

SEQUENCE OF ADVENTURE-BASED RESIDENT
OUTDOOR EDUCATION PROGRAMS AND
MIDDLE SCHOOL STUDENTS'
PERCEPTIONS OF LIFE
EFFECTIVENESS

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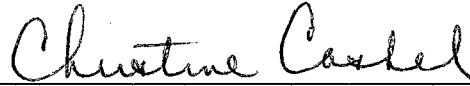
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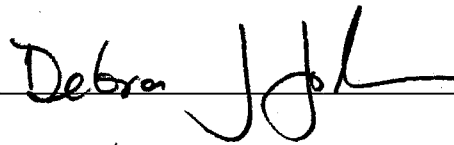
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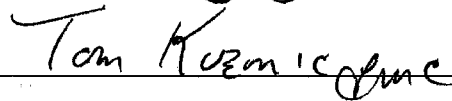
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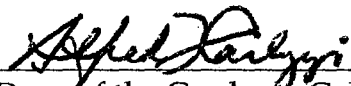


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CHAPTER I

INTRODUCTION

Throughout the twentieth century, schools across the United States have been participating in outdoor education programs, especially in the latter half of the century. At the beginning of the new millennium, it is important to look not only at where outdoor education has been, but what people are learning from it today and where it may lead in the future.

Through the years there have been numerous studies looking at specific benefits of outdoor activities on such aspects as self-concept, self-efficacy, physical fitness, and academic success. There have, however, been very few studies addressing the issues of how outdoor education programs impact life-effectiveness, a measure of perceived personal effectiveness in a variety of psychological and behavioral phenomena (Neill, Marsh, & Richards, 1997). According to Bisson (1997), the concept of sequencing, planning the order of presentation of adventure activities for optimum effectiveness, has been generally overlooked in research. Thus, this study has been designed to address these two issues.

A Brief History of School-Based Outdoor Education

The beginnings of school-based camping and outdoor education can be traced to the 1800s. From 1823 to 1834, Round Hill School, an all-male school located in Massachusetts, offered two hours of physical education and outdoor activity per day. Additionally, the students were taken on occasional longer outdoor experiences, such as a 100-mile hike and horseback ride (Bennett as cited in Ford, 1981).

The Gunnery School in Connecticut is much better known than its predecessor, and is often given the credit of being the first school camp. Frederick William Gunn offered camping as part of the educational curriculum in the early 1860s (Lehman as cited in Ford, 1981). After the start of the Civil War, male students were eager to become soldiers and wanted to march and sleep in tents. The first extended camping trip in 1861 lasted just over two weeks; the campers hiked for two days to the campsite and then participated in outdoor activities such as sailing and fishing. This two week camp experience was considered to be part of the school curriculum (Gibson, 1936).

While traditional summer camp programs grew considerably during the late 1800s to the 1930s, the school camping movement saw very little growth and development during that time (Ells, 1986; Ford, 1981; Raiola & O'Keefe, 1999). Things started to change in the 1920s and 1930s, when the school-based outdoor education movement started gaining momentum under the leadership of L.B. Sharp. Through his Life Camp program for underprivileged city children, Sharp

worked to establish a philosophical foundation to connect education and the camping experience by using teaching methods from the traditional school setting with small groups of children in the outdoors. He also developed an advanced outdoor leadership training center called National Camp through which he influenced many outdoor educators (Ells, 1986; Ford, 1981; Raiola & O'Keefe, 1999).

In the 1940s, especially after World War II, overnight school camps during the school year started becoming more popular. The earliest programs in Michigan, Texas (Tyler), Missouri (St. Louis), and California paved the way for other schools to begin including outdoor education as a part of their curricula. These early school camping programs included activities such as camp chores, fire building, hikes, cook-outs, archery, fishing, group meetings, dramatics, music, dance, and evening campfire programs. The at-camp portion of the program was enhanced by in-school educational activities before and after the camp program (Manley & Drury, 1952).

The late 1940s and 1950s saw a shift from recreation-based to curriculum-based school camping programs. In fact, as outdoor education expanded, outdoor educators like Julian Smith (Smith, Carlson, Donaldson, & Masters, 1963) suggested abandoning the words "school camping" in favor of terms like "outdoor education" (Raiola & O'Keefe, 1999; Smith, et al., 1963), "resident outdoor school" (Ford, 1981) and "residential outdoor education" (ROE) (Hammerman, Hammerman, & Hammerman, 1994). Although the ROE

programs were becoming more curriculum centered, the camp programs began emphasizing group interaction and individual growth and social adjustment more than just achievement in outdoor activities (Alexander, 1969; Ford, 1981; Kleindiest, 1957; Kranzer, 1958; Margulis, 1952; Pepper, 1952).

In the 1960s and 1970s, the United States began focusing nationally on the responsible use of natural resources. Books like Silent Spring (Carson, 1962), A Sand County Almanac (Leopold, 1949), and The Quiet Crisis (Udall, 1963) were sources of much debate centered on ecological and environmental practices.

During this time, the term “environmental education” was developed to explain the phenomenon of teaching conservation and ecological processes and became an all-encompassing term for outdoor education (Ford, 1981; Kirk, 1977). Since the 1970s, many environmental education curriculum models have been developed. Some examples of these include Project WILD (Western Regional Environmental Council, 1976), Project Learning Tree (American Forest Foundation, 1974), Project WET (Nelson, 1996), and Van Matre’s (1979) Sunship Earth: An acclimatization program for outdoor learning. Some of these projects were designed specifically for use at camps and outdoor centers, while others are more “classroom friendly”.

From the late 1970s onward, there has been another programmatic shift in school-based outdoor education programs in the United States. More and more programs view environmental education and adventure-based programming as two separate parts of outdoor education. When programs and organizations such

as Outward Bound, National Outdoor Leadership School (NOLS), and Project Adventure become more popular, many outdoor education providers started including adventure/challenge/risk activities as a part of their curricula (Ford, 1981; Green & Thompson, 1990; Hogan, 1968; Petzoldt, 1974; Prouty, 1990; Raiola & O'Keefe, 1999). Today, outdoor education programs may range from simple nature study programs to camping skills, to in-depth environmental education programs, to high-adventure programs or a combination of these components.

Sequencing

The order in which people learn new things is very important. Most teachers and educational curricula begin with instruction of basic material and then add more complex information (Dewey, 1916; Flexner, 1923; Hergenhahn & Olson, 1997). In the field of education, there are metaphors comparing the educational process to that of building construction (Pietig, 1997; Shulman, 1990; Stone, 1998; Wood, Bruner, & Ross, 1976). The concept of scaffolding relates to having a framework in place and filling in around it, linking concepts together. The foundation concept means starting at the bottom and working upward, building on top of what already exists (Pietig, 1975; Shulman, 1990). Physical educators call the foundation concept skill progression (Everhart, 1996; Langley & Woods, 1997; Siedentop, 1983). While there is some debate about which is the better technique, educators generally agree that there must be some type of preliminary structure from which all things are built (Pietig, 1997).

In adventure-based programs the order in which activities are presented is referred to as sequencing (Gass, 1993; Gass, 1995; Rohnke, 1989). While many authors have discussed the importance of sequencing the adventure program, there has been little research completed to assess these claims (Bisson, 1997). A recent study found that the order in which activities are presented during an adventure-based school camping program had a significant effect on group development and dynamics (Bisson, 1997). Since sequencing does impact group development, this study was designed to answer the question if sequencing also impacts individual development, specifically, life effectiveness as measured by the Life Effectiveness Questionnaire – Version I (LEQ-I) (Neill, 2000).

Gender and Sex Issues

Throughout the years, it has been suggested that as a whole, females and males have different attitudes and behaviors. The United States functions as a White-male dominated society (Gilligan, 1998). In fact, women have been participating in outdoor activities since the beginning of time. Although not widely realized, women were participating in many outdoor pursuits in the late 1800s and early 1900s. However, with the advent of industrialism and organized recreation, certain activities were considered off-limits to females (Bialeschki, 1992). Their choice of activities was limited to those that accented beauty, such as horseback riding, swimming, skating, etc. (Bialeschki, 1992; Warren, 1996).

While females have been a force in the outdoors for many years, history has silenced their presence (Bialeschki, 1992; Warren, 1996). For example, Mary

Schaffer and Mary Adams explored the Canadian Rocky Mountains in the early 1900s, and Margaret LeLong bicycled solo from Chicago to San Francisco in 1896. Moreover, Anna Botsford Comstock was a leader in the field of nature study, writing several different educational texts (e.g., Comstock, 1905; 1911; 1939; 1977). Unfortunately, most outdoor enthusiasts are unfamiliar with these women and their achievements. Because history has silenced the voices of and avoided acknowledging the presence of the many capable outdoorswomen, there are very few prominent female role models in the out of doors (Henderson, Bialeschki, Shaw, & Freysinger, 1996).

This lack of a feminine voice in the outdoors has contributed to our culture's viewing outdoor pastimes as masculine. Some females, therefore, question their femininity when considering participating in outdoor programs (Bialeschki, 1992; Warren, 1996). There has been, however, some change in females participation in many active endeavors, such as sports and outdoor pursuits, since the passage of Title IX of the Education Reform Act of 1972 (Kane 1989; 1990). Although there is increased acceptance of females' participation in traditionally male activities, there is still great social pressure for these girls and women to be viewed as feminine based on societal pressure . In fact, Kane (1989; 1990) reported that when females are spotlighted in the media, there is a greater tendency to focus on the more "feminine" aspects of their lives, such as nutrition, beauty, and health of these participants, more so than their male counterparts.

Because pre-adolescents and adolescent girls face increasing social pressure to conform, they tend to lose courage (Rogers, 1998), self-esteem and confidence (Sadker & Sadker, 1994). This social pressure might be one of the reasons why teenage girls decrease their levels of physical and outdoor activity as they mature (Pipher, 1994; Stemmermann, 1993). This decreased level of activity continues through adulthood (Pearce, 1999). Through participation in male-dominated activities such as outdoor pursuits, females may be able to find new ways to explore their identity and to assert some power in other aspects of their lives (Henderson, Bialeschki, Shaw, & Freysinger, 1996; Wearing, 1990). For these reasons, this research study has included a comparison of LEQ scores based on sex of participants to compare male and female students' perceptions of their own life effectiveness skills before and after participating in an outdoor education program.

Purpose of the Study

The purpose of this study was to look at how the sequence of adventure activities impacts students' perceptions of their own life effectiveness. Life effectiveness, or personal effectiveness, as it is considered in this project is essentially how successful a person perceives him/herself to be in a variety of psychological and sociological ways. The LEQ-I is comprised of the following nine dimensions, or scales, that are considered by the instrument's authors to be important aspects of personal effectiveness: achievement motivation, active initiative, emotional control, intellectual flexibility, locus of control, self-

confidence, social competence, task leadership, and time management (Neill, Marsh, & Richards, 1997).

As suggested by several authors, it is important for a basic framework or foundation of ideas and information to be built before more complex ideas or work can be completed (Dewey, 1916; Flexner, 1923; Hergenhahn & Olson, 1997). Because education may be viewed as development and growth in an individual (Hergenhahn & Olson, 1997), it relates to the desired outcome of personal growth through an outdoor education experience. Therefore, this study examined differences in the outcomes of students who participate in the same outdoor adventure activities presented in differing orders.

Research Questions and Hypotheses

This study will address the following questions and associated hypotheses:

1. Research Question 1: Do overall LEQ-I scores change as a result of an adventure-based outdoor education program, sequence of activities, and sex, and do any changes have lasting effects?

H0-1: There is no significant interaction between LEQ-I scores based on sequence of activities, sex, and time.

2. Do overall LEQ-I scores change as a result of an adventure-based outdoor education program over time?

H0-2: There is no significant difference in LEQ-I scores over time.

3. Does program activity sequence impact changes in LEQ-I scores?

H0-3: There is no significant difference between LEQ-I scores based on activity sequence.

4. Are LEQ-I scores dependent on sex of participant?

H0-4: There is no significant difference between LEQ-I scores based on sex.

5. Do specific dimensions of the LEQ-I change as a result of the adventure-based outdoor education program, time, sequence, and sex?

H0-5: There is no significant interaction in LEQ-I scores for different dimensions based upon time, sequence, and sex.

6. Do specific dimensions of the LEQ-I change over time?

H0-6: There is no significant difference in LEQ-I scores for different dimensions over time.

7. Do specific dimensions of the LEQ-I change as a result of the activity sequence?

H0-7: There is no significant difference in LEQ-I scores for different dimensions based on activity sequence.

8. Are specific dimensions of the LEQ-I dependent upon sex?

H0-8: There is no significant difference in LEQ-I scores for different dimensions based on sex.

Significance of the Study

This study was important for several reasons, the first of which being that school administrators, teachers and parents sometimes question if the benefits of

outdoor education programs outweigh the costs (Jordison, 1993; Kaspar, 1988; Luera, 1998). Jordison (1993) found that budget cuts, especially in small schools have led to cuts in outdoor education programs. While agreeing that reductions in funding place a strain on the ability of school participants to attend outdoor education programs, Luera (1988) suggested that there are questions in the academic community about the quality of outdoor education curricula and the relevance to students. Additionally, some school personnel, in particular younger and male teachers and principals in public schools, may be leery about taking time away from “academics” for outdoor education field trips (Kaspar, 1988). The results of this study may help support arguments about continuing these types of programs as part of the school curriculum.

Another important aspect of this study was the choice of measurement tool. Many of the instruments used to study effects of outdoor education programs have not been designed specifically for those purposes. By using an instrument designed by outdoor educators for outdoor education programs, the results may be more precise than by using other instruments.

This study was tested if there were significant differences in scores based on program activity sequencing. The results may impact future adventure education programming decisions. For example, if it is shown that order A, B, C, D is the most effective and order C, D, A, B is least effective, outdoor education program directors may choose to modify their programs to make the most of the time that participants have during the programs.

The final significant aspect of this study was the examination of differences between the sexes. Based on the results of this study, educators, both in the outdoors and in schools, may be able to provide experiences that lead to improved growth and development for both males and females.

Assumptions

The following assumptions were made in relationship to this study:

1. Subjects voluntarily assented to participate in this study.
2. Subjects completed the forms with integrity, meaning that they answered each question honestly and to the best of their ability.
3. Subjects were able to follow instructions.

Limitations of the Study

The results of this study might have been affected by the following limitations:

1. The researcher utilized intact samples of middle school children which may not be representative of the larger population of middle school children.
2. Statistical analyses of data were based on measures that have the general limitations of self-report instruments.
3. The LEQ-I was designed and tested on subjects aged 11 to 30+ years. Because the subjects in this study are 11 to 13 years of age, they fall on the lower edge of the age group tested. For this reason maturity may influence the results.

4. Students may not understand the meaning of certain words or phrases on the questionnaire, which may impact the scores on certain items.
5. Because the instrument is new, there is a “need to develop concurrent validity evidence, especially corroboration with other methods of observation and data collection” (Neill, 2000, p. 9).
6. As the treatment is an outdoor education program, if there is inclement weather, the activities may have to be altered or substituted which may cause a difference in the results.
7. Because there are a number of leaders and instructors at the outdoor education center, the same instructors most likely will not teach the same activities to every group that comes through. A difference in leadership styles and abilities could influence the impact of an activity on a group.

Delimitations of the Study

This study was delimited to:

1. A sample of approximately 110 middle school students from the St. Louis area who participate in a three-day residential adventure-based school camping program at an outdoor education center as a part of the school curriculum.
2. Measurement of life effectiveness via the Life Effectiveness Questionnaire- Version I (LEQ-I).

Definition of Terms

The following terms are defined for specific application in this study:

Achievement motivation: "How motivated a person is to achieve some goal or objective" (Neill, Marsh, & Richards, 1997, p. 6).

Active initiative: "A dynamic ability to actively and independently initiate new actions and thoughts in a variety of personal and work settings" (Neill, Marsh, & Richards, 1997, p. 6).

Adventure-based school camping program: Residential outdoor education program in which school participate in adventure/challenge/risk activities such as challenge courses, river trips, caving, and orienteering at an outdoor education center, where they spend one or more nights, as part of the classroom curriculum.

Adventure/challenge/risk activities: activities and programs that include an element of perceived risk, and are designed to challenge the individual through a set of stimulating outdoor activities.

Emotional control: "A person's ability to deal with emotions under difficult or demanding situations" (Neill, Marsh, & Richards, 1997, p. 8).

Environmental education: "Environmental education should increase public awareness and knowledge about environmental issues as well as provide the public with the skills necessary to make informed decisions and the motivation to take responsible actions" (National Environmental Education Advisory Council, 1998).

Intellectual flexibility: "A person's ability to appropriately adjust their views to accommodate and act upon the ideas of others" (Neill, Marsh, & Richards, 1997, p. 7).

Life-effectiveness: "Psychological and behavioral aspects of human functioning which determine a person's effectiveness or proficiency in any given situation" as measured by the Life Effectiveness Questionnaire- Version I (LEQ-I) (Neill, Marsh, & Richards, 1997, p. 5).

Locus of control: Beliefs about how much freedom and control a person has over the positive and negative events in his/her life (Mannell & Kleiber, 1997).

Outdoor education: Outdoor education is an experiential method of learning with the use of all senses. It takes place primarily, but not exclusively, through exposure to the natural environment. In outdoor education the emphasis for the subject of learning is placed on relationships concerning people and natural resources (Priest, 1999, p. 111).

Program: A designated course, or courses of study, and interchangeable with curriculum.

Residential outdoor education: A program where students go to a camp or environmental education center and spend at least one night at that site while learning outdoor skills, about the environment, and/or participating in adventure-based activities.

School-based camp: Camp program at a residential outdoor education center which is sponsored by a school and is included as part of the school curriculum.

Self-confidence: "An individual's general confidence of success in work and personal situations. Closely related to self-esteem, self-efficacy, and self-concept" (Neill, Marsh, & Richards, 1997, p. 8).

Sequencing: The order in which activities are presented to the participants.

Social Competence: "The ability to function effectively in social situations, also called interpersonal competence and social skills" (Neill, Marsh, & Richards, 1997, p. 6).

Task Leadership: "An individual's ability to take control of situations, motivate and enthuse others towards common goals, and ensure a productive and harmonious outcome when there is a situational need or opportunity" (Neill, Marsh, & Richards, 1997, pp. 7-8).

Time Management: "An individual's ability to plan and make efficient use of time" (Neill, Marsh, & Richards, 1997, p. 6).

CHAPTER II

REVIEW OF RELATED LITERATURE

In order to provide for a better understanding of the concepts in this study, a review of the literature in several related topical areas has been included. The five major sections of this review have been organized as follows: (a) outdoor education; (b) sequencing; (c) gender; (d) life effectiveness; and, (e) summary.

Outdoor Education

Outdoor education has been defined in many different ways. One of the most simplistic, yet holistic, definitions is, "Outdoor Education is education in, about, and for the outdoors" (Donaldson & Donaldson, 1958, p. 17). Education "in the outdoors" is a self-explanatory concept. In fact L. B. Sharp summed up this notion well by explaining "that which can best be learned inside the classroom should be learned there. That which can best be learned in the out-of-doors... should there be learned" (Sharp, 1947, p. 43).

The other two portions of this definition, about and for the outdoors, are what cause some questions and confusion in this field. These tend to suggest that outdoor education is synonymous with environmental education. During the 1960s and 1970s, when environmental education was making its way into the

forefront of outdoor education, many people viewed the two to be identical. Today, environmental education is often viewed as one branch of outdoor education that deals with both ecosystemic and ekistic relationships (Priest, 1999). Ecosystemic relationships deal with the interrelationships of plants and animals in the environment. Ekistic relationships, on the other hand, refer to human and natural relationships (Ford, 1981; Priest, 1999).

While one of the aims of all outdoor education is to facilitate an appreciation of the outdoors (Ford, 1981; Rohnke, 1989; Storer Camps, 1988) there is a second branch of outdoor education, adventure education, which has other primary goals and objectives (Ford, 1981; Priest, 1999). Like environmental education, adventure education also deals with two types of relationships, interpersonal and intrapersonal (Priest, 1999). The term "interpersonal relationships" describes how groups of two or more people interact with one another (Redmond, 1995). Intrapersonal relationships describe how an individual relates to him/herself and include feelings and thoughts about performance and worth (Redmond, 1995).

Because outdoor education includes both environmental and adventure education, a more appropriate definition of outdoor education for this study follows:

Outdoor education is an experiential method of learning with the use of all senses. It takes place primarily, but not exclusively, through exposure to the natural environment. In outdoor education the emphasis for the subject of learning is placed on relationships concerning people and natural resources. (Priest, 1999, p. 111)

Experiential Education

Priest's (1999) definition includes the phrase "experiential method of learning". Experiential education uses reflection and critical thinking about experiences as the teacher (Merriam & Caffarella, 1999). John Dewey (1938, p. 13) suggested that "all genuine education comes about through experience," although he explained that not all experience leads to education. Figure 1 and the following explanation of the experiential education cycle are extensions of Dewey's theory.

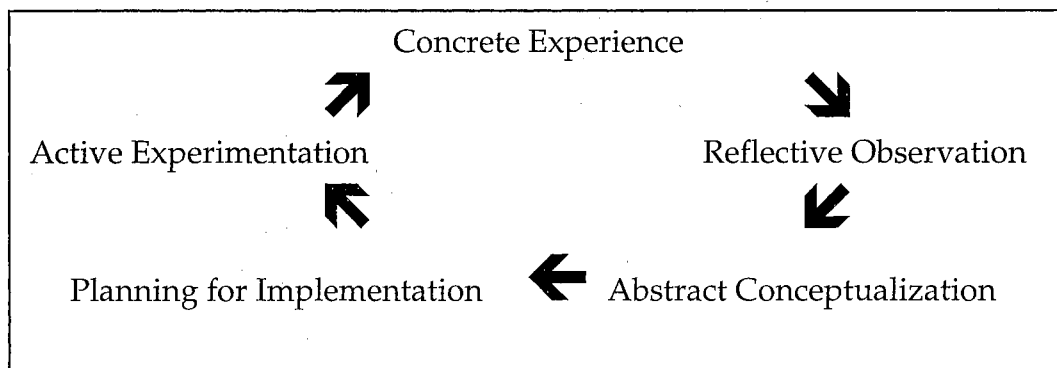


Figure 1. Experiential Education Cycle. Adapted from Barnett (1989) and Merriam & Caffarella (1999).

The experiential education cycle begins with a Concrete Experience. This means that an individual has taken part in some event. After participation, the person then looks back at what occurred (Reflective Observation). This would be similar to watching a video instant replay at a sporting event. The next step in the cycle is Abstract Conceptualization, whereby the person looks not only at what happened, but at what he/she learned from that experience. This learning

could be either ethical or technical in nature. After remembering what one has learned, some thought is given about what will be done differently in future situations (Planning for Implementation). The person tries something different (Active Experimentation) in order to achieve a different result the next time they are in a similar situation (a new Concrete Experience) (Barnett, 1989; Kolb, 1984; Merriam & Caffarella, 1999).

Virtually any subject can be taught in an experiential manner, however, the experiential education cycle is almost always used with adventure-based education programs. Adventure/challenge education utilizes activities such as rock climbing, caving, and high ropes courses that have high levels of perceived risk for the participant. The participants push and challenge themselves to reach their full potential while respecting their own and others' physical and emotional limitations (Priest, 1999; Rohnke, 1989).

Purpose of Outdoor Education

Smith et al. (1963, p. 4) suggested that "modern living has removed large segments of the population from close contact with the land, and has created a need for man to learn about his physical universe and to acquire the skills and appreciations necessary to enjoy fully some of the values of his original habitat." In addition to fulfilling this need, Smith et al. stated that outdoor education can help schools meet the "broad purposes of education;" namely, self-realization, human relationship, economic efficiency, and civic responsibility.

Through the years, the purposes of outdoor education, especially as related to school curriculum, have grown and evolved. For example, the following seven objectives of outdoor education have been identified by an outdoor education center that specializes in providing school camping programs:

1. To help students understand and experience the relationship between themselves and the natural environment.
2. To strengthen social relationships among teachers and students, students, and schools from different geographic and social backgrounds.
3. To help students gain a sense of independence and self-identity.
4. To give students a chance to succeed in a non-graded environment.
5. To help students become more aware of their senses.
6. To foster a spirit and attitude of inquiry in students.
7. To encourage students to actively participate in outdoor activities (Storer Camps, 1988).

Other purposes of outdoor education that not included in this list are increased academic success as noted by higher grades and higher scores on standardized achievement tests (Beard, 1998), improved critical thinking (Kranzer, 1958), improved attitude toward school work (Shaw, 1958), and increased academic self-concept (Steel, 1969). Additionally, Ford & Blanchard (1993) suggested that there are certain values inherent in outdoor activities, which include physical values, mental values, and emotional values. Some of the

physical benefits of participation in outdoor activities include exercise, endurance, energy, strength, skills, and coordination (e.g. Ford & Blanchard, 1993; Kranzer, 1958, Steel, 1969).

Outdoor participation has also led to some mental benefits like self-awareness, self-concept, understanding of safety measures, and knowledge about the environment (e.g. Coren, 1970; Davidson, 1965; Esparo, 1971; Ford & Blanchard, 1993; Steel, 1969). Participants also receive certain emotional benefits from participating in outdoor activities, such as a sense of achievement, the ability to overcome stress, and enjoyment (e.g., Alexander, 1969; Beker, 1959; Coren, 1970; Ford & Blanchard, 1993).

Research has shown that certain outdoor education programs, especially environmental education programs, have led to enhanced environmental awareness or literacy among the participants (Eaton, 1998; Esparo, 1971; Harding, 1997; Martin, 1999; Nelson, 1996, Pepper, 1952; & Smith, 1995; Van Der Smissen, 1980). It has been suggested in some outdoor education literature that an increase in environmental awareness and knowledge provide the foundation for changed environmental attitudes and philosophy (e.g. Ford, 1981; Hammerman, Hammerman, & Hammerman, 1985; Leitner, Leitner and Associates, 1989). Additionally, Shepard and Speelman (1985-86) found that five-day long resident outdoor education programs have a greater impact on environmental attitude than shorter programs.

Through outdoor education activities specific societal structures and power relationships may start to change so that all groups involved have a more equitable role in their community or micro-society (Aronstein, 1972; Shaw, 1958; Stack, 1960). While most people view the outdoors as being a typically white, male domain (Ford & Blanchard, 1993; Warren, 1996), school-based outdoor education can involve people of diverse backgrounds at a young age. When people are exposed to experiences as children, they tend to feel a sense of entitlement and belonging in the outdoors. Additionally, experiencing activities, developing relationships with and respect for others helps young people of different social groups (including sex, race, and religious affiliation) feel more comfortable with and respectful toward each other (Aronstein, 1972; Beker, 1959; Rhoades, 1953; Shaw, 1958; Stack, 1960).

Sequencing

Most educational curricula begin with instruction of basic material with more complex information being added as the students gain mastery (Dewey, 1916; Flexner, 1923; Hergenhahn & Olson, 1997). In the field of education, there are two major metaphors comparing the educational process to that of building construction, foundation and scaffolding concepts (Pietig, 1997; Shulman, 1990; Stone, 1998; Wood, Bruner, & Ross, 1976). The concept of scaffolding relates to having a framework in place and filling in around it, linking concepts together. The foundation concept means starting at the bottom and working upward,

building on top of already existing understanding of concepts (Pietig, 1975; Shulman, 1990).

Physical educators call the foundation concept skill progression and suggest that when teaching a physical skill, one should begin with the simplest movement and slowly add more difficult moves as the students achieve mastery (Everhart, 1996; Langley & Woods, 1997; Siedentop, 1983; Siedentop, 1998).

While there is some debate about which is the better technique, educators generally agree that there must be some type of preliminary structure upon which all other knowledge is built (Pietig, 1997).

In adventure-based programs the order in which activities are presented to the participants is referred to as sequencing (Gass, 1993; Gass, 1995; Rohnke, 1989). Sequencing has been defined as “paying attention to the order of activities so that the order is appropriate to the needs of the group” (Schoel, Prouty, & Radcliffe, 1998, p. 35). While many books and articles have discussed the importance of sequencing the adventure program, there has been little consensus about the appropriate sequence of activities (at a micro-level), because every group develops differently and has different needs that need to be met (Smith, Roland, Havens, & Hoyt, 1992; Rohnke & Butler, 1995).

Models of Sequencing

Although the literature suggests that there is no single specific set order for sequencing that must be followed, several different models have been proposed for use during adventure education: sequential process (Roland &

Havens, 1983), experiential challenge program (Roland, et al, 1987a), activity process model (Roland, et al., 1987b), challenge education sequence (Robb & Ewert, 1987), trust fall and spotting exercise sequence (Rohnke, 1989; Schoel et al., 1988), Project Adventure sequence (Schoel et al., 1988), the Corporate Adventure Training sequence (Priest, Attarian, & Schubert, 1993), and the hypothetically correct sequence (Bisson, 1997). Overall, these models have similarities in their progression, even though they were designed for different populations.

The “Sequential Process” model was the first specific sequential model developed to enhance programmatic outcomes. It was designed for use with people with disabilities at the Vinland National Center in Minnesota (Roland & Havens, 1983). This model includes five levels: (a) awareness activities; (b) group cooperative games; (c) individual initiative tasks; (d) group initiative tasks; and, (e) high adventure activities. The authors argued that lead-up activities serve a dual purpose. First, participants would become more involved and thereby receive greater benefits of the program. Second, the lead-up activities would prepare participants for more challenging adventure tasks. In this model, the participants move back and forth between individual and group activities, while increasing the level of challenge, though no rationale is given for the progression (Roland & Havens, 1983).

Roland modified his original sequence, “Sequential Process” (Roland & Havens, 1983), to be more group-oriented. His second five step model, the

“Experiential Challenge Program” (ECP), was originally designed for use with mental health patients (Roland, Summers, Friedman, Barton, & McCarthy, 1987a). This model utilizes the following order of activities: (a) goal-setting; (b) awareness; (c) trust; (d) group problem-solving; and, (e) individual problem-solving. The authors suggest that each step establishes a foundation for the next step in the sequence (Roland et al., 1987a). It is to be noted that in this model, the participants go through a series of group activities first and then move on to individual activities. Although no explanation is given for this progression, it is one of the most common sequences in adventure education.

Shortly after the ECP model came out, Roland, Keene, Dubois, and Lentini (1987b) modified it and developed the “Activity Process Model.” This model was suggested because many activities include components from the other steps. This model has a central core titled “Challenge activities.” The five stages from the ECP model are placed in a circle around the core to indicate that each level shares some common components. The next circle indicates that “processing” or “debriefing”, also known as Reflective Observation, Abstract Conceptualization, and Planning for Implementation in the Experiential Education cycle (see Figure 1), occur throughout the experience. The outer circle, “The Adventure Experience” represents a final level that includes activities such as rock climbing or rappelling. This outer circle represents the integrative aspects of the entire sequence from start to finish (Roland et al., 1987b).

The “Challenge Education Sequence” (CES) (Robb & Ewert, 1987) is similar to the ECP (Roland et al., 1987a) and the Activity Process Model (Roland et al., 1987b) In fact the first three steps, (a) goal setting; (b) awareness; and, (c) trust, are identical. Robb & Ewert (1987) differentiated their model with the addition of a new category, “Cooperative activities”, as the fourth step. The last three steps are (e) problem solving; (f) group challenge; and, (g) adventure activities.

Project Adventure suggests that there is no right or wrong sequence and that each group requires a customized progression depending upon the goals and abilities of the group (Rohnke, 1989; Schoel et al., 1988). They do, however, recommend using a three-step fundamental introductory sequence known as the “Trust Fall and Spotting Exercise Sequence” (Rohnke, 1989; Schoel et al., 1988). The three steps include (a) ice-breaker, acquaintance, and warm-up activities; (b) deinhbitizer activities; and, (c) beginning trust and spotting activities. The trust fall sequence has been suggested to be critical in Project Adventure curricula because it assures safety (both physical and psychological) for group members and serves as a preparatory stage for more challenging activities (Schoel et al., 1988).

The Project Adventure (PA) sequence begins with the three-step “Trust Fall and Spotting Exercise Sequence” then adds additional categories to add more group and individual challenge as follows: communication activities, decision-making and problem solving activities, social responsibility activities,

and personal responsibility activities (Rohnke, 1989; Schoel et al., 1988). The PA sequence is one of the most widely known and accepted adventure sequences used today (e.g. Anderson & Frison, 1992; Kimball, 1986; Priest, Attarian, & Schuber, 1993).

The Corporate Adventure Training (CAT) sequence is similar to the PA sequence. It includes six general categories: (a) client visitations; (b) classroom sessions; (c) socialization games (including familiarization and deinhbitization); (d) group initiatives (including trust, communication, decision-making, and problem solving); (e) ropes courses (spotted low courses and belayed high courses; and, (f) outdoor pursuits (activity or wilderness-based pursuits such as rock climbing, kayaking, and backpacking) (Priest, Attarian, & Schuber, 1993).

In 1997, Bisson utilized a group of professional adventure educators to help develop the following "Hypothetically-Correct" sequence: (a) acquaintance activities; (b) deinhbitizer activities; (c) communication activities; (d) trust activities; (e) group problem solving activities; (f) individual low ropes course activities; (g) individual high ropes course activities; and, (h) outdoor pursuit experience.

As mentioned previously, while each of these models has its own unique sequence of activities, they all tend to follow a very similar plan. Unfortunately, very little research has been conducted that assesses the validity of any sequencing model. Of the few models that have been tested (Bisson, 1997; Priest,

in press), no replications have been completed to assist in verification of the initial results.

Research in Sequencing Adventure Activities

The purpose of this section is to review, in chronological order, the existing research on the role of sequencing in outdoor education and its effects on programming outcomes. It contains studies by Wood (1978), McGowan (1989), Freeman (1993), Priest (in press), and Bisson (1997)

Sequencing and Behavior

Wood (1978) studied the interaction patterns of students with each other, staff members, and the environment by focusing primarily on student behavior patterns and perspectives in relationship to the sequence of activities. Wood observed approximately 80 young adolescent students who participated in a two-week residential adventure program. He also interviewed some participants and used symbolic interactionism as the basis for analyzing the findings.

In his study, Wood (1978) altered an existing activity sequence (Sequence I) "to determine whether certain rearranging of activities affected participants' behaviors or further aided in the accomplishment of the objectives" (Wood, 1978, p. 170). Sequence I followed this progression: Outer Limits Film, Adventure I, Adventure II, Adventure III, and the Odessey Trek. Staff members involved with the program recommended placing the "Outer Limits Film" and Adventure I after Adventures II and III, respectively, as the suggested sequence (Sequence II) because they felt it might produce better results. The activities investigated in the

study were limited to only the adventure-based activities of the camp program.

The two comparison sequences can be seen in Table 1.

Table 1

Wood's Sequential Alteration of Session Activities

	SEQUENCE I	SEQUENCE II
DAY 1	Adventure I Group problem-solving activities Outer Limits Film	Adventure II: Glen Course
DAY 2	Adventure II: Glen Course Southern Ropes Canoe Instruction	Adventure II (continued): Southern Ropes Canoe Instruction
DAY 3	Introduction to Camping Adventure III: High Ropes Bridge Zip	Adventure III: High Ropes Bridge Zip Outer Limits Film
DAY 6	Odyssey Trek	Adventure I: Group problem-solving activities Odyssey Trek

Adapted from Wood (1978, p. 169).

In his study, Wood (1978) indicated that Adventure I included group problem-solving activities, like "All Aboard," "Electric Fence," "Human Knot," and "The Wall." Adventure II was the "Glen Course" and "Southern Ropes", and Adventure III was the "High Ropes" and "Bridge Zip". While these two adventures appear to be low and high challenge course activities, respectively, no detail was provided regarding the activities at Adventure II or III except that the "Bridge Zip" was utilized as an exit from the high course. The "Outer Limits

Film” was a National Geographic Society documentary on the Outward Bound School the students watched. The final component of the adventure sequences was the “Odyssey Trek,” a three-day backpacking trip.

Wood (1978) determined that Sequence I was more effective in accomplishing the program objectives than Sequence II, and noted that altering the sequence did not impact student behaviors positively or negatively.

Sequencing and Locus of Control

The purpose of McGowan 's (1989) study was to examine the effects of experiencing activities with an increasing or decreasing amount of perceived risk and either high or low task relevance on an individual's level of locus of control. In this study, 58 adults (11 males and 47 females) were randomly assigned to one of the following six sequence groups: (a) constant low perceived risk with non-task relevance; (b) constant low perceived risk with task relevance; (c) decreasing perceived risk with non-task relevance; (d) increasing perceived risk with non-task relevance; (e) decreasing perceived risk with task relevance; and, (f) increasing perceived risk with task relevance. The first two sequences with constant low perceived risk were viewed as control sequences, while those with increasing or decreasing perceived risk were considered experimental sequences. The sequences of activities in relation to their gradient of perceived risk and task relevance may be seen in Table 2 (McGowan, 1989).

Table 2

McGowan's Sequences of Activities and Perceived Risk and Task Relevance

	NON-TASK RELEVANCE	TASK RELEVANCE
CONSTANT LOW PERCEIVED RISK	Control Group 1: Hiking Plant identification Gold panning	Control Group 2: Tree identification Campfire building Outdoor cooking
DECREASING PERCEIVED RISK	Experimental Group 3: Rappelling Canoeing Plant identification	Experimental Group 5: High ropes course Intermediate ropes course Low ropes course
INCREASING PERCEIVED RISK	Experimental Group 4: Plant identification Canoeing Rappelling	Experimental Group 6: Low ropes course Intermediate course High ropes course

Adapted from McGowan (1989, p. 42).

By using a two-way analysis of variance (ANOVA) on the scores of Rotter's I-E scale at the end of the seven-hour sequence, McGowan (1989) found that there were no significant differences in locus of control when analyzing the data on the four a priori comparisons. During interviews with the group facilitators, he found that experimental group 6 (increasing perceived risk with task relevance) displayed high levels of enjoyment and showed a "high level of verbal group support and much interaction between the group members" (p. 51). In addition to those comments the facilitator for experimental group 5 (decreasing perceived risk with task relevance) said that the participants viewed the overall experience as negative and that some "subjects had voiced their frustration and anger concerning the 'ordeal' they had undergone" (pp. 51-52).

The other four group facilitators reported an average level of group member enjoyment and support.

Sequencing and Flow

The existence of “flow,” as defined by Csikszentmihalyi (1975), during a progressive sequence of adventure activities was the source of Freeman’s (1993) study. “Flow” is characterized by a heightened sense of personal awareness and total immersion into an activity that occurs when a persons’ skill level is congruent with the level of challenge posed by the activity at hand (Csikszentmihalyi, 1975). By presenting 22 adult participants with a hierarchical progression of activities, similar to the Challenge Education Sequence (Robb & Ewert, 1987), Freeman hypothesized that the perceived challenge of the activity would match the perceived skill level of the learners leading to a state of “flow” as measured by a modified Experience Sampling Form. The following six step hierarchical sequence was used: (a) goal setting; (b) awareness activities; (c) trust activities; (d) cooperative activities; (e) group problem solving activities; and, (f) group challenge activities. For specific activities in each of the six steps see Table 3.

It is interesting to note that some of the activities included in Freeman’s (1993) study have been identified by other facilitators as belonging to different categories. For example, Freeman designated the All-Aboard as a problem solving activity while Rohnke (1984) indicated it to be an initiative and Schoel et al. (1988) considered it to be a communication activity. Some of these difficulties

in categorizing specific activities may have explain why Freeman (1993) found no significant differences in the frequency of “flow” experiences among the six hierarchical steps.

Table 3

Freeman’s Hierarchical Steps and Corresponding Activities

STEPS	ACTIVITIES
Goal setting	Moonball
Awareness	Blindfold/awareness walk
Trust	One-on-one trust fall, willow in the wind
Cooperation	Yogurt Beam
Problem solving	Zig-zag, All-aboard
Group challenge	Mohawk walk

Adapted from Freeman (1993).

The study also showed no significant differences in four of the six phases when compared to the frequency of “flow” during daily life activities. Freeman (1993) did find, however, that there were significant differences in the frequency of “Flow” during the cooperation and problem solving activity steps as compared to the typical occurrence of “flow” during daily life activities.

Sequencing and Teamwork

The first research study to address the effects of sequencing on group development focused on how sequencing impacts teamwork development (Priest, in press). Eight variations of the Corporate Adventure Training (CAT) sequence were tested for effectiveness in developing teamwork among 200 employees of a major corporation. The sequence variations were assigned to

eight subgroups of 25 people each and the experimental treatment occurred over a period of ten weeks. All subgroups participated in the same introduction and closure activities. Three days after each weekly adventure session participants completed the Team Development Indicator (Priest, in press).

All eight subgroups improved their teamwork as a result of the ten-week program. There was a large variation in improvement among the groups, from 50% to 70%, which was attributed to the sequence of the activities. Within the groups that participated in group-oriented activities such as socialization, group initiatives, and low ropes courses with spotting, the teamwork scores began to improve immediately. Individually-oriented activities added to the teamwork if they followed the group-oriented activities. Sequence B, which showed the most uniformity and greatest increase in teamwork utilized the following sequence of activities: (a) socialization game; (b) group initiative tools; (c) group initiative tests; (d) low ropes course; (e) high ropes course; (f) orienteering course; (g) rappelling; and, (h) classroom lecture (Priest, in press).

Conversely, groups that started with individually-oriented activities saw a slight decline before increasing. These findings are important because they show that while effective sequencing can have positive effects on participants' teamwork, ineffective sequencing possibly can have detrimental effects on teamwork skills and attitude (Priest, in press).

Sequencing and Group Cohesion

The most recent research on sequencing examined the impact of the order of activities on group cohesion (Bisson, 1997). In this study, a group of 25 professionals were used to develop the following “hypothetically correct sequence” by using a modified Delphi technique: (a) acquaintance activities; (b) deinitializer activities; (c) communication activities; (d) trust activities; (e) group problem-solving activities; (f) individual low ropes course events; (g) individual high ropes course events; and (h) outdoor pursuit experience (Bisson, 1997).

Elementary school students were divided into three groups: Hypothetically correct sequence (n=25), altered sequence (n=28), and a control group (n=29) that participated in an environmental education program. The Group Development Assessment questionnaire (Jones & Bearley, 1994) was used to determine levels of group cohesion. The results of this research showed that while both the hypothetically correct sequence and altered sequence were effective at developing group cohesion, the hypothetically correct sequence was significantly more effective than the altered sequence. Additionally, the results support that adventure education programs are more effective in developing group cohesion than an environmental education program (Bisson, 1997).

Summary of Sequencing Literature

Much time and attention has been devoted to literature related to sequencing in adventure programs. Many models have been developed and a

few research studies have tested some of these sequencing models. The impact of sequencing has shown that group-oriented activities should occur before individually-oriented activities (Bisson, 1997; Priest, in press; Wood, 1978). While two studies have examined sequence on specific aspects of personal growth (Freeman, 1993; McGowan, 1989), neither directly examined the order that adventure activities have on personal development.

Gender and Sex Differences in Outdoor Education

In the past, females have been underrepresented in the outdoors; therefore, the research on gender and sex issues in the outdoors has been focused primarily on women and girls. More recent research has shown that the number of females participating in some of the more popular activities such as backpacking, mountain biking, rock climbing, and kayaking often equals or exceeds the number of males participating in those sports (Henderson, 1996a; Henderson, Bialeschki, Shaw, & Freysinger, 1996; Kelly & Warnick, 1999). This large influx of females into a traditionally male domain has great implications for outdoor research. This section will attempt to explore some of the reasons why females participate in the outdoors, constraints to their involvement, and outcomes of outdoor education and participation in outdoor activities.

Participation

As mentioned in Chapter 1, girls and women have been participating in outdoor activities since the beginning of time. However, with the advent of industrialism and organized recreation, certain activities have been considered

off-limits to females. One of the first opportunities for women to find freedom in the outdoors was through bicycling. Susan B. Anthony once said, "let me tell you what I think of bicycling... I think the bicycle has done more to emancipate women than anything else in the world. I stand and rejoice every time I see a woman ride on a wheel. It gives women a feeling of freedom and self-reliance" (Anthony, as quoted in Dodge, 1996, p. 130). From these first steps of freedom and experience in the outdoors, women and girls have moved into an era where they are climbing, kayaking, fishing, hunting, and backpacking with increased numbers every day (Henderson, Shaw, Bialeschki, & Freysinger, 1996; Kelly & Warnick, 1999). While females have many different motivations for participation in the outdoors, most reasons fall into one of three categories: spirituality, skill development, or empowerment.

Spirituality

Henderson (1996c) views spirituality as "manifested in relationships – with a higher being or beings, with one another, with nature, and within ourselves" (p. 194). By going into the outdoors, each woman can reflect on her place in this world and reestablish connections with nature that are impossible to create in any other environment (Dal Vera, 1996; Mitten & Dutton, 1996).

Fredrickson and Anderson (1999) found that being aware of the "sheer powers of nature" and the "expansiveness of the landscape" acted in part to create a spiritual experience for women in the outdoors. In addition to nature's beauty and power, the social interactions and personal relationships with others also

influence women's tendency to perceive wilderness experiences as spiritual (Fredrickson & Anderson, 1999; Henderson, 1996c; Roberts, 1996). In addition to spirituality, the outdoors can be a place where women feel more competent in their skills.

Skill Development

In fact, Jordan (1998) found that three of the top four reasons that women participate in outdoor education programs are skill related. Learning new skills, trying new things, and practicing skills already learned are important for women choosing to participate in outdoor pursuits. In a separate evaluation of the Iowa Becoming an Outdoors-Woman program (Wilson, 1994) found that 82 out of 83 women rated their pre-experience general outdoor skill level as average, novice, or no prior experience. After the workshop, 73 of the women stated that they would be adding new activities to their outdoor repertoire as a result of program participation (Wilson, 1994).

Empowerment

Involvement in the outdoors can be very empowering for women. They learn to overcome fears, feel in control of their actions, and become more confident in their ability to perform in a variety of situations (Dal Vera, 1996; Jordan, 1998; McClintock, 1996; Mitten, 1996; Rohde, 1996). This increase in self-efficacy in the outdoors can be transferred to other aspects of their lives with proper leadership and education (Jordan 1991; Henderson 1996a). Rogers (1999) suggests that as females go through adolescence, they tend to lose courage.

Outdoor education may open doors for girls to find new ways to explore their identity and to assert some power in other aspects of their lives (Henderson, Bialeschki, Shaw, & Freysinger, 1996; Wearing, 1990).

Constraints

Involvement in outdoor activities can be very rewarding for those who choose to participate, however, the many constraints imposed on women in the United States, leaves a large number of women unable to receive the benefits that the outdoors offers (Henderson et al., 1998). Some of these barriers include accessibility, exposure to the outdoors, and other gender issues.

Accessibility

Accessibility is the first limiting factor for many women. The lack of economic equitability between males and females means that many women cannot afford to participate in some of the outdoor programs that are more readily available to men (Henderson, et. al., 1988; Jackson, 1994). Even if women can financially afford the experience, social conditioning keeps many from participating (Henderson, Stalnaker, & Taylor, 1988; Thomas & Peterson, 1993). Most women have been socialized to care more for others, especially their children, than themselves. This nurturing behavior can cause many women to feel guilty if they leave their responsibilities for "selfish" indulgences (Roberts, 1996; Warren, 1996). Because women have an "ethic of care," it becomes more imperative for outdoor providers to understand that even in leisure pursuits, women seek relationships and bonding with others (Henderson & Allen, 1991).

Exposure

In this country, more men than women were brought up participating in outdoor activities like hunting, fishing, camping, etc. (Bialeschki, 1992; Jordan, 1989). This inequity in exposure has caused a lack of technical skills, which leads to apprehension among women participants (Warren, 1996). Additionally, a lack of exposure to outdoor activities causes women to believe that the outdoors is a place for men only. Moreover, they may also believe that they have no right to participate in these “masculine” pastimes. Research has shown that this lack of entitlement to outdoor pursuits is especially pronounced in women of color (Roberts, 1996; Roberts & Drogin, 1996; Roberts & Henderson, 1997).

An issue related to having few prominent female role models in the outdoors, is that our culture tends to view outdoor pastimes as masculine (Henderson, Bialeschki, Shaw, & Freysinger, 1996). Some females, therefore, question their femininity when considering participating in outdoor programs. This lack of voice also leads women to question their rights to participate in activities that they feel they have not “earned” or are entitled to (Bialeschki, 1992; Warren, 1996).

Fear

Fear deters many women from participating in outdoor pursuits. Fear of physical violence, fear of the unknown, fear of failure, fear of looking incompetent, fear of being alone, and fear of risk are only a few of the many fears that women may experience in relation to outdoor activities. High levels of fear

of violence are consistently found in women's research (Shaw, 1999). Gilligan (1998) has suggested that a fear of success can lead women to avoid trying new activities, such as outdoor pursuits. Men often brag about their failures to show that they at least attempted some goal. Conversely, women tend to hide their failures because they think that as a role model, they must be perfect. Del Vera (1996) states that a "focus on setting learning goals rather than performance goals is a key to overcoming...an extreme fear of failure that keeps women from actualizing their potential and enjoying life" (p. 283).

When physical strength becomes an issue in performing certain skills, females may face initial failure in completing the activity. Even though the women may have the same knowledge of the skills as men, because women have less physical prowess, they may not perform the skills to the same level as the men. For women, it may take a while before the skill can be performed, because they need to rely more heavily on technique. Because the women may fail initially, many may internalize these feelings of inadequacy, which in turn can lead to a lack of participation in the outdoors (Jordan, 1989; Warren, 1996).

Body Image

Body image is of particular concern among many women because it impacts both health and self-esteem. Poor body image may stifle some women's participation in certain leisure pursuits (Henderson, Bialeschki, Shaw, & Freysinger, 1996; Shaw, 1999; West-Smith, 1997). However, there is some research that has shown that women who regularly participate in outdoor

pursuits tend to view their body image more positively than the general population of women. Ninety percent (90%) of the outdoorswomen in West-Smith's (1997) study rated themselves as having at least average physical attractiveness. She also found that outdoorswomen tend to have a different definition of physical attractiveness than what is depicted by the media and supermodels. Her study showed that outdoor participants look at attractiveness as it relates to women's perception of self, physical fitness, and care of the body (West-Smith, 1997).

Adolescents

While much of the research related to gender and sex and the outdoor experience relates to women rather than adolescents, it is important to note that as girls move through their teenage years they come under more and more pressure from society to fit in (Rogers, 1999). This social pressure can be one of the reasons why teenage girls' level of physical and outdoor activity decreases (Pipher, 1994; Stemmermann, 1993). The girls may believe, as a result of decreased self-esteem and confidence, that by giving up or limiting activities they will feel more feminine (Sadker & Sadker, 1994). As a result of increased pressure to conform to societal norms, the adolescent female might be less likely to stay involved in an active outdoor lifestyle (Sadker & Sadker, 1994).

Potentially, outdoor education can help young adolescent girls feel comfortable in the outdoors by helping them overcome many of the constraints that women in the U.S. face (Culp, 1998). Culp (1998) found that adolescent girls

often acknowledged that a lack of self-esteem or confidence were reasons that other girls might not want to participate in outdoor activities. Additionally, research on an early outdoor education day camp has suggested that after six weeks of program participation that girls improved in their physical fitness levels and social-personal adjustment levels more than a group that did not attend the camping program (Coren, 1970). More recent studies have shown that outdoor activities can positively influence self-esteem, locus of control, and empowerment (Ewert, 1982; Hendee & Brown, 1987; and Mitten, 1992). Moreover, Thomas (1994) found that women who had been Girl Guides as teens had high perceived levels of competence, self-confidence and self-esteem. In a study on gender equitable outdoor education programs, it was suggested that although the participants showed attitudes and behaviors that aligned with traditional sex-role stereotypes, that they involved themselves in ways (attitudinally and behaviorally) that challenged traditional roles and relations (Monsour, 1998).

Life-Effectiveness

Currently, there is very little literature and research that addresses life-effectiveness. The author of the Life-Effectiveness Questionnaire suggests that it be viewed as personal effectiveness (Neill, 1999; 2000), how an individual acts, responds, and thinks in a variety of situations. It has been proposed that the greater one's personal effectiveness, the more likely that person is to achieve success in life (Neill, 2000; Neill, Marsh, & Richards, 1997).

Over the last sixty years, experiential and outdoor education practitioners have touted the benefits of challenging outdoor activities on participants' personal development. Initially, many of the claims were based on personal experience, anecdotal success, and a belief that such experiences are inherently beneficial.

Beginning in the 1960s, researchers began evaluating adventure/ challenge/ risk programs more rigorously by using psychometrically developed instruments to measure changes in psychological phenomena such as locus of control (e.g. 1972; Rotter, 1966; Wright, 1982), self-esteem (e.g. Coopersmith, 1984) self-concept (e.g. Crume, 1983; Fitts, 1965; Nye, 1976), and personality factors (e.g. Hendy, 1975). Most of the published research on adventure program outcomes have used instruments that were designed for assessment rather than for measuring developmental changes. Additionally, these instruments only measure one specific area of personal development.

Unhappy with the instruments available to assess changes in personal development as a result of participation in outdoor education programs, a group of outdoor educators in Australia began designing a psychometrically valid instrument that would measure developmental changes in participants' perceptions of their overall life effectiveness. In addition to this broad overall objective, they wanted the instrument to: (a) be easily administered in the field; (b) relevant to most program aims, especially facilitating personal development in a variety of life skills; (c) detect change; and, (d) specifically measure a range

of life skills that are necessary and/or beneficial to successful living and working (Neill, Marsh, & Richards, 1997).

After a series of pilot tests, the Life Effectiveness Questionnaire – Version I (LEQ-I) was developed. This instrument measures nine different aspects of life effectiveness: achievement motivation, active initiative, emotional control, intellectual flexibility, locus of control, self-confidence, social competence, task leadership, and time management (Neill, 2000). A brief review of the literature related to each of these nine dimensions follows.

Nine Dimensions

Achievement motivation

Research has shown a close relationship between motivation and achievement (Arkes, 1982). With higher motivation to achieve, comes a greater chance that a particular accomplishment will be obtained (Weiner, 1980). One long-standing assumption of achievement motivation is that people with competitive and individualistic social values tended to have higher need for achievement than those with cooperative and group-oriented social values (McClelland, et al., 1976; Murray, 1938). Since then, studies have shown that the only real differences in achievement motivation between people with cooperative social values and people with competitive or individualistic social values is the reported enjoyment of interpersonal competition (Kagan & Knight, 1981; Platow & Shave, 1995).

Ang & Chang (1999) looked at the effects of locus-of-control on need for achievement and need for affiliation among students at an Asian university. They found that locus-of-control is not a significant predictor of need for achievement. They did however, discover that need for achievement and need for affiliation are positively correlated. (Ang & Chang, 1999).

A research study about entrepreneurship in Asian countries looked at the impact of environmental variables (dynamism and hostility) and personal variables (achievement, locus of control, and self-efficacy) and how they interact together to influence organizational success (Ibrayeva, 1999). It was shown that environmental variables negatively impacted need for achievement and locus of control, as well as organizational performance. Additionally, high self-efficacy had a positive impact on organizational performance and mediated the relationship between need for achievement and locus of control and organizational performance (Ibrayeva, 1999).

Gilligan (1998) suggested that there are differences in males' and females' achievement motivation. Men tend to approach success and avoid failure. Women, on the other hand, tend to fear success. She suggests that females find a discrepancy between success and maintaining relationships with others and retaining a feminine identity.

Other studies related to achievement motivation address the issue of academic success (Accordino, 1999; Chiu, 1997; Edelin, 1998; Lenz, 1999). In a study on achievement motivation in high-school students, Accordino (1999)

found that if students have high personal standards and strong feelings about not meeting those standards, this discrepancy predicted high academic achievement. Additionally, high personal standards significantly predicted achievement motivation and work orientation (Accordino, 1999). Chiu (1997) also found a strong correlation between students' achievement motivation and their grades.

Lenz (1999) studied the importance of help and support from parents on achievement and self-concept and found that while parental help and support for students help improve achievement, low levels of parental pressure were found to be more beneficial than high levels of pressure on achievement (Lenz, 1999). While looking at achievement motivation of African-American middle school students, Edelin (1998) suggested that the classroom context, including the teachers' goals, impacts students' achievement goals. She found that students in poor, urban schools described classrooms with low-level academic work, few opportunities to be autonomous, and an emphasis on extrinsic incentives to control students all of which negatively impact need for achievement and motivation (Edelin, 1998).

Active Initiative

Active initiative has been defined as "the dynamic ability demonstrated by an individual who actively and independently initiates new actions and thoughts in a variety of personal and work settings." (Neill, Marsh, & Richards, 1997, p. 6). In a personal communication with Neill on September 17, 2000, he

stated that “the idea (of active initiative) was to try to capture the quality of people seeing a need and then taking positive action to resolve a problem or to create something new.”

Although the concept has not been embraced by psychology, it does have qualities that appear to be important in business, management, and sport. For example, when looking at the definitions of some components of creativity, such as innovation, entrepreneurship, production, and transformation (Piirto, 1998), these concepts seem to be anecdotally related to active initiative.

In a similar way, active initiative may be linked to some aspects of leadership, such as empowerment and drive, (Bass, 1990; Conger, 1989; Kirkpatrick & Locke, 1991). By fostering initiative and responsibility in those whom one supervises, Conger (1989) suggests that workers become more empowered. This improves not only the success of the organization, but also the employees’ sense of worth. A study of traits of effective leaders showed that drive and initiative are key traits that help leaders in formulating, pursuing, and implementing an organizational vision (Kirkpatrick & Locke, 1991).

While there is often some resistance to organizational change, Frohman (1997) found that changes suggested and implemented from the bottom of an organizational structure are important in company success. He suggested that organizations should create policies and systems that encourage individuals to take risks and initiate change (Frohman, 1997). Along similar lines, Hinterhuber & Popp (1993) suggest that initiative and creativity should be embraced by

management if it wants to improve the entrepreneurial attitude among its employees. Siegel (2000), pointed out that companies should hire employees based not only on the technical skills required for the job, but also on the possession of strong communication skills, leadership and initiative.

Emotional Control

Goleman's (1995) theory of emotional intelligence became popular as people began to look to other measures of success besides IQ (intelligence quotient). His theory is an outgrowth of alternative intelligence models, such as multiple intelligence theory (Merriam & Caffarella, 1998). Emotional intelligence includes knowing oneself, understanding the relationship between emotions and rational thoughts, empathizing with other people, and managing emotions and coping. Goleman (1995) suggests that emotional intelligence is a skill and therefore, unlike traditional IQ, can be taught to people.

An important part of emotional intelligence is self-awareness, which includes both the awareness of thought processes (metacognition) and the awareness of emotions (metamood) (Goleman, 1995). Through outdoor education, students learn skills that lead to awareness of both thoughts and emotions. Because group processing is an important part of adventure-based outdoor education (Gass, 1995), the students have time to sort through experiences and think about both the thought processes and emotions that went along with an activity. Additionally, they have the opportunity to share with others the insights they gathered along the way. Some programs include "magic

spots” or solo time, when the students have the chance to be by themselves. While many use the time for journaling, others may use it as a time to sort through the experiences on their own. Both group processing and alone time help students to become more self-aware, which can lead to an improved self-concept (Rohnke, 1989; Harmon & Templin, 1987; Horwood, 1994).

The emotional/rational dichotomy can be difficult for instructors to bring about. Any time a person makes a rational decision, people say the decision was made with the “head.” Making decisions with the “heart” means deciding based on feelings and emotions. Goleman (1995) suggests that “feeling” that something is right leads to stronger convictions and a deeper certainty than “thinking” that something is right with one’s rational mind. By teaching students about ethics, outdoor education may help students to deal with the emotional/rational dichotomy of decision-making (Garvey, 1999; Hampton & Cole, 1995). They learn to think and feel in order to make the best decision.

Empathizing with others, understanding diverse perspectives and respecting differences, is another key to emotional intelligence (Goleman, 1995). In the outdoors, individual differences occur every day. One of the goals of outdoor educators is to try to help students to understand why people behave in a wide variety of ways (Hammerman, Hammerman, & Hammerman, 1985). Through explanation and activities that address differences in comfort zones and challenge zones, the students begin to understand how different people think and feel. By recognizing different strengths in people, and finding areas where

individuals need support, the students learn to connect with others in more positive ways (Aronstein, 1972; Beker, 1959; Rhoades, 1953; Rohnke, 1989; Shaw, 1958; Stack, 1960).

Every emotion, anger, fear, happiness, love, surprise, disgust, sadness, and others, elicits a specific physiological response. The strength of the emotion positively correlates with the physiological response to that emotion. Many times, when someone experiences a strong emotion it is said that they “can’t think straight”. The reason for that is that emotions are more primitive and the body tends to take over and react, rather than the brain thinking through the situation (Goleman, 1995). Learning coping skills is one way to manage these emotions.

In the outdoors, students learn to cope with a variety of situations through a variety of methods (Neill & Heubeck, 1998). Research has shown that participants found healthier ways to cope with stress while they were in the outdoors. In particular, after an outdoor experience, females used laughter to deal with stresses more than they did before. The escape from everyday life for a little while helps some people cope with stress better after they get back home (Leitner, Leitner, & Associates, 1989; Norris & Weinman, 1996; Watts, Cohen, & Toplis, 1994).

Another psychological outcome of outdoor education related to coping and managing emotions is spiritual experience. Henderson (1996) views spirituality as “manifested in relationships – with a higher being or beings, with

one another, with nature, and within ourselves" (p. 194). Horwood (1994) mentions that the outdoors evokes an unforgettable sense of wonder toward nature. Even though young students may not perceive the peacefulness and connection that is often found in nature to be a spiritual experience, many do believe that the outdoors is a special place for inspiration (Link, 1981; Driver, Tinsley, & Manfreda, 1991; McDonald & Schreyer, 1991).

Intellectual Flexibility

The ability to adjust one's views to allow the consideration of other's ideas and to act upon those ideas is what is meant by intellectual flexibility (Neill, Marsh, & Richards, 2000). There is a strong relationship between intellectual flexibility and existential openness, the tendency to confront existential dichotomies like certainty/uncertainty, purposefulness/meaninglessness, self-determination/fate (Stevens, 1992) and conceptual complexity (Suedfeld, 1995).

Much of the research related to intellectual flexibility has been centered on the workplace (Husenits, 1992; Longino, 1987; Schwalbe, 1984; Sutton, 1984). Sutton (1984) found that a lack of routinization among teachers was significantly related to their intellectual flexibility. Other research has shown that low job satisfaction (including low amounts of problem solving, role taking, etc. in the work environment) result in intellectual inflexibility, while higher job satisfaction resulted in increased intellectual flexibility (Schwalbe, 1984). Utilizing imagery as a way of thinking has been shown to increase intellectual flexibility among teachers (Longino, 1987).

To date, no research has been conducted to examine how the use of metaphors in processing adventure education activities (Gass, 1995) relates specifically to intellectual flexibility. However, the relationship between imagery and metaphor may suggest that this part of adventure/challenge education, combined with a lack of routinization, and high problem solving and role taking is what causes the changes in intellectual flexibility after an outdoor education experience (Neill, Marsh, & Richards, 1997).

Locus of Control

Rotter (1966) suggested that people vary in the amount of control they think they have over the events and outcomes in their lives. He suggested that people who believe they have a lot of control over their lives tend to have an internal locus of control, while those who believe that fate, luck, or other people control their destiny tend to have an external locus of control. Research that has examined the relationship between locus of control and personal adjustment has shown that people with an internal locus of control tend to have more positive personal adjustment, while those with external locus of control tend to have decreased personal, social, and overall adjustment (Ainsworth, 1977; Campbell, 1998; Day, 1999; Shavitt & Rabinowitz, 1978).

Studies related to locus of control in the therapeutic environments has shown that an internal locus of control has helped with drug addiction (Stratynner, 1998), improved chances of success after release from prison (Conerly, 1997), and resiliency in youth (Garvie, 1997). Luckner (1989) found that an

outdoor adventure education program for individuals with hearing impairments had a positive effect on the participants' locus of control. When examining the effects of sequence on locus of control, McGowan (1989) found no difference in participants locus of control scores based upon the sequence of activities, but that some improvement occurred in both groups. Contrary to Luckner's (1989) and McGowan's (1989) findings, Plas (1995) found that early adolescent females' locus of control moved in a negative direction after a wilderness outdoor education program, and continued steadily downward for three months after the program.

Social Competence

Ewert (1987) suggested that friendship, compassion, group cooperation, communication, behavior feedback, respect for others, and belonging are important social by-products of outdoor participation. These changes in social behaviors and relationships beg the question, "What happens to the group of students in an outdoor setting that does not occur in a traditional classroom setting?"

First and most obvious is the change of setting, from school to a natural area. With a change of setting, comes a change in the group dynamics (Wheelan, 1999). Because the group can not function in the outdoors in the same manner as it does at school, the group is unable to maintain the status quo (Dyson & O'Sullivan, 1998). This situation causes change at all of the following levels, individual thoughts, individual behaviors, interpersonal relationships, group

dynamics and group behaviors. Moreover, the changes at each level impact all of the other levels (Priest & Gass, 1997; & Wheelan, 1999).

Acquiring social interaction skills is necessary for mutually beneficial relationships between individuals to form (Redmond, 1995; Trenholm, 1986). By encouraging respect for each other and maintaining a focus on abilities rather than limitations, leaders often can help facilitate the interaction among group members to help them develop into a high-functioning team (Schleien, McAvoy, Lais, & Rynders, 1993).

Residential outdoor education programs tend to create environments where social distance between students decreases (Haynes & Gallagher, 1998; Hammerman, Hammerman, & Hammerman, 1985; Davis, 1960; Fletcher 1973; Acuff, 1976; D'Agostino, 1980). In cooperative endeavors and work situations less popular students were often sought out because of their willingness to work cooperatively with others. Even though these students may have originally been exploited, there was a shift to genuine regard by the end of the experience (Davis, 1960). The outdoor environment can also serve to break down some racial barriers by helping alleviate racial hostility and improve racial attitudes (Acuff, 1976; D'Agostino, 1980).

Perceived differences in gender abilities also come to the forefront during outdoor educational programs. Some of the typical male-female stereotypes can be broken down when students begin to appreciate each person's unique contributions to the group. In fact, Monsour's (1998) ethnographic research

study has shown that boys and girls tended to view each other more positively after an extended outdoor education camp experience than they had before.

In addition to increased numbers of friendships between students, there was also an improvement in teacher-student relationships. Over the years, studies have shown that both teachers and students tended to perceive each other more positively after the outdoor residential program (Bateson, 1981; Storer Camps, 1988; Vogan, 1970). Bateson (1981) suggested that this increase was due to teachers being able to see students who routinely do poorly in school, excel at challenges given to them in the outdoors. On the other hand, students tended to view their teachers more positively because they got to see them in a differently structured, somewhat more relaxed environment (Bateson, 1981).

Another explanation for the increase in relationships after an outdoor education program is found in interpersonal communication theory. Proximity, the physical closeness of individuals, plays a large role in the creation of friendships. People tend to choose acquaintances from people in close physical proximity to them (Redmond, 1995; Trenholm, 1986). During residential programs, the students spend more time in dialogue with people they may not know very well than they typically do at school.

Self-confidence

When choosing which measure of self-evaluation to include, the authors of the LEQ-I decided to select self-confidence. Self-confidence may be defined as a certainty or reliance in one's abilities or powers (Klint, 1999). Studies have

shown than low self-confidence during adolescence can be linked to depression (Marton, Connolly, Kutcher, & Korenblum, 1993), decreased mental health during adulthood (Offer, Kaiz, Howard, & Bennett, 1998), increased use of avoidance strategies to deal with difficult issues (Chapman & Mullis, 1999), and an increased rate of withdrawal from school (House, 1999). Self-confidence is closely related to the terms self-awareness, self-esteem, and self-efficacy, which all “fall under” the big umbrella of self-concept, a generalized term defining a way of looking at “the big picture” of one’s self (Klint, 1999).

Self-concept. Because improving self-concept is a goal or outcome of many outdoor education programs, especially adventure-based programs (Klint, 1999; Priest, 1999), creating the environment for this change is significant. A change in self-concept relies on at least three necessary factors in the outdoors:

1. Adapting to a changing environment;
2. Sharing of self with others; and,
3. Receiving feedback about one’s self from others (Rhudy, 1987; Rosenfeld, 1976).

The ability to adapt to changes can affect self-concept in a variety of ways. One example of this is when students learn strategies for successfully dealing with change, they may begin to feel more at ease or more confident about themselves and the group. This can lead to better overall feelings of self-worth (Rhudy, 1987).

The willingness of an individual to reveal personal thoughts and ideas to others is another portion of self-concept change. Allowing others to look more closely at who a student really is, that individual may begin to understand more about himself/herself. In addition to its role in self-concept change, sharing oneself with others is also essential for group living success (Rhudy, 1987).

Personal feedback and hearing what others have to say also changes the way an individual looks at him/herself. This element is easily added into outdoor education curriculum because it tends to occur naturally through the nature of the activities. Living closely with others and participating in stressful activities both provide avenues for students to give each other feedback (Rhudy, 1987).

There are other opportunities for a change in self-concept to occur during an outdoor education program. The opportunity for solos (spending some time alone in nature), journaling, and storytelling give students opportunities to process the activities in which they have participated. They can share their thoughts and ideas with others or choose to keep their ideas to themselves, either way, these activities can become a time for meaningful, personal discovery (Horwood, 1991).

Self-esteem. While self-concept deals with looking at oneself as a whole, self-esteem is essentially an evaluation of the self (Rosenberg, 1965). Self-esteem serves as a maintenance function of positive affect. In other words, they are positively correlated. When self-esteem is bolstered, a person tends to have a

positive affect. Conversely, when self-esteem is lowered, an individual appears to have a negative affect. Research has shown, however, that negative affect does not necessarily mean low self-esteem (Leary & Miller, 1986). For these reasons, outdoor educators tend to promote esteem-enhancing rather than esteem-diminishing feedback. Additionally, leaders strive to keep students away from self-defeating behavior like learned helplessness, which works against the students' best interests (Leitner, Leitner, & Associates, 1989; Dattilo & Murphy, 1987).

Personal testing and confidence building encourage high self-esteem (Kaplan, 1997). When students participate in activities such as exploring a wild cave, canoeing down a river, or climbing to the top of a 30 foot tall telephone pole and then jumping out to catch a trapeze bar, they achieve higher levels of self-esteem because they feel more confident (Kaplan, 1977; Leitner, Leitner, & Associates, 1989). Additionally, after an outdoor education program, students showed a decrease in negative affect (Fry & Heubeck, 1998).

Self-efficacy. While self-esteem is an evaluation of self-worth, self-efficacy describes a person's belief about his/her particular skills and capabilities. Efficacy expectations determine how a person reacts behaviorally, cognitively, and emotionally to problematic events (Bandura, 1984). Perceptions of self-efficacy determine what activities people attempt, how hard they try, and how long they persist in the face of failure. The higher an individual's efficacy expectations are set, the more likely it is that the individual will set challenging

goals, persevere in frustration, and attain more (Bandura, 1984; Leary & Miller, 1986).

“When performance accomplishments are perceived to be of great magnitude they tend to be broadly generalized to other situations in which performance had formerly been self-debilitated by pre-occupations with personal inadequacies” (Harmon & Templin, 1987, p. 73-74). In other words, efficacy expectations are based on interpretation of personal accomplishment and serve to direct future performance. Research has shown that self-efficacy predicts performance on never attempted activities better than past performance in related situations can (Leary & Miller, 1986).

Bandura (1984) suggests that there are four major sources of self-efficacy information: performance accomplishments, vicarious experience, verbal persuasion, and emotional arousal. The following suggests how efficacy expectations are linked to outdoor education. Performance accomplishments include modeling, performance desensitization, exposure, and self-instruction as methods employed by outdoor educators. By providing the students with hands-on experience, they actually learn by doing the activity. Therefore, they can monitor their own behaviors and learn on their own (Harmon & Templin, 1987).

Both live and symbolic modeling make up a vicarious experience. The students might watch each other or discuss appropriate methods of doing the activity. Through observation and visual images created through dialogue, each person learns more about him/herself from others (Harmon & Templin, 1987).

Verbal persuasion tends to have more impact on outcome than efficacy expectations, however, the outcomes do impact self-efficacy. Group leaders and peers have the opportunity to talk people into believing that they can accomplish their goals through instruction and encouragement. The difference between persuasion in outdoor education and the traditional classroom is that persuasion in the outdoors is mixed with experience, which makes this a very important efficacy tool (Harmon & Templin, 1987).

The fourth source of self-efficacy information is emotional arousal. While some arousal is necessary to energize and motivate students, excessive arousal can lead to decreased attention, avoidance, and learning. In outdoor education, fear tends to be the primary emotion to which educators should pay attention. An extremely fearful group needs to have their fears reduced to a relaxed enough state so that participants can learn. On the other hand, if students do not appear to be focused on the task, a slight increase in their fear levels may be necessary for optimal performance on an activity (Harmon & Templin, 1987).

Because many fears are learned, students can be taught to fear an object by pairing a fear-producing stimuli with an otherwise innocuous neutral object (Bandura, 1984; Leary & Miller, 1986). One example of this is a young child climbing a tree. The child is not afraid, but the parent comes out screaming loudly that the child will fall and needs to come down quickly. If this same sequence continues to occur, the child will most likely become afraid of tree climbing and heights. In order to help address some of the fears associated with

the outdoors, heights, the dark, snakes, spiders, water, etc., outdoor educators employ different methods such as relaxation, symbolic exposure, or symbolic desensitization (Harmon & Templin, 1987).

Because emotional arousal level is related to fear, fear-laden messages can induce fear and facilitate attitude and behavior change if three components are met. First, the fear produced by the message must be relatively strong. Next, the participants must believe that the fearful event has a high probability of occurring. Finally, the students must believe that fearful events can be avoided by changing attitudes or behavior (Leary & Miller, 1986).

It is interesting to note that anxiety and perceived danger are much poorer predictors of performance than self-efficacy (Leary & Miller, 1986). In other words, just because someone has a very strong fear of snakes or heights, that does not necessarily mean that a person will not be successful at a reptile class or on a high challenge course. Their self-efficacy is a much better determinant of how and what they will achieve.

In order to improve self-efficacy it is important that outdoor educators help people find and create a sense of ability. People find that in the outdoors they have many unknown capabilities (Horwood, 1994). By providing challenges and teaching new skills that push the participants while respecting each person's limits, outdoor education can increase the efficacy expectancies of the students (Haynes & Galligher, 1998).

Task Leadership

The authors of the LEQ felt that one of the most important leadership functions is task orientation, which was defined as the ability to get others involved in the activity and motivated to achieve the desired outcome (Neill, Marsh & Richards, 1997). Previous research has shown that task skills, concern for the task at hand, as well as emotive skills, concern for the welfare of the group members, are both important components of leadership (Fleishman, 1989). Wait (1986) looked at how three aspects of task leadership (activity, task contribution, and interpersonal directiveness) impact the integrative performance of a group. The findings show that larger groups tend to have more task-oriented and directive task leaders. Additionally, the amount of leader activity and the leader's task contribution have a positive effect on performance.

On the other hand, interpersonal directiveness has a negative impact on integrative performance (Wait, 1986). Similarly, Sleeth and Johnston (1996) found that effective leaders should serve as a link between people and the tasks to be completed in order for an organization to have lasting effectiveness.

In a study of leadership behavior and group cohesion in team sports, it was found that teams with the highest levels of task cohesion appeared to have leaders who were strong in training and instruction, social support, democratic behavior, and provide positive feedback (Shields, Gardner, Bredemeier, & Bostro, 1997). Additionally, the team members also had high task cohesion because the coach was able to unify the team around task goals, presumably

because coaches of competitive sports tend to focus on performance issues, which essentially are task-related.

On the other hand, a school principal's leadership style does not appear to impact student achievement (Herron, 1994). While research in education has shown that effective schools are a result of strong leadership of the principal, it is uncertain how this leadership is demonstrated (Herron, 1994).

Time Management

One of the more common themes in any journal, magazine, or book on successful living is time management. The ability to avoid procrastination, to plan, prioritize, and organize are key components to being successful in many areas of life, both professionally and personally (Drucker, 1996 & Kraus, 2000). Recent studies on academic success have shown that time management is one of the most important skills students should possess (Carroll, 1998; Johnson, 2000; Marshall, 1999; Osmond, 1994; Smith, 1999; Wisrodt, 1998). Despite the abundance of literature on the topic, there has been little empirical research on time management outside of academic success (Macan, 1994), especially as it relates to people in everyday life (Neill, Marsh, & Richards, 1997).

The research on each of the nine dimensions of the LEQ-I, achievement motivation, active initiative, emotional control, intellectual flexibility, locus of control, self-confidence, social competence, task leadership, and time management, has shown that each of these areas has been shown to be important

to success in life. Additionally, research has shown that deficits in some of these areas relate to physical, social, and/or mental difficulties in life.

Research using the LEQ

Since the development of the LEQ (all versions, A-I), over 5000 participant responses have been entered into the LEQ database. This database is the largest of its kind in adventure education. Approximately eighteen percent (18%) of the participants were school-age students under the age of seventeen. Most of the programs studied and included in the database (at least 76%) lasted longer than nine days, and only ten percent (10%) of the programs were school-based (Neill, 2000). See Table 4 for additional information about the LEQ database.

Table 4

LEQ Database Participant and Program Profile

PROGRAM TYPE	NUMBER OF SUBJECTS	PROGRAM LENGTH	PARTICIPANT DEMOGRAPHICS
School Outward Bound (OB)	N= 542	2 to 10 days	Age 12 to 16 years
Non-OB	N= 581	Varies	Adults – varies
Management OB	N= 451	5-10 days	Adults: middle management.
Adventure OB	N= 131	9 days	Age 12 to 16 years
Adult OB	N= 336	9 days	Age 30+ years
Family OB	N= 108	10 days	2+ family members
Challenge OB	N=1176	21 – 26 days	Age 17-29 years

Adapted from Neill (2000).

When comparing the school-based program data to other types of adventure-education programs, the positive changes in LEQ are much smaller

for school programs. Neill (1999) suggested that some of the reasons for these differences include: participant age, program length, and adolescent developmental influences. When looking at the school program participants by age groups, although the change is positive, eleven and twelve-year old students demonstrate less change in LEQ scores than any other age group except for fifteen year olds.

All of the published studies using the LEQ (any version) have shown positive changes in adventure education participants' life effectiveness (e.g., Eagle, Godon, & Lewis, 2000; Neill & Flory, 2000a & b; Neill, 1999; Neill, 2000; Neill, Marsh, & Richards, 1997). The one dimension or sub-scale of the LEQ that has repeatedly shown the most change is that of Time Management. The sub-scales with secondary gains include Self-Confidence, Social Competence, Emotional Control and Task Leadership. The other dimensions showed positive, but much smaller, gains (Neill, 1999). See Table 5 for more detail.

Table 5

LEQ Database Dimension Effect Size

DIMENSION	EFFECT SIZE
Time Management	ES = .55
Task Leadership	ES = .48
Social Competence	ES = .47
Self-confidence	ES = .46
Emotional Control	ES = .43
Active Initiative	ES = .35
Intellectual Flexibility	ES = .32
Achievement Motivation	ES = .28

Adapted from Neill (1999).

Neill, Marsh, and Richards (1997) completed psychometric testing to ascertain reliability and validity information on the LEQ-Version H. The only changes from version H to version I are the addition of five items to measure locus of control. At the present time, there have been no published reports on the psychometric validity for the locus of control dimension.

Since one intended use of the Life Effectiveness Questionnaire was to compare educational program outcomes, consistency across gender and age were desired. Three types of Confirmatory Factor Analysis (CFA) were completed: congeneric analysis (items by sub-scale), multifactorial CFAs (similar to exploratory factor analysis but with greater power to assist in instrument development), and multifactorial CFAs to test for structural invariance between groups (comparison between groups, e.g. gender). The researchers used the following outcome statistics: factor loadings, co-efficient omega, and two fit indices, Tucker-Lewis Index (TLI) and relative noncentrality index (RNI) (Neill, Marsh, & Richards, 1997). Table 6 displays the results.

As seen in Table 6, the results of that study showed that all but three individual items had factor loadings of at least .70, which means that at least half of the variance can be accounted for by the latent factor. All of the sub-scales had co-efficient omegas above .80, which means the sub-scale reliability is at desired levels. Five of the sub-scales have fit indices over the desired .90, meaning that the model fits the data. The low scores on the fit indices for Task Leadership (.672), Time Management (.870), and Intellectual Flexibility (.888), were explained

by the estimation of uniqueness because they all had high factor loadings (Neill, Marsh, & Richards, 1997).

Table 6.

LEQ Factor Loadings (FL), Uniqueness, Co-efficient Omega (Ω), Goodness-of fit Indices (TLI & RNI), and Sample Size (N)

SCALE & ITEMS	FL	Uniqueness	Ω	χ^2	df	TLI/RNI	N
Time Mgt			.868	118.20	3	.870	923
TM01	.736	.396					
TM17	.748	.320					
TM25	.860	.214					
Social Competence			.896	82.15	3	.929	918
SO02	.875	.196					
SO10	.865	.202					
SO18	.680	.456					
Ach. Motivation			.870	69.12	3	.922	923
AM03	.648	.519					
AM11	.887	.185					
AM19	.755	.350					
Intellectual Flex.			.825	76.78	3	.888	919
IF20	.561	.507					
IF28	.813	.299					
IF36	.791	.333					
Task Leadership			.873	268.48	3	.672	914
TL15	.630	.347					
TL31	.862	.204					
TL39	.798	.310					
Emotional Control			.883	33.06	3	.977	924
EC08	.853	.244					
EC16	.777	.333					
EC40	.850	.263					
Active Initiative			.890	40.16	3	.971	922
AI44	.753	.356					
AI50	.830	.298					
AI59	.889	.188					
Self Confidence			.861	38.14	3	.965	925
SC45	.783	.336					
SC48	.752	.371					
SC54	.847	.254					

Adapted from Neill, Marsh, & Richards (1997).

Summary

Today's resident outdoor education programs have a rich history dating back to the 1800s. Since that time the programs have expanded to cover a variety of activities including environmental education and adventure education.

Pioneers in the fields of experiential education, such as Dewey; outdoor education, such as Sharp and Smith; and adventure programming, such as Hahn and Petzoldt have helped pave the way for current outdoor education centers to provide a variety of experiences for the participants.

Through the years, researchers have examined many aspects of outdoor education and camping programs and found, in general, that participation in an outdoor education program can help people develop mentally, physically, socially, and academically. In more recent years, researchers have started looking more closely at the effects of adventure programming in areas of personal growth such as self-concept, self-efficacy, and locus of control, as well as, in areas related to social skills like group development and teamwork.

Participation in outdoor pursuits has been considered in our society to be a traditionally male domain (Bialeschki, 1992). Today, however, more and more females are participating in outdoor recreation and education programs (Henderson, 1996a; Henderson, Bialeschki, Shaw, & Freysinger, 1996; Kelly & Warnick, 1999). As a result of this participation, research has shown that women and girls tend to receive many positive benefits.

While many outdoor educators have been concerned with sequencing the activities to provide the best learning environment (e.g. Gass, 1993; & Rohnke, 1989), few researchers have examined the effects of sequence on participant outcomes. Those who have examined the effects of sequencing on adventure education outcomes have found, in general, that beginning a program with group oriented activities and then moving to more individually oriented activities provides for better group development and teamwork (Bisson, 1997; Priest, in press).

A group of outdoor educators saw a need to develop an instrument that could be easily administered in the outdoors, works well with a variety of groups, would assess several areas of personal development important to success in life, and could easily detect change in an individual. This instrument, the LEQ-I has been found to be a reliable and valid measurement tool to assess nine dimensions of life effectiveness, achievement motivation, active initiative, emotional control, intellectual flexibility, locus of control, self-confidence, social competence, task leadership, and time management (Neill, Marsh, & Richards, 1997).

CHAPTER III

METHODOLOGY

The purpose of this study was to examine the effects of an adventure-based residential outdoor education (ROE) program on middle school students' perceptions of life effectiveness. Two areas of particular interest to the researcher were the impact of the sequence of program activities on Life Effectiveness Questionnaire- Version I (LEQ-I) scores and sex of the participants on the LEQ-I scores. This chapter explains the methods used in this research study.

Sample of School Camping Participants

An outdoor education center located in Eureka, MO, agreed to allow their regular three-day adventure-based school camping programs to serve as the treatment intervention for evaluating any changes in scores on the Life-Effectiveness Questionnaire- Version I (LEQ-I) in this study. The organization has been providing outdoor residential programming for over one hundred (100) years. The organization began in 1897 as an agricultural farming camp for inner-city children from St. Louis. Since that time, the organization has expanded to provide summer camp and school camp programs at two residential sites, as well as, community outreach programs in St. Louis and East St. Louis, Illinois.

In 1949, the organization began providing camping programs to schools in the St. Louis area. The first school camping programs had an environmental education focus. During the past ten years, the focus at the camp changed. Approximately fifty percent (50%) of their school programs are still entirely environmental education focused. The other half of the school programs are one- to four- day adventure-based programs that include the experiential education cycle as a basis for program development. Although the program focus is adventure education, the staff also includes information about ecology, nature appreciation, stewardship, and Leave No Trace principles as a part of the experiences.

The most common adventure program, which was utilized as the treatment in this study, is a three-day residential program. During the three-day adventure program, students rotated through several different adventure experiences, such as team building/low challenge course, high challenge course, caving, and river float trips during the day. The evening programs included activities such as hayrides, campfires, night hikes, and astronomy.

Several of the schools that participated in these programs agreed to be a part of this research project and to provide intact groups of 20 to 75 sixth grade middle school students for this study. In order to participate in the study, the participants and their parents were required to complete assent and consent forms, respectively. Two of the schools that participated in the study were private Catholic schools located in the suburbs of St. Louis. One of those schools

has been participating in programs at the outdoor education center for eight years, the other, for two years. The public school from the suburbs of St. Louis has taken students to this outdoor center for school camping programs for over ten years.

When the students arrived at camp, the teachers from their school assigned them to groups of approximately fifteen students with whom they rotated through the structured activities at camp. The outdoor education center providing the programs routinely has large ROE programs. To accommodate all the students, they must be divided into smaller, more manageable groups for adventure activities. For programmatic reasons, the activity sequence must be altered so that the number of participants is not too great in any particular activity. The program director at the outdoor education center was the person who sequenced the adventure program activities that were tested in this study. These small groups (See Table 7) provided the basis for assessing the effect of program sequence on life effectiveness.

As seen in Table 7, the students participated in a variety of activities which included team building, problem-solving/communication, group adventure, and individual challenge. The "team building" activity was approximately 3 hours long and included ice-breaker activities, de-inhibitizer games, initiatives, a spotting and trust sequence and low ropes course elements; these were very similar to the Project Adventure (PA) sequence (Schoel et al., 1988) described in Chapter 2 of this study. The purpose of this activity was to

develop group cohesion, leadership, and communication and teamwork among the participants.

Table 7

Sequence of Activities during Adventure-based ROE Program

GROUP NUMBER	SEQUENCE OF ACTIVITIES
GROUP 1	Individual challenge Group adventure Team building Problem solving/communication
GROUP 2	Problem solving/communication Group adventure Individual challenge Team building
GROUP 3	Team building Individual challenge Problem solving/communication Group adventure
GROUP 4	Team building Problem solving/communication Group adventure Individual challenge
GROUP 5	Group adventure Individual challenge Team building Problem solving/communication
GROUP 6	Team building Problem solving/communication Individual challenge Group adventure

The “problem-solving/communication” activity required the participants to build either a raft that could be paddled on the lake or a shelter that would be tested for water-tightness with participants inside. These activities lasted

approximately 3 hours and were designed to facilitate communication among the group members, as well as provide the opportunity for students to develop critical thinking, and problem solving skills.

The participants either went caving or on a river float trip for the “group adventure” activity. The participants who went caving spent approximately 3 hours exploring a wild cave as a group. For the river trip, two or three canoes were tied together to create a raft that was paddled down a flat, seven-mile stretch of the Meramac River. The rationale behind providing the group adventure activity was to help students learn to support and depend on one another while participating in a new (for most participants) activity with a high degree of perceived risk.

The “individual challenge” activity was a high ropes course. The outdoor education center has three different high courses which were all utilized during the public school’s program. The students spent approximately 3 hours at this activity. The purpose of the high ropes course activity was to help the students become more self-aware and self-confident by learning about their own levels of comfort and “pushing themselves” to achieve goals.

Instrumentation

The LEQ-I is a 29-item questionnaire with an 8-point Likert-type scale response. Participants answered each item by deciding where the statement fell along a continuum of false/completely unlike them (a score of one), to true/definitely like them (a score of eight). Therefore, an individual’s Overall

Score could be no less than 29 and no greater than 232. The questionnaire included nine life effectiveness dimensions or scales: achievement motivation, active initiative, emotional control, intellectual flexibility, locus of control, self-confidence, social competence, task leadership, and time management. Because some of these dimensions had three questions, while others have five, an arithmetic mean was calculated for each dimension so they could be equitably compared to each other. Additionally, the researcher asked the participants to include background and demographic information such as ethnicity, sex, and date of birth so that responses could be compared while helping to ensure anonymity and confidentiality.

Procedure

The LEQ-I was administered three times: pre-test, post-test, and follow-up test (See Table 8). The pre-test was completed at the participating schools on a Friday, three to five days before that school's adventure-based outdoor education program began. The participants then participated in the three-day adventure program. Just before the participants left the outdoor education center on the final day of program, the post-test was administered. The follow-up test was given to the participants approximately one month after the program ended. If one calendar month from the end of the program fell on a Friday, the follow-up test was given that day. Otherwise, it was administered on the first Friday following one calendar month from the end of program.

During the pre-test and follow-up test, the public school students who participated in the study left the classroom to complete the LEQ-I, while the private school students stayed in the classroom. At the private school, the teacher gave a quiet assignment to the students not participating in the study. During the post-test at the outdoor education center, the students not participating in the study completed an evaluation form provided by the center.

Table 8

Research Design Guidelines

PRE-TEST	TREATMENT	POST-TEST	FOLLOW-UP
LEQ-I administered at school on Friday 3-5 days before program began.	Adventure-based ROE program. One of six activity sequences assigned.	LEQ-I administered at the conclusion of the program.	LEQ-I administered at school on Friday one month after program ended.

The researcher and/or designated associates (hereafter called administrator) gave each of the following to all participants: computer scanning form answer sheets (General Purpose NCS® Answer Sheet form no. 4887), LEQ-I instruction sheet, LEQ-I instrument, and a number 2 lead pencil. The administrator read the instructions to the participants and explained how to complete the background information. The subjects were asked to answer truthfully and to complete the form without talking to other subjects. After completing the LEQ-I, the administrator made sure that the forms were properly coded and the answers marked in the appropriate area of the form. Then the

forms were placed inside an envelope marked with the school name and the type of test (pre-test, post-test, or follow-up). The envelope was sealed and unopened until the University Testing Service scanned the data into the computer using the ScanTools Version 2.0 software.

During the post-test, the administrator assigned each of the small rotation groups a number and placed a copy of the schedule with the numbers assigned to the groups into the envelope with the completed answer sheets. The students were asked to include their rotation group number as a part of the demographic information. The rotation group number and the schedule were used to analyze the sequence of program activity participation.

Research Questions and Hypotheses

This research study attempted to answer the following questions by testing each of the hypotheses related those questions:

1. Do overall LEQ-I scores change as a result of an adventure-based outdoor education program, sequence, and sex, and do any changes have lasting effects?

H0-1: There is no significant interaction between LEQ-I scores based on sequence, sex, and time.

2. Do overall LEQ-I scores change as a result of an adventure-based outdoor education program over time?

H0-2: There is no significant difference in LEQ-I scores over time.

3. Does program activity sequence impact changes in LEQ-I scores?

- H0-3: There is no significant difference between LEQ-I scores based on activity sequence.
4. Are LEQ-I scores dependent on sex?
- H0-4: There is no significant difference between LEQ-I scores based on sex.
5. Do specific dimensions of the LEQ-I change as a result of the adventure-based outdoor education program, time, sequence, and sex?
- H0-5: There is no significant interaction in LEQ-I scores for different dimensions based upon time, sequence, and sex.
6. Do specific dimensions of the LEQ-I change over time?
- H0-6: There is no significant difference in LEQ-I scores for different dimensions over time.
7. Do specific dimensions of the LEQ-I change as a result of the activity sequence?
- H0-7: There is no significant difference in LEQ-I scores for different dimensions based on activity sequence.
8. Are specific dimensions of the LEQ-I dependent upon sex?
- H0-8: There is no significant difference in LEQ-I scores for different dimensions based on sex.

Scoring of Assessment Measure

The completed answer forms (General Purpose NCS® Answer Sheet form no. 4887) were scanned using ScanTools Version 2.0 software. This software

performed a conversion allowing the data to be saved as an SPSS readable data file. This method of computer scanning was checked, because if any stray marks on the answer sheet were not completely erased, the computer was unable to read the proper response. In order to have more accurate data, any blank response cells were double-checked against the original answer sheet. The data were then imported into an SPSS for Windows Version 10.0 file and analyzed using descriptive statistics, repeated measures Analysis of Variance (ANOVA), and Multivariate Analysis of Variance (MANOVA).

The independent variables included the within variable of test (3 levels), and the between variables of sequence (6 levels), and sex (2 levels). The dependent variables were overall score on LEQ-I and scores on each of the nine dimensions; achievement motivation, active initiative, emotional control, intellectual flexibility, locus of control, self-confidence, social competence, task leadership, and time management.

For all analyses, the level of significance was set at $\alpha=.05$, which is considered, in the behavioral sciences, to be an appropriate level of determining significant change, while minimizing the chance of a Type II error (Keppel, 1991; Shavelson, 1996). For all significant main effects, the Tukey HSD post-hoc analysis was performed to determine the specific source(s) of significance.

CHAPTER IV

RESULTS

This study was designed to determine the effects of an adventure-based residential outdoor education (ROE) program sequence of activities on middle school students' perceptions of life effectiveness. The subjects were assigned to one of six adventure activity sequences during a three-day ROE program. The participants completed the Life Effectiveness Questionnaire – Version I (LEQ-I) three times, as a pre-test, post-test, and follow-up test. Table 9 depicts the research design described in Chapter 3 and includes specific information about the subjects.

The scores on each of the nine LEQ-I dimensions and the total LEQ-I score acted as the dependent variables to gauge the effects of the independent variables (test, sequence, and sex). This chapter describes the findings from the repeated measures ANOVA, independent samples t-test, and MANOVA analyses, as well as post-hoc comparisons for each of the significant scores on the eight hypotheses in this study.

Table 9

Research Design

SCHOOL	Pre-test	Treatment	Post-test	Follow-up
Private School 1	Males, N= 8	Sequence 1, N= 8	Males, N= 8	Males, N= 8
		Sequence 2, N= 5		
		Sequence 3, N= 6		
	Females, N= 21	Sequence 4, N= 6	Females, N= 21	Females, N= 21
		Sequence 5, N= 5		
		Sequence 6, N= 0		
Public School	Males, N= 27	Sequence 1, N= 10	Males, N= 31	Males, N= 20
		Sequence 2, N= 14		
		Sequence 3, N= 12		
	Females, N= 33	Sequence 4, N= 9	Females, N= 33	Females, N= 30
		Sequence 5, N= 8		
		Sequence 6, N= 9		
Private School 2	Males, N= 18	Sequence 1, N= 12	Males, N= 18	Males, N= 17
		Sequence 2, N= 0		
		Sequence 3, N= 11		
	Females, N= 5	Sequence 4, N= 0	Females, N= 5	Females, N= 5
		Sequence 5, N= 0		
		Sequence 6, N= 0		

Descriptive Statistics

In this research study the total number of subjects was N=120. There were 58 males and 62 females from the three schools that participated in this project. The public school had 65 participants, while the private schools had 55 participants combined (30 and 25). During the pre-test, 112 participants completed the LEQ-I. One hundred sixteen (116) subjects completed the post-test, while 102 completed the follow-up. Of the subjects, 99 completed all three tests. The number of participants was largest during the post-test because some of the participants in the study were absent from school on the days of the pre-

test and follow-up test. Additionally, some participants dropped out of the study after the post-test. For the six levels of activity sequence, the largest group was Sequence 1 with 30 participants and the smallest group was Sequence 6 with 9 participants. Table 10 provides the frequency distributions of the subjects in this study.

Table 10

Number of Subjects by Sex, School, Test, and Sequence

SEX	SCHOOL	TEST	SEQUENCE
Male, N= 58	Private School 1, N=30	Pre-test, N= 112	1, N= 30
Female, N= 62	Public School, N=65	Post-test, N= 116	2, N= 19
	Private School 2, N=25	Follow-up, N= 102	3, N= 29
			4, N= 15
			5, N= 13
			6, N= 9

Hypothesis 1

Question 1, "Do overall LEQ-I scores change as a result of an adventure-based outdoor education program, sequence, and sex, and do any changes have lasting effects?" was tested by using a repeated measures ANOVA:

H0-1: There is no significant interaction between LEQ-I scores based on sequence, sex, and time.

Table 11 shows the ANOVA summary table that was used to test the first null hypothesis, H0-1. The Test X Sequence source with 10 df had an F-value of 1.337 and a p -value= .214. The Test X Gender source with 2 df had an F-value of 1.561 and a p -value= .213. The Gender X Sequence source with 5 df had an

F-value of 1.196 and a p -value of .318. Test X Sequence X Gender source with 10 df had an F-value of 4.09 and a p -value of .941. Because none of these potential interactions were significant at the $\alpha = .05$ level of significance, the researcher did not reject the first null hypothesis, H0-1.

Table 11

ANOVA Summary Table for Test, Sequence, and Sex

SOURCE	SUM OF SQUARES	df	MEAN SQUARE	F	p
Test *	55146.823	2	2573.412	23.284	<.001
Test X Sequence	1477.307	10	147.731	1.337	.214
Test X Sex	344.974	2	172.487	1.561	.213
Test X Sequence X Sex	452.516	10	45.252	.409	.941
Error (Test)	19009.991	172	110.523		
Sequence	8077.522	1	1615.504	1.309	.268
Sex	1113.764	1	1113.764	.902	.345
Sequence X Sex	7384.475	5	1476.895	1.196	.318
Error	106173.2255	86	122334.573		

* Significant at the .05 level.

Hypothesis 2

The second research question in this study was, "Do overall LEQ-I scores change as a result of an adventure-based outdoor education program over time?"

Table 11 shows the ANOVA summary table related to the second tested hypotheses, H0-2.

H0-2: There is no significant difference in LEQ-I scores over time.

The within variable, Test, with 2 df was statistically significant ($F=23.284$, $p<.001$). Therefore, the second hypothesis H0-2 was rejected. A Tukey HSD post-

hoc comparison of the Test main effects showed significance between the pre-test and post-test ($p < .001$) (mean scores, 182.615 and 193.303) and between the pre-test and follow-up ($p < .001$) (mean Scores, 182.615 and 192.808). Table 12 shows the results of the post-hoc pairwise comparisons, while Figure 2 graphs the mean scores by test.

Table 12

Post-hoc Comparison of Test Main Effects

TIME (I)	TIME (J)	MEAN DIFFERENCE (I-J)	STD. ERROR	p
1	2*	-10.689*	1.832	<.001
	3*	-10.194*	1.992	<.001
2	1*	10.689*	1.832	<.001
	3	.495	1.434	.731
3	1*	10.194*	1.992	<.001
	2	-.495	1.434	.731

* Significant at the $\alpha = .05$ level.

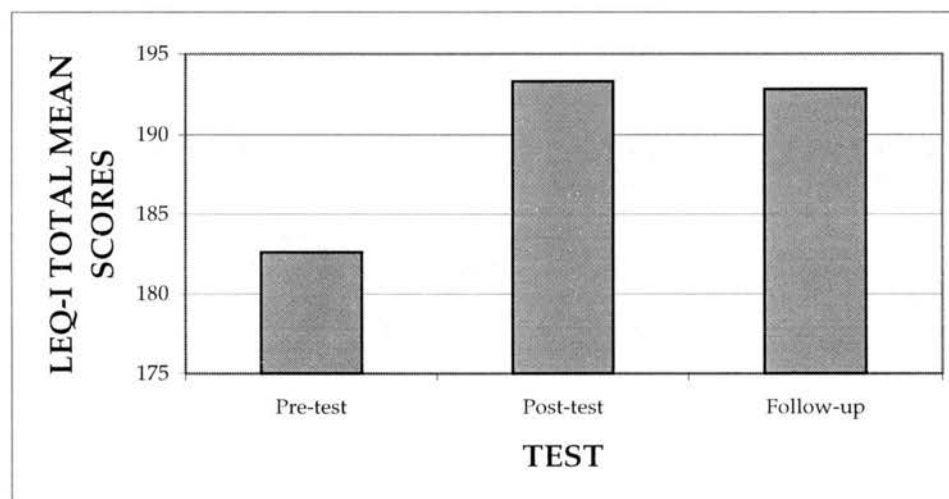


Figure 2. Overall LEQ-I Scores By Test for All Groups.

Hypothesis 3

Table 13 shows the results in an ANOVA summary table that were used to test the null hypothesis based on the third research question, "Does program activity sequence impact changes in LEQ-I scores?" The between variable, Sequence, with 5 df was not statistically significant ($F=.516$, $p=.763$). Therefore, the researcher failed to reject the third hypothesis.

H0-3: There is no significant difference between LEQ-I scores based on activity sequence.

Table 13

ANOVA Summary Table for Sequence

SOURCE	SUM OF SQUARES	df	MEAN SQUARE	F	p
Sequence	25120.489	5	5024.098	.516	.763
Error	1060398.954	109	9728.431		
Total	1085519.443	114			

Hypothesis 4

"Are LEQ-I scores dependent on sex?" was the fourth research question. The hypothesis related to this question, H0-4, was not rejected because the t-statistic ($t=-1.643$, $p=.103$) for the between variable, Sex, with was not statistically significant. Table 14 contains the Independent T-test summary table for this hypothesis:

H0-4: There is no significant difference between LEQ-I scores based on sex.

Table 14

Two-tailed Independent T-test for Sex

Source	t	df	p	Mean Difference	Std. Error Difference
LEQ Total	-1.643	118	.103	-35.5000	21.6021

Hypothesis 5

The fifth research question, “Do specific dimensions of the LEQ-I change more than others as a result of the adventure-based outdoor education program, sequence, sex, and time?” relates to the following hypothesis:

H0-5: There is no significant interaction between specific dimension scores based on sequence, sex, and time.

Repeated measures ANOVA were calculated for the scores on each of the nine LEQ-I dimensions from each of the three tests, pre-test, post-test, and follow-up test. Each dimension score served as the within variable, while sequence and sex were the between variables. Only significant interactions are discussed in this section, Hypothesis 5. The information for each LEQ-I dimension can be found under the sub-heading by that name. For further information about significant main effects for Time, see the section labeled “Hypothesis 6,” or for Sequence, see the section labeled “Hypothesis 7.”

Achievement Motivation

As seen in Table 15, the repeated measures ANOVA based on the Achievement Motivation scores failed to show any significant interactions. There was, however, a significant main effect for time ($F=4.192$, $p=.017$).

Table 15

Achievement Motivation ANOVA Summary Table for Time, Sequence, and Sex

Source	Sum of Squares	df	Mean Square	F	p
AM (Time) *	3.122	2	1.561	4.192	.017
AM x SEQUENCE	2.843	10	.284	.763	.664
AM x SEX	.633	2	.317	.850	.429
AM x SEQUENCE x SEX	1.140	10	.114	.306	.979
Error(AM)	64.053	172	.372		
Intercept	11037.832	1	11037.832	5087.555	<.001
SEQUENCE	22.638	5	4.528	2.087	.075
SEX	1.986	1	1.986	.915	.341
SEQUENCE x SEX	13.406	5	2.681	1.236	.299
Error	186.583	86	2.170		

* Significant at the .05 level

Active Initiative

The repeated measures ANOVA for Active Initiative scores showed that there were no significant interactions at the .05 level of significance. Additionally, no significant main effects for any of the independent variables were observed.

For more details of this analysis see Table 16.

Table 16

Active Initiative ANOVA Summary Table for Time, Sequence, and Sex

Source	Sum of Squares	df	Mean Square	F	p
AI (Time)	1.649	2	.825	2.784	.065
AI x SEQUENCE	1.922	10	.192	.649	.770
AI x SEX	.252	2	.126	.426	.654
AI x SEQUENCE x SEX	1.449	10	.145	.489	.895
Error(AI)	50.957	172	.296		
Intercept	10785.842	1	10785.842	3752.445	<.001
SEQUENCE	20.152	5	4.030	1.402	.232
SEX	.119	1	.119	.041	.839
SEQUENCE x SEX	12.906	5	2.581	.898	.486
Error	247.194	86	2.874		

Emotional Control

Emotional Control scores failed to produce any significant interactions between the independent variables of Time, Sequence, and Sex. As seen in Table 17, there was a significant main effect for Emotional Control scores over time ($F=19.518$, $p<.001$)

Intellectual Flexibility

The repeated measures ANOVA using the Intellectual Flexibility scores as the dependent variables resulted in no significant interactions between the independent variables. Table 18 shows these results as well as a significant main effect for Time ($F=3.345$, $p=.038$).

Table 17

Emotional Control ANOVA Summary Table for Time, Sequence, and Sex

Source	Sum of Squares	df	Mean Square	F	p
EC (Time) *	17.950	2	8.975	19.518	<.001
EC x SEQUENCE	4.233	10	.423	.920	.516
EC x SEX	.131	2	6.569E-02	.143	.867
EC x SEQUENCE x SEX	5.926	10	.593	1.289	.240
Error(EC)	79.092	172	.460		
Intercept	7970.838	1	7970.838	1518.278	<.001
SEQUENCE	10.275	5	2.055	.391	.853
SEX	.413	1	.413	.079	.780
SEQUENCE x SEX	3.284	5	.657	.125	.986
Error	451.493	86	5.250		

* Significant at the .05 level

Table 18

Intellectual Flexibility ANOVA Summary Table for Time, Sequence, and Sex

Source	Sum of Squares	df	Mean Square	F	p
IF (Time)*	2.929	2	1.464	3.345	.038
IF x SEQUENCE	5.653	10	.565	1.291	.239
IF x SEX	6.683E-02	2	3.342E-02	.076	.927
IF x SEQUENCE x SEX	2.099	10	.210	.479	.902
Error(IF)	75.309	172	.438		
Intercept	9009.656	1	9009.656	3100.185	<.001
SEQUENCE	18.793	5	3.759	1.293	.274
SEX	7.171	1	7.171	2.468	.120
SEQUENCE x SEX	6.822	5	1.364	.469	.798
Error	249.930	86	2.906		

* Significant at the .05 level

Locus of Control

As shown in Table 19, the dependent variables for each test, failed to show any significant interactions, at the $\alpha=.05$ level on the Locus of Control dimension.

There were, however, significant main effects for Time ($F=9.502$, $p<.001$).

Table 19

Locus of Control ANOVA Summary Table for Time, Sequence, and Sex

Source	Sum of Squares	df	Mean Square	F	p
LOC (Time)*	5.284	2	2.642	9.502	<.001
LOC x SEQUENCE	4.508	10	.451	1.621	.104
LOC x SEX	1.204	2	.602	2.165	.118
LOC x SEQUENCE x SEX	1.904	10	.190	.685	.738
Error(LOC)	47.828	172	.278		
Intercept	8374.587	1	8374.587	4156.623	<.001
SEQUENCE	12.824	5	2.565	1.273	.283
SEX	.145	1	.145	.072	.789
SEQUENCE x SEX	9.639	5	1.928	.957	.449
Error	173.269	86	2.015		

* Significant at the .05 level

Self-confidence

On the Self-confidence dimension, a repeated measures ANOVA showed no significant interactions between any of the independent variables. Table 20 shows the results of this analysis in more detail. As noted in that table, there was a significant main effect for Time ($F=31.498$, $p<.001$)

Table 20

Self-confidence ANOVA Summary Table for Time, Sequence, and Sex

Source	Sum of Squares	df	Mean Square	F	p
SEC (Time) *	25.726	2	12.863	31.498	<.001
SEC x SEQUENCE	2.002	10	.200	.490	.895
SEC x SEX	1.328	2	.664	1.626	.200
SEC x SEQUENCE x SEX	2.147	10	.215	.526	.870
Error(SEC)	70.242	172	.408		
Intercept	10200.250	1	10200.250	5326.671	<.001
SEQUENCE	10.979	5	2.196	1.147	.342
SEX	1.368	1	1.368	.714	.400
SEQUENCE x SEX	14.225	5	2.845	1.486	.203
Error	164.685	86	1.915		

* Significant at the .05 level

Social Competence

Table 21 shows the results of the repeated measures ANOVA using Social Competence scores as the within variable, Time, and Sequence and Sex as the independent between variables. This analysis resulted in a significant interaction between Sequence and Sex ($F=3.828$, $p=.004$). Figure 3 shows the graph of the significant interaction by charting the means for both males and females by sequence number. This analysis also resulted in two significant main effects at the $\alpha=.05$ level: the within-variable, Time ($F=12.449$, $p<.001$), and the between variable, Sequence ($F=3.026$, $p=.015$). For additional information about the significant main effect for sequence, see the section on Hypothesis 7 and Table 43 and Figure 6.

Table 21

Social Competence ANOVA Summary Table for Time, Sequence, and Sex

Source	Sum of Squares	df	Mean Square	F	p
SOC (Time) *	7.750	2	3.875	12.449	<.001
SOC x SEQUENCE	5.308	10	.531	1.705	.083
SOC x SEX	5.879E-02	2	2.939E-02	.094	.910
SOC x SEQUENCE x SEX	3.483	10	.348	1.119	.351
Error(SOC)	53.539	172	.311		
Intercept	9127.310	1	9127.310	4318.4	<.001
SEQUENCE *	31.981	5	6.396	3.026	.015
SEX	5.230	1	5.230	2.474	.119
SEQUENCE x SEX *	40.449	5	8.090	3.828	.004
Error	181.767	86	2.114		

* Significant at the .05 level

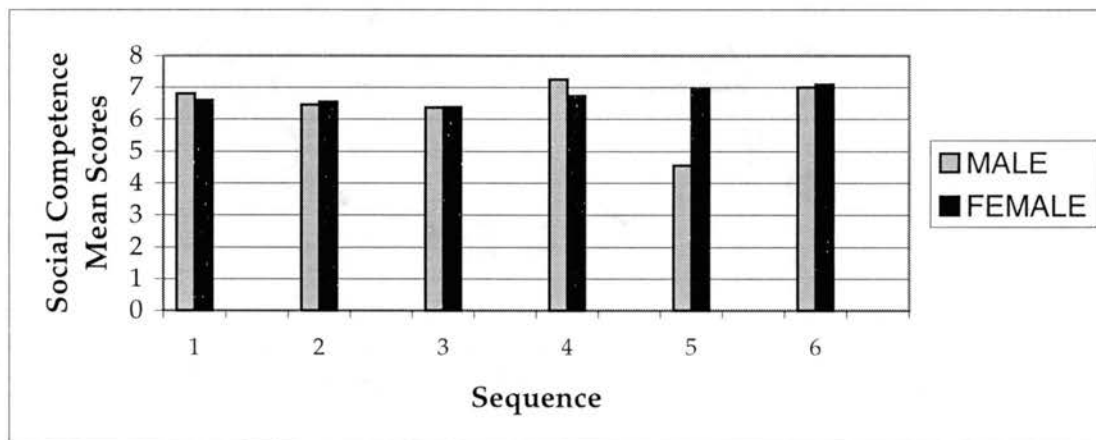


Figure 3. Mean Scores on Social Competence by Sex and Sequence

Task Leadership

As seen in Table 22, there was a significant interaction between Time and Sequence based on the Task Leadership Scores ($F=2.878$, $p=.002$). Figure 4 illustrates the patterns shown by the mean scores for Task Leadership on each

test for each Sequence group. In addition to the significant interaction, this analysis also resulted in a significant main effect for Time ($F=11.528, p<.001$).

Table 22

Task Leadership ANOVA Summary Table for Time, Sequence, and Sex

Source	Sum of Squares	df	Mean Square	F	p
TL (Time) *	8.526	2	4.263	11.528	<.001
TL x SEQUENCE *	10.643	10	1.064	2.878	.002
TL x SEX	.460	2	.230	.621	.538
TL x SEQUENCE x SEX	1.649	10	.165	.446	.922
Error(TL)	63.609	172	.370		
Intercept	7604.366	1	7604.366	2005.699	<.001
SEQUENCE	11.695	5	2.339	.617	.687
SEX	7.931	1	7.931	2.092	.152
SEQUENCE * SEX	33.139	5	6.628	1.748	.132
Error	326.059	86	3.791		

* Significant at the .05 level

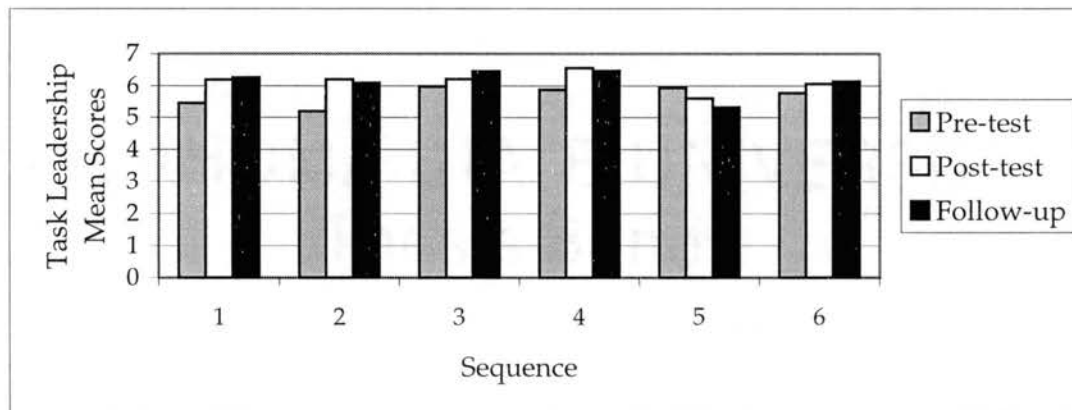


Figure 4. Task Leadership Mean Scores by Test and Sequence

Time Management

Table 23 contains the results of the repeated measures ANOVA utilizing Time Management scores as the within variable Time. There were no significant interactions resulting from this analysis. One significant main effect, Time, had an F-value with 2 df of 9.173 and a p-value < .001.

Table 23

Time Management ANOVA Summary Table for Time, Sequence, and Sex

Source	Sum of Squares	df	Mean Square	F	p
TM (Time)*	7.131	2	3.566	9.173	<.001
TM x SEQUENCE	1.552	10	.155	.399	.946
TM x SEX	.404	2	.202	.519	.596
TM x SEQUENCE x SEX	.878	10	8.783E-02	.226	.994
ErrorI	66.860	172	.389		
Intercept	8085.911	1	8085.911	1969.327	<.001
SEQUENCE	18.044	5	3.609	.879	.499
SEX	1.971	1	1.971	.480	.490
SEQUENCE * SEX	10.387	5	2.077	.506	.771
Error	353.110	86	4.106		

* Significant at the .05 level

Summary of Hypothesis 5

Two of nine LEQ-I dimensions, Social Competence and Task Leadership, showed significant interactions between the variables. Social Competence showed a significant interaction between Sequence and Sex, while Task Leadership showed a significant interaction between Time and Sequence. Because of these interactions at the $\alpha=.05$ level of significance, Hypothesis 5 was rejected.

Hypothesis 6

Research question six asks, "Do specific dimensions of the LEQ-I change over time?" To test the related hypothesis, H0-6, a repeated measures ANOVA with the score for each dimension, from the Pre-test, Post-test, and Follow-up test, serving as the within variable. Results of these analyses are discussed by dimension in the following section.

H0-6: There is no significant difference in LEQ-I scores for different dimensions over time.

Achievement Motivation

As seen in Table 24, Achievement Motivation showed significant main effects ($F=6.629$, $p=.002$). A Tukey HSD (Table 25) post-hoc comparison was performed to determine the source of significance. Those results showed that the Achievement Motivation scores on the Pre-test were significantly different from the scores on the Post-test ($p=.019$) and the Follow-up test ($p=.003$). There was no significant difference between the Post-test and Follow-up test ($p=.150$).

Table 24

Achievement Motivation ANOVA Summary Table by Time

SOURCE	SUM OF SQUARES	df	MEAN SQUARE	F	p
AM (Time)*	4.762	2	2.381	6.629	.002
Error (AM)	69.683	194	.359		

* Significant at the .05 level

Table 25

Achievement Motivation Post-hoc Comparisons for Time

AM (I)	AM (J)	MEAN DIFFERENCE (I-J)	STD. ERROR	p
1	2*	-.204	.085	.019
	3*	-.306	.099	.003
2	1*	.204	.085	.019
	3	-.102	.070	.150
3	1*	.306	.099	.003
	2	.102	.070	.150

* Significant at the .05 level.

Active Initiative

Table 26 shows the results of the repeated measures ANOVA with Active Initiative scores as the within variable for Time. At the .05 level of significance, the main effect for Time was significant ($F=4.393$, $p=.014$). Post-hoc comparisons (Table 27) showed significant differences between the scores on the Pre-test with scores on the Post-test ($p=.025$) and Follow-up test ($p=.015$). There was no significant difference between Post-test and Follow-up test scores ($p=.826$).

Table 26

Active Initiative ANOVA Summary Table for Time

SOURCE	SUM OF SQUARES	df	MEAN SQUARE	F	p
AI (Time)*	2.465	2	1.232	4.393	.014
Error (AI)	54.424	194	.281		

* Significant at the .05 level

Table 27

Active Initiative Post-hoc Comparisons for Time

AI (I)	AI (J)	MEAN DIFFERENCE (I-J)	STD. ERROR	p
1	2*	-.187	.082	.025
	3*	-.201	.081	.015
2	1*	.187	.082	.025
	3	-1.361E-02	.062	.826
3	1*	.201	.081	.015
	2	1.361E-02	.062	.826

* Significant at the .05 level.

Emotional Control

The Emotional Control scores showed significant main effects over Time ($F=24.696$, $p<.001$) (See Table 28). There were significant differences in the mean scores from the Pre-test to Post-test ($p<.001$) and from Pre-test to Follow-up ($p<.001$). There was no significant difference between Post-test and Follow-up ($p=.907$) scores. Table 29 shows the results of these post-hoc comparisons.

Table 28

Emotional Control ANOVA Summary Table for Time

SOURCE	SUM OF SQUARES	df	MEAN SQUARE	F	p
EC (Time)*	23.086	2	11.543	24.696	<.001
Error(EC)	90.674	194	.467		

* Significant at the .05 level.

Table 29

Emotional Control Post-hoc Comparisons for Time

EC (I)	EC (J)	MEAN DIFFERENCE (I-J)	STD. ERROR	p
1	2*	-.599	.110	<.001
	3*	-.590	.107	<.001
2	1*	.599	.110	<.001
	3	8.503E-03	.072	.907
3	1*	.590	.107	<.001
	2	-8.503E-03	.072	.907

* Significant at the .05 level.

Intellectual Flexibility

In the repeated measures ANOVA, Time had significant main effects ($F=4.328$, $p=.014$) based on the Intellectual Flexibility scores (See Table 30). The post-hoc analysis shown in Table 31 revealed that there were significant differences between the Pre-test and Post-test ($p=.017$). There were no differences between the Pre-test and Follow-up test ($p=.054$) and the Post-test and Follow-up test ($p=.399$).

Table 30

Intellectual Flexibility ANOVA Summary Table for Time

SOURCE	SUM OF SQUARES	df	MEAN SQUARE	F	p
IF (Time) *	3.728	2	1.864	4.348	.014
Error(IF)	83.179	194	.429		

* Significant at .05 level.

Table 31

Intellectual Flexibility Post-hoc Comparisons for Time

IF (I)	IF (J)	MEAN DIFFERENCE (I-J)	STD. ERROR	p
1	2*	-.259	.107	.017
	3	-.213	.109	.054
2	1*	.259	.107	.017
	3	4.592E-02	.054	.399
3	1	.213	.109	.054
	2	-4.592E-02	.054	.399

* Significant at the .05 level.

Locus of Control

The Time variable based on Locus of Control scores showed significant main effects ($F=22.645$, $p<.001$). Tables 32 and 33 show the results of the ANOVA and the post-hoc comparison, respectively. Additionally, significant differences were found during the post-hoc analysis between the Pre-test and Post-test ($p<.001$) and between Pre-test and Follow-up ($p<.001$). There was no significant difference between the Post-test and Follow-up ($p=.267$).

Table 32

Locus of Control ANOVA Summary Table for Time

SOURCE	SUM OF SQUARES	df	MEAN SQUARE	F	p
LOC (Time) *	13.016	2	6.508	22.645	<.001
Error (LOC)	55.753	194	.287		

* Significant at the .05 level.

Table 33

Locus of Control Post-hoc Comparisons for Time

LOC (I)	LOC (J)	MEAN DIFFERENCE (I-J)	STD. ERROR	p
1	2*	-.478	.081	<.001
	3*	-.407	.083	<.001
2	1*	.478	.081	<.001
	3	7.092E-02	.064	.267
3	1*	.407	.083	<.001
	2	-7.092E-02	.064	.267

* Significant at the .05 level.

Self-confidence

The within variable, Time, showed significant main effects in the Self-confidence dimension ($F=55.792$, $p<.001$). Table 34 shows the summary table for this repeated measures ANOVA. Additionally, there were significant difference between the Pre-test and the Post-test ($p<.001$) and Follow-up test ($p=.001$). There was no difference between the Post-test and the Follow-up test scores ($p=.750$).

See Table 35 for the results of the post-hoc comparisons.

Table 34

Self-Confidence ANOVA Summary Table for Time

SOURCE	SUM OF SQUARES	df	MEAN SQUARE	F	p
SEC (Time) *	43.196	2	21.598	55.792	<.001
Error (SEC)	75.101	194	.387		

* Significant at the .05 level

Table 35

Self-confidence Post-hoc Comparisons for Time

SEC (I)	SEC (J)	MEAN DIFFERENCE (I-J)	STD. ERROR	p
1	2*	-.803	.095	<.001
	3*	-.823	.103	<.001
2	1*	.803	.095	<.001
	3	-2.041E-02	.064	.750
3	1*	.823	.103	<.001
	2	2.041E-02	.064	.750

* Significant at the .05 level

Social Competence

Table 36 shows the result of the repeated measures ANOVA using the three test scores on the Social Competence dimension as the within variable, Time. There were significant main effects for Time in this dimension ($F=11.479$, $p<.001$). The comparison between Pre-test, Post-test, and Follow-up scores showed that there were significant differences between the Pre-test and Post-test ($p=.001$) and Pre-test and Follow-up ($p<.001$). There was no significant difference in Post-test and Follow-up scores ($p=.349$). See Table 37 for results of the Tukey HSD post-hoc comparisons.

Table 36

Social Competence ANOVA Summary Table for Time

SOURCE	SUM OF SQUARES	df	MEAN SQUARE	F	p
SOC (Time) *	7.497	2	3.749	11.479	<.001
Error (SOC)	63.354	194	.327		

* Significant at the .05 level

Table 37

Social Competence Post-hoc Comparisons

SOC (I)	SOC (J)	MEAN DIFFERENCE (I-J)	STD. ERROR	p
1	2*	-.306	.091	.001
	3*	-.364	.085	<.001
2	1*	.306	.091	.001
	3	-5.782E-02	.068	.394
3	1*	.364	.085	<.001
	2	5.782E-02	.068	.394

* Significant at the .05 level.

Task Leadership

Table 38 shows the results of the Task Leadership dimension repeated measures ANOVA. Time had a significant main effect ($F=21.446$, $p<.001$). The post-hoc comparisons (Table 39) showed significant differences between the Pre-test and Post-test ($p<.001$) and Pre-test and Follow-up test ($p<.001$). The comparison between Post-test and Follow-up showed no significant difference ($p=.647$).

Table 38

Task Leadership ANOVA Summary Table for Time

SOURCE	SUM OF SQUARES	df	MEAN SQUARE	F	p
TL (Time) *	16.940	2	8.470	21.446	<.001
Error (TL)	76.616	194	.395		

* Significant at the .05 level

Table 39

Task Leadership Post-hoc Comparisons for Time

TL (I)	TL (J)	MEAN DIFFERENCE (I-J)	STD. ERROR	p
1	2*	-.493	.097	<.001
	3*	-.524	.102	<.001
2	1*	.493	.097	<.001
	3	-3.061E-02	.067	.647
3	1*	.524	.102	<.001
	2	3.061E-02	.067	.647

* Significant at the .05 level.

Time Management

The final dimension, Time Management, showed significant main effects for Time ($F=14.503$, $p<.001$). See Table 40 for the Summary Table for this analysis.

The Tukey HSD post-hoc comparisons (see Table 41) showed that there were significant differences between the mean scores on Time Management for the Pre-test and Post-test ($p<.001$) and Pre-test and Follow-up test ($p<.001$). There was no significant difference between Pre-test and Follow-up test ($p=.397$).

Table 40

Time Management ANOVA Summary Table for Time

SOURCE	SUM OF SQUARES	df	MEAN SQUARE	F	P
TM (Time) *	10.492	2	5.246	14.503	<.001
Error (TM)	70.175	194	.362		

* Significant at the .05 level

Table 41

Time Management Post-hoc Comparisons for Time

TM (I)	TM (J)	MEAN DIFFERENCE (I-J)	STD. ERROR	p
1	2*	-.425	.097	<.001
	3*	-.371	.093	<.001
2	1*	.425	.097	<.001
	3	5.442E-02	.064	.397
3	1*	.371	.093	<.001
	2	-5.442E-02	.064	.397

* Significant at the .05 level

Summary of Hypothesis 6

Figure 5 shows the mean scores of each dimension over time. Because each of the nine LEQ-I dimensions showed significant change over time, H0-6 was rejected.

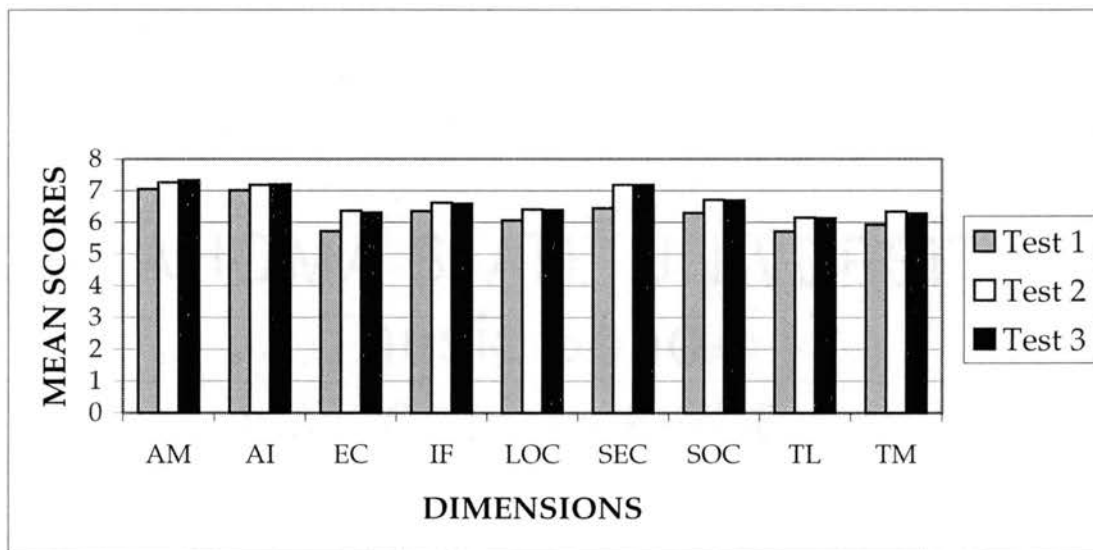


Figure 5. Mean Scores of Dimensions by Test

Hypothesis 7

H0-7: There is no significant difference in LEQ-I scores for different dimensions based on activity sequence.

Hypothesis 7 was derived to examine the following research question, "Do specific dimensions of the LEQ-I change as a result of the activity sequence?" To examine this hypothesis a MANOVA was calculated using each of the nine dimension totals as the dependent variables and sequence as the between independent variable. Table 42 shows that none of the main effects were significant. However, when looking at Hypothesis 5, there was a significant main effect for sequence on the Task Leadership dimension. The post-hoc comparison (See Table 43 and Figure 6) revealed that Sequence 5 (mean = 5.764) was significantly different from Sequences 1 (mean = 6.700), 2 (mean = 6.494), 4 (mean = 6.993), and 6 (mean = 7.046) and that Sequence 3 (mean = 6.364) was significantly different from Sequence 4. Because Task Leadership showed significant main effects for sequence at the .05 level, H0-7 was rejected.

Table 42

MANOVA Summary Table for Sequence

Source	Dependent Variable	Sum of Squares	df	Mean Square	F	p
SEQUENCE	AM	6.496	5	1.299	1.899	.100
	AI	6.329	5	1.266	1.387	.235
	EC	4.319	5	.864	.529	.754
	IF	7.328	5	1.466	1.494	.198
	LOC	3.351	5	.670	.976	.436
	SEC	3.637	5	.727	1.165	.331
	SOC	5.371	5	1.074	1.328	.258
	TM	5.257	5	1.051	.777	.568
	TL	1.891	5	.378	.279	.924
Error	AM	74.559	109	.684		
	AI	99.494	109	.913		
	EC	177.893	109	1.632		
	IF	106.949	109	.981		
	LOC	74.854	109	.687		
	SEC	68.032	109	.624		
	SOC	88.166	109	.809		
	TM	147.516	109	1.353		
	TL	147.544	109	1.354		
Total	AM	81.055	114			
	AI	105.823	114			
	EC	182.212	114			
	IF	114.277	114			
	LOC	78.204	114			
	SEC	71.668	114			
	SOC	93.537	114			
	TM	152.773	114			
	TL	149.434	114			

Table 43

Post-hoc Comparisons of Social Competence Mean Scores by Sequence

SEQUENCE (I)	SEQUENCE (J)	Mean Ddifference (I-J)	Std. Error	p
1	2	.206	.270	.448
	3	.336	.236	.157
	4	-.293	.298	.328
	5*	.936	.330	.006
	6	-.347	.382	.366
2	1	-.206	.270	.448
	3	.130	.268	.629
	4	-.499	.324	.127
	5*	.730	.354	.042
	6	-.552	.403	.174
3	1	-.336	.236	.157
	2	-.130	.268	.629
	4*	-.629	.296	.036
	5	.600	.329	.071
	6	-.683	.380	.076
4	1	.293	.298	.328
	2	.499	.324	.127
	3*	.629	.296	.036
	5*	1.229	.376	.002
	6	-5.344E-02	.422	.899
5	1*	-.936	.330	.006
	2*	-.730	.354	.042
	3	-.600	.329	.071
	4*	-1.229	.376	.002
	6*	-1.282	.445	.005
6	1	.347	.382	.366
	2	.552	.403	.174
	3	.683	.380	.076
	4	5.344E-02	.422	.899
	5*	1.282	.445	.005

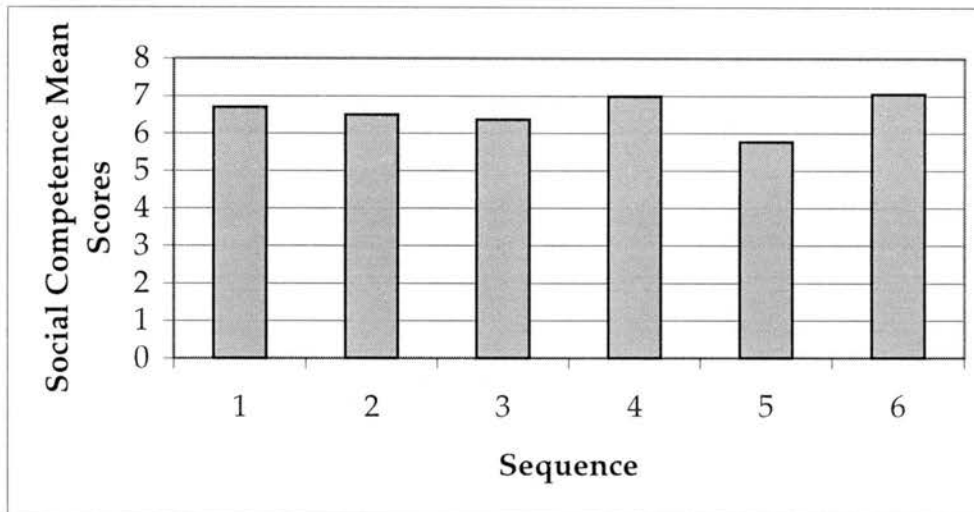


Figure 6. Social Competence Mean Scores by Sequence

Hypothesis 8

Research question 8, “Are specific dimensions of the LEQ-I dependant upon sex?” is related to the following hypothesis, which was tested by using a MANOVA to determine the relationship between the independent variable, Sex, on the dependent variables, the nine LEQ-I dimensions.

H0-8: There is no significant difference in LEQ-I scores for different dimensions based on sex.

As seen in Table 44, there were no significant main effects at the $\alpha=.05$ level of significance for Sex on any of the dimensions. For that reason, the researcher did not reject H0-8.

Table 44

MANOVA Summary Table for Sex

Source	Dependent Variable	Sum of Squares	df	Mean Square	F	p
Sex	AM	.893	1	.893	1.296	.257
	AI	8.162E-02	1	8.162E-02	.082	.775
	EC	5.859E-02	1	5.859E-02	.038	.847
	IF	3.776	1	3.776	3.816	.053
	LOC	2.731E-02	1	2.731E-02	.039	.843
	SEC	6.040E-02	1	6.040E-02	.097	.756
	SOC	.528	1	.528	.667	.416
	TM	2.811	1	2.811	2.029	.157
	TL	.585	1	.585	.441	.508
	Error	AM	81.310	118	.689	
AI		117.537	118	.996		
EC		184.066	118	1.560		
IF		116.779	118	.990		
LOC		81.778	118	.693		
SEC		73.602	118	.624		
SOC		93.345	118	.791		
TM		163.500	118	1.386		
TL		156.473	118	1.326		
Total		AM	82.203	119		
	AI	117.618	119			
	EC	184.124	119			
	IF	120.556	119			
	LOC	81.805	119			
	SEC	73.662	119			
	SOC	93.873	119			
	TL	166.311	119			

Summary of Results

Each of the eight hypotheses related to the eight research questions in this study were tested by using repeated measures ANOVA, MANOVA, and post-hoc analyses. A summary of the hypothesis testing follows in Table 45.

Table 45

Summary of Hypotheses Testing Results

HYPOTHESES	RESULTS
H0-1 There is no significant interaction between LEQ-I scores based on sequence, sex, and time.	Failed to reject.
H0-2 There is no significant difference in LEQ-I scores over time.	Rejected
H0-3 There is no significant difference between LEQ-I scores based on activity sequence.	Failed to Reject
H0-4 There is no significant difference between LEQ-I scores based on sex.	Failed to reject
H0-5 There is no significant interaction in LEQ-I scores for different dimensions based upon time, sequence, and sex.	Rejected
H0-6 There is no significant difference in LEQ-I scores for different dimensions over time.	Rejected
H0-7 There is no significant difference in LEQ-I scores for different dimensions based on activity sequence.	Rejected
H0-8 There is no significant difference in LEQ-I scores for different dimensions based on sex.	Failed to reject

CHAPTER V

DISCUSSION AND RECOMMENDATIONS

The purpose of this research study was to examine the effects of an adventure-based ROE program on middle school students' perceptions of life effectiveness and to examine the impact of sequence, time, and sex on Life Effectiveness Questionnaire – Version I (LEQ-I) scores. This chapter will first address the research findings, following a similar format as that of Chapter 4, beginning with a discussion of the descriptive statistics, then each individual research question, and concluding with an overall summary. Next, conclusions and implications of the study will be addressed. The chapter will close with concluding comments and recommendations for future research.

Discussion of Research Findings

Descriptive Statistics

With regard to the subjects in this study, it is important to note that subjects were chosen from intact groups, based on parental consent and participant assent. Because they were not randomly selected, the results, therefore, cannot be generalized to populations outside of the research participants. When comparing the number of participants in each of the variables, it is important to note that the number of subjects in Time and Sex

were similar, but the Sequence group sizes were not ($N_1=30$, $N_2=19$, $N_3=29$, $N_4=15$, $N_5=13$, $N_6=9$) The unequal Ns for the Sequence variable has some impact on the repeated measures ANOVA and MANOVA. The reason for the discrepancy in group sizes relates to the size of the schools that were represented in the study. The smallest school only had two sequence groups, 1 and 3. The medium sized school had five sequence groups, 1-5. The largest school had all six sequence groups. As discussed in some of the following sections, a lack of randomization, as well as unequal Ns, could have influenced the results of the analyses based on sequence of activities.

Another caveat related to the findings of this study deals with the academic maturity of the participants. During each one of the test administration periods, the administrator(s) had to explain the meaning of several words or phrases to some of the students. The most common requests for clarification were for the meanings of “competent” (Social Competence dimension), “get people to work for me” (Task Leadership dimension), and “fate, chance, or destiny” (Locus-of-control dimension). This non-comprehension could also have influenced the results of the analyses.

Research Question 1

Do overall LEQ-I scores change as a result of an adventure-based outdoor education program, sequence, and sex, and do any changes have lasting effects? There were no differences in the overall LEQ-I scores among the groups regardless of the sex or sequence group of the subjects. Therefore, it was not

possible to answer “yes” to this question. It can be concluded, however, that in this study the overall LEQ-I scores did increase from Pre-test to Post-test regardless of sex or sequence group. Additionally, the Follow-up test scores were the same for all the groups. This shows that the scores follow the same basic pattern no matter what the combination of activity sequence and sex.

Research Question 2

Do overall LEQ-I scores change as a result of an adventure-based outdoor education program over time? Yes, the overall LEQ-I scores went up from pre-test to post-test and then stayed the same until the follow-up test one month later. In other words, the participants’ overall life effectiveness increased after the adventure-based ROE program and remained at about the same level for at least one month after the program ended.

The scores in overall life-effectiveness increased after participating in an outdoor education program; this finding falls in line with prior research. Some of the early research in the 1950s and 1960s showed that residential outdoor education programs impacted group interaction (e.g., Kleindiest, 1957; Margulis, 1952; Pepper, 1952), individual growth (e.g., Alexander, 1969; Margulis, 1952), and social adjustment (e.g., Kleindiest, 1957; Pepper, 1952). The information in the LEQ database also reflects an improvement after outdoor education programs and suggests that there are lasting effects of outdoor education programs (Neill, 1999; Neill, 2000). It should be noted, however, that one month is a relatively short period of time, but does show that the positive program

effects do not immediately fade away. Future research could examine these effects over a period of six months to a year.

Research Question 3

Does program activity sequence impact changes in overall LEQ-I scores?

No, the overall-scores on the LEQ-I did not differ between the Sequence groups.

As noted in the section on Descriptive Statistics in this chapter, two possible reasons for this result are a lack of randomization and group size.

As noted by both Bisson (1997) and Priest (in press), beginning with group-oriented activities and slowly increasing the challenge and moving toward more individual activities resulted in greater gains based on measures of group development and teamwork. This study, however, failed to show greater rates of change based on overall personal growth as a result of sequence of activities. One possible explanation for these results is that the LEQ-I is a measurement tool for an individual's life effectiveness. The other studies examined group-oriented outcomes. If you look at the most common sequencing models, they appear to be focused on improving group dynamics, rather than personal growth and development.

Research Question 4

Are LEQ-I scores dependent on sex? The analysis showed that there were no significant differences in overall LEQ-I scores based on sex. It appears that this type of program (mixed sex, adventure-based) worked effectively for both males and females from the participating schools.

This finding supports the writings of several authors, who suggested that participation in outdoor education has positive effects on females (eg. Culp, 1998; Dal Vera, 1996; Jordan, 1998; McClintock, 1996; Mitten, 1996; Rohde, 1996; Thomas, 1994). While this study can make no claims about being better for girls than boys or vice versa, it does add support to the claim that both males and females develop positively from participation in outdoor pursuits, which may result in positive life experiences for these students when they become adults.

Research Question 5

Do specific dimensions of the LEQ-I change as a result of the adventure-based outdoor education program, time, sequence, and sex? Yes, as noted in Chapter 4, there were significant interactions related to two different dimensions of the LEQ-I, Social Competence (Sex x Sequence) and Task Leadership (Time x Sequence). The other seven dimensions (Achievement Motivation, Active Initiative, Emotional Control, Intellectual Flexibility, Locus of Control, Self-confidence, and Time Management), all followed the same general pattern regardless of test, sex, or sequence group

In most of the cases, the male and female subjects' scores were very similar. There is, however, one exception. In Sequence 5, the females' scores were higher than the males' scores in the Social Competence dimension. It should be noted, however, that the Pre-test score in this dimension for the male subjects in Sequence 5 was lower than that of any other group. Additionally, it should be noted that these participants did see an increase from Pre-test to Post-test, but the

scores fell slightly at the Follow-up test. In other words, this difference between the boys and girls in Sequence 5 in the Social Competence dimension is linked to a lower baseline score. It is also possible that participants who have low perceptions of their ability to “fit in” with other people may see some improvement when in a different type of setting, but start reverting back to their original feelings of incompetence when back in their familiar settings.

The Time x Sequence interaction in the Task Leadership dimension should also be carefully considered. In most of the Sequences, the mean scores for Task Leadership increased from Pre-test to Post-test. The only exception to that is Sequence 5. In that group, the mean score for Task Leadership dropped from Pre-test to Post-test and fell even further at the Follow-up test for both boys and girls.

Results from Priest’s (in press) and Bisson’s (1997) research would fall in line with the assessment that Sequence 5, beginning with the greater challenge activities and having the individual challenges before more group work might be the cause. But that does not answer the question why the scores of those in Sequence 1 do not follow in a similar pattern, when the only difference between the two sequences is that Group 5 begins with Group adventure followed by the Individual challenge, while Group 1 begins with the Individual challenge followed by the Group adventure.

Research Question 6

Do specific dimensions of the LEQ-I change over time? Yes, each of the LEQ-I dimensions showed significant change over time. In fact, all nine of the dimensions showed significant change from Pre-test to Post-test, which means that participation in an adventure-based ROE program leads to improved perceptions of an individual's competence in Achievement Motivation, Active Initiative, Emotional Control, Intellectual Flexibility, Locus of Control, Self-confidence, Social Competence, Task Leadership, and Time Management.

As mentioned in the discussion of Research question 2, these findings add weight to the claims that outdoor education helps people develop in a variety of ways. In addition to adding support to commonly researched personal growth claims, such as increased social competence (e.g., Acuff, 1976; D'Agostino, 1980; & Haynes & Gallagher, 1998), self-confidence (e.g., Fry & Heubeck, 1998; Haynes, & Gallagher, 1998; Horwood, 1994; & Kaplan, 1997), and emotional control (e.g. Neill & Heubeck, 1998; Norris & Weinman, 1996), as a result of participation in outdoor education programs, this research helps build the foundation for showing positive gains in a variety of personal growth areas not often studied in relation to the outdoors.

Additionally, it was shown that in eight of the nine dimensions (all except Intellectual Flexibility) that these positive changes remain in effect for at least one month. Intellectual Flexibility is an interesting case in that only the Pre-test and Post-test scores were significantly different from one another. By examining the

mean scores on this dimension, it was found that the scores dropped back down somewhat after the Post-test. The results of previous research utilizing the LEQ (any version) (Neill, 1999; Neill, 2000), show that (a) young adolescents showed lower change effects than older adolescents and adults, and (b) the LEQ database has shown that while Intellectual Flexibility has shown positive change after participation in outdoor education programs, its magnitude of change is smaller than almost all of the other nine dimensions (Neill, 1999; Neill, 2000). When taking these factors into account, it is not surprising that this factor would show some diminishing effects over time. It is interesting to note, however, that after the drop from post-test to follow-up test, the students' perceptions on this dimension (mean scores) were still higher than four other dimensions.

Research Question 7

Do specific dimensions of the LEQ-I change as a result of the activity sequence? Yes and no. Eight of the nine dimensions (all except Social Competence) showed no differences based upon activity sequence. This suggests that the sequence of adventure activities was not an important factor in changing most areas of life effectiveness. As mentioned in the discussion of Research Question 5, the LEQ-I dimensions are individually oriented outcomes. Other research that has found significance based on sequencing has examined group-oriented outcomes (Bisson, 1997; Priest, in press).

A second possible reason for that result was the length of the program. In three days, there was not much time for the participants to look back and reflect

on what they have learned and then build on that process as the Experiential Learning Cycle suggests. The staff members at the outdoor education center did, however, help the participants reflect meaningfully on their experiences through discussion and other activities, within the amount of time allotted for the ROE program.

In the Social Competence dimension, however, there were some differences in scores based on the Sequence groups. The first group difference to be addressed is between Groups 3 and Group 4. As a reminder, Group 3's activity sequence was Team building, Individual challenge, Problem solving/communication and Group adventure. Group 4's sequence was Group 4's sequence was Team building, Problem solving/communication, Group adventure, and Individual challenge, which closely resembles most of the sequencing models (Bisson, 1998; Priest, Attarian, & Schuber, 1993; Robb & Ewert, 1987; Rohnke, 1989; Roland et al., 1987a; Roland et al., 1987b; Schoel et al., 1988) and to the most effective sequences in Bisson's (1998) and Priest's (in press) studies. By re-examining the pre-test scores, it was found that Group 3's pre-test scores were significantly different and lower than Group 4's. Therefore, this difference in sequence is more likely due to pre-existing perceptions of Social Competence rather than the order of adventure activities.

The second discussion of differences in the Social Competence dimension is focused on Group 5 (Group adventure, Individual challenge, Team building, and Problem solving/communication). As mentioned in Chapter 4, Group 5 was

significantly different and lower than all other groups except Group 3. Group 5 had the lowest mean score and Group 3 had the second lowest mean score for the Social Competence dimension. As mentioned in the discussion of Research Question 5 in this chapter, the Pre-test scores for these sequence groups were lower than the other groups. Because both Groups 3 and 5 showed an increase from Pre-test to Post-test, it is probable that the difference in scores was more dependent upon a lower starting point, rather than a difference based upon activity sequence.

Although no other differences were found during the data analyses in the Social Competence dimension, it should be pointed out that the highest mean scores in this dimension belonged to groups Group 4 and Group 6. As mentioned previously, Group 4's sequence of activities was closest to most adventure sequencing models. In addition, Group 6's sequence, was almost identical to Group 4's except that Group adventure and Individual challenge were reversed. It is possible that the reason these scores were highest in the Social Competence dimension is that they are a more appropriate sequence of activities for this dimension, which tends to be more group-oriented than the other LEQ-I dimensions. Because Group 6 had the smallest number of participants, the difference in group size (unequal n's) was most likely why the analyses showed no statistical difference between Group 3 and Group 6.

Research Question 8

Are specific dimensions of the LEQ-I dependent upon sex? Just as in Research Question 4, sex did not show up as a significant main effect for any of the LEQ-I dimensions, therefore the hypothesis was not rejected. Again, it should be noted that both males and females showed positive change on each of the nine LEQ-I dimensions after the adventure-based ROE program. Therefore, it can be suggested that this type of program is good for both male and female students to participate in, if the goals of the program are to develop a variety of personal skills necessary for successful living.

Conclusions

In relationship to this study, several conclusions might be drawn. The first is that participating in a three-day adventure-based ROE program may have several personal growth benefits for middle school students. While this study cannot be generalized to all middle school students, it does show that for these students, positive growth in nine areas of life effectiveness was shown.

Additionally, there may be some link between the sequence of activities and the outcomes of Task Leadership and Social Competence. This conclusion can be linked to other Sequencing research related to group development (Bisson, 1997) and teamwork (Priest, in press) which showed that challenging adventures and individual activities should follow team-building and group oriented activities. Finally, it can be concluded that this adventure-based ROE program was a positive force in contributing to life effectiveness skills for both male and female

sixth graders in this study. Although the results of this study cannot be generalized to other populations, they do support prior research on outdoor education, life effectiveness, and to some degree, sequencing.

Implications

School personnel who are interested in developing “the whole person” as a part of the school curriculum may seek to include, or continue including, adventure-based ROE programs. This program and others (Eagle et al., 2000; Neill, 1999; Neill, 2000; Neill & Flory, 2000a) have shown that participants’ Achievement Motivation, Active Initiative, Emotional Control, Intellectual Flexibility, Locus of Control, Self-confidence, Social Competence, Task Leadership, and Time Management increase after outdoor education programs. Additionally, this study supports previous research on the benefits of outdoor education for the participants (e.g., Acuff, 1976; Alexander, 1969; Haynes & Galligher, 1998; Kleindiest, 1957; Kranzer, 1958; Margulis, 1952; Pepper, 1952). A suggestion for schools that want to help students develop their Life Effectiveness, especially Intellectual Flexibility which dropped one month after the program, would be to begin with an adventure-based ROE program and then continue with in-school lessons that build upon that foundation.

The second implication of this study is targeted toward outdoor educators. While the number of studies related to sequence of adventure activities is still quite small, more and more evidence seems to be pointing in the direction that group development activities should be placed in sequence before

other more challenging and individually-oriented adventure activities when dealing with “other-oriented outcomes” such as group development (Bisson, 1997), teamwork (Priest, in press), Social Competence, and Task Leadership.

This becomes an issue when one thinks in terms of numbers of patrons in a group. Because both the outdoor center and the school typically want to make the program economically feasible, large numbers of students often participate in the programs at the same time. When this happens, additional alternative sequences must be included. While the reason for the differences between Sequence Groups in the Task Leadership and Social Competence dimensions cannot be explained from this study, it is important to note that there were differences on both dimensions and in both cases, Sequence 5 – Group adventure, Individual challenge, Team building, and Problem solving/communication, was the source of lower scores than the other sequences. Because of this, program directors and administrators should be very cautious when planning programs for large groups so that the participants receive the most benefit from participation.

A third implication relates to the continued use of the LEQ-I for students in the sixth grade or younger. Students understood almost all of the questionnaire items, yet the test administrators noted that there were a number of questions about definitions and meanings of a few words and phrases on the questionnaire. For that reason, the researcher recommends using it with older participants who would have a more sophisticated vocabulary.

Concluding Comment and Recommendations

This study, while answering some questions about Life Effectiveness, Time, Sequencing, Sex, and the adventure-based ROE program, has raised others that should be addressed with future research.

1. Replication of studies completed about Sequencing. While there has been a foundation laid for appropriate Sequencing, additional studies can help develop the existing theories.

2. Research is needed to determine the effects of sequence over longer periods of continuous programming. There has been no research to assess the effect of program length and sequence on outcomes.

3. Further study is needed to assess the difference in Life Effectiveness scores between multi-day resident outdoor education programs, where the participants spend the night at the outdoor education center, and multi-day outdoor education programs where the students go home each day.

4. Further research should evaluate the effects of specific program components on Life Effectiveness. For example, does team building produce greater LEQ-I scores than a group adventure activity like caving? Or do different group adventures (i.e., caving or river floating) produce different results?

5. Future research should address the role of including both individual challenge and group adventure activities in the development of Life Effectiveness. In other words, would a program that focuses more on group-

oriented activities have higher LEQ-I scores than a program that focused more on individually-oriented activities, or vice versa?

6. In the future, additional research should look at the long-term effects (one year after the program) of adventure-based outdoor education programs on Life Effectiveness, as well as, other areas of personal growth.

7. In order for the participants to better understand the instrument, another recommendation is to develop another version of, or an instrument similar to, the Life Effectiveness Questionnaire- Version I. A questionnaire that can be more readily understood by younger participants could make research in life effectiveness more reliable and valid for children.

8. Future replications of this study should include the use of a different statistical software package. SPSS for Windows Version 10.0 is not capable of calculating all the necessary post-hoc comparisons that resulted from the data analyses in this study.

The researcher hopes that this study will serve as a springboard for other research that seeks to develop a stronger case for adventure-based ROE programs as a part of the school curriculum.

REFERENCES

Accordino, D. B. (1999). Effects of perfectionism, depression, and self-esteem on adolescent achievement and achievement motivation. (Doctoral Dissertation, The Pennsylvania State University). [Online]. Digital Dissertations. Publication Number: AAT 9937912.

Acuff, D.S. (1976). The effect of an outdoor education experience on the general and intercultural anxiety of Anglo and Black sixth graders. Unpublished doctoral dissertation, University of Southern California.

Ainsworth, J. S., IV (1977). Personality and intellectual correlates of congruent and incongruent perceptual-expectancy styles in a vocational rehabilitation population. (Doctoral Dissertation, The University of Texas at Austin). [Online]. Digital Dissertations. Publication Number: AAT7722911.

Alexander, A. A. (1969). The effect of a residential camping experience on the self concept of boys from low income families. Unpublished doctoral dissertation, Boston University.

American Forest Foundation (1994). Project Learning Tree: environmental education activity guide: Pre K – 8. Washington, D.C.

Anderson, G. S. & Frison, D. (1992). The hidden value of adventure based programs: a reflection. California Association for Health, Physical Education, and Recreation Journal, 58(2), 12-17.

Ang, R.P. & Chang, W.C. (1999). Impact of domain-specific locus of control on need for achievement and motivation. The Journal of Social Psychology, 139(4), 527-530.

Arkes, H.R. (1982) (Ed.) Psychological theories of motivation. Monterey, CA: Brooks Cole.

Aronstein, L. W. (1972). A study of attitudinal change in college students as a result of constructive participation in an environmental community service project. Unpublished doctoral dissertation, State University of New York – Buffalo.

Bandura, A. (1984). Recycling misconceptions of perceived self-efficacy. Cognitive Therapy and Research, 8, 231-255.

Barnett, B.G. (1989, October). Reflection: The cornerstone of learning from experience. Paper presented at the University Council for Educational Administrators Annual Convention, Scottsdale, AZ.

Bass, B. M. (1990). Bass & Stodgill's handbook of leadership. New York, NY: Free Press.

Bateson, D.J. (1981). Changes in student-teacher perceptions following a residential outdoor program. Unpublished doctoral dissertation. University of British Columbia, Canada.

Beard, L.A. (1998). The relationship between outdoor classroom learning experiences and achievement and attitude of eighth grade students (Doctoral dissertation, The University of Southern Mississippi, 1998). [On-line]. Digital Dissertations. Publication Number: AAT 9901327

Beker, J. (1959). The relationship between school camping social climate and change in children's self-concepts and patterns of social relationship.

Unpublished doctoral dissertation, Teachers College, Columbia, SC.

Berman, D.S. & Davis-Berman, J. (1995). Outdoor education and troubled youth. Charleston, WV: ERIC/CRESS. ERIC NO: ED385425

Bialeschki, M. D. (1992). We said, "Why not?" – A historical perspective on women's outdoor pursuits. Journal of Physical Education, Recreation, and Dance 63(2), 52-55.

Bisson, C. (1997). The effects of varying the sequence of categories of adventure activities on the development of group cohesion. Doctoral dissertation, University of Northern Colorado. [Online]. Digital Dissertations, Publication Number: AAT 9827958.

Burns, E.M. (1994). Self-perception of leadership styles in a high technology defense contractor organization using the Hersey and Blanchard model of situational leadership (Doctoral Dissertation, Walden University). [On-Line]. Digital Dissertations. Publication Number: AAT 9518018.

Campbell, M.L. (1998). Measures of control and functioning among mood and anxiety disorders in an outpatient psychological services center setting.

(Doctoral Dissertation, Adler School of Professional Psychology). [Online] Digital Dissertations, AAT 9904690.

Carroll, N.E.W. (1998). Undergraduate retention programs for minorities: A case study. (Doctoral Dissertation, The University of Texas at Austin). [Online] Digital Dissertations, AAT 9905702.

Carson, R. (1962). Silent Spring. New York: Fawcett Crest.

Chapman, P.L. & Mullis, R.L. (1999). Adolescent coping strategies and self-esteem. Child Study Journal, 29(1), 69.

Chiu, L. (1997). Development and validation of the School Achievement Motivation Rating Scale. Education and Psychological Measurement, 57(2), 292-306.

Comstock, A. B. (1905). How to keep bees: A handbook for the use of beginners. New York: Doubleday, Page & Co.

Comstock, A. B. (1911). Handbook of nature-study for teachers and parents. Ithaca, NY: Comstock Publishing Co.

Comstock, A. B. (1939). Handbook of nature-study. Ithaca, NY: Comstock Publishing Co.

Comstock, A. B. (1977). Ways of the six-footed: A reissue of the 1903 ed., with a new foreword by Edward H. Smith. Ithaca, NY: Cornell University Press.

Conerly, (1997). The effect of life skills instruction on locus of control in adult male inmates. (Doctoral Dissertation, The University of Southern Mississippi). [Online] Digital Dissertations, AAT 9806474.

Conger, J. A. (1989). Leadership: The art of empowering others. Executive, 3(1), 17-24.

Coopersmith, S. (1987). Self-esteem inventories. Palo Alto, CA: Consulting Psychologists Press.

Coren, B.E. (1970). A comparison of social, personal, and physical development of males and females exposed to a day camp environment. Unpublished doctoral dissertation, University of New Mexico.

Crume, C. T. (1983). A study of the effect of group outdoor activities on the self-concept of physical education and recreation majors. Unpublished doctoral dissertation, University of Kentucky.

Csikszentmihalyi, M. (1975). Beyond boredom and anxiety. San Francisco, CA: Jossey-Bass.

Culp, R. H. (1998). Adolescent girls and outdoor recreation: A case study examining constraints and effective programming. Journal of Leisure Research, 30(3), 356-380.

D'Agostino, A.C. (1980). The effect of an outdoor education project on the cross-cultural attitudes of Black, White, and Puerto Rican fifth graders. Unpublished doctoral dissertation, Rutgers, The State University of New Jersey.

Dal Vera, A. (1996). Facing women's fear of failure: An AWESome experience. In K. Warren (Ed.), Women's Voices in Experiential Education (pp. 276-287). Dubuque, IA: Kendall/Hunt.

Dattilo, J. & Murphy, W.D. (1987). High adventure for everyone: Implications for people with disabilities. In Meier, J.F, Morash, T.W., & Welton, G.E. (Eds.), High-adventure Outdoor Pursuits: Organization and Leadership (2nd ed., pp. 49-58). Columbus, OH: Publishing Horizons.

Davidson, M. (1965). Changes in self-concepts and sociometric status of fifth and sixth grade children as a result of two different school camp curricula. Unpublished doctoral dissertation, University of California, Berkley.

Davis, C.J. (1995). Communicating shared vision in a scientific research organization. (Doctoral Dissertation, University of Illinois at Urbana-Champaign). [Online] Digital Dissertations, AAT 9543566.

Davis, O.L. (1960). The effect of a school camp experience on friendship choices. The Journal of Educational Sociology, 33 (3).

Day, S.K. (1999). Psychological impact of attributional style and locus of control on college adjustment and academic success. (Doctoral Dissertation, Northern Arizona University). [Online] Digital Dissertations, AAT 9924253.

Dewey, J. (1916). Democracy and education. New York: Free Press.

Dewey, J. (1938). Experience and education. New York: Collier Books.

Dodge, P. (1996). The bicycle. Paris; New York: Flammarion.

Donaldson, G.E. & Donaldson, L.E. (1958, May-June). Outdoor education, a definition. Journal of the American Association for Health, Physical Education and Recreation, 17-19.

Driver, B.L., Tinsley, H.E.A., & Manfredro, M.J. (1991). Leisure and recreation experience preference scales. In Driver, B.L., Brown, P.J., & Peterson, G.L., (Eds.), Benefits of Leisure. State College, PA: Venture.

Drucker, P. F. (1996). The executive in action. New York: Harper Business.

Dyson, B. & O'Sullivan, M. (1998). Innovation in two alternative elementary school programs: why it works. Research Quarterly for Exercise and Sport, 69(3), 242-254.

Eagle, H., Gordon, J., & Lewis, L. (2000). The effects of a public school system's one day adventure experience. In L.A. Stringer, L. H. McAvoy, A. B. Young (Eds.), Coalition for education in the outdoors fifth biennial research symposium proceedings, January 14-15. Bradford Woods, IN: The Coalition for Education in the Outdoors.

Eaton, D. (1998). Cognitive and affective learning in outdoor education. (Doctoral Dissertation, University of Toronto). [Online]. Digital Dissertations. Publication Number: AAT NQ41587.

Edelin, K. C. (1998). An achievement goals perspective on the educational trajectories of early adolescents: The role of race and contexts. (Doctoral Dissertation, The University of Michigan). [Online]. Digital Dissertations. Publication Number: AAT 9825210.

Ells, E. (1986). History of organized camping: The first 100 years. Martinsville, IN: American Camping Association.

Erickson, D. (1996). How to get nine hours of work into an eight-hour day. Parks and Recreation, 36(10), 22.

Esparó, J. (1971). Assessment of student attitudes and involvement in the environmental quality program of the Mott Institute – Okemos secondary school project. Unpublished doctoral dissertation, Michigan State University.

Everhart, B. (1996). Assessing motor and sport skill performance: Two practical procedures. JOPERD- The Journal of Physical Education, Recreation & Dance, 67(6), 49-51.

Ewert, A. (1987). Emerging trends in outdoor adventure recreation. In Meier, J.F., Morash, T.W., & Welton, G.E. (Eds.), High-adventure Outdoor Pursuits: Organization and Leadership (2nd ed., pp. 149-159), Columbus, OH: Publishing Horizons.

Fitzpatrick, C. N. (1968). Philosophy and goals for outdoor education (Unpublished Doctoral Dissertation, Colorado State College, 1968).

Fletcher, S.A. (1973). A comparison of affective changes between economically disadvantaged and advantaged sixth graders at a resident outdoor education program. Unpublished doctoral dissertation. Indiana University.

Flexner, A. (1923). A modern college and a modern school. Garden City, NY: Doubleday.

Ford, P.M. (1981). Principles and practices of outdoor/environmental education. New York: John Wiley & Sons.

Ford, P. & Blanchard, J. (1993). Leadership and administration of outdoor pursuits (2nd ed.) State College, PA: Venture.

Fredrickson, L.M. & Anderson, D.H. (1999). A qualitative exploration of the wilderness experience as a source of spiritual inspiration. Journal of Environmental Psychology, 19(1), 21-39.

Freeman, P.A. (1993). The experience of "flow" during challenge education activities for adults (Doctoral Dissertation, University of Indiana). [Online]. Digital Dissertations. Publication Number: AAT 9323242.

Frohman, A. L. (1997, Winter). Igniting organizational change from below: The power of personal initiative. Organizational Dynamics, 25(3), 39-53.

Fry, S.K. & Heubeck, B.G. (1998). The effects of personality and situational variables on mood states during Outward Bound wilderness courses: An exploration. Personality & Individual Differences, 24(5), 649-659.

Garvey, D. (1999). Outdoor adventure programming and moral development. In J.C. Miles and S. Priest (Eds.), Adventure Programming (pp. 133-139). State College, PA: Venture Publishing.

Garvie, P.A. (1997). The effects of difficult tasks on resilience in young adults. (Doctoral Dissertation, Auburn University). [Online]. Digital Dissertations, AAT 9811950.

Gass, M.A. (1993). Adventure therapy : therapeutic application of adventure programming. Dubuque, IA: Kendall/Hunt.

- Gass, M.A. (1995). Book of metaphors: Volume II. Dubuque, IA: Kendall/Hunt.
- Gibson, H. W. (1936, January). The history of organized camping. Camping Magazine, 9, 26-27.
- Gilligan, C. (1998). Woman's place in a man's life cycle. In C.A. Woynshner & H.S. Gelfond (Eds.), Minding Women: Reshaping the Educational Realm (pp. 41-58). Cambridge, MA: Harvard Educational Review.
- Goleman, D. (1995). Emotional intelligence: Why it can matter more than IQ. New York: Bantam Books.
- Gray, T. (1997). Examining the fruits of the outdoor education tree from a gender perspective. In: Deeply Rooted, Branching Out, 1992-1997. Annual AEE International Conference Proceedings, 19-38.
- Green, J., & Thompson, D. (1990). Outward Bound USA. In J.C. Miles and S. Priest (Eds.), Adventure education (pp. 5-6). State College, PA: Venture Publishing.
- Hammerman, D. R., Hammerman, W.M., Hammerman, E. L. (1994). Teaching in the outdoors (4th ed.). Danville, IL: Interstate Publishers.
- Hampton, B. & Cole, D. (1995). Soft paths. Mechanicsburg, PA: Stackpole Books.
- Harding, J. B. (1997). The effect of an outdoor residential environmental education program on the development of grade seven students' environmental attitudes and ecological knowledge. (Masters Thesis, Memorial University of

Newfoundland). [Online]. Digital Dissertations. Publication Number: AAT MQ23141.

Harmon, P. & Templin, G. (1987). Conceptualizing experiential education. In Meier, J.F., Morash, T.W., & Welton, G.E. (Eds.), High-adventure Outdoor Pursuits: Organization and Leadership (2nd ed., pp. 69-77). Columbus, OH: Publishing Horizons.

Haynes, L. & Gallagher, S. (1998). The wilderness intervention program: Change through mentoring. In Exploring the Boundaries of Adventure Therapy: International Perspectives. Proceedings of the International Adventure Therapy Conference, Perth, Australia, 1, 7-14.

Hendee J. C., & Brown, M. H. (1987). How wilderness experience programs work for personal growth, therapy and education: An explanatory model. In The highest use of wilderness: Using wilderness experience programs to develop human potential. Moscow, ID: Wilderness Research Center, University of Idaho.

Henderson, K. (1996a). Feminist perspectives on outdoor leadership. In K. Warren (Ed.), Women's Voices in Experiential Education (pp. 107-117). Dubuque, IA: Kendall/Hunt.

Henderson, K. (1996b). Kind of in the middle: Gendered meaning of the outdoors for women students. In Coalition for Education in the Outdoors Third Research Symposium Proceedings (pp. 14). Bradford Woods, IN: Coalition for Education in the Outdoors.

Henderson, K. (1996c). Women and the outdoors: Toward spiritual empowerment. In K. Warren (Ed.), Women's Voices in Experiential Education (pp. 193-202). Dubuque, IA: Kendall/Hunt.

Henderson, K.A. (1997). Ecofeminism and experiential education. The Journal of Experiential Education, 20(3). 130-133.

Henderson, K. A., & Allen, K. R. (1991). The ethic of care: Leisure possibilities and constraints for women. Loisir & Societe/Society & Leisure, 14(1), 97-113.

Henderson, K., Bialeschki, M.D., Shaw, S., & Freysinger, V. (1996). Both gains and gaps: Feminist perspectives on women's leisure. State College, PA: Venture.

Henderson, K.A., Stalnaker, D., & Taylor, G. (1988). The relationship between barriers to recreation and gender-role personality traits for women. Journal of Leisure Research, 20(1), 69-80.

Hendy, C. M. (1975). Outward Bound and personality: Profiles of instructors and changes in male and female students 16-19 years of age. (Doctoral Dissertation, University of Oregon). [Online]. Dissertation Abstracts. Publication Number: AAT7600930.

Hergenhahn, B.R. & Olson, M.H. (1997). An introduction to theories of learning (5th ed.). Upper Saddle River, NJ: Prentice Hall.

Herron, F. R. (1994). Leadership styles of elementary school principals and their impact on student achievement (Doctoral Dissertation, Temple University). [On-Line]. Digital Dissertations. Publication Number: AAT 9434687.

Hinterhuber, H. H. & Popp, W. (1993, July). What makes a strategist out of a manager? What engineers should know about strategic management. International Journal of Production Economics, 30(7), 297-308.

Hogan, J. (1968). Impelled into experience: The story of Outward Bound. Yorkshire, UK: Educational Publications, Ltd.

Horwood, B. (1994). The influence of outdoor education on curriculum integration: A case study. In Coalition for Education in the Outdoors Research Symposium Proceedings. Bradford Woods, IN.

House, J. D. (1999). Self-beliefs and background variables as predictors of school withdrawal of adolescent students. Child Study Journal, 29(4), 247-262.

Hunt, J.S. & Wurdinger, S.D. (1999). Ethics and Adventure Programming. In J.C. Miles and S. Priest (Eds.), Adventure Programming (pp. 123-131). State College, PA: Venture Publishing.

Husenits, K.J. (1992). Complex work experiences as mechanisms in advanced ego development in men and women. (Doctoral Dissertation, Indiana University of Pennsylvania). [Online] Digital Dissertations. Publication Number: AAT9218671.

Ibrayeva, E. S. (1999). Entrepreneurship in transitional economies: Testing a social cognitive model. (Doctoral Dissertation, The University of

Nebraska-Lincoln). [Online] Digital Dissertations. Publication Number: AAT 9929206.

Jackson, D.N. (1984). Personality research form manual (3rd ed.). Port Huron, MI: Research Psychologists Press.

Jackson, E.L. (1994). Constraints on participation in resource-based outdoor recreation. Journal of Applied Recreation Research, 19(3), 215-245.

Johnson, M.G. (2000). The impact of affective factors on retention at a rural community college. (Doctoral Dissertation, University of Minnesota). [Online]. Digital Dissertations, AAT 9954743.

Jones, J. E., & Bearley, W. L. (1994). Group development assessment: Facilitator guide. King of Prussia, PA: Organizational Design and Development.

Jordan, D. (1989). A new vision for outdoor leadership theory. Leisure Sciences, 9(1), 35-47.

Jordan, D. J. (1991). Effective leadership for girls and women in outdoor recreation. Journal of Physical Education, Recreation, and Dance, 63(2), 61-64.

Jordan, D. J. (2001). Leadership in leisure services: Making a difference (2nd ed.). State College, PA: Venture.

Jordan, D. (1998). Learning outdoor recreation skills in a safe place: Lessons from a single-sex program. In Coalition for Education in the Outdoors Fourth Research Symposium Proceedings. (pp. 85-91). Bradford Woods, IN: Coalition for Education in the Outdoors.

Jordison, J. (1993). Lack of money for outdoor and environmental education. Pathways: The Ontario Journal of Outdoor Education, 5(2), 17-19.

Jung, D. I. & Avolio, B. J. (1999). Effects of leadership style and followers' cultural orientation on performance in group and individual task conditions. Academy of Management Journal, 42(2), 208-209.

Kagan, S., & Knight, G. (1981). Social motives among Anglo American and Mexican American children: Experimental and projective measures. Journal of Research in Personality, 15, 93-106.

Kane, M. J. (1989, March). The post Title IX female athlete in the media: Things are changing but how much? JOPERD – The Journal of Physical Education, Recreation, and Dance, 60(3), 58-62.

Kane, M. J. (1990, January). Female involvement in physical recreation – gender role as a constraint. JOPERD – The Journal of Physical Education, Recreation, and Dance, 61(1), 52-56.

Kaplan, R. (1977). Summer outdoor programs: Their participants and their effects. In Children, Nature, and the Urban Environment: Proceedings of a Symposium Fair (pp. 175-179). USDA Forest Service General Technical Report NE-30. Northeastern Experimental Station, Upper Darby, PA.

Kaspar, M.J. (1998). Factors affecting elementary principals' and teachers' decisions to support outdoor field trips (Doctoral Dissertation, The University of Texas at Austin). [On-Line]. Digital Dissertations: Publication number: AAT 9838013.

Kelly, J. R. & Warnick, R. B. (1999). Recreation trends and markets: The 21st century. Champaign, IL: Sagamore Publishing.

Keppel, G. (1991). Design and analysis: a researcher's handbook (3rd ed.). Upper Saddle River, NJ: Prentice Hall.

Kim, C.W. (1999). Social-cognitive factors influencing success on college entrance exams in South Korea. (Doctoral dissertation, University of Southern California). [On-line]. Digital Dissertations. AAT 9955525.

Kimball, R. O. (1986). Experiential therapy for youths: The adventure model. Children Today, 15(2), 26-31.

Kirk, J. (1977). The quantum theory of environmental education. In National Association for Environmental Education Sixth Annual Conference Proceedings, YMCA of the Rockies, Estes Park, Colorado.

Kirkpatrick, S. A. & Locke, E. A. (1991, May). Leadership: Do traits matter? The Executive, 5(2), 48-61.

Kleindiest, V. K. (1957). A study of the experiences of camping for the purpose of pointing out ways in which a school camping program may supplement the elementary school at the sixth grade level. Unpublished doctoral dissertation, New York University.

Klint, K. A. (1999). New directions for inquiry into self-concept and adventure experiences. In J.C. Miles and S. Priest (Eds.), Adventure Programming (pp. 163-168). State College, PA: Venture Publishing.

Knapp, C.E. (1999). In accord with nature: Helping students form an environmental ethic using outdoor experience and reflection. Charleston, WV: ERIC/CRESS. ERIC NO: ED425897

Kolb, D.A. (1984). Experiential learning: Experience as the source of learning and development. Englewood Cliffs, NJ: Prentice Hall.

Kranzer, H. C. (1958). Effects of school camping on selected aspects of pupil behavior – an experimental study. Unpublished doctoral dissertation, University of California at Los Angeles.

Kraus, R. (2000). Leisure in a changing America : trends and issues for the 21st century (2nd ed.). Boston, MA : Allyn and Bacon.

Langley, D. J. & Woods, A.M. (1997, September). Developing progressions in motor skills: a systematic approach. JOPERD-The Journal of Physical Education, Recreation & Dance, 68(7), 41-46.

Leary, M.R. & Miller, R.S. (1986). Social psychology and dysfunctional behavior: origins, diagnosis, and treatment. New York: Springer-Verlag.

Leitner, M.J., Leitner, S.F. and Associates. (1989). Leisure enhancement. New York: The Haworth Press.

Lenz, C.R. (1999). The effects of family influence on motivation and achievement of low-socio-economic Latino and African-American elementary school students. (Doctoral Dissertation, St. John's University, New York). [Online]. Digital Dissertations. AAT 9942106.

Leopold, A. (1949). A Sand County almanac, and sketches here and there. New York, NY: Oxford University Press.

Link, M. (1981). Outdoor education: A manual for teaching in nature's classroom. Englewood Cliffs, NJ: Prentice Hall.

Longino, E.L.R. (1987). Imagery practice for teachers of young children: an ethnographic study of perceptions of change. (Doctoral Dissertation, University of South Carolina). [Online] Digital Dissertations, AAT 8724851.

Luckner, J.L. (1989). Altering locus of control of individuals with hearing impairments by outdoor-adventure courses. The Journal of Rehabilitation, 55(2), 62-68.

Luera, G.R. (1998). The effectiveness of environmental education programs from the perspectives of three stakeholders: Participants, sponsors, and professionals. (Doctoral dissertation, The University of Michigan). [Online]. Digital Dissertations, Publication Number: AAT 9909942.

Macan, T. H. (1996, May). Time-management training: Effects on time behaviors, attitudes, and job performance. The Journal of Psychology, 130(3), 229-237.

Manley, H. & Drury, M.F. (1952). Education through school camping. St. Louis, MO: The C.V. Mosby Company.

Mannell, R.C., & Kleiber, D.A. (1997). A social psychology of leisure. State College, PA: Venture.

Margulis, J. D. (1952). A study of existing public school sponsored camping programs in New York state and an analysis of factors which might encourage the development of additional camping programs in the public elementary schools of New York state (Unpublished Doctoral Dissertation, University of Buffalo).

Marshall, B.J. (1999). A descriptive study of the perspectives of parents and educators regarding the importance and critical elements of teacher-child relationships in the learning process. (Doctoral Dissertation, University of South Carolina). [Online] Digital Dissertations, AAT 9939195.

Martin, S. C. (1999). The influence of outdoor school yard experiences on elementary students' environmental knowledge, attitudes, behaviors, and comfort levels. (Doctoral Dissertation, University of Florida). [Online] Digital Dissertations, Publication Number AAT 9956613.

Marton, P., Connolly, J., Kutcher, S., & Korenblum, M. (1993). Cognitive social skills and social self-appraisal in depressed adolescents. Journal of the American Academy of Child and Adolescent Psychiatry, 32(4), 739-745.

McClelland, D.C., Atkinson, J.W., Clark, R.A., & Lowell, E.L. (1976). The achievement motive. New York: Irvington Publishers.

McClintock, M. (1996). Why women's outdoor trips? In K. Warren (Ed.), Women's Voices in Experiential Education (pp.18-23). Dubuque, IA: Kendall/Hunt.

McDonald, B.L., & Schreyer, R. (1991). Spiritual benefits of leisure participation and leisure settings. In Driver, B.L., Brown, P. J., & Peterson, G.L. (Eds.), Benefits of Leisure. State College, PA: Venture.

McGowan, M. L. (1989). Order of perceived risk intensity and task relevance as program factors influencing locus of control in adventure recreation. Dissertation Abstracts International, 50(12), 4099-A.

Merriam, S.B. & Caffarella, R.S. (1999). Learning in adulthood, (2nd ed.). San Francisco: Jossey-Bass.

Mitten, D. (1996). A philosophical basis for a women's outdoor adventure program. In K. Warren (Ed.), Women's Voices in Experiential Education (pp. 78-84). Dubuque, IA: Kendall/Hunt.

Mitten, D. & Dutton, R. (1996). Outdoor leadership considerations with women survivors of sexual abuse. In K. Warren (Ed.), Women's Voices in Experiential Education (pp. 130-140). Dubuque, IA: Kendall/Hunt.

Monsour, K.L. (1998). Outdoor education programs as gender equitable environments? An ethnographic study. (Master's Thesis, University of Ottawa, Canada). [On-line]. Digital Dissertations. Publication number: AAT MQ28447

Murray, H. (1938). Explorations in personality. New York: Oxford University Press.

National Environmental Education Advisory Council. (1998). Report assessing environmental education in the United States and the implementation

of the national environmental education act of 1990. (EPA 171-R-96-001).

Washington, D.C.: U.S. Government Printing Office.

Neill, J.T. (1999). The melting pot of outdoor education effects: Testing the flavours of program type, duration, and participant age. Paper presented to the 11th National Outdoor Education Conference, Perth Western Australia, Jan. 11-15.

Neill, J.T. (2000). The Life Effectiveness Questionnaire: A tool for measuring change. ACT, Australia: University of Canberra.

Neill, J.T. & Flory, M. (2000a). A pilot study of the short-term and long-term effects of The Women's Wilderness Institute "Girlz in the Wood" courses on adolescents' personal effectiveness and self-esteem. Boulder, CO: The Women's Wilderness Institute.

Neill, J.T. & Flory, M. (2000b). Brief report on the effects of a Colorado Outward Bound School program on the life effectiveness of adult gay and lesbian participants. ACT, Australia: University of Canberra.

Neill, J.T. & Heubeck, B. (1998). Adolescent coping styles and outdoor education: Searching for the mechanisms of change. In Exploring the Boundaries of Adventure Therapy: International Perspectives. Proceedings of the International Adventure Therapy Conference, Perth, Australia, 1, 18-36.

Neill, J.T., Marsh, H.W., & Richards, G.E. (1997). The Life Effectiveness Questionnaire: Development and psychometrics. Sydney, Australia: University of Western Sydney.

Nelson, D. (1996). Project WET: K-12 curriculum and activity guide.

Washington, D.C.: Council for Environmental Education.

Norris, R.M., Weinman, J.A. (1996). Psychological change following a long sail training voyage. Personality & Individual Differences, 21(2). P. 189-194.

Nouryan, E.R. (1992). Evaluation of candidates with different leadership styles in assessment centers. (Doctoral Dissertation, Hofstra University). [Online] Digital Dissertations, AAT 9234266.

Nye, R. P., Jr. (1976). The influence of an Outward Bound program on the self-concept of the participants. (Doctoral Dissertation, Temple University). [Online] Digital Dissertations. Publication Number: AAT 7615854.

Offer, D., Kaiz, M., Howard, K.I., & Bennett, E.S. (1998). Emotional variables in adolescence, and their stability and contribution to the mental health of adult men: Implications for early intervention strategies. Journal of Youth and Adolescence, 27(6), 675-688.

Osmond, T.W. (1994). Stress and time management: The development of an awareness and training program for older children. (Master's Thesis, Memorial University of Newfoundland, Canada). [Online] Digital Dissertations, AAT MM17630.

Pearce, K. D. (1999). Parks and recreation and the Surgeon General's Report: Race, ethnicity, and physical activity. Journal of Physical Education, Recreation, and Dance, 70(1), 25-28.

Pepper, N. H. (1952). A study of school camping with special emphasis on program objectives, curriculum, administration and evaluation. Unpublished doctoral dissertation, University of Houston.

Petzel, T. P., Johnson, J.E., & Bresolin, L. (1990). Peer nominations for leadership and likability in problem-solving groups as a function of gender and task. The Journal of Social Psychology, 130(5), 64-72.

Petzoldt, P.K. (1974). The wilderness handbook. New York, NY: W. W. Norton and Co.

Pietig, J. (1975). Is foundations of education a discipline? Educational Studies, 60(2), 1-12.

Pietig, J. (1997). Foundations and teacher education: Do we need a new metaphor? Journal of Teacher Education, 48(3), 177-185.

Piirto, J. (1998). Understanding those who create (2nd ed.). Dayton, OH: Gifted Psychology Press.

Pipher, M. (1994). Reviving Ophelia : saving the selves of adolescent girls. New York: Ballantine.

Plas, R. E. (1995, Mar). The effects of a wilderness experience program on self-esteem and locus of control in early adolescents. Dissertation Abstracts International: Section B: The Sciences & Engineering, 55 (9-B) 4144.

Platow, M.J. & Shave, R. (1995). Social value orientations and the expression of achievement motivation. The Journal of Social Psychology, 135(1), 7-18.

- Priest, S. (1997). Effective leadership in adventure programming. Champaign, IL: Human Kinetics.
- Priest, S. (1999). The semantics of adventure programming. In J.C. Miles and S. Priest (Eds.), Adventure Programming (pp. 111-114). State College, PA: Venture Publishing.
- Priest, S. (in press). The impact of sequencing on teamwork development in a CAT program. Manuscript submitted for publication in The Australian Journal of Outdoor Education.
- Priest, S., Attarian, A., & Schubert, S. (1993). Conducting research in experiential-based training and development programs: Pass keys to locked doors. The Journal of Experiential Education, 16(2), 11-20.
- Priest S., & Gass, M. A. (1997). Effective leadership in adventure programming. Champaign, IL: Human Kinetics.
- Prouty, D. (1990). Project adventure: A brief history. In J.C. Miles and S. Priest (Eds.), Adventure Education (pp. 97-109). State College, PA: Venture Publishing.
- Raiola, E. & O'Keefe, M. (1999). Philosophy in practice: A history of adventure programming. In Miles, J. C. & Priest, S. (Eds.), Adventure Programming (45-53). State College, PA: Venture.
- Redmond, M.V. (1995). Interpersonal communication: Readings in theory and research. Orlando, FL: Harcourt Brace.

Rhoades, L. W. (1953). A close view of the 1952-53 camping program of Verona School, Battle Creek, Michigan, as a guide to future action. Unpublished doctoral dissertation, Columbia University.

Rhudy, E. (1987). An alternative to Outward Bound programs. In Meier, J.F., Morash, T.W., & Welton, G.E. (Eds.). High Adventure Outdoor Pursuits: Organization and Leadership (2nd ed.). Columbus, OH: Publishing Horizons.

Robb, G. M., & Ewert, A. (1987). Risk recreation and persons with disabilities. Therapeutic Recreation Journal, 21(1), 58-69.

Roberts, N. S. (1996). Women of color in experiential education: Crossing cultural boundaries. In K. Warren (Ed.), Women's voices in experiential education (pp. 276-287). Dubuque, IA: Kendall/Hunt.

Roberts, N. S. & Drogin, E. B. (1996). The outdoor recreation experience: Factors affecting participation of African American Women. In K. Warren (Ed.), Women's Voices in Experiential Education (pp. 85-93). Dubuque, IA: Kendall/Hunt.

Roberts, N. S. & Henderson, K. (1997). Women of color in the outdoors: Culture and meanings. The Journal of Experiential Education, 20 (3), p. 134-142.

Rogers, A.G. (1998). Voice, play, and a practice of ordinary courage in girls' and women's lives. In C.A. Woyshner & H.S. Gelfond (Eds.), Minding Women: Reshaping the Educational Realm (pp. 195-226). Cambridge, MA: Harvard Educational Review.

Rohde, R. (1996). The value of therapeutic wilderness programs for incest survivors: A look at two dominant program models. In K. Warren (Ed.), Women's Voices in Experiential Education (pp. 45-60). Dubuque, IA: Kendall/Hunt.

Rohnke, K. (1989). Cowstails and cobras II: A guide to games, initiatives, ropes courses, & adventure curriculum. Dubuque, IA: Kendall Hunt.

Rohnke, K. & Butler, S. (1995). Quicksilver: Adventure games, initiative problems, trust activities, and a guide to effective leadership. Dubuque, IA: Kendall/Hunt Publishing Co.

Roland, C. C. & Havens, M. D. (1983). A sequential approach to challenging activities with persons who are disabled. Loretto, MN: The Vinland National Center.

Roland, C. C., Summers, S., Friedman, M., Barton, G., & McCarthy, K. (1987a). Creation of an experiential challenge program. Therapeutic Recreation Journal, 21(2), 54-63.

Roland, C. C., Keene, T., Dubois, M., & Lentini, J. (1987b). Experiential challenge program development in the mental health setting. The Bradford Papers Annual, Volume III. Martinsville, IN: Bradford Woods Outdoor Center.

Rosenberg, M. (1965). Society and the adolescent self-esteem. Princeton, NJ: Princeton University Press.

Rosenfeld, L.B. (1976). Now that we're all here...relations in small groups. Columbus OH: Charles E. Merrill.

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, 80(1).

Ruggiero, V.R. (1984). The moral imperative (2nd ed.). Mountain View, CA: Mayfield.

Sadker, M., & Sadker, D. (1994). Failing at fairness: How our schools cheat girls. New York: Touchstone.

Schleien, S.J., McAvoy, L. H., Lais, G.J., & Rynders, J.E. (1993). Integrated outdoor education and adventure programs. Champaign, IL: Sagamore.

Schoel, J., Prouty, D., & Radcliffe, P. (1988). Islands of healing: A guide to adventure based counseling. Hamilton, MA: Project Adventure.

Schwalbe, M.L. (1984). The cognitive and affective consequences of natural and alienated labor. (Doctoral Dissertation, Washington State University).
[Online] Digital Dissertations, AAT 8504230.

Sharp, L. B. (1947, May). Basic considerations in outdoor and camping education. The bulletin of the National Association of Secondary School Principals. pp. 43.

Shavelson, R. J. (1996). Statistical reasoning for the behavioral sciences (3rd ed.). Boston, MA: Allyn and Bacon.

Shaw, M. J. (1958). The educational effectiveness of the traveling school camp. Unpublished doctoral dissertation, University of California.

Shaw, S.M. (1999). Gender and leisure. In E.L. Jackson & T.L. Burton (Eds.), Leisure Studies: Prospects for the Twenty-first Century (pp. 271-281). State College, PA: Venture.

Shepard, C., & Speelman, L. (1985-86). Affecting environmental attitudes through outdoor education. Journal of Environmental Education, 17(2), 20-23.

Shields, D. L. L., Gardner, D. E., Bredemeier, B. J. L., & Bostro, A. (1997). The relationship between leadership behaviors and group cohesion in team sports. The Journal of Psychology, 131(2), 196-211.

Shulman, L. S. (1990). Reconnecting foundations to the substance of teacher education. Teachers College Record, 91(3), 300-310.

Siedentop, D. (1983). Developing teaching skills in physical education (2nd ed.). Mountain View, CA: Mayfield.

Siedentop, D. (1998). Introduction to physical education, fitness, and sport (3rd ed.). Mountain View, CA: Mayfield.

Siegel, G. (2000, April). Skills needed for entry-level management accounting positions. Strategic Finance, 81(10), 79-80.

Sleeth, R.G. & Johnston, W.R. (1996). The effective leader as a link between tasks and people. SAM Advanced Management Journal, 61(2), 16-22.

Smith, D.F. (1999). A study of characteristics that contribute to persistence of adult commuter students who earn 60 or more hours of college credit. (Doctoral Dissertation, Ball State University). [Online] Digital Dissertations, AAT 9924372.

Smith, J. W., Carlson, R. E., Donaldson, G. W., & Masters, H. B. (1963).

Outdoor Education. Englewood Cliffs, NJ: Prentice-Hall.

Smith, T.E. (1995). An experiential adventure school for sexually abused adolescents. In Experience and the Curriculum. ERIC NO ED398034.

Smith, T. E., Roland, C. C., Havens, M. D., & Hoyt, J. A. (1992). The theory and practice of challenge education. Dubuque, IA: Kendall/Hunt.

Sosik, J.J. (1997, December). Effects of transformational leadership and anonymity on idea generation in computer-mediated groups. Group & Organization Management, 22(4), 460-28.

Stack, G. C. (1960). An evaluation of attitudinal outcomes of fifth and sixth grade students following a period of school camping. Unpublished doctoral dissertation, University of Oklahoma.

Steel, D. T. (1969). The effects of physical skills and academic self concepts on general self concept and academic achievement in a summer camp environment. Unpublished doctoral dissertation, Michigan State University.

Stemmermann, J. (1993). The courage to just do it: Girls and experience-based learning. New Moon Parenting, 1, 1, 8-10.

Stevens, M.J. (1992). Predictors of existential openness. Journal of Research in Personality, 26, 32-43.

Stone, C.A. (1998). The metaphor of scaffolding: Its utility for the field of learning disabilities. Journal of Learning Disabilities, 31(4), 344-381.

Storer Camps (1988). Nature's classroom: A program guide for camps and schools. Martinsville, IN: American Camping Association.

Stratynner, H.B. (1998). The relationship of readiness to change and health attribution locus of control to addiction severity in dually diagnosed individuals. (Doctoral Dissertation). [Online]. Digital Dissertations, AAT 9829245.

Suedfeld, P. (1995). Personality correlates of conceptual complexity. Journal of Social Behavior and Personality, 10, 229-242.

Sutton, R.E. (1984). The development of a measure to assess dimensions of training programs for adult students. (Doctoral Dissertation, The Pennsylvania State University). [Online] Digital Dissertations, AAT 8419689.

Thomas, C.L. & Peterson, T.A. (1993). Becoming an Outdoors-Woman. Women in Natural Resources, 15(3), 16-21.

Thomas, C. S. (1994). Girls, guiding and the outdoors: An exploratory study. Master's Thesis, University of Alberta, Canada. [Online]. Digital Dissertations. Publication Number: AAT MM11390.

Thompson, L., Battersby, T., & Lee, A. (1998). Initiation: The rights of passage into young adulthood. In: Exploring the Boundaries of Adventure Therapy: International Perspectives. Proceedings of the International Adventure Therapy Conference, Perth, Australia, 1.

Trenholm, S. (1986). Human communication theory. Englewood Cliffs, NJ: Prentice Hall.

- Udall, S. L. (1963). The quiet crisis. New York, NY: Holt, Rinehart and Winston.
- Van Der Smissen, B. (1980). Impact on educational research. In Fifty Years of Resident Outdoor Education 1930 – 1980: Its Impact on American Education. Martinsville, Indiana: American Camping Association.
- Van Matre, S. (1979). Sunship Earth: An acclimitization program for outdoor learning. Martinsville, IN: American Camping Association.
- Vogan, C. L. (1970). Criteria for evaluating conditions and changes affecting teacher-student relationships in outdoor education (Unpublished Doctoral Dissertation, Michigan State University).
- Wait, R.F. (1986). Task performance factors and social-emotional leadership. (Doctoral Dissertation, Indiana University). [Online]. Digital Dissertations, AAT 8704024.
- Warren, K. (1996). Women's outdoor adventures: Myth and reality. In K. Warren (Ed.), Women's Voices in Experiential Education (pp. 10-17). Dubuque, IA: Kendall/Hunt.
- Watts, F.N., Cohen, J. & Toplis, R. (1994). Personality & individual differences, 17 (5) 647-656.
- Wearing, B. (1990). Beyond the ideology of motherhood: Leisure as resistance. Australian and New Zealand Journal of Sociology, 26(1), 36-58.
- Weiner, B. (1980). Human motivation. San Francisco, CA: Holt, Rinehart, and Winston.

West-Smith, L. (1997). Body image perceptions of active outdoorswomen: Toward a new definition of physical attractiveness. (Doctoral Dissertation, The Union Institute). [Online]. Digital Dissertations. Publication Number: AAT 9736721.

Western Regional Environmental Council (1986). Project WILD (Rev. ed.). Boulder, CO.

Wheelan, S. A. (1999). Creating effective teams: a guide for members and leaders. Thousand Oaks, CA: Sage Publications.

Wilson, L.J. (1994). Iowa's 1994 Becoming an Outdoors-Woman Workshop Report. Des Moines, IA: Iowa Department of Natural Resources.

Wisrodt, J.B. (1998). The effect of motivation curriculum on the academic performance of ninth grade students. (Doctoral Dissertation, University of Sarasota). [Online]. Digital Dissertations, AAT 9828776.

Wood, D., Bruner, J.S., & Ross, G. (1976). The role of tutoring in problem solving. Journal of Child Psychiatry and Psychology, 17(1), 89-100.

Wood, D. E., (1978). Analyzing adventure education: Behavior patterns, relating objectives, sequencing activities, and discovering student perspective. Dissertation Abstracts International, 39(5), 2735-A.

Wright, A. N. (1982). Therapeutic potential of the Outward Bound process: An evaluation of a treatment program for juvenile delinquents. Dissertation Abstracts International, 42(3-A), 923.

Yerkes, R. & Haras, K. (1997). Outdoor education and environmental responsibility. Charleston, WV: ERIC/CRESS. ERIC NO: ED414

Yukl, G. (1994). Leadership in organizations. Englewood Cliffs, NJ: Prentice Hall.

APPENDIX A

LIFE EFFECTIVENESS QUESTIONNAIRE – VERSION I

L.E.Q. - I[®]

Please do not write on this questionnaire. Record all your answers on the computer scan form.
Make sure that you have completed all the background information from the other page.

STATEMENT	FALSE not like me	TRUE like me
01. If I try hard enough, I can succeed at anything.	1 2 3 4 5 6 7 8	
02. I plan and use my time efficiently	1 2 3 4 5 6 7 8	
03. I am successful in social situations.	1 2 3 4 5 6 7 8	
04. When working on a project, I do my best to get the details right.	1 2 3 4 5 6 7 8	
05. I change my thinking or opinions easily if there is a better idea.	1 2 3 4 5 6 7 8	
06. I am in control of things that happen to me.	1 2 3 4 5 6 7 8	
07. I can get people to work for me.	1 2 3 4 5 6 7 8	
08. I can stay calm in stressful situations.	1 2 3 4 5 6 7 8	
09. I like to be busy and actively involved in things.	1 2 3 4 5 6 7 8	
10. I know I have the ability to do anything I want to do.	1 2 3 4 5 6 7 8	
11. I do not waste time.	1 2 3 4 5 6 7 8	
12. I am competent in social situations.	1 2 3 4 5 6 7 8	
13. I try to get the best results when I do things.	1 2 3 4 5 6 7 8	
14. I am open to new ideas.	1 2 3 4 5 6 7 8	
15. I believe I am responsible for all my actions.	1 2 3 4 5 6 7 8	
16. I am a good leader when a task needs to be done.	1 2 3 4 5 6 7 8	
17. I stay calm and overcome anxiety in new or changing situations.	1 2 3 4 5 6 7 8	
18. I like to be active and energetic.	1 2 3 4 5 6 7 8	
19. When I apply myself to something I am confident I will succeed.	1 2 3 4 5 6 7 8	
20. I manage the way I use my time well.	1 2 3 4 5 6 7 8	
21. I communicate well with people.	1 2 3 4 5 6 7 8	
22. I try to do the best that I possibly can.	1 2 3 4 5 6 7 8	
23. I am adaptable and flexible in my thinking and ideas.	1 2 3 4 5 6 7 8	
24. I don't believe in chance, fate or destiny.	1 2 3 4 5 6 7 8	
25. As a leader I motivate other people well when tasks need to be done.	1 2 3 4 5 6 7 8	
26. I stay calm when things go wrong.	1 2 3 4 5 6 7 8	
27. I like to be an active, 'get into it' person.	1 2 3 4 5 6 7 8	
28. I believe I can do it.	1 2 3 4 5 6 7 8	
29. I can change the way I think and behave.	1 2 3 4 5 6 7 8	

L.E.Q. - I[©]
PLEASE DO NOT TURN OVER YET
READ THESE INSTRUCTIONS

This is a chance for you to consider how you think and feel about yourself in some ways. **This is not a test** - there are no right or wrong answers, and everyone will have different responses. It is important that you give your own views and that you be honest in your answers and do not talk to others while you think about your answers. They will be used only for research purposes and will in no way be used to refer to you as an individual at any time.

Over the page are a number of statements that are more or less true (that is like you) or more or less false (that is unlike you). Please use the eight point scale to indicate how true (like you) or how false (unlike you), each statement is as a description of you. **Answer the statements as you feel now**, even if you have felt differently at some other time in your life. Please do not leave any statements blank.

FALSE NOT LIKE ME				TRUE LIKE ME			
1	2	3	4	5	6	7	8
This statement doesn't describe me at all; it isn't like me at all		More false than true		More true than false		This statement describes me very well; it is very much like me.	

Please do not write on this paper. Record your answers by completely FILLING IN THE CIRCLE on your ANSWER SHEET that describes how you feel about that statement. Use #2 pencil only.

SOME EXAMPLES

- A. I am a fast thinker. 1 2 3 4 ● 6 7 8
 (The 6 on the answer sheet has been filled in because the person answering believes the statement "I am a fast thinker" is sometimes true. That is, sometimes like him/her.)
- B. I am a good storyteller. 1 ● 3 4 5 6 7 8
 (The 2 has been filled in because the person answering believes that the statement is mostly false as far as he/she is concerned. That is, he/she feels he/she does not tell good stories.)
- C. I enjoy working on puzzles. 1 2 3 4 5 6 7 ●
 (The 8 has been filled in because the person really enjoys working on puzzles a great deal, therefore the statement is definitely true about him/her.)

**** ARE YOU SURE WHAT TO DO? ****

If yes, then please turn the page over, and fill in your answers for all the statements
ON THE COMPUTER SCANNING SHEET.

If still unsure about what to do, ASK FOR HELP.
PLEASE GIVE HONEST, PRIVATE ANSWERS

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APPENDIX B

INSTRUCTIONS FOR ADMINISTERING THE LEQ-I

INSTRUCTIONS FOR ADMINISTERING THE LEQ-I

1. Pass out LEQ-I, answer sheets and #2 pencils to all participants.
2. Ask participants to wait and to listen to instructions before they begin.
3. Read the instructions on the front side of the questionnaire ALOUD to the participants. Give them time to fill in the background information as you reach that segment.
4. Make sure that in the "NAME" box they put their primary/homeroom teacher's last name only.
5. Make sure they mark M or F to designate sex.
6. Make sure they fill out Birthdate properly. Fill in circle for month, use two digits for the day, and the last two digits for the year.
7. Leave the section marked IDENTIFICATION NUMBER blank.
8. Under SPECIAL CODES, please write the COLUMN LETTER and ONLY the Correct Response for Column K&L on a chalk board. For Columns M&N please write ALL possible choices on the board and ask them to choose the appropriate response.
 - COLUMN K – Test codes (write ONLY the number that designates which test they are taking)
 - 1= pre-test (done at school before they come out to camp)
 - 2= post-test (done at camp at the end of the program)
 - 3= follow-up (done at school one month after the camp program ends)
 - COLUMN L - School codes (give the students ONLY the number that designates their school)
 - 1= (Private school 1)
 - 2= (Public school)
 - 3= (Private school 2)
 - COLUMN M – Ethnicity Codes (Please write down all options so the students can choose appropriately)
 - 1= African American
 - 2= Asian American/ Pacific Islander
 - 3= European American (White)
 - 4= Hispanic American
 - 5= Native American
 - 6= Other
 - *COLUMN N – Group they were in at camp *(ONLY DURING POST-TEST)*
 - Assign a number to each group – (Please make a copy of the schedule and write down the assigned number beside each group also indicate if any activities were canceled because of bad weather and what the replacement activities were. Please put the schedule in the envelope with the answer sheets)
9. Finish reading instructions and ask them to turn over the page and begin answering the questions by filling in the circle on the answer sheet.
10. If they have questions about the meaning of some terms, please use the following definitions:
 - #2 – efficiently = effectively or productively
 - #12 - competent = skilled or capable
 - #24 – chance, fate, or destiny = life is predetermined, "just the way things happen"
11. As they finish answering the questions, make sure that the background information is correct and that they answered all 29 statements.
12. Put completed answer sheets in a manila envelope. On the outside, please write the school name, the date, and pre-test, post-test, or follow-up. Seal the envelope.
13. Collect pencils and questionnaires.

THANK YOU!

APPENDIX C
STUDENT ASSENT FORM

Dear Student,

Soon, you and your classmates will be attending an outdoor education program. This year, the (outdoor education center) will be working with a graduate student named Tammie Stenger from Oklahoma State University. As part of her schoolwork, she will be looking at the outcomes students like you will receive from participating in the school camp program. This is a chance for your principal, teachers, and the (outdoor education center) to learn more about what you got out of the program, which will help make the program even better in future years.

If you volunteer to be a part of this project, you will be asked to truthfully answer a 29-item questionnaire about your own skills and abilities. It takes about 15 minutes to complete the form and you will be asked to respond on three different occasions, before you go to the camp, at the end of the program, and one month after the program ends. This questionnaire is not a test and no grades will be given. In fact, your name will not be asked for on the form, so you can maintain your privacy.

I really hope that you will participate in this project so that others can find out what students got from the outdoor education program. Because taking part in this project is voluntary, there is no penalty if you decide not to be involved. You can drop out of this project at any time simply by telling Ms. Stenger or your teacher.

After you have read and fully understand this form, please sign it, cut or tear off the bottom and give the bottom part to your homeroom teacher. You keep this top part. Soon after you return this and the permission slip from your parents/guardians, this project will start.

Thank you so much for helping me with one of my school assignments!

Tammie Stenger

.....Cut here.....

I want to participate in the Life Effectiveness Research Project.

Printed Name _____ Date _____

Signature _____

Homeroom teacher's name

APPENDIX D
PARENTAL CONSENT FORM

Dear Parents/Guardians:

As you know, your child will soon attend an outdoor education program. In order to better understand what outcomes are received by the students, I, Tammie Stenger, a doctoral student at Oklahoma State University, will be conducting a research study entitled, "Adventure-based outdoor education programs and middle school students' perceptions of life-effectiveness."

By allowing your child to participate in this research study, you authorize Ms. Stenger or designated associates to distribute a 29-item questionnaire on three separate occasions: 1) the Friday before the school group arrives at the (outdoor education center, 2) at the conclusion of the outdoor education program, and 3) one month after the program.

Participation requires the student to complete a questionnaire regarding his/her perception of abilities and skills before and after participating in the outdoor education program. This survey takes approximately 15 minutes to complete. The responses will be recorded on a computer scanning form, which will immediately be placed in an envelope and sealed once all students from that classroom complete the questionnaire. In order to assure anonymity, the form requests only gender, ethnicity, date of birth, and teacher's name. The researcher at no time has access to student names or other information. The researcher and supervising professors will be the only people looking at the completed questionnaires until the results are scanned into the computer. After which, all surveys will be destroyed.

Participation in this study is voluntary and there is no penalty for refusal to participate. All students are free to withdraw from this project at any time without penalty after notifying the project director.

If you have questions about this study you may contact Tammie Stenger at telephone number: 405-744-3307, or Sharon Bacher, IRB Executive Secretary, 203 Whitehurst, Oklahoma State University, Stillwater, OK 74078; telephone number: 405-744-5700.

After you have read and fully understand this form, please sign it, cut or tear off the bottom portion (you keep the top) and have your child return the bottom portion to his/her homeroom teacher.

.....Cut here.....

My child _____ has my permission to participate in the OSU/Wyman Center Life effectiveness research project.

Parent/Guardian's Signature _____ Date _____

APPENDIX E

COVER LETTER TO SCHOOL PRINCIPALS

117G COLVIN CENTER
OKLAHOMA STATE UNIVERSITY
STILLWATER OK 74078

(Principal)
(School)
(Address)

Dear (Principal):

Thank you for agreeing to assist with the (outdoor education) assessment project. I appreciate you and the teachers taking the time out of your schedules to work with me on this study. I am excited to look at what type of impact the outdoor adventure education program has on students' life effectiveness.

Included with this letter are three items. The first is the Letter of Agreement, which outlines the roles and responsibilities of the involved parties. I have included two copies, one for you to keep for your records and the second to be returned to me after being signed. The second and third items are copies of the consent and assent forms to be completed by the students and their parents/guardians. The school may keep copies of the forms, but the originals should be returned to me for my records.

I am anxiously awaiting the start of this study and cannot wait to see the results of the project! In the spring, a copy of the results will be made available to you to share with your teachers and other administrators. A copy will be sent to the (outdoor education center) as well.

Throughout the course of the project, if you have any questions for me, please do not hesitate to call me at 405-372-2056 or at the office 405-744-3307. If you prefer, you may contact me by e-mail, bg_tls@yahoo.com. Thank you, once again, for your time and assistance with my dissertation.

Sincerely,

Tammie L. Stenger
Doctoral Student, Oklahoma State University

Enclosures
tls

APPENDIX F

LETTER OF AGREEMENT WITH SCHOOLS

LETTER OF AGREEMENT

The following letter outlines the agreement between (School) and Tammie L. Stenger, Doctoral Candidate at Oklahoma State University. By signing this statement, both parties agree to the following terms.

By participating in this project, (School) agrees to do the following:

1. Encourage parents/guardians to allow students to participate in the study.
2. Distribute to the parents/guardians of the students in the classes participating in (outdoor education) programs this fall the Consent/ Assent Forms and collect the signed forms and return them to the researcher.
3. Set up appointments with the researcher so that pre-test and follow-up questionnaires can be distributed at the school during class time.
4. Schedule a post-test at the end of the (outdoor education) program.
5. Share the results of the research with teachers and parents.

As the researcher, Tammie L. Stenger agrees to do the following:

1. Follow all guidelines required by the Human Subjects Review Committee of the Oklahoma State University Institutional Review Board.
2. Provide the schools with timely and accurate answers as questions arise.
3. Provide copies of the Consent/ Assent Forms to the school to be distributed to the students and their parents prior to the study.
4. Distribute (or have designated associate distribute) the pre-test questionnaire prior to the (outdoor education) program, the post-test questionnaire at the end of the program, and a follow-up questionnaire one month after the program.
5. Maintain student anonymity by using codes to identify the students.
6. Avoid using the school name in any published documents unless given written permission by the school superintendent or principal.
7. Provide a written copy of the results to the school system during the Spring of 2001.

I hereby agree to the terms as outlined in this letter.

School Official's Name (please print)	Signature	Date
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Tammie Stenger

Researcher's Name	Signature	Date
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APPENDIX G
INSTITUTIONAL REVIEW BOARD APPROVAL

**Oklahoma State University
Institutional Review Board**

Protocol Expires: 10/26/01


Date : Friday, October 27, 2000

IRB Application No ED0135

Proposal Title: ADVENTURE-BASED OUTDOOR EDUCATION PROGRAMS AND MIDDLE SCHOOL
STUDENTS' PERCEPTIONS OF LIFE-EFFECTIVENESS

Principal
Investigator(s) :


Tammie L. Stenger
916 S Pine
Stillwater, OK 74074

 Lowell Caneday
106 Colvin
Stillwater, OK 74078

Reviewed and
Processed as: Expedited (Spec Pop)

Approval Status Recommended by Reviewer(s) : Approved

Signature :



Carol Olson, Director of University Research Compliance

Friday, October 27, 2000

Date

Approvals are valid for one calendar year, after which time a request for continuation must be submitted. Any modifications to the research project approved by the IRB must be submitted for approval with the advisor's signature. The IRB office MUST be notified in writing when a project is complete. Approved projects are subject to monitoring by the IRB. Expedited and exempt projects may be reviewed by the full Institutional Review Board.

VITA

Tammie L. Stenger

Candidate for the Degree of

Doctor of Education

Thesis: SEQUENCE OF ADVENTURE-BASED RESIDENT OUTDOOR
EDUCATION PROGRAMS AND MIDDLE SCHOOL STUDENTS'
PERCEPTIONS OF LIFE EFFECTIVENESS

Major Field: Applied Educational Studies

Biographical:

Educational: Received a Bachelor of Arts degree in Corporate and Organizational Communication from Western Kentucky University in May, 1994; received a Master of Science degree in Recreation from Western Kentucky University in December, 1996. Completed the requirements for the Doctor of Education degree with a major in Applied Educational Studies with an emphasis in Leisure Studies in August, 2001.

Experience: Employed by the University of Kentucky Cooperative Extension Service as a County Extension Agent for 4-H/Youth Development. Employed by the Wyman Center, Inc. as an Assistant Program Director for the Education Program. Employed by Oklahoma State University, Department of Leisure Studies as a Graduate Teaching Associate.

Professional Memberships: National Recreation and Parks Association, Oklahoma Recreation and Parks Society, American Camping Association, Association for Outdoor Recreation and Education.

Academic Awards: Fred Kirchner Outstanding Senior Recreation Student, Western Kentucky University; Outstanding Recreation Student, Kentucky Association for Health, Physical Education, Recreation, and Dance; Outstanding Graduate Assistant, School of Applied Health and Educational Psychology, Oklahoma State University