THE RELATIONSHIP BETWEEN MALE AND FEMALE SIXTH-GRADERS' ATTITUDES AND A MULTIDISCIPLINARY OUTDOOR ENVIRONMENTAL EDUCATION EXPERIENCE

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Submitted to the Faculty of the Graduate College
of the Oklahoma State University
in partial fulfillment of the requirements
for the Degree of
DOCTOR OF EDUCATION
July 1986

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ACKNOWLEDGEMENTS

Grateful acknowledgement and heartfelt thanks are extended to my advisor Dr. Russell L. Dobson for his patient encouragement and guidance. Special thanks is also due to Dr. Terence J. Mills, whose encouragement and faith in my abilities has guided and inspired me through some bleak moments during the course of my doctoral studies. Likewise, I am very grateful to my committee member, Dr. William E. Segall, for his continued interest, patience and valuable suggestions.

In addition, many thanks are due to the staff members of the Stillwater Middle School, including the teachers for their cooperation in administering the questionnaire in their classrooms. I am particularly grateful to Jean Spang who devotedly and diligently edited the dissertation. A deep appreciation is expressed to Suzanne Sippola who did more than type the dissertation; she read my handwriting, designed the format, typed and retyped the pages and fitted it all together.

I am grateful for the assistance of Dr. Judith Shelton Dobson who unfortunately was not able to remain on the committee.

To my loyal, understanding and supportive husband Manoochehr for his help in all aspects of support and patience. Thanks also to my daughters, Maryam 6 and Sara 3, and my son Saeed 1, for allowing me to take a great deal of time away from them while doing the study.

Finally to my mother, Mahin Solati and my father, Ali Alikhani, my deepest appreciation and love for their warm support and silent prayers. It was their initial belief in me that challenged and inspired me to pursue and continue my education. To them, this study is dedicated.

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CHAPTER I

INTRODUCTION

In planning a model school, the predominant organizational designs of modern-day classrooms should be carefully assessed. How do they hold up against expectations of a stimulating and whole-person-oriented education? Modern teachers, like those of the past, are often caught in the traditional teacher-talking and student-listening instructional style. Sirotnik (1983) emphasizes the persistence of the "mutually affectless environment" filled with "almost invariably closed and factual questions; little corrective feedback and no guidance" (p. 29). A disturbing possibility is that educators may have created a hidden curriculum; Sirotnik (1983) eludes to this in describing schools that "... are implicitly teaching dependence upon authority, linear thinking, social apathy, passive involvement, and hands-off learning" (p. 29).

A recent examination of instructional time by teachers in the elementary school classroom (Goodlad, 1983) indicates that the percentage of lecturing and explaining in the classroom has been increased to almost 70%. The instructors studied by Goodlad used the remaining time not in lecturing, but in secondary activities that were "about equally divided between working alone at their desks, observing and monitoring students, and moving about or interacting nonverbally" (Goodlad, 1983, p. 467). Goodlad (1983) concluded that:

> ...if the classroom is not to be a place of enthusiastic learning, presumably it is appropriately a place of help with learning. But the feedback-with-guidance associated with helping students to understand and correct their mistakes was almost nonexistent (p. 467).

Thus, the quality of teacher behavior in producing an atmosphere of learning is in need of improvement.

Indeed, if the studies by Sirotnik and by Goodlad are any indication of classroom reality, then the need for encouraging more active participation by students, and decreasing one-way, relatively passive, instruction by teachers, is apparent. Obviously, some attempts need to be made by educators to elicit enthusiastic learning, in order to minimize the adverse effects of the hidden curriculum on students. However, as Sirotnik (1983) points out, "fundamental and pervasive changes cannot occur without restructuring societal values and priorities" (p. 29). Changing the educational atmosphere is a complex challenge and may even call for new perceptions of students. As Toffler (1974) writes:

> ... education ... is not just something that happens in the head. It involves our muscles, our senses, our hormonal differences, our total biochemistry. Nor does it occur solely within the individual. Education springs from the interplay between the individual and a changing environment. (p. 13)

Toffler advises that educators work toward a deep restructuring of the links between schools, colleges, universities, and the communities that surround them. It is in keeping with this approach to education that integrating the outdoor environment into formal education is considered as one accessible option for instructional revision. This is an approach that may bring both direct and indirect benefits.

Bringing involvement in the actual outdoor world into elementary education is vital for the "whole child." According to Staley (1979), an indoor curriculum requires rules, schedules, and learning by books and lectures; these aspects of school develop poor self-concepts in many children, particularly those who have difficulty coping with rules and regulations. Staley (1979) indicates that in outdoor education, students are more active in learning with real objects, so they feel good about themselves and therefore develop their self-concepts. Staley (1979) also believes that outdoor education helps children to develop the right hemisphere of their brains as well as their left hemisphere. For example, by doing something in the outdoors, they develop the right brain while at the same time developing the left brain by thinking about what should be done. Through problem finding activities, students develop the right brain while developing their left brain by mental problem solving. Staley implies that the "whole child" is not given adequate development in the totally classroom-oriented instructional pattern.

Adequate environmental education also helps integrate practical needs and natural balances with science (Phillips, 1974). Knowledgeable attitudes toward science build psychological health in young people, for science is a tool for understanding the massive changes around us. It is also a tool for preventing an overwhelming "future shock," as Toffler (1970) calls it, and all individuals, whether young or old, have a stake in becoming aware of the rapid changes in technology.

Outdoor environmental education should not be examined as an isolated science and nature program in the school. If well planned, outdoor environmental education can be integrated with the broader educational curriculum and can consequently alter the school environment significantly. As Clark (1973) points out, aims for environmental education programs can include producing an awareness of the "social, cultural, and economic aspects of one's surroundings as well as the biological and physical" (p. 6). Outdoor environmental education can inevitably alter the entire school experience by removing children from their classrooms and the constraints of traditional settings. A model school would surely maximize the outdoor environmental education potential.

Due to the probable diversity of large-scale outdoor environmental education programs, questions arise about the social and psychological impacts of such programs on school children. Conversely, as teachers modify children's educational experiences to incorporate an outdoor-environmental focus, questions occur about long-range effects on students' attitudes toward school and self. It is with these questions in mind that the present study is conducted. Thus, this investigation focuses on certain attitudinal shifts of youngsters who participate in outdoor environmental education, with special emphasis on whether a differential impact occurs in males and females.

Justification for the Study

Some science educators are beginning to realize that it is not enough to have short science lessons within the traditional classroom structure. Within-classroom teaching cannot adequately convey a

realization of the human dependence on nature. Indeed, as long as paper and pencil lessons are stressed, the elementary school child has his/her feelings of separateness from the natural environment reinforced. But by transferring the educational setting to the outdoor classroom, tremendous gains are made in motivation toward learning about the natural environment. Such settings provide a variety of concrete learning experiences that can satisfy a child's curiosity about the world he/she lives in and make him/her interested in understanding the workings of this world. Clearly,

> Outdoor classroom experiences fit into every discipline encouraging awareness that open the way for comprehension. And these experiences are the only way that children can become active participants rather than passive spectators in learning how to protect and care for natural resources. (SCSers, 1973, p. 13)

In addition, outdoor classroom experiences can be used to help children in primary and early elementary grades relate concrete experiences in the world to reading skills. A series of outdoor learning exercises has been developed for "observing, classifying, comparing, and generalizing to help beginning readers or students who have difficulty relating to the printed word" (Marturano & Ward, 1975, p.16). The content of these exercises is consistent with findings mentioned in recent educational literature which suggests "that reading is an active process of constructing meaning not merely from the printed page but from the child's entire environment" (Marturano & Ward, 1975, p. 16). Thus, environmental education can aid the development of concepts by "engaging the child in activities which require reading the surroundings through a variety of conceptual skills" (p. 16). If outdoor environmental education can help students better cope with rules and regulations in school, and if a good

attitude toward teachers and school is important, then outdoor environmental education experience can help improve students' attitudes toward teachers, school, and themselves in general.

This study was based upon the premise that the regular classroom is, in part, an unnatural environment for learning. All too often the classroom is limiting in its encouragement of students to develop a positive attitude toward school in general and toward learning experiences in particular. But by providing the opportunity for the youngsters to observe, manipulate, discover, and learn the content of school curriculum, can the multidisciplinary outdoor environmental educational setting can encourage students to develop more positive attitudes toward teachers, school, and themselves.

The Purpose of the Study

The purpose of this study was to determine whether a relationship exists between outdoor environmental education and student attitudes. Attitudes of students toward teachers, toward school, and toward self were the precise focus that was examined.

Research Questions and Hypotheses

The investigation proposed to establish a basis for testing the following null hypotheses that were generated by the stated research questions:

Research Question Number One

What is the difference between the sixth-grade male and female students' attitude toward their teachers, school, and themselves on a

normal school day.

HO_1 There is no significant difference between the mean attitude responses of male and female sixth-graders to a normal school day (Pretest).

Research Question Number Two

What is the difference between the sixth-grade male and female students' attitude toward their teachers, school, and themselves immediately after a one-day multidisciplinary outdoor environmental education experience?

HO_2 There is no significant difference between the mean attitude responses of male and female sixth-graders following a one-day multidisciplinary outdoor environmental education experience (Posttest I).

Research Question Number Three

What is the difference between the sixth-grade male and female students' attitude toward their teachers, school, and themselves after a normal school day three weeks following the multidisciplinary outdoor environmental education experience?

HO_3 There is no significant difference between the mean attitude responses of male and female sixth-graders made at the end of a normal school day three weeks following multidisciplinary outdoor environmental education experience (Posttest II).

Research Question Number Four

Does the attitude held by male sixth-graders toward their teachers, school, and themselves change when a comparison is made between their responses on a regular school day and their responses made three weeks after the multidisciplinary outdoor environmental education experience?

HO_4 There is no significant difference between the mean attitude responses of male sixth-grade students on a normal school day (Pretest) and the mean attitude responses of male sixth grade students on a normal school day three weeks following the multidisciplinary outdoor environmental education experience (Posttest II).

Research Question Number Five

Does the attitude held by female sixth-graders toward their teachers, school, and themselves change when a comparison is made between their responses on a regular school day and their responses made three weeks after the multidisciplinary outdoor environmental education experience?

HO_5 There is no significant difference between the mean attitude responses of female sixth-grade students on a normal school day (Pretest) and the mean attitude responses of female sixth-grade students on a normal school day three weeks following the multidisciplinary outdoor environmental education experience (Posttest II).

Research Question Number Six

Does the attitude held by male sixth-grade students toward their teachers, school, and themselves on each of ten items of the questionnaire change when a comparison is made between a normal school day before the multidisciplinary outdoor environmental education experience and a normal school day three weeks following a multidisciplinary outdoor environmental education experience?

HO_6 There is no significant difference between the mean attitude responses of male sixth-grade students to each of ten questionnaire items on a normal school day (Pretest) and the mean attitude responses of male sixth-grade students to each of ten questionnaire items on a normal school day three weeks following the multidisciplinary outdoor environmental education experience (Posttest II).

Research Question Number Seven

Does the attitude held by female sixth-grade students toward their teachers, school, and themselves on each of ten questionnaire items change when a comparison is made between a normal school day and responses made in a normal school day three weeks following the multidisciplinary outdoor environmental education experience?

HO_7 There is no significant difference between the mean attitude responses of female sixth-grade students to each of ten questionnaire items on a normal school day (Pretest) and the mean attitude responses of female

sixth-grade students to each of ten questionnaire items on a normal school day three weeks following the multidisciplinary outdoor environmental education experience (Posttest II).

Definition of Terms

For the purposes of this study, the following definitions were used:

Multidisciplinary Outdoor Environmental Education Experience. This is a program in which students learn common school subject matters that are already taught in the classroom, but in this case are taught in an outdoor environment. In this setting, students learn such subject matter through real objects by touching, exploring, and manipulating. The activities in which students in this study participated were divided into four clusters according to Shaw and Mills (1981, p. 138) (see Appendix B).

Normal School Day. A normal school day is a day in which there was not any disruption or any other unusual events. According to Goodlad (1983), a normal school day is a day during which students mostly listen or work alone.

Attitude. Knapp (1972) defined the term "attitude" as "a person's favorable or unfavorable expression toward a class of objects or events. Attitudes are primarily characterized by evaluating human responses" (p. 26).

Major Assumptions

For the purposes of this study, the following assumptions were:

1) In view of a desirable procedure for teaching, multidisciplinary outdoor environmental education is considered an effective alternative for delivering the curriculum.

2) Elementary male students will be more interested in outdoor environmental education than will elementary grade female students.

3) Elementary school-age female students have a more positive attitude toward regular school in general than do elementary grade male students.

4) Elementary school-age students will have more opportunity for freedom to explore by themselves without adult intervention in an outdoor education experience.

5) Elementary school-age students will respond to the instrument willingly without feelings of pressure or personal threat.

6) All elementary school-age children need some degree of freedom to learn while they explore and manipulate.

7) Outdoor environmental education could solve some of the stereotypical problems that schools face in teaching male students in elementary schools.

Limitations

The same students were not always available at each of the three test times. Therefore the insufficient numbers of responses at the three test times created difficulty in determining a relationship between a normal school day before outdoor environmental education and a normal school day three weeks following outdoor environmental

education.

Administering the same questionnaire to obtain all three measurements (Pretest, Posttest I, and Posttest II) could provide inaccurate data. The students could remember answers given during the previous measurement.

Due to illness and absence some students did not respond to all three tests and, therefore, were eliminated from this study. These omissions could have had some influence on the outcome of the measurements.

Format for Succeeding Chapters

In Chapter I is an introduction for this study. It includes justification for the study, the purpose of the investigation, enumeration of the research questions and hypotheses, definition of terms, and major assumptions and limitations. In Chapter II the literature related to this study is reviewed. Chapter III is a discussion on the methods and procedures used in conducting the study. Chapter IV presents the data gathered through the use of a questionnaire which was administered to sixth-grade students. And, Chapter V provides a summary of the findings of the study as well as conclusions and recommendations.

CHAPTER II

REVIEW OF RELATED LITERATURE

The review of literature relating to the outdoor education experience is divided into six categories. These include a definition of "outdoor education"; a survey of outdoor environmental education; an analysis of the teacher's role; an examination of the effect of sex roles; a survey of the methods of nurturing self-concept; and a final summary. Each main category is followed by a short summation.

Outdoor Education Definition

The character of outdoor education varies. Classes may simply be held outside near the school. Although a metropolitan environment may not permit teachers casually to include outdoor education in lesson plans, an outdoor trip can be used to introduce a new subject and sometimes it can be used to reinforce previous lessons and classwork (Falk, 1977). But the particular character of outdoor education is that first-hand experiences are sought, as opposed to education with books, chalkboards, and the like. The schoolroom is abandoned for the "real world." As Falk (1977) states:

> A successful experience should have as its main objective the goal of maximizing the concrete aspects of the given subject matter to be taught, in order to provide each child with tangible examples for future discussions in the classroom. In this way, each outdoor trip becomes an integrated part of the total curriculum, not an isolated event in the lives of the children. (pp. 24-25)

Finding a site for outdoor education can be a problem, because as might be expected, not all schools were planned with nearby parks or wooded areas. Possible field trips could be arranged to a nature center, school camp, boy- or girl-scout camp, regional park, or research study area (Falk, 1977). Yet no matter the exact setting, the outdoor experience involves individual interaction with the environment. Falk (1977) describes a very free-form type of outdoor education, where a minimum of adult guidance is stressed:

> Working in small groups of four or five, children use sweep nets to measure animal diversity, pound nails into the ground with bricks to make comparative measurements of nail hardness, seine for organisms in the estuary, or compare the taste of Bay water with standards to determine salinity. All of these can be happening at the same time. These children are allowed to investigate the land and water of the Chesapeake Bay region at their own pace. (Falk, 1977, p. 25)

The opportunities for discovery in such a program are obviously numerous. The discussion by Sale and Lee (1972) of "percepts," as related to direct environmental education, emphasizes that it is through percepts, the impressions of a stimulus obtained through the sender, that a child learns about his surroundings. These impressions are combined "with mental images, verbal symbols, and related input to form concepts. For example, the child learns the concept 'dog' by feeling the animal's body, smelling its odor, hearing its bark, and seeing its wagging tail and other behavior" (Sale & Lee, 1972, p. 42). The outdoor environment is thus well-suited to develop children's perceptions toward natural resources because it provides a concrete example of items that cannot be matched in a classroom. Such experiences give children the abundant opportunity to develop percepts, which are important, because as the research of Piaget (1964) indicates, "a child's ability to work with the broad concept of space,

time, matter, and causation depends upon a type of learning that evolves from his direct sensory experiences" (Sale & Lee, 1972, p. 42).

Zjawin (1978) believes that teachers can find useful outdoor mathematical experiences, but these are difficult for children to integrate without aid from the instructor. Outdoor situations involving mathematics can be as casual as a school recess or a walk to a local park. There, the teacher helps young students use the materials and phenomena in the outdoor setting (man-made as well as natural) to develop some "real match sense" by learning that counting tree rings is useful for determining the age of trees, for example. Counting, measuring, and acquiring an awareness of geometric space are the three skills most directly developed, but awareness of the total environment may also have a more subtle impact. "As casual as these learning experiences may seem, they help children become aware of the world around them and realize that math, science, and art are very much related" (Zjawin, 1978, p. 93). Zjawin also recommends that students be urged to keep records of their discoveries, although on a very simple scale, a technique that may help develop powers of observation.

Patterson (1973) also conducted an outdoor mathematics class, finding it to be a tremendous motivational tool for students. "Using the body as a standard for measuring, they learn to estimate the height of trees, telephone poles, and the school building. They estimate distances and learn to pace off yardage, which gives them an idea of the size of many other concepts dealing with measurement" (1973, p. 4). Social studies sessions at Patterson's school made use of analogies between the lives of humans and other animals. "We have compared insect activities with human occupations. The lighting experts are

lightning bugs or fireflies; masons are dirt daubers, papermakers are wasps ..." (p. 4). Patterson makes a very favorable evaluation of these innovations in teaching: "We believe that our outdoor classroom can be a source of enrichment in every subject, and our goal is to guide the students in becoming aware of their environment and to instill in them a desire to use resources wisely" (1973, p. 4). Similarly, Serrin and Ellingson (1978), who formulated an outdoor education program, comment that "the quality of life will improve only when environmentally informed people act individually and feel that their actions count" (p. 104). Such decision making will be enhanced by their program, Serrin and Ellingson feel.

Almost all the writers on outdoor education say that it is difficult for students not to learn something during an outdoor experience, but that there is still a lack of awareness of how wide-ranging this education can be. If mathematics lessons thrive when held outdoors, then the more concrete sciences should also be able to thrive; the outdoors is the natural setting for biology or botany. As long as it is remembered that human intervention is obvious even in most "natural" settings--in everything from the benches in the park to the alteration of habitat in a nature preserve--then lessons of environmental impact can also be emphatically illustrated. Basically, as emphasized by Kellogg (1977):

> In outdoors, the books become alive and children experience highly motivated learning experiences thru the use of their senses of feeling, testing, touching, smelling, seeing, and learning. As the children create their classroom and then use it, they begin to see pattern and relationships between the books, themselves, and their environment, and thus they have a great desire to learn. (pp. 267-8)

Research on Outdoor Environmental Education

Some research on outdoor education focuses on introducing sensory awareness activities into the classroom. Hillocks and Kachur (1977) report that teachers at the University of Chicago conducted a program which showed that teachers can help students improve their writing skills by exposing them to details of taste, smell, sight, sound, and touch. "Students found the observation exercises used in the study intriguing and challenging, and the games helped kids develop the sensory awareness necessary to write better" (Hillocks & Kachur, 1977, p. 48). Students became more specific, creative, and better organized in their writing. Such research is applicable to outdoor environmental education as well, and it would be worthwhile for other investigators to study these applications directly.

Empirical investigations that deal specifically with outdoor environmental education are scarce. But papers by Huckestein (1976) and by Fletcher (1973) are relevant. Huckestein (1976) researched the effect of a sequence of outdoor camping experiences on fifth-grade students in Houston, Texas. Although a total of 9,000 children from various ethnic groups (black, Mexican-American, Caucasian, and others) participated in the camping experience, only 400 of these, selected randomly, were designated as the experimental group and compared with a control group of 100 noncamping students.

Three outdoor campsites were chosen which could each hold 120 students per week. Outdoor environment concepts were emphasized in these settings, including "knowledge and skills for intelligent environmental decision making and positive attitudes toward self, others, and the environment" (p. 161). The program developers wanted

to assess the "degree of the students' modification toward environmental awareness" and hence prepared a pre- and postexperience instrument for the purpose of measuring attitudes. Both the experimental and control groups were asked to complete the pre- and postquestionnaires, before and after the camping experiences, respectively. For the purpose of assessing whether any carryover from the outdoor experiences was evident, the experimental group was again requested to fill out the questionnaire three months later. Huckestein (1976) reports that "findings indicated that there were positive attitudinal changes as a result of the program" (p. 162).

The Toledo (Ohio) Public Schools conducted a program and study which focused on a five-day residential outdoor program (Fletcher, 1973). Both economically advantaged and disadvantaged males and females participated, and the study attempted to assess differences in the affective outcomes of the two student groups. Random samples of 25 advantaged males and females and 25 disadvantaged males and females were given pretests and posttests. These tests consisted of (a) the Nowicki-Strickland Locus of Control Test, which was intended to measure internal-external dimensions; (b) the All About Myself Scale, which was essentially self-evaluative; and (c) a questionnaire designed specifically to measure pre- and postcamp attitudes which was developed by the Toledo Public Schools' Office of Evaluation.

The Nowicki-Strickland scale was considered the most valuable indicator. Both the experimental groups were made more self-reliant and self-confident by the five-day program. Moreover, they exhibited a moderate improvement in their degree of cooperation with others; they liked camp, and wanted to return or stay longer. The study also

revealed that, unfortunately, the positive attitudes and values developed at camp only transferred to the classroom to a moderate extent. This finding might be taken to imply that the classroom environment cannot be counteracted by outdoor experiences unless the outdoor programs are a regularly repeated aspect of education.

Kranzer (1973) made a study of the changes in sixth-grade student behavior during a week-long camping experience. He concluded that there were some rapid changes in social and democratic behavior; moreover, critical thinking in low-ability students improved slightly. These changes might have been attributed to the freeing of learning from the institutional setting, but more investigation is needed before this conclusion can be verified (Kranzer, 1973).

Garuba studied an outdoor program that was in progress from 1975 to 1978. Garuba's 1978 survey of 251 sixth-grade students from the same school in Stillwater, Oklahoma that was investigated in the present study, generated the questions guiding the present investigation. The first survey of the total sixth-grade population by Garuba showed considerable positive gains by students following the outdoor experiences, but there was no evidence identifying the nature of the students whose perceptions had a positive change. And in Garuba's second survey of the total sixth-grade population, considerable positive change of involved and uninvolved students was found, but there was no evidence identifying the role of differences in sex and their perception toward multidisciplinary outdoor environmental programs.

Teacher's Role

In keeping with the humanistic background of outdoor environmental education theory, the role of the teacher as a facilitator rather than an authority who tries to dictate knowledge is emphasized in much of the literature. Moustakas feels that it is important for the teacher to create an "atmosphere in which the experience of freedom is facilitated and encouraged" (1967, p. 11). Individual human development will be stifled as long as the child does not experience a freedom to be. Likewise, Clark and Kadis (1971) write: "The best we can do as educators is to encourage students to do their own learning so they will not have to depend solely upon teachers" (p. 51). A similar approach is taken by Armstrong (1973):

> Method must be based upon motive. There can be no method in the absence of aim and object. The question is, what should we aim at in educating the child? This is the question which is commonly left out of account. The general course seems to be merely to follow stereotyped instructions. Such thoughtless teaching is useless. (p. 123)

The literature reflects a general concensus that the goal of the environmental education teacher is to develop the individual potential of the child. In doing so, the greatest task may be to undo the habit of passivity that many school children have developed. And a prerequisite for this task is to understand the nature of motivation and to develop techniques for eliciting motivation.

Griggs (1978) points out some principles relating to motivation. First is that one's values, interests, feelings about self, personal goals, past experiences, and the present learning environment, all interact in the formation of a motivation to learn. Providing a stimulating learning environment thus has an effect on motivation, both

in the immediate present and in the future insofar as the experiences persist in the child's mind. Second, "when students perceive some usefulness in the content, they will be more likely to want to learn" (p. 60). The teacher should become experienced in pointing out the connectedness of things, the interrelations and effects in the environment that have meaning in the lives of the students. A third point is that "students' motivation is likely to be increased when the learning task requires mental and physical participation" (p. 60). Students should be encouraged to interact directly with nature during their outdoor experiences. They should touch the trees and peel apart a leaf, not just look at them. They should be stimulated to think about the meaning and function of what they see. Also, they should not be placed in an environment that is already so familiar that they are bored and do not feel the need for mental participation:

> For each individual there is a level of environmental complexity to which it has become accustomed. Further commerce with stimuli of this complexity level is rather boring, since the individual has already learned about stimulation at this level of complexity. (Arkes & Garske, 1977, p. 146)

Finally, curiosity should be seen as an important precursor to motivation. The teacher should be alert to the child's natural curiosity and learn to reinforce it. Skinner (1978) also discusses the teacher's role in dealing with student's curiosity:

> Teachers can work to arrange learning experiences based on a characteristic of our species--we are reinforced by successful actions on the environment. Therefore, the teacher should create the maximum amount of reinforcement for the student by allowing him to be successful in manipulating the world. (p. 12)

Purkey takes a different approach and points out that many researchers believe that the maintenance and enhancement of the perceived self may be the motive behind all behavior. "If this is so,

then it follows that there is only one kind of motivation that each and every human being has at all times, in all places, and when engaged in any activity" (1970, p. 12). The implication is that the wise teacher will be attuned to the significance of the relationship between a student's self-concept and his performance in school. The teacher who tries to make the students feel good about themselves and their abilities will be helping them succeed (Purkey, 1970).

Kohl conducted a study (1977) that provides an excellent illustration of the effect of a teacher's approach to conducting discussion sessions on actual success in eliciting student participation. With the goal of getting students to speculate about different definitions of a sound, three approaches were taken. The first was for the teacher to confront the class with the question: "What is a sound?" Results were disappointing, for no one in the group would attempt an answer. The second approach was as follows: "The teacher introduced the concept of sound by playing different pitched notes on the flute and piano and asking them a variety of questions. There was little enthusiasm. They seemed to have no interest in the sounds and answered questions briefly" (Kohl, 1977, p. 17). The third approach was most valuable:

> ...the teacher asked each student to pick a bottle and make a sound with it. She asked them not to use anything but their hands or breath. All students started right in. Some began to blow into the bottles, others flicked them with fingernails... After the students had been exploring possibilities for a few minutes, the teacher asked her first question. 'What kinds of sounds did you make? How did you make it?' (Kohl, 1977, pp. 17).

Class response was excellent, with many students wanting to attempt an answer.

A further point can be made. As Purkey (1970) notes, the teacher will not make such progress in developing the abilities and curiosity of students if he/she conveys the impression that he/she is an expert. This attitude produces a continual apprehension in the young people that they will be judged negatively if their guesses about the nature of objects being discussed are wrong. This is a threat to the self-esteem that they need to retain so badly (Purkey, 1970).

The teacher's approach, of course, should vary in accordance with the characteristics of the student population. In a project described by Hillier (1971), the task of effectively teaching a group of below average achievers was attempted. Goals were to enable students to: (a) perceive and develop an awareness of the environment; (b) relate to his or her environment; (c) manipulate and change the environment; and (d) conduct experiments on environmental projects within the classroom (Hillier, 1971). Within a limited budget, a project was launched that was primarily field-oriented, with very little student research or written work. The perceived result was a positive change in the students' attitudes toward interest in the subject matter and the environment. With a student group which exhibited higher degrees of motivation and achievement, the teacher could place more emphasis on integrating the field experiences with individual or group research and written work, maximizing the positive effect of the learning situation without necessarily devaluing the experience.

In many respects, the task of the teacher in an outdoor environment is similar to his/her task in an indoor environment, with the difference that he/she must learn to guide the student to knowledge in a setting with stimuli far more diverse than in the classroom.

Curris (1975, p. 6) points out that "the teacher must often be shown that there is nothing to fear outside the classroom, that the trust established between the teacher and student in the classroom continues just as well in the outdoors." Moreover, "the use of outdoor laboratories is unlimited and knows no discipline boundaries. Education truly becomes interdisciplinary in an outdoor classroom" (Curris, 1975, p. 6). So the teacher must set goals, learn when guidance is needed and when it is intrusive and, above all, let students experience the environment directly.

Sex Roles

Because the system of education in the United States plays a significant role in conditioning sex roles in young people as they grow, outdoor environmental education can possibly have a significant effect in preventing some negative aspects of such conditioning. Examination of sex role research, therefore, is important in defining the potential role that outdoor education might play in altering negative influence.

The influence of sex on child-rearing is omnipresent, not just in the schools. Adults, including both teachers and parents, view children of different sexes in correspondingly different ways, and their expectations work to shape the youngsters' behavior according to what is perceived in the adult world as "appropriate" for each sex. The most common stereotypes which emerged in research by Maccoby and Jacklin (1974) were that girls are more fragile than boys, easily frightened, soft, clean, quiet, well-mannered, helpful, and sensitive to the feelings of others, whereas boys are more aggressive than girls,

adventuresome, noisy, and competitive. School-aged children are significantly influenced by the stereotypes of society, so an examination of these concepts is worthwhile.

The individual who has a sex role identity has an internal standard of "masculinity" or "femininity" to which his or her behavior is to be matched. This standard is a relatively consistent behavior guideline, a significant component of personality (Kagan, 1964, pp. 137-38). Each male and female, to varying degrees, desires to possess the external attributes belonging to his or her sex role identity and, therefore, avoids any behaviors or items that are "sex-typed" as belonging to the opposite gender. As Kagan points out, boys and girls possess many different standards (e.g., cleanliness or honesty), but it is the sex role standard that "dictates the adoption of different responses for boys and girls" (1964, p. 138). The sex role standard is a "learned association between selected attributes, behaviors, and attitudes, on the one hand, and the concepts male and female, on the other" (Kagan, 1964, p. 138).

By the time a child enters school, his or her sex role standards are already becoming part of the child's character. At this point, he/she is directly exposed to his/her peers and, hence to the wider culture's definition of the sex roles. This exposure encourages the child to shift more from the masculine and feminine model of his/her parents to the community standards (Kagan, 1964, p. 145). Many attempts have been made to study the school-aged child from this sex-typing perspective.

As a teacher, the educator must be aware of the ways in which sex role awareness interacts with the school environment. Any actions that result in consequent handicaps for male or female children should be consciously minimized. Kagan's research suggests that one approach would be to cultivate a "sex-neutral attitude" toward various subject matters. This may be a quite difficult task.

The sobering evidence has tended to show that sex-specific educational handicaps do exist. For example, male children in the U.S. rapidly fall behind female children in their reading abilities. Some writers have hypothesized that greater achievement in verbal skills by elementary school females may be partly attributed to the "feminine" environment of the classroom. Evidence indicates that female teachers, at least in middle-class schools, approve of female sex-typed behavior, such as dependence, in both boys and girls (Levitin & Chananie, 1972). Etaugh and Hughes (1975) found that male, as well as female, teachers in both lower- and middle-class school settings clearly tend to approve of dependency more than aggression for both boys and girls:

> Male teachers showed even greater approval of dependency than did female teachers. These data suggest that male teachers are at least as likely as females to reinforce a characteristically feminine behavior. (Etaugh & Hughyes, 1975, p. 394)

Moreover, teachers at the elementary school level are predominantly female, and the exposure to only female role models when learning such activities as reading can be a hindrance for the boys. It is notable that evidence points to a partial cultural determination of sex differences in reading. First, Johnson (1973) found that English and Nigerian boys surpassed girls in reading skills, a contrast to findings in the U.S. and Canada that show girls are better readers than boys. Second, German elementary school teachers are mostly male

and reading and learning are seen as male-appropriate. Thus the boys in Germany exceed girls in reading ability at the elementary school level (Dwyer, 1973). According to Finn, exceptions to the female superiority role are explained by the differentiation of skills:

> There is a definite tendency for boys to accelerate in the accumulation of vocabulary and general knowledge relative to their female peers, a pattern found also in Sweden. Nevertheless, the knowledge appears not to affect boys' ability to study and understand written passages. (Finn, 1980, p. 10)

In general, it seems that a school setting dominated by feminine values may not only result in boys achieving less, but in boys coming to be seen by teachers as naturally poorer readers than girls (Austin et al., 1971; Stanchfield, 1968). As long as such differential expectations are held, a cycle is perpetuated which results in different performance levels (Finn, 1980). Finn reports that some investigations found that boys received more disapproval and criticism from their teachers than girls, even at times "in spite of producing more correct answers" (Finn, 1980, p. 11).

Troubles with school start as early as the first grade level:

> Boys are less mature, and their impulsive and aggressive qualities threaten authority. Their higher impulse level requires greater inhibition in order for them to quietly concentrate and learn. There is more early stress on boys to conform to a sex model: thus the active boy has to restrain himself in order to do problem solving ... while the passive boy is rejected by his peers. (Bardwick, 1971, p. 104)

Bardwick also points out that some areas in which males tend to excel--space manipulation, for example--are not incorporated in the school curriculum as appropriate problem sets. In general, therefore, "the stress from the culture is greater on boys and the capacity for resolution is less" (Bardwick, 1971, p. 105).

Also, the fact that brain differences exist between males and females cannot be ignored. Restak (1979) believes that there are some explanations why 95% of hyperactive students are male. Teachers describe hyperactive males: "He can't sit still, can't write legibly, is always trying to take things apart..." (p. 230). Restak (1979) explains that because the male brain is visual, males tend to be more clumsy in fine hand coordination, and they learn by manipulation. Part of the problem may be simply that males are often more muscularly active than females at the elementary school level: "The experience of being with a group of 8- to 9-year old boys is illuminating. They fight, run, jump, hit, twitch, climb, and in all manner of ways ignore the demands of authority to 'cool it'" (Bardwick, 1971, p. 101).

In a classroom setting, the tendencies of teachers to impose different standards on males and females can be exhibited too often. For example, the pressures on males to demonstrate their adventuresome and physically vigorous side can emerge in the classroom as aggressiveness, which has been shown to be more common in elementary school males than females (Serbin et al., 1973, p. 796). Specifically, teachers:

> ...respond to the disruptive behavior of boys three times more often than to the disruptive behavior of girls. Thus teachers appeared to notice and negatively reinforce aggression in boys more than in girls. (Serbin et al., 1973, p. 796)

The frequency of punishment for aggressiveness may make the school environment generally more unpleasant for male children and may influence their whole attitude toward education. Haladyna and Thomas (1979) studied the attitude of elementary schoolchildren toward school and school subjects; they found that the most predictable boy-girl

difference was that "attitudes toward school declined more drastically for boys than for girls" (p. 18).

Of course, it would be misleading to imply that all the problems of sex-typing in schools are detrimental to male children. Females have more long-term and stubborn forms of discrimination with which to deal. Just when females excel in reading skills at the elementary level, they are already falling behind in science and mathematics.

> Boys traditionally excel in science topics such as physics and chemistry, introduced in Western schools at a relatively late grade, while girls do not generally achieve as well ... Girls have poorer attitudes toward science as a school subject and do not take it as often when given a choice ... Ultimately, women do not become scientists as often as men do, even in Sweden, a country with egalitarian goals. (Finn, 1980, p. 11)

What is in the atmosphere of schools that allows such discrepancies to continue? For one thing, girls also have problems with discriminatory treatment by teachers. Serbin et al. (1973) found that teachers respond more frequently to boys than to girls in all classroom activities and also tend to reward the girls for staying close to the teacher by paying more attention to them when they are close than when they are farther away. This behavior can encourage female passivity and dependence. Also, the combination of these emerging traits in the classroom can widen the gap between males and females and can build early sex stereotypes in young children's minds. "In the U.S., knowledge of sex-trait stereotypes was found to develop in a linear fashion between the ages of 5-11, with more male traits than female traits being known at each age level" (Best et al., 1977, p. 1378). The growing tendency is to sex-stereotype in the traditional way, as the teacher becomes another characteristic of the classroom environment. Transferring the educational environment to an outdoor

setting may or may not lessen this sex-specific conditioning by the teacher, but the issue is worth examining.

The school environment is full of objects and tools that reinforce traditional sex roles or influence the students in sex-specific ways. One obvious example is that females are underrepresented in much educational material (Weitzman & Rizzo, 1975). Weitzman and Rizzo point out that females are relatively uncommon in mathematics textbooks: "Story problems tend to be about males, unless they involve 'feminine' activities such as cooking or sewing, and masculine language is used" (1975, p. 26). Students' performance on problems may vary in quality if the problem content is sex-appropriate. Milton (1959) presented a set of problems of which 50% were oriented toward typical female roles. Females performed better on problems which featured females as the subjects, whereas "male achievement was not affected by the problem content" (Milton, 1959, pp. 705-08). Because such subtle influences may have a long-term impact which restricts childrens' growth in stereotyped ways and, hence, denies them an environment in which they are free to develop all their capacities fully, they must be guarded against. Utilizing the outdoor environment to teach subjects such as mathematics may be beneficial by minimizing these subtle sex differences in the educational materials.

If aspects of the school environment are to be used to promote maximum positive identity formation for each female and male student, one must understand how the schools further sexism. One important change would be to minimize stereotypes in instructional settings. An outdoor environment enables the teacher to counteract the "feminine" atmosphere that is so often found in the schoolroom and provides an

outlet for male students' motor activity, enabling both teacher and child to focus more upon learning than upon discipline problems. An outdoor environment exposes pupils to a range of subject matter that is relatively sex-neutral. Moreover, an effectively developed outdoor environmental education program can stress the development of each student's skills for choosing and solving problems, because it is more individually geared than conventional classrooms. Lastly, the outdoor environment may serve to increase a student's self-knowledge in a way that lessens the distance between the different sexes and increases the common human elements. All of these characteristics are cited by Minuchin (in Finn, 1980) as being important to improving the role of schools in sex-identity formation.

Societal changes are currently supportive of selected changes in sexual identity, and this trend is already showing up in some research data. Bachtold (1979) compared studies in the 1950s, 1960s and late 1970s and found that female students are less and less interested in such sedentary games as doll play. There is a shift from interest in purely academic subjects such as language arts and mathematics to interest in physical education and "involvement in motor activities--preferably group-related and competitive" (p. 202). "More Seventies girls at ages nine and eleven named sports as their hobby than did the girls a decade earlier. In addition, more girls age nine specified swimming as their hobby and fewer girls age eleven named a sedentary game" (Bachtold, 1979, p. 202). Females also show increasing interest in science and mathematics as compared to past generations. As such gains are made, the school decision-makers should strive to continue such development. Hopefully, outdoor environmental education

is one of the options they will explore in the future.

Research to determine differential gender responses to new outdoor environmental education programs is definitely needed. Investigators, however, would be prudent to remember some of the points made in this section: that it is hard to measure and integrate data on sex differences, that the data are hard to explain due to the complexity of the issues involved, and that sex-role identity is very pervasive and persistent. It is unfortunate that sex difference data often emerge in the course of other investigations and are not examined as rigorously as would be the case if sex differences were the central concern. Clearly, we have not yet reached the point where we can predict the degree of gender-channeling in new educational settings.

Self-Concept

"Self-concept" is a rather global term and although the literature is full of references to self-concept, the approaches to conceptualizing it vary somewhat. The outdoor curriculum planner should attempt to develop a clear picture of what self-concept means so it can be consciously taken into account in the formulation of projects. Conoley, Adams, and Conoley (1981) explain their use of the word as follows: "Children have a variety of attitudes and feelings that reflect the interactions and the feedback within the immediate culture. This accumulation of self-data ... is a scheme that represents the feelings a person has from one day to the next and from one situation to the next similar situation" (p. 7). Because environments vary, the perceptions surrounding the environments also vary, resulting in such potentially overlapping categories as a school

self-concept, a playground self-concept, a home self-concept, a bike-riding self-concept, and so on. The self-concept developed in association with outdoor environmental education will, it follows, overlap with the self-concept centering around the classroom. Conoley et al. view the Gestalt of the whole self as made from the range of separate self-concepts that each of us possesses.

Beane (1982) agrees with the multidimensional view of self-concept. He writes that self-perceptions "consist of our self-feelings regarding the many roles we play and how competent we feel in them, as well as our views of various personal attributes such as physical features" (p. 504). Self-concept and self-esteem thus refer to a collage of self-views of oneself such as peer, son, daughter, or student. However, the "self-concept" that the academic researcher generally looks at is more specific:

> Where correlations between self-concept/esteem and academic achievement reach significance, the researcher most often is looking at self-concept of ability in academics generally or in the specific subject area of study; that is, how well the individual thinks he or she can do in that area. (Beane, 1982, p. 504)

The most common references to self-concept in educational literature center around "social" self-concept, "academic" self-concept, and "global" self-concept. The question of how much a "global" self-concept affects specific types of self-perception is problematic. However, there seems to be a consensus that various types of self-concept are independent. For example, Samuels (1977) points out that children may have a positive social self-concept and a negative academic self-concept and vice versa. This difference may result from an unnecessary partitioning of experience, though if outdoor educational experiences can blend social and academic work,

they may help effect a less rigid boundary between these social and academic self-concepts. Another commonly accepted finding is that the relatively objective performance of a child, socially or academically, does not necessarily correlate with the subjective self-concept. Samuels notes: "Children may actually be good students or have friends, but may perceive themselves as not having a positive academic or social self-concept" (p. 117). Samuels believes that children with negative self-perception, either globally or in the academic or social dimensions of self-concept, probably experience more anxiety and tend to achieve less or avoid involvement in social experience (p. 117).

The importance of self-concept partly derives from the "vicious cycle" effect developed when a child has a poor self-concept. Research indicates that a child with good feelings about him-/herself often is well-adjusted socially and has a high degree of peer acceptance; this social acceptance, in turn, tends to increase the positive self-concept. A child with poor self-concept, however, tends to be more uncomfortable in social situations and to seek them out to a lesser extent. He or she cannot then encounter experiences that will reverse his/her poor self-concept (Samuels, 1977, p. 112). Much research has been devoted to establishing the extent to which a similar vicious cycle applies in the area of poor self-concept. There is significant potential in outdoor educational experiences for encouraging participation that might stop this cycle. A child would have less of a burden in individually seeking out-of-classroom contact.

A review of the literature on the subject suggests that both researchers and educators should attempt to assess student self-concepts as sensitively as possible. Evaluation of student

self-concepts involves making use of both self-report and observation, but, as Purkey (1970) points out, the complexity and multidimensionality of a self-concept makes it "many times more difficult to assess than is some tangible object," (p. 11) and one should not be too quick to make inferences about "the student's self." Samuels (1977) also warns against over-simplification. She suggests working on a self-concept profile for each student. "Assets and liabilities vary in intensity and in kind with children falling on a continuum in self-concept, some having problems in all areas and some in a few" (p. 184). From observation, the researcher has to focus on the specific dimensions for each child and then try to develop a profile that is accurate. Of course, researchers may not succeed in developing truthful self-concept profiles for their subjects; their studies are often limited by this fact.

Many writers emphasize that the school is a very influential part of a child's life in the formation of his or her self-concept. Felker (1974) points out that school affects the child in multiple ways: by the environment, the teacher-student interaction, the peer group. The choice of school curriculum (Hudson, 1968; Herman, 1971), traditional or modern approach to learning (Minuchin, 1969), and out-of-school activities (Beker, 1960; Clifford & Clifford, 1967; Payne, 1970), all have a relationship to self-concept. Hudson, for example, found that arts students perceived themselves as warm, imaginative, and exciting, whereas science students saw themselves as cold, dull, and unimaginative (cited in Thomas, 1973, p. 16). To understand the dynamics of self-concept, Felker (1974) says, the educator must take into account the significance that society attributes to the

intellectual activities of school. "It is these activities which society has determined to be the major reason for the existence of schools. The importance of intellectual mastery is conveyed to the child by much of what society does" (p. 62). Felker believes that ignoring the intellectual concerns in order to deal with behavioral or emotional difficulties only compounds the problems of children:

> Children know that they are supposed to be learning in school, and, if the school neglects this learning while attempting to deal with other problems, this perception increases the guilt and feelings of failure which characterize children with low self-images. (p. 62)

In general, intellectual concerns take on greater significance than they did before school because they predominate in school. Difficulty in mastering the assignments and lessons given in school add to feelings of incompetence, whether these difficulties result from slow learning or from inadequate adjustment to the restrictive and rather passive behavior patterns required in most school situations. It is by improving this adjustment that outdoor environmental education can help, as it minimizes the restrictive and passive aspects of the classroom. Beker (1960) observed positive changes in self-concept in children from school camps compared with a control group of non-campers. In 1967 Clifford and Clifford studied the self-concept of students in Outward Bound courses; these boys felt "more worthy and competent and exhibited less discrepancy between self and ideal self" (in Thomas, 1973, p. 16).

Felker believes that a major part of self-concept development is the acquisition of a system for dealing with incompetencies and failures. This achievement is intrinsic to the learning process. Unfortunately, although the possibility of competence increases in

school, there is a simultaneous increase in the possibility of feelings of incompetence. These negative feelings are made worse by the fact that the goals of the school are not determined by the child--they are external to him or her. In Felker's words, "the child is thrust into a situation which is highly evaluative and over which he exercises very little control" (p. 61).

The emphasis on student-directed activities in outdoor environment education is an attempt to address this problem. The teacher should realize how many times every day a child is evaluated, either directly or by indirect comparison with the others in the group who are doing the same thing. Such evaluation can be very anxiety-provoking. The activities of school may be unrewarding for some children and may do much to damage their self-concept. It is a hard situation for the child who experiences difficulty in gaining competence but is still required to engage in the assigned activities. In fact, a study by Stanwyck (1972) at a suburban middle-class school evaluated self-concepts and found a steady downward trend from grades 2 through 8 (cited in Felker, 1974). Felker views this trend as evidence that the schools do not meet the problem of enhancing self-concept. Beane (1982) points out that a child under stress in school may develop feelings of inadequacy and self-doubt due to punitive sanctions, stereotypes, and other features of the curriculum, both hidden and unhidden. Such psychological or physiological stress may result in lowered academic achievement as a whole. "At this level, academic achievement may be facilitated by making the students feel comfortable and secure in school" (Beane, 1982, p. 505).

Including outdoor teaching is a worthwhile technique by which to achieve this positive reinforcement. Because the self-concept of ability in any particular area is multiply determined, previous success or lack of success is not its only cause. Obstacles such as "hidden curriculum features in the specific situation, such as teacher expectations, class climate and the like" may enter into students' feelings of negative self-image (Beane, 1982, p. 505). Clearly, attempts to escape the hidden influence of class climate without leaving the classroom are difficult.

Thomas (1973) describes a number of studies that indicate children with learning problems have a poor self-concept. The opportunity for academic achievement encourages development of an adequate self-concept. The teacher has a role in intervening in such cases, and there are "benefits to be obtained from greater knowledge of self-attitudes in children with learning difficulties" (p. 13).

Many recommendations about improving student self-concept are found in the literature. Conoley et al. emphasize the importance of exhibiting unconditional acceptance: "The teacher interacts positively with a student no matter what behavior is demonstrated. The child is accepted while either reinforcing or intervening with his behavior" (p. 8). This acceptance is to free the student of the fear of teacher rejection. Conolely et al. stress the fostering of an optimistic attitude in class by teachers assuming that "all students have potential beyond our knowledge" (p. 8), promoting involvement by allowing a child to freely choose from among a variety of carefully planned activities, and encouraging nontrivial positive experiences so that when a child succeeds he or she feels it is genuine and he/she can

feel responsible for the success. The same principles apply to selection of outdoor curricular experiences. Purkey (1970) hopes teachers will understand that "a backlog of challenge, freedom, respect, warmth, control, and success develops positive self-images in students and encourages academic achievement" (p. 56).

Samuels (1977) summarizes her recommendations as follows: (a) Set standards of excellence that are realistic, (b) eliminate excessive failure experiences, (c) create situations that will make success likely, and (d) increase intrinsic motivation. These steps tend to increase a student's self-concept and allow him/her to be more open to new experiences. Samuels also emphasizes the role of the teacher: What is taught is often less important than how it is taught, because the attitudes of a teacher permeate all aspects of the school curriculum. The positive effect of chosen outdoor activities on teacher attitudes and behavior has significance. The teacher also serves as an important role model: "If a child perceives herself negatively and this is reinforced by the teacher, the child's peers will more likely model his/her behavior and also treat the child negatively" (p. 184).

Thomas (1973) recommends a "modern" curriculum that includes out-of-school activities. He cites several studies that indicate positive changes in student self-concept due to such changes in school programs. Bybee's (1974) approach is similar. He urges that science teachers need to build their programs in environments that are familiar to students. A positive self-concept will emerge through accumulated social contacts and real-world experiences in which the individual student sees himself or herself as able, adequate, and successful.

Bybee summarizes as follows:

> Allow the students to study their environment; get them out of the classroom and have them observe their surroundings. Encourage the students to study something of interest to them, even if you have to first focus attention on various aspects of the environment. As the students develop interests, allow them to pursue these interests while you extend and enlarge upon their experiences through guidance and consultation. (p. 24)

The issue of student self-concept is complex but important. The relationship of outdoor environmental education to self-concept can be significant in creating a greater degree of academic achievement. Obviously, the connection is worth studying.

Summary

Although outdoor education takes many different forms, it is characterized by teachers and students who seek out first-hand experiences and direct interactions with the environment. The outdoor activities can be restricted to the daytime hours and to areas near the school, or they can consist of overnight camping in relatively distant areas. The outdoor experiences can be free-form and unstructured, or they can be carefully planned by teachers and students together. Outdoor experiences can be so extremely useful in motivating and teaching students that they should be integrated into a multidisciplinary curriculum on a regular basis. It is unfortunate that some administrators, parents, and teachers do not consider outdoor environmental education to be worthwhile (Stevens, 1969, p. 61).

Many benefits can be attained from outdoor environmental education, for it can educate students in how to do their own research, can revive tradition and culture, and can relate concrete experiences in the world with abstract skills such as reading and mathematics. By

removing students from the restrictive and passive constraints of the classroom and from the hidden sex-stereotyped influences in the classroom that may inhibit boys' education, outdoor education can enhance student self-concepts. It can also enhance self-concept by encouraging student involvement and exploration. However, the most important benefit of outdoor experiences is that they can develop the students' understanding of ecological concepts and processes, educating them to value and care for the world they live in. Of course, the desired effect of such experiences cannot be seen because the contribution of each school child toward improving the environment cannot be empirically measured. However, educators can institute outdoor environmental education as a preventive way of handling the problems of man interacting with environment. There is hope that knowing the outdoors and understanding how each person fits into it will make the students more responsible and aware of the world.

Research into the benefits of outdoor environmental education is an essential part of the educator's task, for planning of effective programs requires an understanding of how these programs work. Teachers must learn when they are needed as facilitators and when their students should be left alone. They need information on how effectively to adjust their classroom techniques to an outdoor setting. Education needs to be extended beyond the classroom and made more realistic, thus ways of conducting rewarding lessons in the natural laboratory must be elaborated. Utilizing the outdoor classroom fully, however, requires a deeper understanding of the effect of such experiences, especially in the area of attitudinal change among students.

Although preliminary research indicates that students develop more positive attitudes toward school and self after participating in outdoor environmental educational experiences, there is a need for more well-organized empirical data. Because sex role perceptions can have an influence on students' reactions to outdoor programs, and because the importance of sex-specific behaviors and stereotypes is currently entering public awareness, the present study examines the effect of sex on student response to multidisciplinary outdoor environmental education experiences.

CHAPTER III

RESEARCH METHODOLOGY

Introduction

The method for selecting the subjects and a description of the subjects investigated are outlined in this chapter. In addition, the instrumentation is described, and the procedures for collecting the data are documented. Lastly, the method of analyzing the data is explained.

Description of the Subjects

The subjects were a total population of sixth-grade students at a middle school which is located in a midwestern city (Stillwater, Oklahoma). Of the total population of 314 students, 165 were male and 149 were female. These participants were divided into three groups, and each group was transported by bus to an outdoor lake area for one full day where they participated in four types of activities, based upon the design established by Shaw and Mills (see Appendix B).

The selection of students to be in each of the three groups was conducted by the school administration, corresponding for the most part with classroom groups at the school. No strict criteria were therefore applied for choosing the different groups, but the group sizes were roughly equivalent and a representative balance of different sexes.

Initially, of the total number of students, 138 female students

and 142 male students completed the questionnaire one week before the outdoor environmental education experience began (Pretest). Then, one hundred and twenty-seven female students and 146 male students completed the questionnaire on the day of the outdoor environmental education experience (Posttest I). Finally, one hundred and fifteen female students and 115 male students completed the questionnaire three weeks following the outdoor environmental education experience (Posttest II).

Instrumentation

The instrument that was administered to the subjects was a ten-item questionnaire which been modified from the research of Garuba (1978) and Shaw and Mills (1981) (see Appendix A). Originally, this questionnaire had been adapted from two previous instruments developed by Fox, Luszki, and Schmuck (1966) and from two of six instruments developed by Cooper and Cooper (1976). According to Shaw and Mills (1981), items one and six of the questionnaire measure the students' degree of participation. Items seven through ten measure the students' relationships with their teachers. Items two through five measure the level of school activities.

The content validity of the instrument was established by Cooper and Cooper (1976) and Fox (1966). Ary (1972) indicated that satisfactory reliability coefficients are .70 and above. The reliability formula used for this instrument was the Kuder-Richardson 20, with a reliability coefficient of .76 (Shaw & Mills, 1981).

This instrument was selected as an appropriate inventory to show students' general attitudes toward school at the elementary level. The data collected for this study were derived by administering this instrument three times: Pretest, a week before the outdoor experience; Posttest I, the day of the experience; and Posttest II, three weeks after the outdoor experience.

Students were asked to respond to each item. The items were presented on a Likert-type scale with a range of four high-to-low choices.

Collection of Data

The study was begun in September 1979 and terminated in October 1979. The collection of data was completed in October, 1979 by administration of Posttest II.

The questionnaire (Appendix A) was first distributed and administered by the teachers to the sixth-grade male and female students (Pretest) in the Stillwater Middle School in the Fall of 1979, one week before the students participated in a multidisciplinary outdoor environmental education experience. The Pretest was given at the end of a regular school day.

Next, a questionnaire identical to the one used in the Pretest was employed in Posttest I by the researcher, and administered at the end of the day on which students participated in the multidisciplinary outdoor environmental education experience at Camp Redlands, Lake Carl Blackwell. Testing was done at the outdoor lake area before the students boarded the bus to return to the school.

Last, the third test, Posttest II, was given by the teachers three weeks following the outdoor environmental education experience. This test was identical to the one given in the two previous tests, and it was administered to the students at the end of a normal school day.

Analysis of the Data

The data from all three tests were computed and keypunched on computer cards and analyzed. A t test was used to measure significant differences in the mean attitude responses of the male and female sixth-grade students. Chi-square analysis was used to measure the significance of the male and female frequency of responses (Ary et al., 1972). A 0.05 level of significance was used to reject the null hypothesis.

CHAPTER IV

RESULTS OF THE STUDY

The results from the three tests administered to subjects who participated in the multidisciplinary outdoor environmental education experience are reported in this chapter. The data were obtained from a comparison of responses to the ten-item questionnaire (Appendix A) that was administered one week prior to the outdoor education experience, the day of the experience, and again three weeks after the experience.

Research Question Number One

1. What is the difference between the sixth-grade male and female students attitude toward their teachers, school, and themselves on a normal school day?

HO_1 There is no significant difference between the mean of attitude responses of male and female sixth-graders on a normal school day (Pretest).

The t-test values comparing mean differences in attitudinal responses of male and female students on a regular school day (Pretest) are shown in Table I. Reported are mean, degree of freedom, and level of significance. A 0.05 level of significance was used to reject the null hypothesis.

The data in Table I indicate that there are significant differences between males' and females' perception toward the schools, teachers, and themselves on a regular school day (Pretest). Overall,

females' responses were more positive than males' responses. Therefore, the null hypothesis, that there is no significant difference between the mean of attitude responses of male and female sixth-graders to a normal school day (Pretest), was rejected at the level of significance of 0.0002.

TABLE I

T-TEST RESULTS REFLECTING DIFFERENCES IN MEAN ATTITUDINAL RESPONSES OF MALE AND FEMALE STUDENTS TO PRETEST

Sex	N	$\overline{X}$	Variance	t	df	Level of Significance $p \leq .05$
F	138	31.93	Unequal	3.84	278	0.0002
M	142	29.85				

$p > F^1 = 0.0006 \leq .05$ unequal variances.

The significant value of 0.0002 calls for rejection of the null hypothesis.

Research Question Number Two

2. What is the difference between the sixth-grade male and female students' attitude toward their teachers, school, and themselves immediately after a one-day multidisciplinary outdoor environmental education experience?

HO_2 - There is no significant difference between the mean attitude responses of male and female sixth graders following a one-day multidisciplinary outdoor environmental education experience (Posttest I).

The t-test values comparing mean differences in responses of male and female students following a one-day multidisciplinary outdoor environmental education experience (Posttest I) are shown in Table II. Reported are mean degree of freedom and level of significance.

TABLE II

T-TEST RESULTS REFLECTING DIFFERENCES IN MEAN ATTITUDINAL RESPONSES OF MALE AND FEMALE STUDENTS TO POSTTEST I

Sex	N	$\overline{X}$	Variance	t	df	Level of Significance $p \leq 0.05$
F	127	34.59	Unequal	4.16	271	0.0001
M	146	36.47				

$p > F^1 = 0.0232 \leq 0.05$ unequal variance.

The significant value of 0.0001 calls for rejection of the null hypothesis.

The data in Table II indicate that there are significant differences between males' and females' perception toward the school, teachers, and themselves after a multidisciplinary outdoor program (Posttest I). Generally, males' responses were more positive than females' responses. Therefore, the null hypothesis, that there is no significant difference between the mean attitude responses of male and female sixth-graders following a one-day multidisciplinary outdoor environmental education experience (Posttest I), was rejected at the level of significance of 0.0001.

Research Question Number Three

3. What is the difference between the sixth-grade male and female students' attitude toward their teachers, school, and themselves on a normal school day three weeks following the multidisciplinary outdoor environmental education experience?

HO_3 - There is no significant difference between the mean responses of male and female sixth graders made at the end of a normal school day three weeks following multi-disciplinary outdoor environmental education experience (Posttest II).

The t-test values comparing mean differences in attitudinal responses of male and female students three weeks following a multidisciplinary outdoor environmental education experience (Posttest II) are shown in Table III. Reported are mean, degree of freedom, and level of significance.

The data in Table III indicate that there are no differences (at the level of significance) between males' and females' perception

toward the school, teachers, and themselves on a normal school day three weeks following the outdoor program (Posttest II). Therefore, the null hypothesis, that there is no significant difference between the mean responses of male and female sixth-graders made at the end of a normal school day three weeks following multidisciplinary outdoor environmental education experience (Posttest II), was not rejected at the level of significance of 0.74.

TABLE III

T-TEST RESULTS REFLECTING DIFFERENCES IN MEAN ATTITUDINAL RESPONSES OF MALE AND FEMALE STUDENTS TO POSTTEST II

Sex	N	$\bar{X}$	Variance	t	df	Level of Significance $p \leq .05$
F	115	33.59				
			Unequal	0.32	228	0.74
M	115	33.43				

$p > F^{1} = 0.0011 \leq .05$ unequal variances.

The significant value of 0.74 calls for acceptance of the null hypothesis.

Research Question Number Four

4. Does the attitude of a school day held by male sixth-graders' toward their teachers, school, and themselves change when a comparison is made between responses on a regular school day and responses made

The data in Table IV indicate that there are significant differences between males' attitude response on a normal school day (Pretest) and males' attitude response on a normal school day three weeks following the outdoor program (Posttest II). Therefore, the null hypothesis, that there is no significant difference between the mean attitude responses of male sixth-grade students on a normal school day (Pretest) and the mean attitude responses of sixth grade-students on a normal school day three weeks following the multidisciplinary outdoor environmental education experience (Posttest II), was rejected at the level of significance of 0.0001.

Research Question Number Five

5. Does the attitude of a school day held by female sixth-graders toward their teachers, school, and themselves change when a comparison is made between responses on a regular school day and responses made three weeks after the multidisciplinary outdoor environmental education experience?

HO_5 - There is no significant difference between the mean attitude responses of female sixth grade students on a normal school day (Pretest) and the mean attitude responses sixth grade students on a normal school day three weeks following the multi-disciplinary outdoor environmental education experience (Posttest II).

The t-test values comparing mean attitudinal responses of female students to the Pretest and Posttest II are shown in Table V. Reported are mean, degree of freedom, and level of significance.

The data in Table V indicate that there are significant

differences between females' attitude response on a normal school day (Pretest) and females' attitude response on a normal school day three weeks following the outdoor program (Posttest II). Therefore, the null hypothesis, that there is no significant difference between the mean attitude responses of female sixth-grade students on a normal school day (Pretest) and the mean attitude responses of sixth-grade students on a normal school day three weeks following the multidisciplinary outdoor environmental education experience (Posttest II), was rejected at the level of .0002.

TABLE V

T-TEST VALUES COMPARING MEAN DIFFERENCES IN RESPONSES OF FEMALE STUDENTS ON PRETEST AND POSTTEST II

	N	$\overline{X}$	Variance	t	df	Level of Significance $p \leq .05$
Pretest	138	31.93				
			Unequal	3.81	251	.0002
Posttest II	115	33.59				

$p > F^1 = .0131 \leq .05$ unequal variance.

The significant value for t-test values of 0.0002 calls for rejection of the null hypothesis 5.

TABLE VI

T-TEST VALUES COMPARING MEAN DIFFERENCES OF EACH TEN ITEMS IN RESPONSES OF MALE STUDENTS ON PRETEST AND POSTTESTS II

	N	$\overline{X}$	S.d.	Variance	t-value	df	Level of Significance $p \leq .05$
Q. 1 Pretest	142	2.47	0.07	Equal	5.02	255.0	0.0001*
Posttest II	115	3.05	0.08				
Q. 2 Pretest	141	3.37	0.72	Unequal	1.45	253.9	0.1479
Posttest II	115	3.49	0.59				
Q. 3 Pretest	139	3.29	0.78	Unequal	3.08	251.0	0.0022*
Posttest II	115	3.56	0.60				
Q. 4 Pretest	138	3.24	0.85	Unequal	1.73	247.9	0.0842
Posttest II	115	3.40	0.63				
Q. 5 Pretest	142	2.54	0.98	Equal	3.36	255.0	0.0009*
Posttest II	115	2.94	0.88				
Q. 6 Pretest	140	3.25	0.81	Equal	0.84	253.0	0.4005
Posttest II	115	3.33	0.68				
Q. 7 Pretest	140	2.91	0.86	Equal	3.32	253.0	0.0010*
Posttest II	115	3.26	0.77				
Q. 8 Pretest	141	3.21	1.01	Unequal	2.68	253.1	0.0078*
Posttest II	115	3.51	0.77				
Q. 9 Pretest	142	3.24	1.01	Unequal	3.07	248.1	0.0023*
Posttest II	115	3.57	0.68				
Q.10 Pretest	142	2.57	1.19	Unequal	5.21	254.8	0.0001*
Posttest II	115	3.28	0.98				

* Significant value.
The significant values for items 1, 3, 5, 7, 8, 9 and 10 call for rejection of the null hypothesis for these items.

three weeks after the multidisciplinary outdoor environmental education experience?

HO_4 - There is no significant difference between the mean attitude responses of male sixth grade students on a normal school day (Pretest) and the mean attitude responses of sixth-grade students about a on normal school day three weeks following the multidisciplinary outdoor environmental education experience (Posttest II).

The t-test values comparing mean difference in attitudinal responses of male students respond to Pretest and Posttest II are shown in Table IV. Reported are mean, degree of freedom, and level of significance.

TABLE IV

T-TEST VALUES COMPARING MEAN DIFFERENCES IN RESPONSES OF MALE STUDENTS ON PRETEST AND POSTTEST II

	N	$\overline{X}$	Variance	t	df	Level of Significance $p \leq .05$
Pretest	142	29.85				
			Unequal	6.17	255	.0001
Posttest II	115	33.43				

$p > F^1 = .0194 \leq .05$ unequal variance.

The significant value for t-test values of 0.0001 calls for rejection of the null hypothesis 4.

Research Question Number Six

6. Does the attitude held by male sixth-grade students toward their teachers, school, and themselves on each of ten items of the questionnaire change when a comparison is made between responses on a normal school day before the multidisciplinary outdoor environmental education experience on a normal school day three weeks following a multidisciplinary outdoor environmental education experience?

HO_6 - There is no significant difference between the mean attitude responses of male sixth-grade students to each of of ten items on a normal school day (Pretest) and the mean attitude responses of male sixth-grade students to each of ten questionnaire items on a normal school day three weeks following the multidisciplinary outdoor environment education experience (Posttest II).

The t-test values comparing mean differences of each of the ten items questionnaire of male students responses on a regular school day (Pretest) and responses made in three weeks after multidisciplinary outdoor environmental education (Posttest II) is shown in Table VI. Reported are mean, degree of freedom and level of significance.

The data in Table VI indicate that there are significant differences between males' attitude responses to Pretest and Posttest II at a level greater than .05 for items 1, 3, 5, 7, 8, 9, and 10. Therefore, the null hypothesis, that there is no significant difference between the mean attitude responses of male sixth-grade students to each of the ten item questionnaire on a normal school day (Pretest) and the mean attitude responses of male sixth grade-students to each of ten questionnaire items on a normal school day three weeks following the

multidisciplinary outdoor environmental education experience (Posttest II), was rejected for items 1, 3, 5, 7, 8, 9 and 10, and accepted for items 2, 4, and 6.

Research Question Number Seven

7. Does the attitude of a school day held by female sixth-grade students toward their teachers, school, and themselves on each of ten questionnaire items change when a comparison is made between responses made on a normal school day and responses made on a normal school day three weeks following the multidisciplinary outdoor environmental education experience?

HO_7 - There is no significant difference between the mean attitude responses of female sixth-grade students to each of ten questionnaire items on a normal school day (Pretest) and the mean attitude responses of female sixth-grade students to each of ten questionnaire items on a normal school day three weeks following the multidisciplinary outdoor environmental education experience (Posttest II).

The t-test values comparing mean differences of each ten items questionnaire of female students responses in a regular school day (Pretest) and responses made in three weeks after multidisciplinary outdoor environmental education (Posttest II) is shown in Table VII. Reported are mean, degree of freedom, and level of significance.

The data in Table VII indicate that there are significant differences between female attitude responses to Pretest and Posttest II at a level greater than .05 for items 1 and 5. Therefore, the null hypothesis, that there is no significant difference between the mean

TABLE VII

T-TEST VALUES COMPARING MEAN DIFFERENCES OF EACH TEN ITEMS IN RESPONSES OF MALE STUDENTS ON PRETEST AND POSTTESTS II

	N	$\overline{X}$	S.d.	Variance	t-value	df	Level of Significance $p \leq .05$
Q. 1 Pretest	138	2.66	0.84	Equal	5.40	251.0	0.0001*
Posttest II	115	3.22	0.78				
Q. 2 Pretest	138	3.47	0.55	Equal	1.20	251.0	0.2278
Posttest II	115	3.55	0.56				
Q. 3 Pretest	135	3.37	0.64	Equal	0.12	249.0	0.8982
Posttest II	115	3.36	0.55				
Q. 4 Pretest	135	3.27	0.69	Equal	1.08	249.0	0.2773
Posttest II	115	3.36	0.65				
Q. 5 Pretest	138	2.65	0.90	Equal	2.49	251.0	0.0132*
Posttest II	115	2.93	0.91				
Q. 6 Pretest	138	3.36	0.61	Equal	0.77	251.0	0.4368
Posttest II	115	3.43	0.71				
Q. 7 Pretest	137	3.22	0.61	Unequal	.0022	218.9	0.9983
Posttest II	115	3.22	0.76				
Q. 8 Pretest	135	3.58	0.69	Unequal	1.33	249.0	0.1827
Posttest II	115	3.69	0.57				
Q. 9 Pretest	138	3.52	0.76	Unequal	0.81	249.6	0.4160
Posttest II	115	3.59	0.59				
Q. 10 Pretest	138	2.96	1.10	Equal	1.74	251.0	0.0816
Posttest II	115	3.19	0.93				

* Significant value.
The significant values for items 1 and 5 call for rejection of null hypothesis for these items. Also, items 2, 3, 4, 6, 7, 8, 9 and 10 call for acceptance of null hypothesis for these items.

attitude responses of female sixth-grade students to each of ten questionnaire items on a normal school day (Pretest) and the mean attitude responses of female sixth-grade students to each of ten questionnaire items on a normal school day three weeks following the multidisciplinary outdoor environmental education experience (Posttest II), is rejected for items 1 and 5, and accepted for items 2, 3, 4, 6, 7, 8, 9 and 10.

The percentage of male students' positive responses to all three questionnaires is shown in Table VIII. In Figure 1 is shown the percentage of males' positive responses to all three tests in bar graph form.

Immediately after the outdoor experience, males showed a consistent pattern of increased positive responses to all items on the questionnaire. The highest responses were on items 1, 5, 6, 7, 8, 9, and 10, all were at least twice as high as on the Pretest. Items 1, 7, and 10 were three times as high as originally. On Posttest II, male responses remained high, but were all somewhat lower than Posttest I. But items 1, 5, and 7 remained almost double that of the Pretest.

Positive responses to all three questionnaires by female students are shown in Table IX. In Figure 2 is shown the percentage of females' positive responses to all three tests in bar graph form.

On the day of the outdoor experience, females responses, like that of males, were higher. Item 1 -- how much learned -- was triple that of the Pretest response, and item 7 -- feeling about teachers -- was double. When Posttest II and Pretest are compared, all items were higher on Posttest II, except items 3 and 9; item 1 was double, and item 5 was almost double.

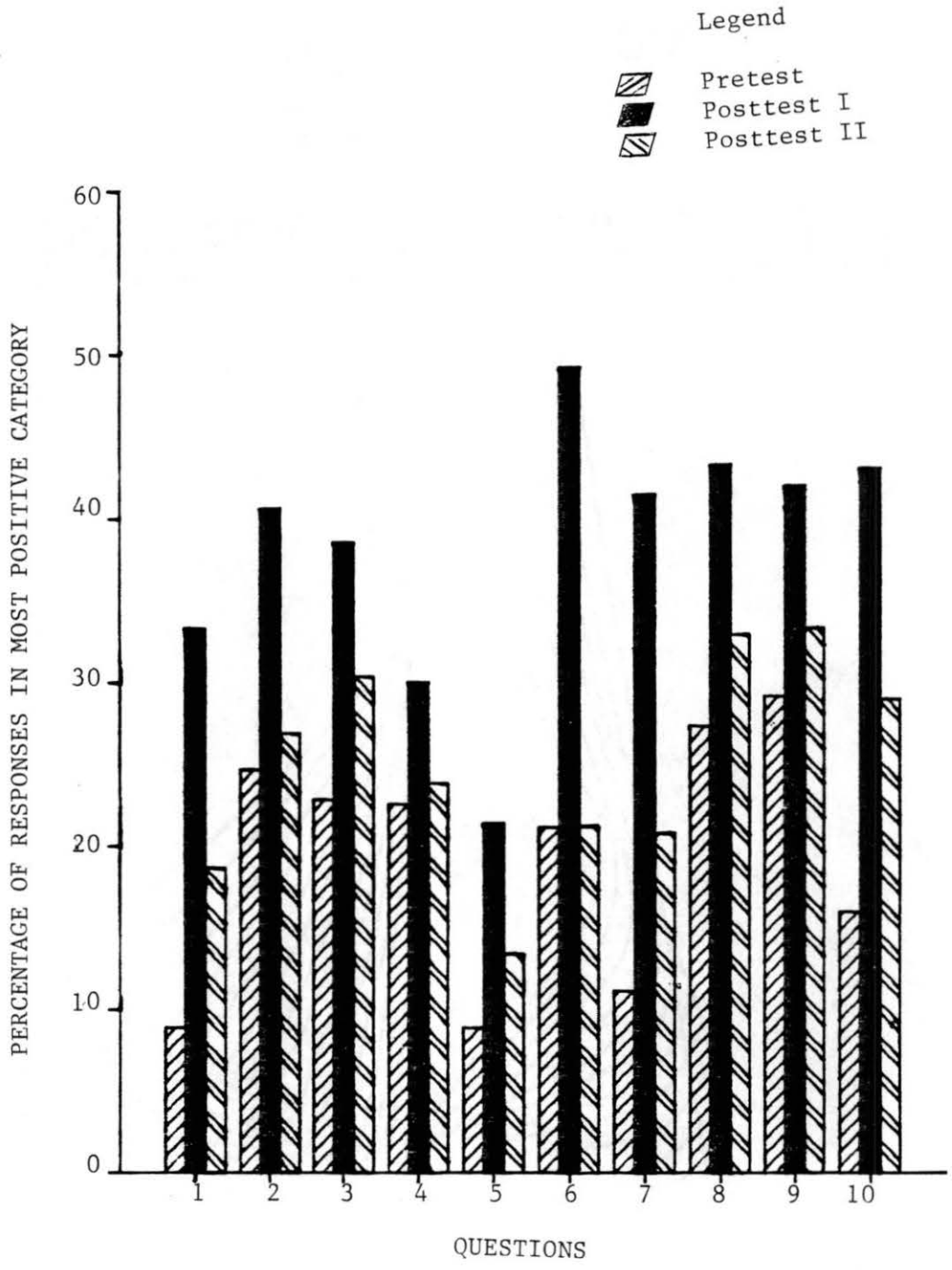

Figure 1. Percentage of Male Students' Positive Responses to Pretest, Posttest I, and Posttest II

TABLE VIII

PERCENTAGE OF MALE POSITIVE RESPONSES TO PRETEST, POSTTEST I AND POSTTEST II

Item*	Pretest (percentage)	Posttest I (percentage)	Posttest II (percentage)
1	8.93	33.33	18.70
2	24.73	40.66	26.96
3	22.91	38.60	30.43
4	22.63	30.04	23.91
5	8.93	21.40	13.48
6	21.22	49.26	21.30
7	11.19	41.54	20.87
8	27.44	43.38	33.04
9	29.29	42.12	33.48
10	16.07	43.22	29.13

The above figures are represented in Figure 1.

*NOTE: Item 1 - how much learned; Item 2 - clarity of assignment; Item 3 - lost feeling toward school work; Item 4 - needed extra help; Item 5 - seeing someone else need help; Item 6 - feeling about participation in school activities; Item 7 - feeling about teachers; Item 8 - teachers are pleased with performance; Item 9 - teachers trusted students; and Item 10 - teachers understood how students felt.

TABLE IX

PERCENTAGE OF FEMALE POSITIVE RESPONSES TO PRETEST, POSTTEST I AND POSTTEST II

Item*	Pretest (percentage)	Posttest I (percentage)	Posttest II (percentage)
1	8.57	24.91	20.87
2	24.73	28.57	29.57
3	22.18	27.21	20.00
4	18.61	15.02	21.74
5	7.86	9.23	13.04
6	21.22	34.19	26.52
7	15.88	30.88	19.13
8	34.30	35.29	37.39
9	33.21	34.80	32.17
10	22.14	31.14	23.04

The above figures are represented in Figure 2.

*Key to items appears in Table VIII footnote, p. 59.

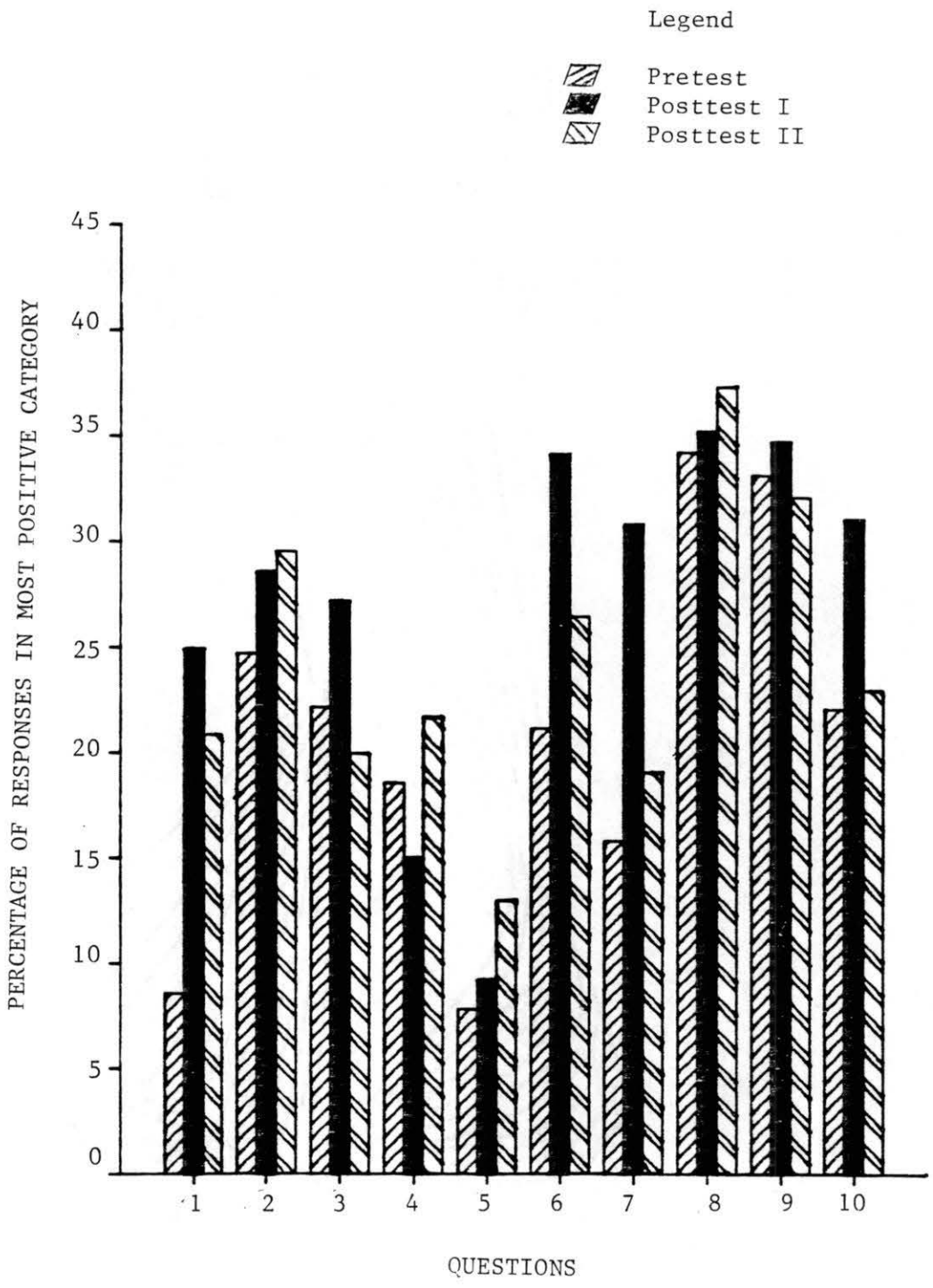

Figure 2. Percentage of Female Students' Positive Responses to Pretest, Posttest I, and Posttest II

The percentage of male and female student's positive responses to each ten items of Pretest questionnaires are shown in Tale X. Comparison of responses by gender is indicated in Figure 3 in bar graph form.

TABLE X

PERCENTAGE OF MALE AND FEMALE STUDENT'S POSITIVE RESPONSES TO PRETEST

Item*	Male (percentage)	Female (percentage)
1	8.93	8.57
2	24.73	24.73
3	22.91	22.18
4	22.63	18.61
5	8.93	7.86
6	21.22	21.22
7	11.19	15.88
8	27.44	34.30
9	29.29	33.21
10	16.07	22.14

*Key to items appears in Table VIII footnote, p. 59.

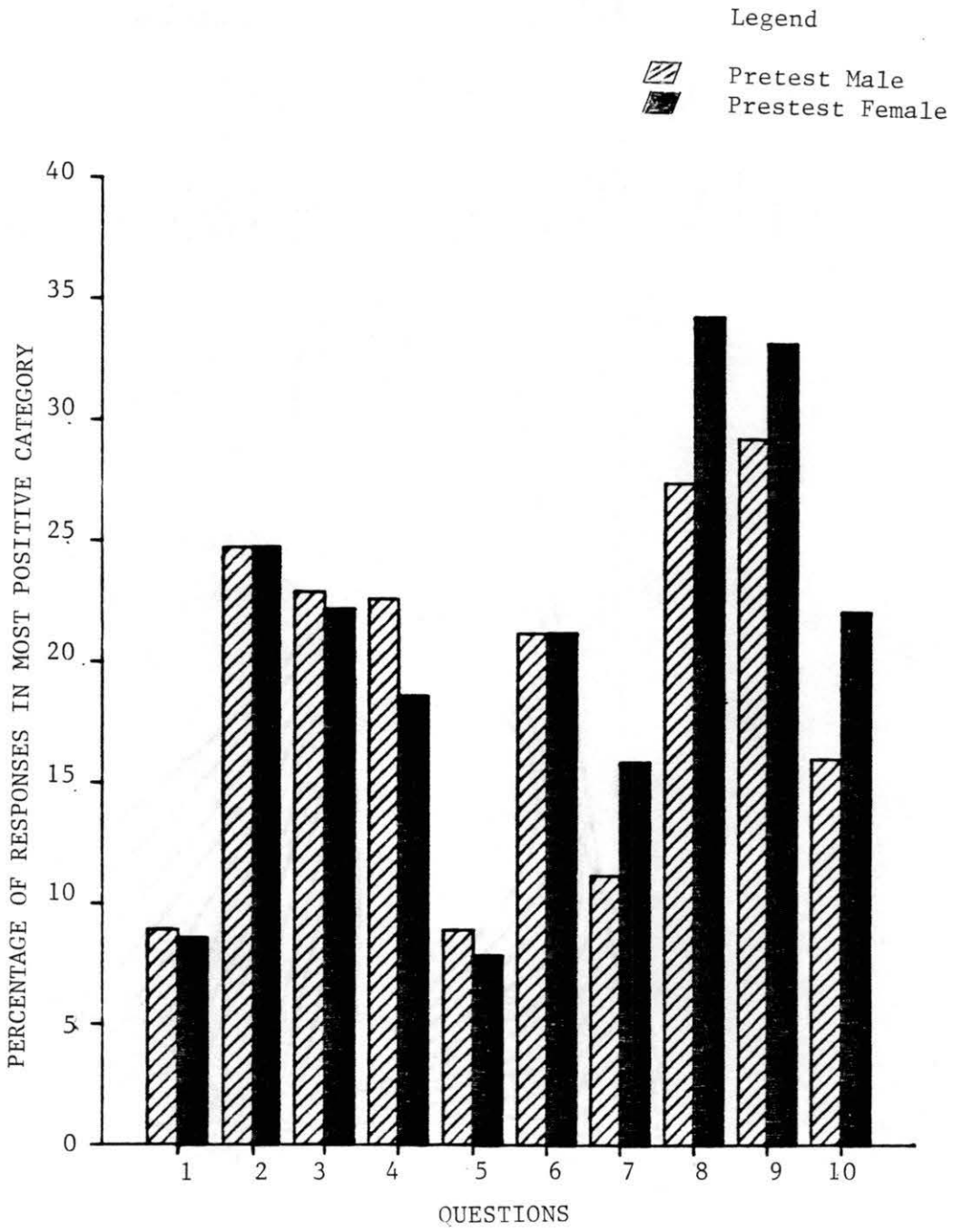

Figure 3. Percentage of Male and Female Students' Positive Responses to Pretest

A comparison of male and female responses on Pretest showed that females had more positive responses than males on items 7, 8, 9, and 10, all dealing with teachers. Males were more positive on items 3, 4, 5, all items dealing with school activities. Males and females were identical in responses to items 2 and 6, dealing with school activities and participation, respectively.

The percentage of male and female student's positive responses to each of the ten items of Posttest II questionnaires are represented in Table XI. In Figure 4 are the comparisons of responses by gender in bar graph form.

In a comparison of male and female responses on Posttest II, females had more positive responses on items 1 and 6 (student participation items), and 2 and 8 (school activities and teachers). Males were more positive on items 3, 4, 5, 7, 9, and 10, dealing with school activities and teachers.

Summary

The ten items investigated on the questionnaires included: 1) How much you feel you learned today, 2) were assignments clear to you today, 3) how often did you feel lost during school work today, 4) how often did you want extra help today, 5) how often did you see somebody else needing help today, 6) how do you feel about your participation in school activities today, 7) how do you feel about your teacher today, 8) my teachers were happy with me today, 9) my teachers trusted me on my own today, and 10) my teachers understood how I felt today. On both Pretest and Posttest II, males indicated positive responses for items 3) how often did you feel lost during schoolwork today, 4) how often

TABLE XI

PERCENTAGE OF MALE AND FEMALE STUDENTS POSITIVE RESPONSE TO POSTTEST II

Item*	Male (percentage)	Female (percentage)
1	18.70	20.87
2	26.26	29.57
3	30.43	20.00
4	23.91	21.74
5	13.48	13.04
6	21.30	26.52
7	20.87	19.13
8	33.04	37.39
9	33.48	32.17
10	29.13	23.04

*Key to items appears in Table VIII footnote, p. 59.

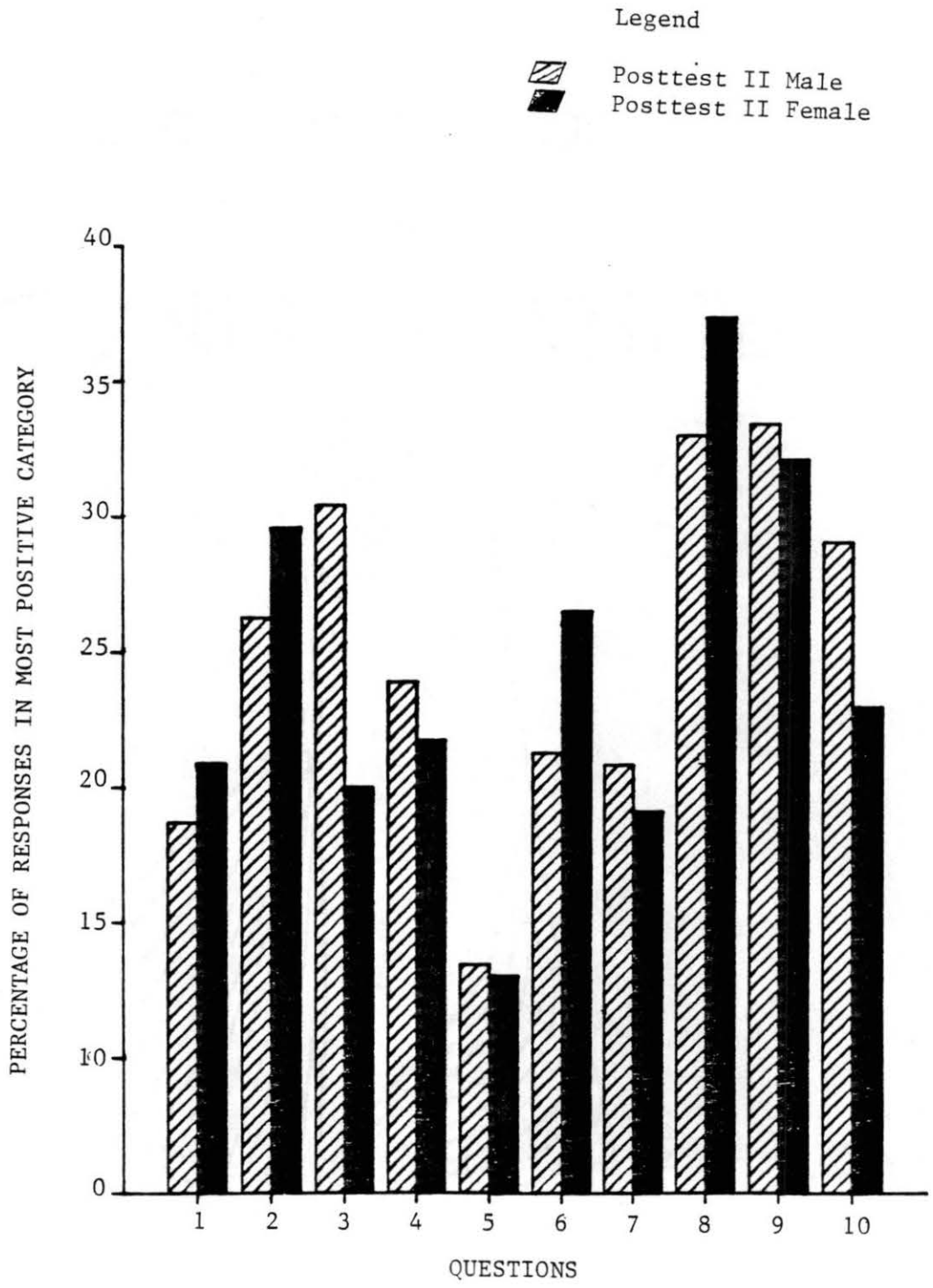

Figure 4. Percentage of Male and Female Students' Positive Responses to Posttest II

did you want extra help today, and 5) how often did you see somebody else needing help today. But on Posttest II, males had more positive responses on other items such as 7) how do you feel about your teacher today, 9) my teachers trusted me on my own today, and 10) my teachers understood how I felt today.

By contrast, females on Pretest gave more positive responses for 7) how do you feel about your teachers, 8) my teachers were happy with me, 9) my teachers trusted me on my own today, and 10) my teachers understood how I felt today. Also, females had more positive responses on Posttest II on items 1) how much do you feel you learned today, 2) were assignments clear to you today, 6) how do you feel about your participation in school activities today, and 8) my teachers were happy with me today. Both sexes had more positive responses comparing Pretest and Posttest II on items 1, 2, 4, 5, 6, 7, 8, and 10.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Introduction and Summary

This study, designed to determine relationships between outdoor environmental education and male and female students' attitudes toward teachers, schools, and selves, compared sixth-graders' responses to questionnaires a week before, the day of, and three weeks after an outdoor education experience. In a similar study, Faris (1982), in the Aspen school district of Colorado, examined all students from grades 5 through 8 in an outdoor educational program, and concluded that such a program developed students' self-concept, self-reliance, and emotional attachment, as well as trust level toward other children and adults. By contrast, the present study sought to determine whether outdoor environmental education helps students to continue to feel good about themselves, teachers, and schools. Thus, student responses at three different time periods were compared.

The population in this investigation consisted of 314 sixth-grade students of the Stillwater Middle School located in Oklahoma. A ten-item questionnaire provided the data, and these data were analyzed by using a t test with the level of significance less or equal to 0.05 of confidence.

Findings and Conclusions

Findings and conclusions of this study, based upon a review of and response to the seven hypotheses proposed are:

(1) The null hypothesis 1, that there is no significant difference between the mean of attitude responses of male and female sixth-graders on a normal school day, was rejected at the .05 level of significance.

Female and male students responded differently. As indicated in Figure 3 and Table X, male responses were more positive on items 1, 3, 4, and 5, which deal with participation and school activities. But female responses were more positive on items 7, 8, 9, and 10, which deal with relationships with teachers. Although both males and females had the same scores on items 2 and 6, which deal with participation and school activities, generally female students were more positive in their responses overall. Therefore, it can be concluded that males did not respond as positively as females toward their teachers because of the school setting.

(2) The null hypothesis 2, that there is no significant difference between the mean attitude responses of male and female sixth-graders following a one-day multidisciplinary outdoor environmental education experience (Posttest I), was rejected at the .05 level of significance.

In the outdoor environmental education experience, males' responses were more positive than females'. Although the results support the conclusion that students (both sexes) became more involved in outdoor environmental education and had positive attitudes toward the outdoor program, males who responded were more positive than females, which may be because males tend to work more in an environment that requires less listening and more involvement in the learning process.

(3) The null hypothesis 3, that there is no significant difference between the mean attitude responses of male and female sixth-graders

made at the end of a normal school day three weeks following multidisciplinary outdoor environmental education experience (Posttest II), was not rejected at the .05 level of significance.

On the basis of mean gain scores, male and female students had more positive responses. The results as shown in Figure 4 and Table XI indicate that male responses were more positive on items 3, 4, 5, 7, 9, and 10. Thus, male responses at this time (Posttest II),became more positive toward their teachers. By contrast, female responses were more positive on items 1, 2, 6, and 8, showing that by the time of Posttest II females were more positive toward school participation. Such data indicate that the outdoor education experience resulted in an upward trend toward accomplishing the objectives of the school.

(4) The null hypothesis 4, that there is no significant difference between the mean attitude responses of male sixth-grade students on a normal school day (Pretest) and the mean attitude responses of male sixth-grade students on a normal school day three weeks following the multidisciplinary outdoor environmental education experience (Posttest II), was rejected at the .05 level of significance.

It can be concluded, therefore, that outdoor environmental education is an effective method of improving and increasing males' attitude toward their teachers. Their attitude toward school and themselves also improved.

(5) The null hypothesis 5, that there is no significant difference between the mean attitude responses of female sixth-grade students on a normal school day (Pretest) and the mean attitude responses of female sixth-grade students on a normal school day three weeks following the

multidisciplinary outoor environmental education experience (Posttest II) was rejected at the .05 level of significance.

It is concluded, therefore, that female students became more involved in school and learning, as well as enhanced their attitudes toward their teachers and the school and themselves. These increases are the result of their participation in the outdoor environmental education program.

(6) The null hypothesis 6, that there is no significant difference between the mean attitude responses of male sixth-grade students to each of ten questionnaire items on a normal school day (Pretest) and the mean attitude responses of male sixth-grade students to each of ten questionnaire items on a normal school day three weeks following the multidisciplinary outdoor environmental education experience (Posttest II), was rejected at the .05 level of significance for items 1, 3, 5, 7, 8, 9 and 10. The null hypothesis for items 2, 4, and 6 was not rejected.

Male students' responses to the questionnaire in the regular school day and three weeks after the outdoor environmental education program differed greatly. It is concluded, therefore, that male students derived certain positive benefits from their participation in the outdoor environmental education program, particularly increased enthusiasm in working with teachers and peers, and increased self-concept as well as more positive and favorable attitudes toward school and learning. The results as shown in Figure 1 and Table VIII support the conclusion that, in general, male students had more positive responses on Posttest II when Pretest and Posttest II are compared, on all items even on items 2, 4, and 6 that were not rejected. Male

students gave more positive responses, but these were not positive enough to be rejected.

(7) The null hypothesis 7, that there is no significant difference between the mean attitude responses of female sixth-grade students to each of ten questionnaire items on a normal school day (Pretest), and the mean attitude responses of female sixth-grade students to each of ten questionnaire items on a normal school day, three weeks following multidisciplinary outdoor environmental education experience (Posttest II), was rejected at the .05 level of significance for items 1 and 5. The null hypothesis for the other eight items was not rejected.

The results from Figure 2 and Table IX support the conclusion that, in general, female students had more positive responses on eight items of the questionnaire on Posttest II when the results of Pretest and Posttest II are compared. But the results were not positive enough to reject all ten items on the questionnaire.

Based on the results of the investigation, as just documented, it can also be concluded that, for students to achieve school objectives, the need by educators to increase students' positive perception's toward teachers, school, and themselves is vital. Through an outdoor education program, student attitudes toward school, teachers, and themselves and functioning within complex society can be effectively channeled to achieve this goal.

Recommendations

Based on the result of this study, recommendations for implementing successful outdoor education experiences are:

attitudes toward the school activities as well as multidisciplinary outdoor environmental education.

(3) Teachers need to continue to develop male students' motivation toward the school activities as well as multidisciplinary outdoor environmental education.

(4) Teachers also need to give serious consideration to the rise of the outdoor environment, not only to supplement the educational program but as a way of improving children's attitudes toward school.

(5) Educators need to encourage parental involvement in the establishment and implementation of outdoor education programs.

(6) Community involvement and awareness about outdoor education experiences needs to be encouraged by teachers and school administrators alike.

Curricular innovations, such as outdoor environmental education programs, are essential to the growth and development of today's students. By utilizing such an approach, the students' potentials for contributions to tomorrow's society will be enhanced.

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APPENDIX A

QUESTIONNAIRE

/__/ Male

/__/ Female

Please circle your answer.

My Reaction to Today's Schoolwork (Shaw & Mills, 1981)

1. How much do you feel you learned today?
   a. Don't think I learned much
   b. Learned a little bit
   c. Learned quite a lot
   d. Learned a lot today

2. Were today's schoolwork assignments clear to you?
   a. Very clear to me
   b. Pretty clear to me
   c. Not so very clear
   d. Not clear at all

3. How often did you feel lost during schoolwork today?
   a. Lost most of the time
   b. Lost quite a few times
   c. Lost a couple of times
   d. Not lost at all

4. How often did you feel you wanted some extra help today?
   a. Wanted help quite a few times
   b. Wanted help several times
   c. Wanted a little help once or twice
   d. Wanted no help

5. How often did you see somebody else needing help today?
   a. Saw somebody needing help a lot
   b. Saw somebody needing help quite a few times
   c. Saw somebody needing help a few times
   d. Saw nobody needing help

6. How do you feel about your participation in today's school activities?
   a. Not satisfied at all
   b. Not very satisfied
   c. Fairly satisfied
   d. Very satisfied

7. How do you feel about what your teachers did in today's school activities?
   a. Very satisfied
   b. Pretty well satisfied
   c. Only a little satisfied
   d. Not satisfied

8. My teachers were happy with me today.
   a. Most of the time
   b. Quite a few times
   c. A couple of times
   d. Not at all

9. My teachers trusted me on my own today.
   a. Most of the time
   b. Quite a few times
   c. A couple of times
   d. Not at all

10. My teachers understood how I felt today.
    a. Most of the time
    b. Quite a few times
    c. A couple of times
    d. Not at all

APPENDIX B

GENERAL ACTIVITIES IN OUTDOOR ENVIRONMENTAL EDUCATION

GENERAL ACTIVITIES IN OUTDOOR

ENVIRONMENTAL EDUCATION

Shaw & Mills, "Involved and Uninvolved Student Perceptions in Indoor and Outdoor School Settings." Journal of Early Adolescence, Vol. 53 No. 1 (February, 1983), pp. 16-31.

1. Aquatic Environment Cluster. This included an investigation of macro- and microscopic aquatic organisms, food chains, life cycles, water and mineral cycles, water conservation, watersheds, map reading, and man's affect upon the aquatic environment.

2. Terrestrial Environment Cluster. These activities included investigations of the effect of abiotic factors upon the organisms in the environment, the relationship between plants and animals in the environment, animal homes, tracks, protective coloration, factors affecting succession, and soil erosion.

3. Camp Craft and Art Cluster. These activities included making art objects from natural materials (mobiles, sandstone carvings, sand paintings, collages, clay pots, etc.), hunting and stalking, fire building, shelter building, and lashing furniture.

4. Awareness Cluster. This group of activities included an inquiry investigation of an old building, producing a play or writing poetry about the building, a blindfolded sensory awareness rope walk, a sensory scavenger hunt, and a guided fantasy trip followed by a discussion centering on values and relationship.

VITA

Soudabeh Alikhani

Candidate for the Degree of

Doctor of Education

Dissertation: THE RELATIONSHIP BETWEEN MALE AND FEMALE SIXTH-GRADERS' ATTITUDES AND A MULTIDISCIPLINARY OUTDOOR ENVIRONMENTAL EDUCATION EXPERIENCE

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