\_: \_\_\_: Weak

Slow \_\_\_: \_\_\_: \_\_\_: \_\_\_: \_\_\_: \_\_\_: \_\_\_: Fast

Figure 1. An example of how a concept is constructed

---

"My Pet" refers in this case to the concept about which an attitude is being measured. Happy-sad, strong-weak, and

slow-fast are the bipolar adjective pairs. The subject would be asked to check the space which would most closely fit the feeling they had toward their pet. A check in the fourth space would indicate a neutral attitude or that the adjectives did not apply to the concept. Osgood discovered three main factors associated with the semantic differential: evaluation, potency and activity. In the example cited above, the happy-sad adjectives would be evaluative measures; the strong-weak adjectives would be potency measures; the slow-fast adjectives would be activity measures.

Through research, Osgood has found that, when analyzed, adjective pairs like good-bad, bitter-sweet, large-small, and clean-dirty, fall into clusters. The most important cluster seems to consist of adjectives that are evaluative such as good-bad and pleasant-unpleasant. The second cluster has adjectives that seem to share strength or potency ideas such as strong-weak and rugged-delicate. A third important factor is called activity because its adjectives seem to express motion or action such as fast-slow and active-passive. Osgood gives a list of fifty scales with their factor identifications and the strength of the identifications for the researcher to select from.

Osgood emphasizes that if one is to use the semantic differential in research, the choosing of the concepts is considered as the most important. The concepts must be relevant to the research problem. Osgood goes on to explain that

there are two general requirements for the selection and use of concepts. One, they must elicit varied responses from different individuals (that is, they must produce large variance among persons). Two, they should cover, to some extent, the semantic space. The second requirement is not a fixed requirement in all research.

The next step in the construction of the instrument is to select appropriate scales or bipolar adjectives. There are two main criteria which determine the selection: factor representatives and relevance to the concepts. Other than the three main factors already mentioned, researchers may want to develop others. DiVesta, for instance, in addition to the evaluative, potency and activity factors, added warmth, novelty-reality and tautness (Kerlinger, 1973). Osgood did a study in which he showed, through a computerized search of Roget's Thesaurus, that there were two more factors--stability and receptivity. These factors were checked out in a single-concept analysis and proved to be consistent with the established three.

Although many factors can be used by researchers, the researcher may go to the opposite extreme and only use one. Osgood supports the idea of using one factor, the evaluative, if studies of attitudes or values are to be made. Osgood suggests using bipolar adjectives with high evaluative loadings and negligible loadings on potency and activity for attitude measurement.

Osgood supplies a working definition of attitudes and discusses major properties which attitudes tend to show. Osgood explains that most authorities are agreed that attitudes are learned and implicit. "They are inferred states of the organism that are presumably acquired in much the same manner that other such internal learned activity is acquired" (p. 191). Further, attitudes are medial positions, but are distinguished from other states of readiness in that they predispose toward an evaluative response. Thus, attitudes are referred to as tendencies of approach or avoidance or as favorable or unfavorable and so on. This notion is related to another shared view. "That attitudes can be ascribed to some basic bipolar continuum with a neutral or zero reference point, implying that they have both direction and intensity" (p. 191).

As indicated by Shaw and Wright (1967), attitudes are the end products of the socialization process and significantly influence man's responses to cultural products, to other persons, and to groups of persons. If one can determine the attitude of a person toward a given object, or class of objects, then this information can be used in conjunction with situational and other dispositional variables to predict and explain reactions of the person to that class of objects. To the extent that principles governing the change of attitudes can be known, they may be used to manipulate an individual's reactions to relevant objects.

A number of semantic differentials have been developed

for various attitude measurements by various researchers and were studied for construction and development of the instrument for this particular study.

McCallan and Brown (1971) used fifteen bipolar adjective pairs in a study on attitudes toward mathematics. The mean and standard deviation on each scale were determined. A factor analysis was performed and potency and evaluative factors identified. Using the Mathematics Attitude scale as a determinant of favorable or unfavorable attitudes, the mean values of each group on the semantic differential were developed and the difference found. This allowed the detection of bipolar adjectives best suited to identifying favorable and unfavorable attitudes.

Martin (1975) did a study utilizing the semantic differential when he assessed attitudes of students and teachers towards a science program and student attitudes toward science students and science teachers.

The second form of analysis used in this study is the sociometric measure. In simplest terms, a sociometric measure is a means of assessing the attractions, or attractions and repulsions, within a given group. It usually involves each member of the group privately specifying a number of other persons in the group with whom he would like to engage in some particular activity and, further, a number of persons with whom he would not like to participate in the activity.

The most important requirements of the sociometric test

advocated by Moreno (1968) are as follows:

(a) the limits of the group should be indicated to the subjects; (b) the subjects should be permitted an unlimited number of choices or rejections; (c) the subjects should be asked to indicate the individuals they choose or reject in terms of specific criteria; (d) results of the sociometric questions should be used to restructure the group; (e) the subjects should be permitted to make their choices and rejections privately, without other members of the group being able to identify the responses; and (f) the questions used should be gauged to the level of understanding of the members of the group (pp. 452-510).

The requirements outlined above identify the sociometric measure in a more or less pure form, and are generally in agreement with Moreno's definition. However, relatively few studies in this area meet all these requirements. For example, the technique as used today seldom involves the promise of restructuring the group. In many cases, because of the nature of the group or the nature of the criterion, it is impossible to introduce such changes. The precondition that the groups be small enough to permit face-to-face interaction is often altered to the needs of the study. Moreno's (1939) original study was of a large closed community, but current research more frequently involves smaller closed groups, temporary experimental groups, and two-person interactions. It is obvious

that the precondition that the groups have existed over a period of time is often set aside. Barker's (1942) investigation of "first impressions" is an early example of a study where it is necessary to administer the sociometric technique before any prolonged interaction. There are also applications of the techniques in large groups and open communities (Lindberg and Steele, 1938; F. A. Stewart, 1946; J. A. Steward, 1948). In these, the problems of statistical analysis are greatly increased (Bassett, 1948; F. A. Stewart, 1948), but the fundamental application remains the same.

Review of sociometric procedures was limited to the nature of the present study. Jennings (1953) analysis of the consistency of the partial-rank-order approach was based on a study of 133 girls at the New York Training School for Girls. The subjects were of "normal" intelligence and between the ages of 12-16. The subjects were allowed unlimited choices for the expression of acceptance or rejection of their peers on two criteria, living and working together. The students were living in cottage units.

A previously mentioned study by Davis also utilized the sociometric device. The instrument was an inventory of children's friendship choices entitled "Who Would You Choose?". The form listed ten open ended questions on which unlimited choice was given the children in choosing their classmates. Scores were obtained on all questions separately and for the inventory as a whole. The test was administered before leaving



for camp and on return.

### Summary

This chapter has revealed, through the studies described, the possibility and need for further research in the area of outdoor education. The literature reviewed showed strong support for outdoor education as an alternate teaching method and also as a means to develop a positive attitude toward certain aspects of social living. It was also clear from the literature that more study of the effects of an outdoor education program on students' performance and attitudes is needed. The literature also revealed it is possible to measure a change in attitude with the effect of an outdoor education program.

With the use of the instruments that have been developed for this research, it is the intent to show a change of attitude due to an outdoor education program on four areas of social living.

## CHAPTER III

### Experimental Design

To evaluate the effect of an outdoor education program on student social relationships at the junior high school level, three areas of social living were measured. A comparison of student attitudes due to the effect of the program was made with students participating in an outdoor education program, as defined, to student attitudes participating in a core subject program. The three dependent variables; student-student relations, student-teacher relations and students' attitudes toward working in a group with others, are to be measured for change as affected by the independent variable; an outdoor education program as opposed to a control. From this, the questions formulated are:

1. Is there any overall difference in students' attitudes toward the three areas of social living, as affected by an outdoor education program?

2. Is there any difference in the students' attitudes toward the area of social living, student-student relations, as affected by an outdoor education program?

3. Is there any difference in the students' attitudes toward the area of social living, student-teacher relations, as affected by an outdoor education program?

4. Is there any difference in the students' attitudes

toward the area of social living, students' attitudes toward working in a group with others, as affected by an outdoor education program?

The students were also measured on the number of times they were chosen by their friends before an outdoor education program and after an outdoor education program. The question formulated from this is:

1. Is there any significant difference in the number of times a student is chosen by his friends before an outdoor education program as compared to the number of times a student is chosen after an outdoor education program?

#### Design of the Study

Before a study of this type could be carried out, two major obstacles had to be overcome. The first was finding the appropriate schools in which to conduct the study, and the second was to make sure the instruments designed would indeed measure an attitude change in junior high school students.

The schools needed for the study had to have the following characteristics to make the study as valid as possible:

1. The schools needed for the study had to be on the semester system.
2. The schools had to be junior high schools and have at least two classes of grade sevens.
3. The schools had to be representative of the same population.

4. The treatment school had to offer an outdoor education program.

Various schools were found by a systematic search. Only one school offered an outdoor education program, but several fitted the requirements for the control school. Once the schools were located, the superintendent of each school division in which testing was to take place was contacted either in person or by letter (see Appendix A), and permission was requested for the researcher to contact school principals. When permission was granted, the principals were approached, in person. It was determined from the principal whether or not the teachers would be willing to participate in the program. A copy of the instruments to be used was shown to the principals and any of the principals' questions about the instruments were answered. The letter sent to the superintendents is included in Appendix A.

#### Validation and Description of the Instruments

The instruments chosen for this study were the semantic differential attitude survey, and a sociometric inventory.

##### The Semantic Differential

According to Osgood (1957), "There are no standard concepts and no standard scales; rather, the concepts and scales used in a particular study depend upon the purposes of the research" (p. 76). In deciding on the concepts for this research, a panel was chosen to determine which concepts best

measured a particular attitude. This was done to eliminate the researcher's personal bias and to give the study greater validity. The panel consisted of a grade seven teacher, a university professor who has done much work with the semantic differential, and a second university professor who has used the semantic differential in research work. The panel was asked to rate a series of concepts on how it felt the concept measured a particular attitude. The concepts received a rating of 5, 3, or 1; 5 representing strong and 1 weak. The two concepts which scored the highest were selected. The panel was also asked to add any concepts they felt applied to a specific attitude. The actual survey can be found in Appendix B. Figure 2 shows how the attitude student-student scored. The remaining results can be found in Appendix C.

---

a. student	<u>7</u>
* b. how I feel about my friends in this class	<u>13</u>
* c. how I feel about my classmates excluding my friends in this class	<u>12</u>

Figure 2. Scores received by each concept on the attitude student-student relations.

\* indicates those concepts accepted.

---

Although Osgood says that it is not necessary to do a sampling analysis, a sampling analysis was done in this case to make sure the concepts did measure the attitude. Osgood

(1957) states: "Sometimes the investigator may actually make a sampling analysis, but more often (in our experience, at least) he simply uses 'good judgement' with respect to his problem" (p. 77).

The construction of the semantic differential attitude survey was achieved using the following sequence. The domain to be measured was the attitude of students toward the three areas of social living; student-student attitudes, student-teacher attitudes, and students' attitudes toward working in a group with others, as affected by an outdoor education program. Concepts necessary for the measurement of the domain were established from the previously mentioned survey. The concepts were: "How I Feel About My Friends In This Class," "How I Feel About My Classmates, Excluding My Friends In This Class," "How I Feel About This Class," "How I Feel About This Teacher," "How I Feel About Working In A Group In This Class," and "Sharing." The first two concepts were used to determine student-student attitudes; the second two concepts were used to determine student-teacher attitudes; the last two concepts were used to measure the attitude toward working in a group.

Bipolar adjectives are then chosen in order to satisfy the concepts. The bipolar adjective scales were drawn from a number of sources. The majority were obtained from previously constructed semantic differential scales and from Osgood's gleaning of Roget's Thesaurus. There was no attempt to construct an unidimensional scale since the affective domain

contains potency and activity as well as evaluation factors; however, the scales used were all high on the evaluation factor. The bipolar adjectives chosen are the same for each concept; consequently, there were several pairs of bipolar adjectives that registered neutral for a particular concept. The adjective pairs chosen were the following: (a) Good-Bad; (b) Helpful-Unhelpful; (c) Fair-Unfair; (d) Boring-Interesting; (e) Relaxed-Tense; (f) Co-Operative-Unco-operative; (g) Awful-Nice; (h) Happy-Sad; (i) Unpleasant-Pleasant; and (j) Pleasing-Annoying.

The concepts were placed at the top of the page and the scales arranged below. Each concept was placed on a separate page as suggested by Osgood; which makes the survey easy to score and permits constancy of meaning in the attitude being judged. The direction of polarity in the adjective pairs was reversed in scales (4), (7) and (9) in order to prevent the formation of position preferences.

Instructions to the students were included with the survey and were handed out to each student as part of the semantic differential. The instructions were read by the researcher and any questions by the students were answered at that time. The semantic differential and the instructions to the students are included in Appendix D.

#### The Sociometric Attitude Inventory

In designing the sociometric instrument, care was taken to follow the requirements advocated by Moreno (1968). The class lists of those students engaged in the outdoor education

program were obtained from the school. The lists were then sorted and students were put in alphabetical order, depending on which class they were in. There were three classes involved in the experimental group. Once the class list was alphabetized, the students were numbered. When the test was administered, each student could then check his or her choice under the corresponding number. Each student received a class list. The number of choices a student made was unlimited.

Six questions were structured, and the students were asked to choose which friends they would like to participate in a particular activity with. The questions were formulated after a close examination of the outdoor education program that was being offered. Each question was open ended, and therefore allowed for an unlimited choice. The inventory was titled "Who Would You Choose?" and the following six questions were asked:

1. Which of your classmates would you choose to engage in a leisure time activity with you?
2. Which of your classmates would you choose to go cross country skiing with?
3. Which of your classmates would you choose to work in a group with?
4. Which of your classmates would you choose to go on a cookout with?
5. Which of your classmates would you choose to be in



your cabin group?

6. Which of your classmates would you choose to go on a nature study with?

The rank order of the questions on the inventory was done randomly.

The inventory was administered to the students by the researcher before the outdoor education program began and at the conclusion of the outdoor education program. The directions were read to the students and then the students were asked to make their choices. The sociometric inventory was only administered to the experimental group. The sociometric inventory and the instructions to the students can be found in Appendix E.

#### The Pilot Study

The purpose of the pilot study was to evaluate and check the reliability of the attitude survey. A simple correlation was used to check the data to see if the instrument measured the four areas of social living it was intended to measure. The researcher felt that if the test was administered on a pre-test post-test format, there should be little change in scores, as no treatment was done.

Subjects for the pilot study consisted of thirty-two grade seven students from a public school in the Winnipeg area. The school was selected because of its willingness to co-operate and because of the similarity in population with the other two schools, the control and experimental

schools.

Data were gathered for the pilot study during the first half of the 1977-78 school year. The survey was applied in a pre-test post-test format with a two week interval between administrations. The same students were involved in both trials, and those missing either the pre-test or post-test were excluded, allowing the test-retest reliability check. The results of the reliability check showed the reliability coefficient to be .78.

The reliability of the survey has nothing to do with the statistical significance of the treatment package. Helmstadter (1964) reports a low reliability as .47, a high reliability as .98 and the median for the two as .79, for attitude scales (p. 85). Guilford (1954) states that a reliability coefficient ". . . may be of the order of only .50 . . ." (p. 388). The author chose the reliability coefficient of .78 as being acceptable for this study.

#### Hypotheses Tested

The following hypotheses were developed in conjunction with the questions studied, as stated in the first section of Chapter III.

##### Hypothesis 1

For the semantic differential given to the students of the control and experimental groups:

H<sub>0</sub>: 1.0 There is no significant change in the attitude of students due to treatment, as measured by the six concepts

as a whole.

H0: 1.1 There is no significant change in the attitude of students toward the area of social living, student-student relations, as measured by the concept "How I Feel About My Classmates, Excluding My Friends, In This Class" and "How I Feel About My Friends In This Class."

H0: 1.2 There is no significant change in the attitude of students toward the area of social living, student-teacher relations, as measured by the concept "How I Feel About This Class" and "How I Feel About This Teacher."

H0: 1.3 There is no significant change in the attitude of students toward the area of social living, working in a group with others, as measured by the concept "How I Feel About Working In A Group In This Class" and "Sharing."

#### Hypothesis 2

For the sociometric inventory given to the students of the experimental group:

H0: 2.0 There is no significant difference in the number of times a student is chosen by his or her friends, before an outdoor education program, as compared to after an outdoor education program.

#### Statistical Treatment of Data

The experimental and control groups were tested with a pre-test and post-test design. The experimental group received the treatment, while the control group received no treatment. Prior to the exposure of any subjects to the treatment condi-

tions, pre-test scores were collected from each subject on each of the three dependent variables; student-student relations, student-teacher relations, and students' attitudes toward working in a group with others. In addition to the semantic attitude inventory, the experimental group was also tested with a pre-test and post-test design utilizing the sociometric inventory as previously discussed.

Two data analysis designs were applied to data resulting from this study. They consisted of a one-way analysis of variance and a paired t-test design. The level of significance for data analyzed in the study was .05 level of significance.

A one-way analysis of variance (abbreviated ANOVA) is an inferential statistical procedure which has the same general purpose as the t-test: to compare groups in terms of the mean scores. The difference between the two procedures lies in the number of groups that can be compared. Whereas the t-test is designed for comparing two groups, a one-way ANOVA can be used to compare two or more groups. The procedure for assessing the validity of the null hypothesis is similar to both tests:

1. the original raw data are put into a formula in order to obtain a calculated value,
2. the resulting calculated value is compared against a critical value, and
3. the null hypothesis is rejected if the calculated value is larger than the tabled critical value, or accepted if the calculated value is less than the critical value.

### One-Way Analysis of Variance

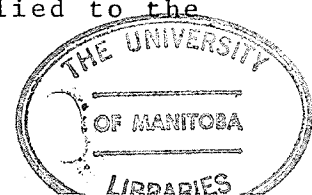
A one-way analysis of variance design (see Figure 3) was applied to data obtained from subjects in groups one and two on the change in scores from pre-test to post-test. The mean from the results of subjects in group one was compared with the mean from the results of subjects in group two for each dependent variable in the study. Each group experienced the questionnaire on the two occasions. Since groups were measured for significant differences on each area of social living (each dependent variable), all aspects of Hypothesis 1 were tested with this design. For Hypothesis 1, calculations revealed whether or not student attitudes toward each area of social living changed significantly over the period of the outdoor education program.

Attitude Treatment	Student- Student	Student- Teacher	Working in Groups	Total
Experimental (Group 1)				
Control (Group 2)				

Figure 3. Two group before-after experimental design, using the one-way ANOVA statistical analysis.

### Paired T-Test

A paired t-test design (see Figure 4) was applied to the



sociometric inventory "Who Would You Choose?" to analyze the mean scores of subjects in group one on the pre-test and post test. Analyzing the number of times a student was chosen to engage in various activities before an outdoor education program, as compared to the number of times a student was chosen at the completion of the program, revealed whether or not students' friendship choices changed significantly during the outdoor education program.

---

Time Treatment Group	Pre-test	Post-test
Group 1		

Figure 4. One group before-after experimental design using the t-test statistical analysis.

---

### Summary

In this chapter the experimental design and procedures were explained, the evaluation instruments were described, and the questions and hypotheses stated. The design consisted of two groups, an experimental group and a control group. The two groups were tested prior to a program and at the completion of a program. The instrument used to measure attitude change was the semantic differential. It was administered to both groups.

A second instrument was used to measure whether or not there was an increase in friendship choices as the result of the program used by the experimental group. The instrument used to measure a change in friendship choices was the sociometric inventory. The method of analyzing the collected data was also discussed in this chapter. A one-way analysis of variance design was used to analyze the data pertaining to Hypothesis 1, and a paired t-test design was used to analyze the data pertaining to Hypothesis 2.

## CHAPTER IV

### Analysis of Results

#### Introduction

The results from the study are analyzed in this chapter. Each hypothesis is discussed with its corresponding data. The first part of the chapter deals with Hypothesis 1 and its statistical treatment, the one-way analysis of variance. The second part of the chapter deals with Hypothesis 2 and its statistical treatment, the paired t-test. Raw scores can be found in Appendices F, G and H and statistical tables in Appendix I.

#### Hypothesis 1

A one-way analysis of variance design was used to analyze data provided by subjects from groups one and two on the pre-test and post-test. Student attitudes toward the dependent variables were measured for each occasion and the resulting data was analyzed separately for each dependent variable. Although the variances of the groups turned out to be heterogeneous (see Appendix I), the data was still analyzed. Kirk states: "Since the F distribution is so robust with respect to violation of the assumptions of homogeneity of error variance, it is not customary to test this assumption routinely" (p. 62).



The experimental manipulation, the outdoor education program, occurred interjacent to the measuring sessions. This design dealt with the first hypothesis and subhypotheses formulated in this study. Hypothesis 1 stated in the null form: There is no significant change in student social relationships due to the treatment of an outdoor education program.

This hypothesis was divided into three subhypotheses (three dependent variables):

H0: 1.1 There will be no significant change in student-student relations due to the treatment of an outdoor education program.

H0: 1.2 There will be no significant change in student-teacher relations due to the treatment of an outdoor education program.

H0: 1.3 There will be no significant change in students' attitudes toward working in a group with others, due to the treatment of an outdoor education program.

Results for Hypothesis 1 are presented in Tables 1 - 4 inclusive. The tabled critical F value needed for significance at the .05 level with 1 and 160 degrees of freedom is 3.84 (Kirk, p. 528).

H0: 1.0 The null hypothesis of no significant change in student social relationships, due to the treatment of an outdoor education program, was rejected at the .05 level of significance.

Table 1  
 One-Way Analysis of Variance on Hypothesis 1  
 Variable One--Student-Student Relations

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	1	73.8777	73.8777	0.294	0.5885
Within Groups	159	39974.1055	251.4095		
Total	160	40047.9805			

Table 2  
 One-Way Analysis of Variance on Hypothesis 1  
 Variable Two--Student-Teacher Relations

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	1	3296.1031	3296.1030	10.185**	0.0017
Within Groups	159	51457.1992	323.6301		
Total	160	54753.3008			

\*Significant at the .05 level ( $F_{.05} = 3.84$  for df 1, 160)

\*\*Significant at the .01 level ( $F_{.01} = 6.63$  for df 1, 160)

Table 3  
 One-Way Analysis of Variance on Hypothesis 1  
 Variable Three--Student's Attitude Toward  
 Working in a Group With Others

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	1	1120.5466	1120.5464	4.115*	0.0442
Within Groups	159	43295.4336	272.2981		
Total	160	44415.9766			

\*Significant at the .05 level ( $F_{.05} = 3.84$  for df 1, 160)

Table 4  
 One-Way Analysis of Variance on Hypothesis 1  
 Total of the Three Variables; Student-Student  
 Relations, Student-Teacher Relations, and  
 Student's Attitude Toward Working in  
 a Group With Others

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	1	9109.4495	9109.4492	5.784*	0.0173
Within Groups	159	250395.6875	1574.8154		
Total	160	259505.1250			

\*Significant at the .05 level ( $F_{.05} = 3.84$  for df 1, 160)

H0: 1.2 The null hypothesis of no significant change in student-teacher relations, due to the treatment of an outdoor education program, was rejected at the .05 level of significance.

H0: 1.3 The null hypothesis of no significant change in students' attitudes toward working in a group with others, due to the treatment of an outdoor education program, was rejected at the .05 level of significance.

H0: 1.1 The null hypothesis of no significant change in student-student relations, due to the treatment of an outdoor education program, was accepted at the .05 level of significance.

Results from Hypothesis 1 show that there was a significant change in attitudes of students toward their teacher and toward working in a group with others, however, significant differences did not occur with a change in attitude from student to student.

## Hypothesis 2

A paired t-test design was used to analyze the data provided by subjects from group one on a pretest post-test design. This design dealt with the second hypothesis formulated in this study. Hypothesis 2 stated in the null form:

H0: 2.0 After an outdoor education program there will be no significant increase in the number of times students are chosen as friends by their classmates.

The number of times a student was chosen by his/her friends

to engage in a particular activity before an outdoor education program was compared to the number of times a student was chosen by his or her friends at the completion of the program. Data from the pre-test was compared, using a paired t-test design, with data from the post-test for significant differences occurring in friendship choices interjacent to the measuring sessions (see Table 5).

The paired t-test compared the mean measure of the number of choices made in the pre-test with the mean measure of the number of choices made in the post-test. The tabled critical value needed for significance at the .05 level was 1.645 for 132 degrees of freedom (Kirk, p. 523). The difference in means was significant at the .05 level of significance. The null hypothesis of no significant increase in friendship choices was rejected for Hypothesis 2. Results from Hypothesis 2 show that there was a significant increase in the number of times students were chosen by their friends to engage in various activities.

#### Summary

The null hypothesis was rejected for dependent variables two and three of Hypothesis 1 and for Hypothesis 2. The null hypothesis was accepted for dependent variable one of Hypothesis 1.

H0: 1.0 The null hypothesis of no significant change in student social relationships, due to the treatment of an outdoor education program, was rejected at the .05 level of

Table 5  
 Paired T-Test on Hypothesis 2--  
 Students Will be Chosen More  
 Times by Their Friends After  
 an Outdoor Education Program  
 Than Prior to the Program

	Variable	
	Pretest	Posttest
Number of Cases	132	
Mean	27.4848	34.4470
Standard Deviation	16.501	22.328
Standard Error	1.436	1.943
(Difference) Mean	-6.9621	
Standard Deviation	13.272	
Standard Error	1.155	
Corr.	0.807	
2-Tail Prob.	0.000	
T Value	-6.03***	
Degrees of Freedom	131	
2-Tail Prob.	0.000	

\*\*\*Level of significance .001 ( $T_{.001} = 3.291$  for df 131)



significance.

H0: 1.1 The null hypothesis of no significant change in student-student relations, due to the treatment of an outdoor education program, was accepted at the .05 level of significance.

H0: 1.2 The null hypothesis of no significant change in student-teacher relations, due to the treatment of an outdoor education program, was rejected at the .05 level of significance.

H0: 1.3 The null hypothesis of no significant change in students' attitudes toward working in a group with others, due to the treatment of an outdoor education program, was rejected at the .05 level of significance.

H0: 2.0 The null hypothesis of no significant increase in friendship choices, due to the treatment of an outdoor education program, was rejected at the .05 level of significance.

## CHAPTER V

### Discussions and Conclusions

#### Introduction

The first section in this chapter is a summary of the research design, procedures and methods of data analysis used in the study. In the second section, discussions and conclusions, statistical findings of the study are discussed and the results are interpreted. In the last section, implications of the study are presented and considerations for further research are offered.

#### Summary

The purpose of this study was to provide objective data on the effect an outdoor education program had on students' social relationships. Three dependent variables, student-student relations, student-teacher relations, and students' attitudes toward working in a group with others, were measured using a pre-test and post-test research design, for change as affected by the independent variable, the type of treatment, either experimental or control.

Subjects participating in the study consisted of 161 seventh grade students from two public schools in the Winnipeg area. The experimental group consisted of 97 students and the control group 64 students. The experimental group received the treatment while the control group received no treatment. Both

groups were tested at the beginning of the second semester and at the end of the second semester in the 1977-78 school year.

Two surveys were designed to evaluate the effect of an outdoor education program on students' attitudes toward the three areas of social living. The surveys were the semantic differential attitude inventory survey and the sociometric device. Both these measuring devices were administered on a pre-test post-test format; the semantic differential attitude survey was given to both the experimental and control groups while the sociometric device was only given to the experimental group.

Two procedures were followed in analyzing the data resulting from this study. A one-way analysis of variance design compared the results of groups one and two on the pre-test with the results of groups one and two on the post-test for each area of social living the study was concerned with. A paired t-test design was used to analyze the mean scores of group one on the pre-test "Who Would You Choose?" inventory with the scores of the post-test using the same inventory or survey.

### Discussions and Conclusions

#### Hypothesis 1

A one-way analysis of variance design tested Hypothesis 1 by analyzing data provided by subjects from groups one and two on the pre-test and post-test. Results indicated a significant change occurred in students' attitudes during the outdoor education program, with respect to dependent variables two and

three. A positive change, as indicated by the questionnaire, occurred in student-teacher relations, and students' attitudes toward working in a group with others, due to the effect of the outdoor education program. Results indicated a significant change did not occur in students' attitudes during the outdoor education program, with respect to dependent variable one, student-student relations. The outdoor education program, therefore, did not seem to have a significant effect on student-student relations as measured by this study.

#### Hypothesis 2

A paired t-test design compared the mean measures of the pre-test scores on the sociometric inventory with the mean measures of the post-test scores. A significant positive difference in means occurred in the number of times students were chosen by their friends to engage in various activities before an outdoor education program as compared to the number of times they were chosen by their friends at the completion of the program.

#### Discussion

In the first area tested, student attitudes, the experimental group achieved better results than the control and at a high level of significance. To further analyze the areas studied, each attitude will be discussed. The first attitude or dependent variable, student-student relations, did not show a significant change from pre-test to post-test as affected by the treatment. The reason for a non-significant change could

be due to several factors. Students involved in both groups are in grade seven and have been exposed to each other prior to the pre-test. The control group, although semestered, would have students who have interacted with the same students in another class, and therefore, attitudes could have already been formed. The same situation would apply to the experimental group. Some factor in the experimental group's routine must have occurred to deter student-student relations.

Benton (1976) in his study dealing with student-student attitudes, found a significant change due to the effect of a resident outdoor education program, but further qualifies his findings. Half of the subjects only showed a minimal positive gain in student-student relations due to a previous outdoor education experience (p. 107).

In seeking explanations for the non-significant difference in attitude, due to student-student relations, it might help to consider the very different influences that probably operate on attitude development between children and adults. Eysenck (1954) showed that attitudes in adults are generally believed to develop as a result of a complex interaction of personality and various learning experiences. Nias (1972) in his study with twelve-year-old children found that the attitudes of children would seem to be determined more by simpler social processes, and in particular by the direct influence of their parents and teachers. The results of the present study support the findings of Nias.

Psychologists show that an attitude will tend to be resistant to change under certain conditions. Krech et. al. (1969) make the following observation:

An attitude will tend to be resistant to change in direct proportion to the number and importance of the personality functions that it serves. If an attitude is perceived as directly serving important ends, it will be difficult to change that attitude--the individual's investment in it is simply too large to allow him to "liquidate" it (p. 823).

This would support the findings that the students' attitudes toward each other were too strong to change.

The attitudes the students showed significant changes in were due to student-teacher relations and students' attitudes toward working in a group. Although Nias used twelve-year-old children and the present study involved grade seven students, a certain parallel can be drawn. Students entering grade seven range in ages from eleven to thirteen.

In the data dealing with student-student relations, it should be noted that both groups had a positive change in attitude, but when compared, the change in group one was not significant when compared with group two. This fact of positive change in junior high students is important for teachers to consider, for it shows that attitudes can be changed, if given the proper stimulus.

The second and third variables tested in Hypothesis 1

were highly significant and, from the analysis of data, could be useful to educators. It should be realized at this point, that not every school can have a successful outdoor education program that would promote better attitudes in the students toward their teacher or toward working in groups, but from the existing data, an implication of some form of an outdoor education program would definitely enhance existing curricula. As mentioned in Chapter I, outdoor education can become an effective curriculum change agent. It can have a far-reaching impact upon people, process and program. Outdoor education can be the agent to effect changes such as more flexible scheduling, integration of subject matter, greater interaction of teachers and students, and also a greater interaction among different grade levels.

The second hypothesis, which dealt with friendship choices, showed that students choose more of their classmates to engage in certain activities with, after an outdoor education program as compared to before the program. From the data, it would seem that the outdoor education program enabled the students to better interact and therefore see another side of their classmates than a structured classroom allowed. A closer look at the data shows that the number of stars increased and isolates decreased. The research also shows that the overall change in friendship choice was significant at the .05 level. The significance of the findings dealing with Hypothesis 2 are important for the educator in several ways. Firstly, the data shows that isolates

before the program improve in social acceptance. If an educator can identify isolates at an early stage and steer them into a program such as an outdoor education program, the student would become more acceptable to his peers. The need for belongingness and love needs is Maslow's third level of the five levels of needs (Kerch, et al, p. 498). The feeling of acceptance is one of the needs all students should have to make schooling meaningful. Smart and Smart (1972) state that "school is the place where most social interaction takes place..." (p. 569). Secondly, the data identifies cliques or groups that are established before the program and at the completion of the program. This information can help the educator by establishing groups other than those identified. This new group structure would allow for greater interaction and sharing of ideas.

### Recommendations

#### To Educators

One of the goals of schools today is to prepare the young to participate in a society that demands that its members possess a certain degree of academic prowess and necessary social skills to function satisfactorily. The educational curriculum should not only provide the opportunity for academics but must provide students with opportunities to develop desirable human attributes and sound social attitudes. In the classroom, there is little opportunity for students to learn how to live with others.



In many ways, schools provide an artificial and a contrived set of conditions for learning. The school buildings and classrooms isolate students from the "outside world," from the sounds, the colours, and the remaining sensory perceptions. The actual walls and rows of desks isolate individuals and groups from one another. The artificial conditions for learning that are created within the schools are far removed from those conditions under which a life-time of learning will occur.

This study has shown that through an outdoor education program, goals concerned with the area of social living or social relationships can be obtained. Attaining effective goals can be achieved using an outdoor education program and therefore, an outdoor education program should be incorporated into the school curriculum. As mentioned earlier in Chapter I, outdoor education has been defined as being interdisciplinary. Through a well-structured outdoor education program, many subject areas can be incorporated into a single lesson. Good textbook material and references are valuable in helping students and teachers understand various concepts; but reading alone will not insure genuine understanding. Someone once said "experience is the best teacher"; through an outdoor education program, the student will have many opportunities to experience various phenomena. Although outdoor education lends itself to the science discipline, many enriching experiences can be obtained in such areas as language arts, math and social studies. Outdoor education forces the issue of integration in the curriculum, to

study and experience things in their total relationships.

#### For Further Research

Results from this study indicated that attitudes toward certain areas of social living could be influenced by an outdoor education program. Student attitudes can change from year to year and one area for further research would be to test these attitudes for a change in later years.

The study revealed a non-significant change in student-student relations. Further research could be conducted to find explanations for the reasons why attitudes did not change.

The present study was mainly concerned with effects on the affective domain. The program could be analyzed more closely, and effects in the cognitive and psychomotor skills domain could be researched. The program could be studied to see what relationship exists between the three domains and if one is more dominant than the other previous to the program, as opposed to the completion of the program.

Research could be done to study what type of outdoor education program could effectively change students' attitudes toward each other. Research could also look at the reasons why so few outdoor education programs are offered when the data seems to show a positive effect in the area of social living.

## References

- Ashcroft, H. S. "The attitude of children toward outdoor education," Outdoor education, a book of readings. Edited by D. R. Hammerman and W. M. Hammerman. Minneapolis, Minnesota: Burgess Publishing Company, 1968.
- Barnes, J., and Lopp, F. S. Evaluation of the camp project for the 7th, 8th and 9th grades. Research and development reports, summer, 1971. Eric Document 058988, 1971.
- Barnes, J., and Nowicki Jr., S. Evaluation of the camp project for 7th, 8th and 9th grade pupils. Research and development reports, summer 1970. Eric Document 055693, 1970.
- Benton, P. A. A study of the effects of an outdoor education programme on the attainment of certain education goals. (Unpublished master's thesis, University of Manitoba, 1976).
- Blackman, C. A. "Perspective: a curriculum specialist looks at outdoor education," Perspectives on outdoor education. Edited by George W. Donaldsen and Oswald Goering, Dubuque, Iowa, Wm. C. Brown Publishers, 1972.
- Davidson, M. "Changes in self-concepts and sociometric status of fifth and sixth grade children as a result of two different school camp curricula." Dissertation abstracts; XXVI (January 1966), 3752.
- Davis Jr., O. L. "The effect of a school camp experience on friendship choices," Outdoor education, a book of readings. Edited by D. R. Hammerman and W. M. Hammerman. Minneapolis, Minnesota: Burgess Publishing Company, 1968.

- Eysenck, H. . The psychology of politics. London: Routledge and Kegan Paul, 1954.
- Freeberg, W. H. "Outdoor education--a method of education," Outdoor education, a book of readings. Edited by D. R. Hammerman and W. M. Hammerman. Minneapolis, Minnesota: Burgess Publishing Company, 1968.
- Guilford, J. P. Psychometric methods. New York: McGraw Hill Book Company, Inc., 1954.
- Helmstadter, G. C. Principles of psychological measurement. New York: Appleton-Century-Crofts, 1964.
- Irving, R. S. The effect of a resident outdoor education program on student social relations. (Unpublished master's thesis, University of Manitoba, 1976).
- Kerlinger, F. N. Foundations of behavioral research. New York: Holt, Rinehart, Winston, Inc., 1973.
- Kirk, R. E. Experimental design: procedures for the behavioral sciences. Belmont, California: Brooks/Cole Publishing Company, 1969.
- Knowlton, J. V. Project BACKSTOP (Better Acquisition of Cognitive Skills Through Outdoor Programming) evaluation report, 1972-73. ERIC Document 082896, 1973.
- Krech, D., et al. Elements of psychology. New York: Alfred A. Knopf, Inc., 1969.
- Lindzy, G., and Aronson, E. The handbook of social psychology reading, Massachusetts: Addison-Wesley Publishing Company, 1968.

- Martin, G. An evaluation of the physical science 201 and 301 program in Manitoba. (Unpublished master's thesis, University of Manitoba, 1975).
- McCallen, E. L., and Brown, J. D. "A semantic differential instrument for measuring attitudes toward mathematics." The journal of experimental education, Number 4, 39: 69-72, 1971.
- Miller, P. N. "Outdoor education: curriculum change agent," Perspectives on outdoor education. Edited by George W. Donaldson and Oswald Goering. Dubuque, Iowa, Wm. C. Brown Publishers, 1972.
- Nesbit, J. D., and Entwistle, N. S. Educational research methods. New York: American Elsevier Publishing Company, Inc., 1970.
- Nias, D. K. B. "The structuring of social attitudes in children," Child development, Volume 43: 211-19, March 1972.
- Osgood, C., Succi, D., and Tunnebaun, G. The measurement of meaning. Urbana: University of Illinois Press, 1957.
- Rillo, J. J. "The role of physical education in outdoor education programs," Perspectives on outdoor education. Edited by George W. Donaldson and Oswald Goering. Dubuque, Iowa, Wm. C. Brown Publishers, 1972.
- Sharp, L. B. "What is outdoor education?" Outdoor education, a book of readings. Edited by D. R. Hammerman and W. M. Hammerman. Minneapolis, Minnesota: Burgess Publishing Company, 1968.

- Shaw, M. E., and Wright, J. M. Scales for the measurement of attitudes. New York: McGraw-Hill Book Company, 1967.
- Smart, M. S. and Smart R. C. Children: development and relationships. New York: The Macmillan Company, 1972.
- Stack, G. C. "An evaluation of attitudinal outcomes of fifth and sixth grade students following a period of school company," Dissertation abstracts; XXI (August 1960), p. 305.
- Witryol, S. L., and Thompson, G. C. "A critical review of the stability of social acceptability scores obtained with the partial-rank-order and the paired-comparison scales," Genetic psychology minographs, 48: 221-260, 1953.

Documents (Unpublished)

- Laidlaw School Administration Staff, "Laidlaw school handbook 1975-76," (A handbook containing information on divisional philosophy and general school regulations. Laidlaw School, Assiniboine South School Division No. 3, Winnipeg, Manitoba, September, 1975).
- St. Vital Divisional Policy Manual, (A handbook containing information on divisional philosophy and educational goals. St. Vital School Division No. 6, Winnipeg, Manitoba, September, 1977).

APPENDIX A

## The University of Manitoba

## Faculty of Education

Department of Curriculum  
Mathematics and Natural Sciences

Winnipeg, Manitoba, Canada R3T 2N2

February 3, 1978

Transcona Springfield School Division #12,  
760 Kildare Avenue East,  
Winnipeg, Manitoba.  
R2C 2C3

Dear Mrs. V. M. Derenchuk:

With regards to our telephone conversation on January 31, regarding the possibility of using a group of grade seven students at Arthur Day Junior High School in a designed study for a Master's degree in Education.

Attached to this letter are two examples of the tests to be administered to the students. These tests will both be administered twice. A pre-test and post-test format is being used. The time allotted is approximately twenty minutes for both tests. The tests will be administered by myself. The tests do not require the students' name, only a number as a means of matching pre-test and post-test scores. The data will be compiled and used to verify my study. The study is titled "The Effects of an Outdoor Education Program on Student Social Relationships at the Junior High School Level." The test information will be confidential and anonymity will be preserved.

Please consider my request at your earliest convenience.

Yours truly,

B. P. van Aggelen.  
BPvA/mp

For added information, please phone: Boyd van Aggelen  
474-9052 - office  
269-0088 - home

OR

Stu Siem (Faculty Advisor, U. of M.)  
474-9057 - office



APPENDIX B

The purpose of this study is to provide data concerning the effects of an outdoor education program on three areas of social living: student-student relations; student-teacher relations; and students' attitudes toward working in a group with others. Student-student relations denotes friendship and how a student perceives himself. An increase in the number of friends a student has as a result of an outdoor education program has been cited as a value of outdoor education. Friendship choices of a participating group of students are thought to become more diffused following an outdoor education program. This study compares the number of friends a student feels he has before the program to the number of friends the student feels he has after the program. Self-perception will also be measured before and after the program.

Student-teacher relations signify the interpersonal relationship existing between a student and his teacher. An outdoor education program is credited with effecting an improved relationship between student and teacher. This study compares how a student felt about his outdoor education teacher before the program to how he felt about his teacher after the program.

Students' attitudes towards working in a group with others refers to a student's disposition toward working and co-operating with other students during the outdoor education program. Along with working in a group, the student will show willingness to help his peers and to share materials and ideas.

Please rate the following concepts on how you feel they  
measure the corresponding attitudes:

5 - strong

3

1 - weak

\*please add any concepts you  
feel apply to the specific attitude

1. student-student attitudes:

a. student \_\_\_\_\_

b. how I feel about my friends in this class \_\_\_\_\_

c. how I feel about my classmates, excluding  
my friends, in this class \_\_\_\_\_

d. \_\_\_\_\_

e. \_\_\_\_\_

2. student-teacher attitudes:

a. this classroom teacher \_\_\_\_\_

b. how I feel about this class \_\_\_\_\_

c. how I feel about this teacher \_\_\_\_\_

d. \_\_\_\_\_

e. \_\_\_\_\_

3. student attitudes toward working in a group:

a. how I feel about working in a group in this class \_\_\_\_\_

b. how I feel about working in a group in my other  
classes \_\_\_\_\_

c. sharing \_\_\_\_\_

d. \_\_\_\_\_

APPENDIX C

Summary of concept ranking	points scored
1. Student-student attitudes:	
a. student	<u>10</u>
* b. how I feel about my friends in this class	<u>11</u>
* c. how I feel about my classmates, excluding my friends, in this class	<u>11</u>
2. Student-teacher attitudes:	
a. classroom teacher	<u>11</u>
* b. how I feel about this class	<u>8</u>
* c. how I feel about this teacher	<u>12</u>
3. Student attitudes toward working in a group:	
* a. how I feel about working in a group in this class	<u>11</u>
b. how I feel about working in a group in my other classes	<u>4</u>
* c. sharing	<u>7</u>

\*indicates those concepts selected to measure the particular attitude.

Concepts written in by panel included: how I feel about my classmates; and myself for the first attitude. My outdoor education teacher; and my outdoor education program for the second attitude. The third attitude did not have any additions.

APPENDIX D

## Attitudes Toward An Outdoor Education Program

The purpose of this test is to measure your attitude toward the Outdoor Education program you are now taking. In taking this test, please make your judgements on the basis of what these ideas mean to you.

On each page of this booklet you will find a different idea to be judged and beneath it a set of scales. You are to rate the idea on each of these scales in order.

Here is how to use these scales:

If you feel the concept at the top of the page is very closely related to one end of the scale you should place your check mark as follows:

Good X : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : Bad

or

Good \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : X : Bad

If you feel the concept is quite closely related to one or the other end of the scale, you should place your check mark as follows:

Good \_\_\_ : X : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : Bad

or

Good \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : X : \_\_\_ : Bad

If the concept seems only slightly related to one side as opposed to the other (but is not really neutral), then you should check as follows:

Good \_\_\_ : \_\_\_ : X : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : Bad

or

Good \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : X : \_\_\_ : \_\_\_ : Bad

If you consider the concept to be neutral on the scale, both sides of the scale equally related to the concept, or if the scale is not in any way related to the concept, then you should place your check mark in the middle space:

Good \_\_\_ : \_\_\_ : \_\_\_ : X : \_\_\_ : \_\_\_ : \_\_\_ : Bad

Sometimes you may feel as though you have had the same item before on the test. This will not be the case, so do not look back and forth through the items. Do not try to remember how you checked similar items earlier in the test. Make each item a separate and independent judgement. Work at a fairly high speed through the test.

IMPORTANT: 1) Place your check marks in the spaces, not on the boundaries

this  
 \_\_\_ : X : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : X - not this

- 2) Be sure to check every scale for every concept - do not omit any
- 3) Never put more than one check mark for each scale.
- 4) Read carefully, some of the scales are reversed.
- 5) Remember, it is your first impressions, the immediate "feelings" about the items, that is wanted.



How I Feel About My Classmates, Excluding My Friends,  
In This Class

- 1) Good \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : Bad
- 2) Helpful \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : Unhelpful
- 3) Fair \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : Unfair
- 4) Boring \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : Interesting
- 5) Relaxed \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : Tense
- 6) Co-operative \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : Unco-operative
- 7) Awful \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : Nice
- 8) Happy \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : Sad
- 9) Unpleasant \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : Pleasant
- 10) Pleasing \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : Annoying

## How I Feel About My Friends In This Class.

- 1) Good \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_: Bad
- 2) Helpful \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_: Unhelpful
- 3) Fair \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_: Unfair
- 4) Boring \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_: Interesting
- 5) Relaxed \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_: Tense
- 6) Co-operative \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_: Unco-operative
- 7) Awful \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_: Nice
- 8) Happy \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_: Sad
- 9) Unpleasant \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_: Pleasant
- 10) Pleasing \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_: Annoying

## How I Feel About This Class

- 1) Good \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_: Bad
- 2) Helpful \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_: Unhelpful
- 3) Fair \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_: Unfair
- 4) Boring \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_: Interesting
- 5) Relaxed \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_: Tense
- 6) Co-operative \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_: Unco-operative
- 7) Awful \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_: Nice
- 8) Happy \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_: Sad
- 9) Unpleasant \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_: Pleasant
- 10) Pleasing \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_: Annoying

- 1) Good ..... : ..... : ..... : ..... : ..... : ..... : ..... : ..... : Bad
- 2) Helpful ..... : ..... : ..... : ..... : ..... : ..... : ..... : ..... : Unhelpful
- 3) Fair ..... : ..... : ..... : ..... : ..... : ..... : ..... : ..... : Unfair
- 4) Boring ..... : ..... : ..... : ..... : ..... : ..... : ..... : ..... : Interesting
- 5) Relaxed ..... : ..... : ..... : ..... : ..... : ..... : ..... : ..... : Tense
- 6) Co-operative ..... : ..... : ..... : ..... : ..... : ..... : ..... : ..... : Unco-operative
- 7) Awful ..... : ..... : ..... : ..... : ..... : ..... : ..... : ..... : Nice
- 8) Happy ..... : ..... : ..... : ..... : ..... : ..... : ..... : ..... : Sad
- 9) Unpleasant ..... : ..... : ..... : ..... : ..... : ..... : ..... : ..... : Pleasant
- 10) Pleasing ..... : ..... : ..... : ..... : ..... : ..... : ..... : ..... : Annoying

## How I Feel About Working In A Group In This Class

- 1) Good \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_: Bad
- 2) Helpful \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_: Unhelpful
- 3) Fair \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_: Unfair
- 4) Boring \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_: Interesting
- 5) Relaxed \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_: Tense
- 6) Co-operative \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_: Unco-operative
- 7) Awful \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_: Nice
- 8) Happy \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_: Sad
- 9) Unpleasant \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_: Pleasant
- 10) Pleasing \_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_:\_\_\_: Annoying

## Sharing

- 1) Good \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : Bad
- 2) Helpful \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : Unhelpful
- 3) Fair \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : Unfair
- 4) Boring \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : Interesting
- 5) Relaxed \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : Tense
- 6) Co-operative \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : Unco-operative
- 7) Awful \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : Nice
- 8) Happy \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : Sad
- 9) Unpleasant \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : Pleasant
- 10) Pleasing \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : \_\_\_ : Annoying

APPENDIX E

"WHO WOULD YOU CHOOSE"

DIRECTIONS:

- 1) Please find a student list accompanying this test. The list has names of your classmates and corresponding numbers. The names are in alphabetical order.
- 2) Read the questions carefully and check the number(s) which correspond to the classmate(s) you have chosen.
- 3) You may choose one classmate or as many classmates as you wish for each question.
- 4) Work quickly and do not spend too much time on any question.
- 5) Please answer each question.

EXAMPLE: (test)

(student list)

"WHO WOULD YOU CHOOSE?"						STUDENT LIST			
Student number	1	2	3	4	46	Willie Makeit	1		
Question					→	Bill Fold	2		
						Penny Leaf	3		
Which of your classmates would you choose to go canoeing with?						Rocky Stone	4		
	✓		✓		✓				
Which of your classmates would you choose to snowshoe with?						Hub Cap	45		
		✓			✓	Jack Fish	46		



	"WHO WOULD YOU CHOOSE?"																																																					
STUDENT NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46								
WHICH OF YOUR CLASSMATES WOULD YOU CHOOSE TO ENGAGE IN A LEISURE TIME ACTIVITY WITH YOU?																																																						
WHICH OF YOUR CLASSMATES WOULD YOU CHOOSE TO GO CROSS COUNTRY SKIING WITH?																																																						
WHICH OF YOUR CLASSMATES WOULD YOU CHOOSE TO WORK IN A GROUP WITH?																																																						
WHICH OF YOUR CLASSMATES WOULD YOU CHOOSE TO GO ON A COOKOUT WITH?																																																						
WHICH OF YOUR CLASSMATES WOULD YOU CHOOSE TO BE IN YOUR CABIN GROUP?																																																						
WHICH OF YOUR CLASSMATES WOULD YOU CHOOSE TO GO ON A NATURE STUDY WITH?																																																						

APPENDIX F

## Summary of Pretest and Posttest

## Scores From the Semantic

## Differential Inventory

## (Experimental Group)

Student Number	A	A'	A-A'	B	B'	B-B'	C	C'	C-C'	Total
1	94	119	-25	140	109	31	130	130	0	6
2	96	128	-32	120	114	6	123	120	3	-23
3	79	73	6	93	90	3	85	91	-6	6
4	109	118	-9	131	125	6	133	133	0	-3
5	134	121	13	136	122	14	130	127	3	30
6	80	41	39	88	82	6	66	61	5	50
7	115	96	19	115	106	9	103	86	17	45
8	117	109	8	130	121	9	123	101	22	39
9	107	90	17	108	111	-3	111	102	9	23
10	94	66	28	119	94	25	125	89	36	89
11	121	110	11	129	127	2	129	129	0	13
12	108	115	-7	120	118	2	119	120	-1	-6
13	122	128	-6	134	136	-2	127	131	-4	-12
14	106	130	-24	123	131	-8	130	131	-1	-33
15	125	118	7	135	122	13	135	136	-1	19
16	131	104	27	138	123	16	119	81	38	71
17	121	120	1	133	127	6	128	131	-3	4
18	118	96	12	129	131	-2	97	111	-4	6
19	139	131	8	132	138	-6	137	138	-1	1
20	112	108	4	91	101	-10	94	83	11	5
21	131	135	-4	140	140	0	136	140	-4	-8
22	99	116	-17	108	120	-12	124	122	2	-27
23	130	96	34	139	96	43	140	108	32	109
24	90	83	7	129	134	-5	134	131	3	5

## Appendix F--(continued)

Student										
Number	A	A'	A-A'	B	B'	B-B'	C	C'	C-C'	Total
25	126	122	4	113	88	25	96	89	7	36
26	96	111	-5	134	123	11	106	123	-17	-11
27	121	134	-13	129	125	4	121	135	-14	-23
28	125	92	33	139	96	43	140	66	74	150
29	101	124	-23	129	119	10	122	117	5	-8
30	111	87	24	117	111	6	118	102	16	46
31	136	131	5	133	134	-1	137	140	-3	1
32	122	112	10	123	89	35	112	98	14	59
33	135	118	17	138	130	8	136	126	10	35
34	132	135	-3	133	139	-6	139	138	1	-8
35	128	128	0	129	134	-5	129	138	-9	-14
36	128	115	13	126	118	8	134	121	13	34
37	118	135	-17	133	137	-4	136	134	2	-19
38	125	132	-7	139	132	7	127	130	-3	-3
39	109	127	-17	111	125	-14	122	121	1	-30
40	108	115	-7	111	127	-16	127	121	6	-17
41	130	118	12	132	127	5	133	121	12	29
42	135	137	2	139	136	3	139	140	-1	4
43	132	105	27	134	128	6	134	134	0	33
44	124	124	0	137	135	2	136	126	10	12
45	131	132	-1	132	138	-6	131	135	-4	-11
46	127	104	23	116	101	15	114	106	8	46
47	129	130	-1	139	134	5	133	133	0	4
48	83	79	4	77	87	-10	76	79	-3	-9
49	137	131	6	137	138	-1	137	138	-1	4
50	131	118	13	136	126	10	140	137	3	26
51	111	117	-6	116	124	-8	121	120	1	-13
52	138	105	33	140	124	16	140	119	21	70
53	139	139	0	140	140	0	140	140	0	0
54	122	129	-7	113	133	-20	136	124	12	-15
55	126	133	-7	127	134	-7	137	129	8	-6

## Appendix F--(continued)

Student										
Number	A	A'	A-A'	B	B'	B-B'	C	C'	C-C'	Total
56	127	119	8	135	134	1	132	131	1	10
57	76	81	-5	79	85	-6	90	91	-1	-12
58	121	121	0	126	132	-6	125	122	3	-3
59	95	111	-6	130	133	-3	135	134	1	-8
60	114	98	16	94	95	-1	102	92	10	25
61	129	132	-3	128	135	-7	100	109	-9	-19
62	128	125	3	129	132	-3	126	135	-9	-9
63	106	86	20	135	131	4	119	103	16	40
64	114	97	17	140	140	0	140	140	0	17
65	133	133	0	130	115	15	129	125	4	19
66	124	129	-5	126	132	-6	128	139	-11	-22
67	115	114	1	139	130	9	114	126	-12	-2
68	136	126	10	136	126	10	130	127	3	23
69	130	96	34	131	119	12	133	103	30	76
70	96	100	-4	107	89	18	72	90	-18	-4
71	123	100	23	130	131	-1	122	127	-5	17
72	128	107	21	127	125	2	128	121	7	30
73	120	110	10	133	130	3	118	120	-2	11
74	126	113	13	139	126	13	140	124	16	42
75	126	119	7	132	127	5	119	120	-1	11
76	129	118	11	131	133	-2	125	116	9	18
77	132	103	29	132	120	12	127	88	39	80
78	106	123	-17	127	115	12	118	114	4	-1
79	111	99	12	132	133	-1	116	122	-6	5
80	119	108	11	131	132	-1	121	132	-11	-1
81	118	121	-3	137	134	3	105	115	-10	-10
82	86	91	-5	124	130	-6	107	123	-16	-27
83	123	113	10	133	140	-7	130	133	-3	0
84	121	126	-5	129	140	-11	129	135	-6	-22
85	121	131	-10	139	138	1	138	133	5	-4

## Appendix F--(continued)

Student										
Number	A	A'	A-A'	B	B'	B-B'	C	C'	C-C'	Total
86	131	129	2	140	136	4	132	118	14	20
87	117	122	-5	124	138	-14	128	132	-4	-23
88	138	124	14	140	125	15	132	127	5	34
89	122	124	-2	134	140	-6	133	139	-6	-14
90	128	127	1	130	132	-2	84	99	-15	-16
91	111	110	1	139	140	-1	124	140	-16	-16
92	135	135	0	137	133	4	139	133	6	10
93	123	128	-5	130	139	-9	128	113	15	1
94	115	107	8	121	131	-10	132	132	0	-2
95	125	125	0	124	133	-9	104	114	-10	-19
96	132	125	7	134	140	-6	131	135	-4	-3
97	139	134	5	134	140	-6	140	140	0	-1

' pretest

A--first dependent variable (student-student relations)

B--second dependent variable (student-teacher relations)

C--third dependent variable (students' attitude toward working  
in a group with others)

APPENDIX G

## Summary of Pretest and Posttest

## Scores From the Semantic

## Differential Inventory

(Control Group)

Student										
Number	$A_2$	$A_2'$	$A_2 - A_2'$	$B_2$	$B_2'$	$B_2 - B_2'$	$C_2$	$C_2'$	$C_2 - C_2'$	Total
1	93	93	0	116	73	43	77	72	5	48
2	103	114	-11	93	64	29	133	133	0	18
3	126	131	-5	92	100	-8	118	124	-6	-19
4	83	120	-37	75	77	-2	84	100	-16	-55
5	113	93	20	116	98	18	122	91	31	69
6	104	103	1	108	132	-24	96	132	-36	-59
7	122	121	1	133	129	4	138	135	3	8
8	81	98	-17	55	71	-16	67	80	-13	-46
9	121	111	10	92	113	-21	122	130	-8	-19
10	122	86	36	125	129	-4	138	135	3	35
11	95	103	-8	80	93	-13	79	95	-16	-37
12	79	110	-31	96	65	31	53	101	-48	-48
13	113	86	47	92	57	35	116	84	32	114
14	82	97	-15	118	117	1	107	100	7	-7
15	106	95	11	117	106	11	114	92	22	44
16	112	78	34	41	53	-12	77	98	-22	0
17	124	140	-16	63	132	-69	75	135	-60	-145
18	125	105	-20	68	75	-7	111	115	-4	-31
19	82	83	-1	37	52	-15	96	103	-7	-23
20	108	114	-6	59	108	-49	101	114	-13	-68
21	125	114	11	97	105	-8	106	117	-11	-8
22	104	89	15	111	77	34	116	90	26	118
23	127	116	11	125	113	12	122	101	21	44
24	124	89	35	118	67	51	131	111	20	106
25	104	101	3	97	97	0	101	96	5	8



## Appendix G---(continued)

Student										
Number	$A_2$	$A_2'$	$A_2-A_2'$	$B_2$	$B_2'$	$B_2-B_2'$	$C_2$	$C_2'$	$C_2-C_2'$	Total
26	138	103	35	114	102	12	118	112	6	53
27	121	110	11	88	70	18	93	71	22	51
28	127	122	5	125	123	2	124	126	-2	5
29	93	94	-1	42	81	-39	78	93	-15	-55
30	101	108	-7	103	76	27	97	109	-12	8
31	87	113	-26	53	117	-64	134	113	21	-69
32	136	106	30	112	121	-9	105	129	-24	-3
33	81	94	-13	76	97	-20	82	96	-14	-47
34	102	99	3	113	116	-3	109	104	5	5
35	103	107	-4	130	127	3	107	111	-4	-5
36	130	132	-2	114	120	-6	126	130	-4	-12
37	100	103	-3	102	101	1	89	97	-8	-10
38	122	131	-9	122	109	13	122	128	-6	-2
39	107	111	-4	127	134	-7	111	96	15	4
40	101	97	4	78	77	1	78	91	-13	-8
41	108	93	15	74	69	5	98	115	-17	-3
42	100	63	37	31	28	3	101	66	35	75
43	134	131	3	98	94	4	134	101	33	40
44	130	87	43	117	129	-12	125	132	-7	24
45	130	131	-1	105	106	-1	129	133	-4	-6
46	131	129	2	102	108	-6	136	130	6	2
47	136	96	40	107	113	-6	131	116	15	49
48	120	132	-12	87	87	0	106	133	-27	-39
49	99	94	5	52	79	-27	111	84	27	5
50	125	114	11	76	98	-22	85	117	-32	-43
51	97	86	11	92	109	-17	117	94	27	21
52	95	92	3	106	103	3	119	94	25	31
53	128	116	12	125	112	13	133	108	25	50
54	94	77	17	78	97	-19	99	96	3	1
55	109	122	-12	100	136	-26	88	122	-34	-72

## Appendix G--(continued)

Student										
Number	$A_2$	$A_2'$	$A_2 - A_2'$	$B_2$	$B_2'$	$B_2 - B_2'$	$C_2$	$C_2'$	$C_2 - C_2'$	Total
56	117	131	-14	53	114	-61	97	115	-28	-103
57	137	132	5	108	95	13	125	135	-10	8
58	117	121	-4	59	80	-21	129	124	5	-20
59	100	131	-31	56	106	-50	140	140	0	-81
60	88	96	-8	52	76	-24	50	48	2	-30
61	75	65	10	92	84	8	57	91	-34	-16
62	134	122	12	116	134	-17	140	140	0	-5
63	109	131	-22	82	140	-58	123	135	-12	-92
64	104	106	-2	89	126	-37	96	88	8	-31

'pretest

A--first dependent variable (student-student relations)

B--second dependent variable (student-teacher relations)

C--third dependent variable (students' attitude toward working  
in a group with others)

APPENDIX H

Sociometric Data Inventory Pre-Test  
and Post-Test Scores on the  
Experimental Group

Student Number	Pre- Test Score	Post- Test Score	Student Number	Pre- Test Score	Post- Test Score	Student Number	Pre- Test Score	Post- Test Score
1	24	14	27	6	12	53	32	26
2	14	16	28	0	15	54	0	5
3	45	42	29	55	78	55	17	25
4	48	70	30	0	0	56	15	18
5	6	0	31	7	13	57	32	41
6	2	6	32	42	27	58	11	19
7	47	51	33	31	31	59	21	19
8	29	19	34	31	53	60	2	0
9	43	104	35	2	3	61	55	54
10	12	6	36	0	3	62	46	41
11	53	43	37	21	27	63	48	53
12	35	36	38	61	50	64	24	35
13	38	55	39	65	74	65	34	78
14	25	58	40	42	36	66	37	48
15	41	42	41	18	42	67	26	38
16	37	41	42	39	34	68	31	36
17	33	32	32	41	49	69	25	44
18	1	8	44	30	22	70	29	57
19	48	53	45	32	22	71	0	19
20	36	18	46	0	0	72	20	24
21	39	42	47	21	31	73	26	34
22	48	59	48	2	6	74	39	71
23	25	11	49	3	11	75	12	13
24	18	16	50	56	51	76	16	47
25	2	23	51	15	16	77	4	6
26	36	32	52	25	43	78	21	35

## Appendix H--(continued)

Student Number	Pre- Test Score	Post- Test Score	Student Number	Pre- Test Score	Post- Test Score	Student Number	Pre- Test Score	Post- Test Score
79	18	37	108	27	37			
80	33	58	109	29	27			
81	20	29	110	35	37			
82	26	45	111	64	93			
83	35	33	112	10	27			
84	29	45	113	23	25			
85	26	19	114	9	4			
86	9	35	115	29	26			
87	32	33	116	4	2			
88	29	35	117	20	18			
89	19	0	118	29	31			
90	6	0	119	69	73			
91	31	55	120	45	61			
92	15	1	121	16	31			
93	25	41	122	22	58			
94	27	48	123	39	51			
95	28	34	124	34	35			
96	48	65	125	56	78			
97	40	65	126	27	31			
98	27	47	127	41	66			
99	16	7	128	26	44			
100	19	10	129	67	66			
101	41	53	130	13	1			
102	7	0	131	16	20			
103	34	64	132	21	23			
104	25	18						
105	67	74						
106	23	26						
107	45	73						

APPENDIX I

Table 6  
 Statistical Tables for One-Way Analysis of Variance  
 on Variable One--Student-Student Relations

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum
GRP01	97	4.6186	13.8995	1.4113	-32.0000	39.0000
GRP02	64	3.2344	18.4423	2.3053	-37.0000	47.0000
Total	161	4.0683	15.8209	1.2469	-37.0000	47.0000
Fixed Effects Model			15.8559	1.2496		
Random Effects Model			1.7672	1.2496		

Table 7

Statistical Tables for One-Way Analysis of Variance  
on Variable Two--Student-Teacher Relations

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum
GRP01	97	2.9175	11.4388	1.1614	-20.0000	43.0000
GRP02	64	-6.3281	24.8475	3.1059	-69.0000	51.0000
Total	161	-0.7578	18.4989	1.4579	-69.0000	51.0000
Fixed Effects Model			17.9897	1.4178		
Random Effects Model			6.6471	4.7002		



Table 8  
 Statistical Tables for One-Way Analysis of Variance  
 on Variable Three--Students' Attitude Toward  
 Working in a Group With Others

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum
GRPO1	97	3.4845	13.4304	1.3637	-18.0000	74.0000
GRPO2	64	-1.9063	20.3069	2.5384	-60.0000	35.0000
Total	161	1.3416	16.6613	1.3131	-60.0000	74.0000
Fixed Effects Model			16.5015	1.3005		
Random Effects Model			3.8528	2.7243		

Table 9  
 Statistical Tables for One-Way Analysis of Variance on Total of  
 Three Variables--Student-Student Relations, Student-Teacher  
 Relations, and Students' Attitude Toward Working in a  
 Group With Others

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum
GRP01	97	10.9485	31.2476	3.1727	-23.0000	150.0000
GRP02	64	-4.4219	49.8665	6.2333	-145.0000	118.0000
Total	161	4.8385	40.2729	3.1739	-145.0000	150.0000
Fixed Effects Model			39.6839	3.1275		
Random Effects Model			11.0168	7.7901		