

DISSERTATION

MEASURING STUDENT LEARNING OUTCOMES ON OUTWARD BOUND
COURSES AND ASSOCIATED INDEPENDENT VARIABLES

Submitted by

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In partial fulfillment of the requirements

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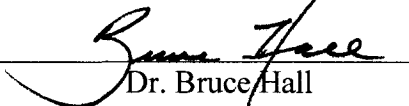
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WE HEREBY RECOMMEND THAT THE DISSERTATION PREPARED UNDER OUR SUPERVISION BY JEFFREY M. FOLEY ENTITLED MEASURING STUDENT LEARNING OUTCOMES ON OUTWARD BOUND COURSES AND ASSOCIATED INDEPENDENT VARIABLES BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

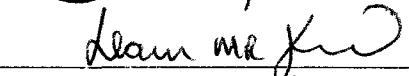
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ABSTRACT OF DISSERTATION

MEASURING STUDENT LEARNING OUTCOMES ON OUTWARD BOUND COURSES AND ASSOCIATED INDEPENDENT VARIABLES

Outward Bound in the United States takes over 20,000 students a year into unique environments and challenges them to develop their character, leadership, and service ethic. Past research has shown an increase in students' self-confidence, leadership, self-esteem, self-efficacy, interpersonal skills, intrapersonal skills, and other skill types. This study conducted a pre-exposure, post-exposure, and follow-up quasi-experimental design that demonstrates that most of Outward Bound's learning outcomes currently stated in the organization's educational framework were met. The experimental group showed statistically significant increases to character development ($p < .001$, $\eta^2 = .146$), leadership development ($p < .001$, $\eta^2 = .837$), and service development ($p < .001$, $\eta^2 = .175$) from pre-exposure to post-exposure surveys. These gains were not maintained over time.

Twelve sub-variables (self-confidence, self-actualization, compassion towards others, healthy/balanced life, goal setting, group collaboration, effective communication, conflict resolution, problem solving, social responsibility, environmental responsibility, and service to others) were also analyzed with all but one showing statistically significant positive change from pre-exposure survey to post-exposure survey. Few of these changes were maintained to the follow-up survey. The independent variables of course characteristics (course length and type), instructor demographics (age, education, tenure,

training), and student demographics (age, gender, ethnicity) were analyzed. The independent variables of course characteristics, instructor demographics, and student demographics did not have an effect on students achieving stated learning outcomes.

Overall, students on an Outward Bound course ($p < .001$, $\eta^2 = .191$) experience a significant positive change in character, leadership, and service, but these changes were not maintained over time.

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This research would not have been possible without the amazing people that come to Outward Bound and risk changing their self-world view for something better. Also, I would like to share my greatest respect for the dedicated and passionate instructors and leadership of Outward Bound who continually strive to make the world a better place.

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CHAPTER 1:

INTRODUCTION

At 18 years old I was a student on an Outward Bound (OB) course in the San Juan Mountains in southwestern Colorado. The experience I had on that course changed me physically, mentally, emotionally, and spiritually. I have spent much of my professional career defining how this 23-day experience so strongly helped inform and guide my development as a person and as an educator. Over the past 23 years I have been an Outward Bound student, instructor, course director, manager, and regional director for the Rocky Mountain region of the national Outward Bound organization. The impact of the courses run each year with thousands of students continually reinforces my belief in the effectiveness of an Outward Bound experience. Outward Bound is a school that uses experiential learning processes, in combination with an outdoor classroom, to challenge students to grow physically, mentally, emotionally, and spiritually.

There have been hundreds of studies that look at the impact of outdoor education (Cason & Gillis, 1994; Conrad & Hedin, 1981; Hans, 2000; Marsh, Richards, & Barnes, 1986; Neill, 2002, 2008), and Outward Bound courses specifically (Hattie, Marsh, Neill, & Richards, 1997; Killert, 1998; McKenzie, 2003; Neill 2008; Neill & Dias, 2001; Paxton & McAvoy, 1998), to determine the achievement of learning outcomes for the learner. These studies use qualitative and quantitative methods to examine the student learning experience and some have developed models to describe the experience. Most quantitative studies show an effect size of .3 to .4 for an overall measure of course

effectiveness (Neill, 2008). Both qualitative and quantitative studies point to an increase in leadership, self-concept, locus of control, academic achievement, personality, and interpersonal development (Cason & Gillis, 1994; Hattie et al., 1997).

All Outward Bound courses, from one to eighty-three days in length, are conducted according to Outward Bound's educational framework. This framework outlines the organization's values, design principles, and learning outcomes. This study incorporated a pre-exposure, post-exposure, and 6-month follow-up to exposure testing method to determine if Outward Bound is meeting the learning outcomes of character development, leadership development, and service development as stated in the educational framework. In addition to comparing an experimental group to a control group on each of the learning outcomes (and sub-variables) this study considered how the instructor's background, the student demographics, and the course characteristics affect students achieving the learning outcomes.

Dissertation Outline

This dissertation followed a traditional format. Chapter One introduces the study and gives some background to Outward Bound, the development of the learning outcomes, and the research questions for this study. Chapter Two is a review of research in outdoor education, foundational studies in measuring the learning outcomes of Outward Bound students including related theoretical writings, and a review of the current research on student learning outcomes of Outward Bound students. Chapter Three outlines the methods used in conducting the study by introducing the instruments, the process for data collection, the process for data analysis, and the reliability and validity processes. Chapter Four is a presentation of the findings from conducting the research.

Chapter Five draws conclusions from the findings, explores implications for practice, and suggests future research possibilities.

Chapter One Outline

This chapter will introduce Outward Bound and the parameters of this research. The first section of this chapter provides a brief history of Outward Bound and lays the foundation for this research. The next section presents an exploration of how learning outcomes have evolved over the past 50 years within Outward Bound. Much of Outward Bound founder Kurt Hahn's writings and theories are covered here. The next section looks specifically at the contemporary practice of Outward Bound and the guiding educational framework that is the backbone of every course. This leads to the research questions for this study. The research questions have been generated through a collaborative process involving instructors, managers, directors, and executive members of Outward Bound in 2007. The final section of this chapter looks at potential limitations of the study.

An Introduction to Outward Bound

Outward Bound is a nautical term referring to a ship as it leaves its safe harbor and sets out into the unknown (Zelinski, 1991). In the contemporary sense Outward Bound is both a theory and an organization. Currently, Outward Bound is an organization that uses ever evolving methods of experiential education that focuses on the physical, emotional, moral, and ethical development of students (Miner & Boldt, 1981; Outward Bound Field Staff Manual, 2008). Kurt Hahn was the school's founder, and one of his strong beliefs was that the youth of his time lacked moral fortitude (Wilson, 1981). Hahn designed a method of instruction and school administration that focused on building

character, morals, and a service ethic in the students (Hogan, 1968). From very humble beginnings at the Salem School in Germany in 1941, the theory and practice of Outward Bound has expanded to 40 schools in 35 countries serving over 230,000 students worldwide every year (Outward Bound Annual Report, 2007). A timeline of the development of Outward Bound in the United States is presented below:

- 1920 Kurt Hahn becomes headmaster of the Salem Schule
- 1934 Kurt Hahn founded the Gordonstoun School
- 1941 Kurt Hahn starts the first Outward Bound School in Aberdovey, Wales
- 1950 Josh Miner, founder of Outward Bound in the U.S. travels to Wales to learn from Hahn
- 1961 Josh Miner starts Colorado Outward Bound School in Marble, Colorado
- 1964 Voyager (Minnesota) Outward Bound is established
- 1965 Hurricane Island Outward Bound (Northeastern U.S.) and Pacific Crest Outward Bound (Pacific Northwest) are established
- 1966 North Carolina Outward Bound is established
- 1979 Outward Bound Professional is established
- 1987 Outward Bound New York Center is established
- 1988 Thompson Island Outward Bound Center is established
- 1990 Atlanta Outward Bound Center is established
- 1992 New American Schools Development Corporation (NAS) funds the Expeditionary Learning School (ELS) Outward Bound
- 1992 Philadelphia Outward Bound Urban Center is established
- 2003 Gates Foundation grants \$12.5 million to open 20 new ELS schools
- 2005 Outward Bound merges Outward Bound West, Voyager Outward Bound, Hurricane Island Outward Bound, Expeditionary Learning Schools Outward Bound, Outward Bound National, and the Baltimore and Philadelphia urban centers into one Outward Bound (2008 Outward Bound Staff Manual)

When Outward Bound came to the United States from Europe the founders ran their first course in Marble, Colorado, in 1961. In the years that followed many other Outward Bound schools started around the United States. Each school had an independent board of directors, executive director, administrative, and operational structure. In 2007 all of the legacy schools in the United States except North Carolina merged into one national organization. Outward Bound is still in the throes of this re-organization from a financial, structural, and pedagogical nature. Defining a unified

educational framework and a set of learning outcomes for Outward Bound courses in the United States has been an important part of this merger. From this point forward when Outward Bound is referred to in this dissertation, it is in reference to Outward Bound in the United States.

Outward Bound currently runs a multitude of course types. Students can go sailing, mountaineering, canyoneering, kayaking, and rafting in the expedition-based programs; courses can be held in residential settings, corporate offices, and community centers in urban-based programs. This study focuses on Outward Bound as it applies to courses run in the more traditional 'expedition' department of Outward Bound, and specifically the experimental group in this study comes from the Rocky Mountain Region of Outward Bound. Students in the Rocky Mountain Region typically go backpacking, rock climbing, mountaineering, and white water rafting. Some groups will complete team building initiatives, a ropes course, and an orienteering course.

The Foundations of Outward Bound

The overall outcomes of an expedition-based Outward Bound experience are holistic in nature, but are made up of two very different intended outcomes. One outcome is to develop the student's physical being and outdoor skills through adventure in the wilderness. The second outcome is to develop the person through their moral, ethical, emotional, and intellectual being. This second outcome will be the focus of the next section, and ultimately of this study. Over the past 50 years Outward Bound's educational framework has evolved from Kurt Hahn's original writings and schools to a framework that is more reflective of the contemporary societal issues faced by every student that steps off the bus. This section explores a sample of Kurt Hahn's writings, the four pillars,

the five tenets, and explores the current mission and the current educational framework for the organization.

Kurt Hahn's Writings

Many of the original learning outcomes used during Outward Bound courses originate from Kurt Hahn's work and writings. Hahn was obsessed with the social decline or social diseases in society. These have been variously described as: (a) the decline in fitness due to the modern methods of locomotion, (b) the decline of initiative and enterprise due to the widespread disease of spectatoritis, (c) the decline of memory and imagination due to the confused restlessness of modern life, (d) the decline of skill and care due to the weakened tradition of craftsmanship, (e) the decline of self-discipline due to the ever-present availability of stimulants and tranquilizers, and (f) the decline of compassion due to the unseemly haste with which modern life is conducted (2008 Outward Bound Staff Manual). Hahn created "The Seven Laws of Salem" to describe his educational approach:

1. Give children the opportunity for self-discovery.
2. Make the children meet with triumph and defeat.
3. Give the children the opportunity of self-effacement in the common cause.
4. Provide periods of silence.
5. Train the imagination.
6. Make games (competition) important but not predominant.
7. Free the sons of the wealthy and powerful from the enervating sense of privilege.

(James, 1980, p. 23).

Hahn wrote many papers and gave many speeches to share this message to other educators and potential donors. Hahn devoted his life to creating a form of education that helped the youth of his time gain life experience and develop character. His vision lives on in 35 different Outward Bound organizations across the world, dozens of expeditionary learning schools, and many small spin-off schools and organizations that incorporate his teachings. A somewhat poetic expression of his beliefs lives in the four pillars.

Four Pillars

The pillars have evolved from the original list expressed by Kurt Hahn in his conversation with Lester Davies, former warden at Ullswater and Sabah. Hahn said,

Imagine a Roman Temple; the roof is the training program. It did not matter whether the mountains, the sea or any other topographical medium is used for the activities which help to develop the boy's character. The roof must be held aloft by four pillars: Rescue, Physical Fitness, Self-Reliance and Project Work. (2008 Outward Bound Staff Manual).

The four pillars were used in Europe and during the transition to Outward Bound in the United States. The pillars evolved into: physical fitness, craftsmanship, self-reliance, and compassion (McKenzie, 2003) in the United States. Some Outward Bound schools in the U.S. used the pillars to frame and instruct Outward Bound courses up until the recent merger in 2005 and educational framework unification in 2007. Another framework used extensively in the U.S. is the five tenets.

Five Tenets

The five tenets also come from the movement of OB from Europe to the United States. The original tenets were a reflection of traits that the founders of the American Outward Bound movement saw lacking in the youth they served. The tenets were used to

frame course outcomes and student instruction from the early 1960s to the early 1990s by many of the American OB schools. They are: “an enterprising curiosity, an undefeatable spirit, tenacity in pursuit, a readiness for sensible self-denial, and above all, compassion” (Golins, 2006, p. 54). These tenets guided many of the OB courses run in the West for over 40 years. Some of these values are still alive in the current educational framework.

Kurt Hahn’s work was influenced by John Dewey. The ideas and themes of experiential education radiate though the Seven Laws of Salem, the four tenets, and the five pillars. These themes are still alive in the current curriculum and educational framework of Outward Bound. Outward Bound is constantly re-visiting the foundational writings and theory of Hahn and early outdoor educators in an attempt to ensure that this philosophical foundation informs the ever evolving contemporary practice.

Outward Bound Now

Outward Bound serves over 40,000 students a year world-wide (Hattie et al., 1997), and 20,000 (wilderness–5,000; urban–15,000) students each year in the United States (does not include Expeditionary Learning Schools). The majority of courses are conducted in the mountains, rivers, and oceans in the continental U.S. and Alaska. Each of these courses has many unique components such as the environment, temperate zone, and activity types used to engage students in learning through challenge and adventure. The common thread through all of these courses is the mission and educational framework.

Mission

The mission of Outward Bound has evolved over the past four decades. Until the merger in 2005, each of the legacy schools had their own mission statement. The current mission is shared across the unified Outward Bound and was written in 2006:

Our mission is to inspire character development and self-discovery in people of all ages and walks of life through challenge and adventure, and to impel them to achieve more than they ever thought possible, to show compassion for others and to actively engage in creating a better world. (2008 Outward Bound Staff Manual, p. 1-2)

This mission is at the core of all programs and activities and is currently being re-written to align with the new educational framework. Of note, the Outward Bound motto is: “To Serve, To Strive and not to Yield” (2008 Outward Bound Staff Manual). This motto has carried through from the first of Outward Bound.

Educational Framework

From 1995 until 2005 schools in the western U.S. operated under a framework called the core values and design principles. The core values were: safety, responsibility, compassion and service, character education, adventure and challenge, and learning through experience (2005 Outward Bound Instructor Manual). The design principles spoke to how the student experience would be facilitated. In late 2007 and early 2008 a group of Outward Bound directors and managers met to discuss the unification underway and relevance of the learning outcomes currently in practice. It was noted that many of the individual schools were still using the pillars and tenets and had never moved to the core values and design principles. The herculean task of unifying and uniting Outward Bound’s approach to the delivery of a unified mission and educational framework is still ongoing.

Values

Outward Bound defined its values or the values that they teach to and work by as:

1. Compassion – demonstrating concern and acting with a spirit of respect and generosity in service to others.
2. Integrity – acting with honesty, being accountable for one’s decisions and actions.
3. Excellence – being one’s best self, pursuing craftsmanship in one’s actions, and living a healthy and balanced life.
4. Inclusion and Diversity – valuing and working to create communities representative of our society that support and respect differences. (2008 Outward Bound Staff Manual)

Design Principles

Outward Bound defined its design principles, or the principles that staff uses to design and deliver programs:

1. Learning through Experience – Facilitating engaging, relevant, sequential experiences that promote skill mastery and incorporate reflection and transference; learning from success as well as failure.
2. Challenge and Adventure – Using unfamiliar settings to impel students into mentally, emotionally, and physically demanding experiences; utilizing and managing appropriate risk.
3. Supportive Environment – Designing an experience that supports physical and emotional safety; developing a caring and positive group culture. (2008 Outward Bound Staff Manual)

Learning Outcomes

Outward Bound has defined its outcomes or the outcomes students' exhibit after participating in Outward Bound programs and the outcomes that are measured as:

1. Character Development – demonstrating increased self-confidence and self-actualization; demonstrating compassion towards others and living a healthy and balanced life
2. Leadership – demonstrating the ability to set goals, and inspire and guide others to achieve them; demonstrating the ability to collaborate, communicate, and resolve conflicts effectively.
3. Service – demonstrating social and environmental responsibility; actively engaging in service to others. (2008 Outward Bound Staff Manual)

The educational framework is the latest incarnation of over 50 years of delivering Outward Bound in the United States and worldwide. Having participated in this process I can attest that the educational framework is not inclusive of all of the ideas, thoughts, and passions of individual instructors or even regional programs. It is a good representation, however, of the diverse nature of Outward Bound as an organization and will help OB unify across the United States in program delivery and quality.

Facilitating the Outward Bound Experience

Obviously, the educational framework demands a method of delivery. This method of delivery in combination with the educational framework is what makes Outward Bound preeminent a sea of outdoor education organizations. Many of the methods for developing character, leadership, and service are found in Chapter Five and are interwoven with the findings from this study to define the implications for praxis for

each parent variable. Walsh and Golins (1976) defined what has come to be known as the Outward Bound Educational Process Model, and this model is reviewed in Chapter Two. The following methods are taken from the 2008 Outward Bound Staff Manual.

Character development is an all encompassing goal of the Outward Bound experience and is a component of each aspect of program design and delivery. Hahn's Seven Laws of Salem (reviewed above) are considered the foundation of program design for character development. Courses are designed in a progression that builds students' self-confidence through mastery. High impact activities (rock climbing, whitewater rafting) take students out of their comfort zones and push them to reflect on how they see the world. Instructors utilize a myriad of facilitation styles including framing, briefing, debriefing, and processing techniques to draw significant learning from each of the experiences. Times of introspection and reflection allow students to internalize these experiences. Instructors then draw upon transference techniques to help students take these experiences and learning home with them and apply them to their community, family, and peer groups. Character development is a key element in leadership development.

Outward Bound develops leadership through instructors using different aspects of facilitative leadership. Instructors share an inspiring vision, focus on results, facilitate building strong relationships, keep students engaged, and role model collaboration to bring out the best in each student. Students are encouraged to seek compassion, integrity, and excellence as they practice as student leaders of the group. Students are also encouraged to develop self-awareness and to be conscious of inclusion of all in the group. They are given many opportunities to practice leadership in a safe and supportive

learning environment as leader of the day. Students are also given tools to set and achieve goals. There are many different models that they are exposed to. One model guides them through the method to develop S.M.A.R.T. (specific, measurable, achievable, realistic, and time-bound) goals. Leadership is often a key component in developing a service ethic.

Service is a theme that is woven throughout the course. This can be service to others or service to the environment. On some courses formal service projects are arranged where students may work with a youth group, a Forest Service representative, or on specific projects like trail building, historic preservation, or environmental studies. Another way that service is explored is in the day-to-day activities and challenges faced by the group. Students learn to be more socially responsible by learning their impact and influence on the group. Students learn to be more environmentally responsible by using Leave-No-Trace techniques when traveling in the backcountry. Each of these elements of service development is taught in a course progression.

Course Progression

The Outward Bound courses that will be focused on in this study vary from one day to twenty-two days in length. For courses seven days and longer a standard progression is followed. The focus of this progression is on building outdoor and technical skills, developing interpersonal skills to assist the student in working within the group, and pushing the group to do more than they ever thought possible; one end goal is that the group will be able to travel with more independence.

The training phase focuses on developing student knowledge and success. In the training phase of the course (2-5 days) the students are introduced to living in the new

environment they have been introduced to such as mountains, desert, or the sea. During this time they are exposed to different interpersonal tools to help them form and bond as a new community or group. After rations resupply the group begins the main phase of the course.

The main phase is focused on group process, interpersonal communication, and individual and group responsibility. This section puts increasing technical and social demands on the group. Two to three days of this 4-10 day phase include a solo that focuses on introspection. The students are alone with minimal distractions to reflect on their experiences thus far and to rest for the upcoming finals phase.

The finals phase (3-5 days) is focused on challenging the students to apply prior learning and initiative. During finals, if the group is ready, the instructors step back into a shadowing role and the group travels independently making route finding, problem solving, and interpersonal facilitation decisions and actions on their own. The course ends with a personal challenge event (a long run, a peak climb, a long sailing event). Graduation is the final element of the course and it focuses on transference, self-awareness, and closure (2008 Outward Bound Staff Manual).

Working with Students

Outward Bound strives to stay current with developments in adolescent and adult learning theory, adolescent and adult physical and emotional development, and the challenges all of our students face (learning disabilities, depression, eating disorders, substance abuse). Each student that steps off the bus comes to Outward Bound with an established world view. Instructors strive to get to know and respect the world view of each student they encounter and at the same time challenge each student to both critically

reflect on that view and to look at new ways of seeing the world. The methods used to facilitate this process have been refined for decades.

The methods used to work with students to achieve the learning outcomes focus on creating a positive and inclusive group culture, managing behavior, and addressing negative group culture. Methods to creating a positive group culture include tone setting, course structure, and learning how to observe, assess, and understand their students. Teaching students interpersonal skills, conflict resolution, anger management, and inclusivity helps each student reflect on how they currently see and interact with others. Student behavior is often facilitated through choice theory, behavior intervention, and educating students on consequences. Quite a bit of time and effort is put into addressing negative group culture before it can come to a head.

The evolution of Outward Bound educational practice has its roots in Kurt Hahn's writings and teachings. The tenets and pillars exemplify how this practice has evolved to meet the needs of society and the student. The educational framework brings the values, design principles, and learning outcomes from many different legacy schools together in one unified and united approach to the delivery of Outward Bound across the United States.

Outward Bound had no system in place to measure the stated learning outcomes in the educational framework. For decades Outward Bound has conducted 'satisfaction' surveys at the end of each course (see Appendix A). These surveys are not tied to the current learning outcomes. A comprehensive study of the achievement of Outward Bound's stated learning outcomes needed to have a pre-exposure, post-exposure, and follow-up survey method. The instrument needed to be derived directly from the learning

outcomes and the dependent variables measure changes in character development, leadership development, and the development of a service ethic. A control group was needed to set the baseline to measure this change. Independent variable such as student characteristics, instructor background, and course characteristics needed to be measured against the changes in the dependent variables.

Purpose of This Study

The purpose of this study is to provide Outward Bound feedback on student's perception of their learning based on Outward Bound's educational framework through learning surveys. This study will utilize the current educational framework outlined above to:

1. Determine if students completing an Outward Bound course have experienced character development.
 - a. Determine if a student completing an Outward Bound course experiences an increase in self-confidence.
 - b. Determine if a student completing an Outward Bound course experiences an increase in self-actualization.
 - c. Determine if a student completing an Outward Bound course demonstrates an increased level of compassion towards others.
 - d. Determine if a student completing an Outward Bound course lives a healthier and more balanced life.
2. Determine if a student completing an Outward Bound course has demonstrated increased leadership abilities.

- a. Determine if a student completing an Outward Bound course demonstrates the ability to set goals and can also inspire and guide others to achieve them.
 - b. Demonstrate the ability to collaborate, communicate, and resolve conflicts effectively.
3. Determine if a student completing an Outward Bound course has demonstrated an increased level of service.
 - a. Determine if a student completing an Outward Bound course demonstrates increased social and environmental responsibility.
 - b. Determine if a student completing an Outward Bound course is more actively engaged in service to others.
4. Determine if an instructor's background/life experience affect the student outcomes.
 - a. Determine if an instructor's age affects the achievement of the student learning outcomes.
 - b. Determine if an instructor's educational background affects the achievement of the student learning outcomes.
 - c. Determine if an instructor's tenure within Outward Bound affects the achievement of the student learning outcomes.
 - d. Determine if an instructor's number of days of training within Outward Bound affect the achievement of the student learning outcomes.
5. Determine if student demographics affect learning outcomes achievement.
 - a. Determine if student gender affects learning outcomes achievement.

- b. Determine if student age affects learning outcomes achievement.
 - c. Determine if student ethnicity affects learning outcomes achievement.
6. Determine if course characteristics affect learning outcomes achievement.
- a. Determine if course length affects student learning outcomes achievement.
 - b. Determine if course type affects student learning outcomes achievement.

Each of the main topics (character, leadership, and service) will serve as the parent dependent variables for this study. Each sub-question serves as a sub-variable in this study. An example would be that self-confidence, self-actualization, compassion, and living a healthier and more balanced life are the four sub-variables for the parent dependent variable of character development. The independent parent variables are instructor background, student demographics, and course characteristics. Each of these parent variables also has sub-variables. An example is that student age, gender, and ethnicity are sub-variables of the student demographics parent variable.

Limitations and Delimitations

This study has three substantial limitations. While Outward Bound works under a unified educational framework they do not work under a unified theory of praxis or a regimented formula for the delivery of Outward Bound. This may prove to be the greatest strength and greatest challenge for Outward Bound in the near future. The quality of delivery of individual course elements is believed to largely dependent on the instructor's prior training, training at Outward Bound, and personal work ethic. A second limitation was related to the environment in which the student takes the course. For example, if a mountaineering course environment is particularly wet, rainy, or cold it appears to affect the level of student learning outcomes. Another factor identified by McKenzie (2003) is

the make-up of the group or crew such as student age, gender, and socio-economic background.

The major delimitation of this study was the inability to generalize the findings from the Rocky Mountain Region to that of all the Outward Bound regions. The sample group does not accurately represent the population of the entire school; and the experimental group was not a random sample.

Summary

Outward Bound is an organization that engages students in interpersonal and intrapersonal development by utilizing the wilderness and adventure to create better people and a better world. Outward Bound originated in Europe during the Second World War and came to the United States in 1961. Since its humble beginnings in the U.S. the organization has grown to serve 4,000 students a year in a multitude of course types and areas. This study measured the stated student learning outcomes of an Outward Bound course. This study looked at the dependent variables of character, leadership, and service development and the independent variables of instructor background, student demographics, and course characteristics. The intent of this research is to help Outward Bound and outdoor educators to gain a better understanding of the achievement of student learning outcomes on an Outward Bound course and the variables that can influence the achievement of these outcomes. The logical launching point for this research is a review of the current research literature that measures the learning outcomes of Outward Bound students and students in other outdoor recreation programs.

CHAPTER 2:

LITERATURE REVIEW

To fully understand the theory and praxis of Outward Bound in the year 2009 when this study takes place, it is important to take a critical look at the historical and current research in outdoor education; specifically at historical and current research that measure the outcomes of Outward Bound courses. This literature was collected via standard graduate research databases (such as ERIC), through web searches, and through bibliographies and reference lists of previous studies.

Outdoor education is learning that takes place in the outdoors. Programs that deliver outdoor education can be either residential programs or journey based experiences; sometimes a program can accomplish both. This study focuses on journey or expedition-based programs. On expedition-based programs students usually participate in adventurous challenges in outdoor activities such as hiking, climbing, canoeing, ropes courses, and group games and initiatives. Outdoor education utilizes the philosophy, theory, and practices of experiential education and environmental education. Outdoor education is often referred to as: adventure education, adventure programming, outdoor learning, outdoor school, adventure therapy, adventure recreation, adventure tourism, expeditionary learning, challenge education, experiential education, environmental education, and wilderness education. For clarification, Outward Bound is a program predominantly guided by the principles and practices of outdoor education.

Outward Bound was introduced in the previous chapter. With a relatively short history of about fifty years, many of the “historical” studies specifically relating to Outward Bound were published from the 1970s to the 1990s. There is an extensive body of literature published between 1990 and today that can be considered ‘contemporary’.

This literature review is organized in the following manner: first is a look at the research on outdoor education, then the historical and contemporary studies of Outward Bound learning outcomes, next an acknowledgement of the vast amount of research outside of outdoor education and Outward Bound on the parent and sub-variables in this study, and finally a summary of the main findings and a transition to the methods used in this study.

Research on Outdoor Education

This section explores research that has been done across the discipline of outdoor education. It is important to review a global perspective on the developments in outdoor education as a discipline before looking at the specific research and theory of Outward Bound, which is one form of the practice of outdoor education. The research in this section is presented chronologically as many of the studies build upon one another.

Foundational Research on Outdoor Education

Conrad and Hedin (1981) worked to prove the case for experiential education in K-12 schools in the early eighties. They evaluated 1,000 students in 27 experiential learning programs from private and public schools across the U.S. Students were surveyed on the overall outcomes of social, psychological, and intellectual growth. Utilizing a multitude of then common test instruments and two instruments created specifically for the study, they collected data such as the student’s personal and social

responsibility, attitude towards others, involvement in community, and career planning. They also looked at course length, intensity, and characteristics of each field experience.

Conrad and Hedin (1981) found overall that participants in the surveyed experiential education programs reported measurable growth in psychological, social, and intellectual growth. Students that participated in experiential education programs reported a higher level of psychological growth, self-esteem, social development, social responsibility, personal responsibility, attitude towards adults, attitudes towards others, attitudes towards community, and intellectual development as compared to the control group. While they reported no significant difference between the experimental group and the control group in the areas of social and personal responsibility and problem solving, they attributed this to faulty instruments. The second part of the study determined that no one factor in the students' experience contributed to a higher level outcome. Program features, student characteristics, and characteristics of individual experiences did not significantly reflect in the measured outcomes.

Conrad and Hedin believed this study proved that experiential education programs are a great method for developing student's personal and intellectual being and that educators need to utilize experiential learning methods to better serve their students. They argued that there is demonstrated value in experiential education programs and advocated for changes in teacher education to support these programs, for longitudinal studies to track these effects, and for stronger research methods to enhance results.

About the same time, Marsh, Richards, & Barnes (1984) surveyed 361 Australian Outward Bound students (ages 16-31; 75% male) and measured self-described personality items using the Rotter Locus of Control Scale and a self-description

questionnaire (SDQ). The SDQ included thirteen scales related to academic, interpersonal, and belief constructs. Students were sent an instrument one month prior to the course, administered an instrument the day of the course start, and the day of the course end. Changes in all thirteen factors were statistically significant ($p < .01$) from the pre-course to post-course survey. This study concluded that an Outward Bound Program does have an improving effect on self-concept and possibly on locus of control. The concept of “halo effect” or the rating of the concluding surveys at a possibly inflated score because of a ‘post group euphoria bias’ was discussed (p. 19) and considered a factor in higher post-course scores on some variables. The authors pointed out the critical need for a control group as a countermeasure to post group euphoria (halo effect). There was no statistical significance in test scores in relation to participant gender.

These first two studies are considered “foundational” in much of the research reviewed. Neither study was able to identify which specific independent variables had led to higher student outcomes.

Meta Analysis and Recommendations on Study Design

Cason and Gillis (1994) published the findings of the first meta-analysis of outdoor adventure programs with adolescents in the *Journal of Experiential Education*. They acquired seventy-nine empirically-based studies of which forty-three reported statistical information on more than one variable generating a total of 235 effect-sizes describing nineteen outcome measures. The effect sizes encompassed 11,238 adolescent students and a final total of 147 effect sizes were utilized of the final forty-three studies. These studies investigated the following independent variables:

1. Duration of the program in hours.

2. Participant categories (normal, delinquents, handicap, unspecified).
3. Average age of the participants.
4. Type of outcome measured (self-concept, locus of control, behavioral measures).
5. Date of publication.
6. Type of publication.
7. Design rating (random/non-random, pre-post-follow-up, and control group).

The effect sizes ranged from -1.48 to 4.26 with an average effect size of 0.31 and a standard deviation of 0.62. The authors concluded that the average adolescent participating in an adventure program is better off than 62.2% of adolescents that do not. When looking at a z-score of 0.31 the authors believed that the students demonstrated a 12.2% improvement for the average student in the study. The meta-analysis measured seven outcome measurements (Table 2.1).

Table 2.1

Average Effect Sizes and Standard Deviation for Specific Outcomes Measures

Outcome Measure	N	ES	SD
Self-Concept	61	.339	.700
Behavioral Assessment	23	.399	.670
Attitude Surveys	19	.457	.238
Locus of Control	13	.302	.639
Clinical Scales	12	1.047	.459
Grades	10	.609	1.527
School Attendance	9	.469	.476

Note. (Cason & Gillis, 1994, p. 44)

The authors found a significant correlation ($r = .174, p = .008$) between length of the program and the effect size, noting that adventure programs are more effective if they are longer. They were not able to determine the optimal length of a course. The age of the participant was negatively linked with effect size, indicating that younger participants benefited slightly more than older participants. There was no statistical significance in the participant categories meaning that all participant types (normal or adjudicated) appeared to benefit equally from the experiences.

Of specific note were the authors' findings and conclusions around experimental design. They considered weak studies as those being the most informal requiring only pre and post testing without a control group. They considered strong studies as those that had a randomly assigned control group and had a pre-post-follow-up with both the experimental and control group. They concluded that less empirically sound studies had more positive effect sizes, the more empirically stringent studies had lower effect sizes, and studies published in a refereed journal had a higher effect size than dissertations. A problem identified by the authors was the lack of published studies compared to all of those conducted. The suggestion of using a pre-post-follow-up procedure with an experimental and a control group was used in this study.

This article concludes by pointing out that there are many flaws in current research on adventure programming. Leadership training and leadership styles are rarely taken into account. Second, very few characteristics about students are looked at beyond common demographic information. And third, the specific activities, types of facilitation style employed, facilitation time and quality, and the order of activities that were presented are not well studied. In the end Cason and Gillis challenge the use of

quantitative research in this field. Allison and Pomeroy (2000) expand this 'challenge' to include a complete shift in how research is conceived.

Allison and Pomeroy (2000) believe that the use of traditional research practices (objectivist epistemology) in experiential education research is not adequate. The authors advocate for the use of a constructivist epistemology in experiential education research. They argue that most experiential educators use a learner-centered approach, but most researchers use an outcome-focused objectivist epistemology that does not match the subjective nature of the student's experience. Experiential education researchers need to move towards a constructivist epistemology that utilizes ethnography, case study, biographies, and phenomenology in order to develop understanding or "verstehen."

Allison and Pomeroy break the field of experiential education into three categories: input, process, and output. Research can focus on any one of these categories or a combination there of. The authors beg the question with such a rich area of study, why do researchers only focus on the outcome? It may help with funding or make outdoor educators feel better, but it does not help improve practice. The authors encourage researchers to make an epistemological shift and focus not on the question, but move towards understanding (ontological view). Changing research language, purpose, approach, methodology, and descriptions of findings are steps towards a new way of exploring experiential learning.

McKenzie (2000) reviewed the existing literature that measures how adventure education program outcomes are achieved. The major focus of this article is similar to Allison and Pomeroy, in that much of the current research on outdoor education focuses on the benefits or measurement of outcomes and not on how they are achieved.

McKenzie focused on: the physical environment, activities, processing, the group, instructors, and the participant. McKenzie notes that the effects of the physical environment on the achievement learning outcomes have not been studied. This would include the effect of a wilderness and non-wilderness environment on outcomes and the psychology of entering a completely foreign environment on learners.

Other research McKenzie reviewed indicated that the type, duration, and sequencing of activities can have an effect on the achievement of learning outcomes. This research can have an influence on how activities are sequenced, and designed for specific outcomes. McKenzie points out a general lack of research on how each program activity contributes to or effects student learning outcomes. Outward Bound uses a progression of program activity types to achieve different outcomes in the educational framework. While forethought is put into the ‘progression’ of activities, there is no quantified or numerical process used to order the activities.

McKenzie reviews six generations of ‘processing’ an experience ranging from very hands off to very metaphoric and participatory. McKenzie points out that there is very limited research comparing the type and quality of experience processing to the achievement of student learning outcomes. McKenzie did find that student group size, make-up, and ability have been shown to have a direct effect on program outcomes. It is important to note that other researchers in this literature review have found the opposite of what McKenzie proposes concerning the effect group size, make-up, and ability have on learning outcomes. In a review of the research on student demographics (age and gender) McKenzie found that contrary to earlier studies that older students gained more from an outdoor education program than did younger students. Student gender appears to

have the same positive outcome for both male and female students. But McKenzie notes that research on student age, gender, and background are inconclusive. Further research (Neill, 2008) will again contradict this finding.

McKenzie (2003) notes that the characteristics of effective instructors have been extensively studied. Many studies focus on biographical backgrounds of instructors and instructor personality traits. Few of the articles referenced in her article pertaining to instructor effectiveness were tied to student learning outcomes achievement. McKenzie urges future research to look at instructor style, behavior, and attitude as it effects student learning outcomes.

In conclusion, McKenzie feels that the current measurement of learning outcomes on outdoor education programming is mostly theoretical with few of the reported outcomes being grounded in solid empirical research. McKenzie is also a strong advocate of using qualitative research methods to describe 'how' program outcomes are achieved. Neill (2002) had similar observations to McKenzie, but Neill offered meta-analysis as the method for assessing these outcomes.

James Neill (2002) is a lecturer for the Centre for Applied Psychology at the University of Canberra in Australia and hosts a website called wilderdom.com. Neill has published multiple research reports on outdoor recreation student learning outcomes, and wrote a compelling review of historical research offering many pointed suggestions. First Neill notes that most documented reports of the learning outcomes of outdoor education students are anecdotal, testimonials, or rhetoric. Few high quality reviews have been written on the subject. Neill believes that many programs base the entire evaluative criteria on post-program surveys. These surveys are often "satisfaction surveys" with no

pre-determined research method and results can be affected by the halo effect, group think, or post group euphoria effect. The non-scientific nature and randomness of these surveys lead to low statistical reliability. A second method of inquiry Neill looked at is pre-post testing models. These models are very dependent on the use of a control group, instrument design and quality, and the presence or absence of follow-up testing.

Neill has been a strong proponent of the meta-analysis as a way of looking at the overall outcomes of outdoor education experiences. Meta-analysis is reported in effect sizes that demonstrate the quantified amount of change. Neill goes on to interpret the results of five meta-analyses (Bunting & Donley, 2002; Cason & Gillis, 1994; Hans 2000; Hattie et al., 1997; Marsh, 1999); all of these studies are reviewed individually in this literature review. His overall interpretation is that outdoor education programs have an effect size of between .3 and .4 suggesting that a small to moderate amount of change occurs in self-esteem, behavior problems, and teamwork within students participating in outdoor education programs (Neill, 2002). These effects appear to have some long-term permanence for Outward Bound type programs with an additional effect size of .17 reported by Hattie et al. (1997).

Of note is the observation that not all outdoor education programs show a net positive effect. Common factors that influence outcomes are: program length, participant gender, participant age, participant type, gender mix, nature of program, organization running the program, and quality of the study (Neill, 2002). In general Neill noted that outdoor education programs have a lower effect size than psychotherapy and other psychological treatments. Neill recommends that future research should describe the program's methods in more detail, consider the influence of individual differences on

outcomes, and use effect size as benchmarks in program evaluation. Neill points out the need for systematic and rigorous evaluations of program effectiveness and the development of common methodologies that facilitate a larger dissemination of research findings. Neill would also like to see more research reported in peer-reviewed journals. Neill's suggestions of a cleaner and more rigorous method, clear and validated descriptive variables, and expanding the study of causal independent variables are well integrated into this study and the Outward Bound research program.

Neill's research on the outcomes of outdoor education is the most inclusive and prolific of all of the material reviewed that applies directly to this study. This dissertation is included in this review for the simple reason that there has not been enough time since Neil's defense to publish a peer-reviewed article. I have been following Neill's research for quite some time and the Life Effectiveness Questionnaire (LEQ) that Neill developed and beta tested was foundational to the creation of the instruments for this study. Neill's dissertation accomplished three main objectives: (a) provide a synthesis of theoretical and empirical outdoor education literature, (b) develop an instrument to measure life effectiveness, and (c) conduct and report on a longitudinal study of life effectiveness outcomes of outdoor education programs.

The first study in Neill's dissertation was to further develop the LEQ. The LEQ-H was the version used in his dissertation research and measured eight life effectiveness factors. Each version of the LEQ has a different suffix and each was pilot tested and modified using exploratory and then confirmatory factor analysis between 1986 and 2000. The final eight factors are: achievement motivation, active initiative, emotional control, intellectual flexibility, self-confidence, social competence, task leadership, and

time management. The second study utilized the eight LEQ-H factors as dependent variables and looked at the independent variables of: program type, program length, group gender, group size, participant gender, and participant age (Neill, 2008). Neill had a four stage test model: pre-program baseline mailed six weeks prior to course, beginning of program, end of program, and a two to six month follow-up with an *n* of 3,961. Eighty-three percent of the participants attended an Outward Bound program in Australia; the other seventeen percent were from sailing programs for young adults, scientific exploration for youth, and a program for gay and lesbian youth.

Neill's second study investigates the long-term effects of an outdoor education experience on life effectiveness. Neill again used four data collection points (pre, day one, last day, and follow-up). There was a statistically significant drop in LEQ scores from pre-exposure to day one testing. There was a statistically significant change from pre-exposure to post-exposure testing (effect size = .047, *n* = 3,640) (Neill, 2008). There also proved to be statistically significant long-term changes on the follow-up survey (effect size = .31, *n* = 633).

The six independent variables were: student age, student gender, group size, group gender, program type, and length. Group gender refers to the gender composition of the group; for example an all-male group, an all-female group, or a mixed-gender group. These variables were tested with descriptive statistics, *t* tests, and full-factor RMMANOVAs. Neill did find positive overall outcomes for all six main program types: young adults (53%), adolescents (19%), corporate (13%), adults (9%), family (3%), and special (3%). Neill summarized this section stating, "Overall, these independent variables were not particularly predictive of outdoor education program LEQ outcomes" (p. 270).

A second set of statistics using multi-level analyses was run against the same independent variables. Multi-level analysis (MLA) allows variance in outcome variables to be analyzed at multiple hierarchical levels, and is often used with nested data. Student age did not influence short-term or long-term effects on the overall LEQ outcomes, but gender did have some effect on four of the eight LEQ components. Group size did have some effect on five LEQ components and the overall LEQ effect and group gender did have a small effect for males on four components and on one component for females. Course length did not have an effect on short-term or long-term outcomes, but course type was again a stronger predictor but with small effect sizes.

Overall the second study revealed “moderate overall short-term changes in life effectiveness, with small-moderate long-term changes” (Neill, 2008, p.291). There was a small negative change between the pre-exposure and day one survey. There was also a negative change between the post-exposure and follow-up surveys. Neill attributes this to the phenomena of post group euphoria. In his discussion section Neill notes a general negative skewness of all LEQ variables and the possible contribution to a ceiling effect for these variables. Ceiling effect is a situation where the pre-exposure scores are very high and the post course scores are also very high leaving a narrow degree of difference between the two tests.

There are strong parallels between the work Neill has done with Australia Outward Bound and the work that is currently under way in Outward Bound in the United States. About half of the questions on the instruments for this study are based on questions from different versions of the LEQ. The learning outcomes being measured in

this study are divergent enough from Neill's research that a unique and original instrument was needed.

Non-Traditional Studies of Assessing Student Learning Outcomes

The next two studies present non-traditional methods of assessing student learning outcomes. Russell and Sibthorp (2004) advocate that we need to look for nested data structures inherent in studies of outdoor education. They use Hierarchical Linear Modeling to point out the degree of unexplained variance with an end goal to more deeply describe the how and why of data generated in experiential education studies. This article introduces researchers to a different form of data collection and a way to measure outcomes in experiential learning programs. The study supports, extends, and refutes existing adventure education theory and proposes a model to describe the processes existing with the Outward Bound process. The researchers used questionnaires, interviews, and researcher observation of group discussions to gather data for this study. The questionnaire included a quantitative matrix where students rated specific course outcomes. A triangulation approach blended the quantitative findings with the observation and interview data. The findings looked at how the qualities of the course (achieving success, challenge, learning new skills), specific course activities (backpacking, mountaineering, solo), and the physical environment, the instructors, and the group affected the student's outcomes on the course. In general the study concludes that specific course outcomes are influenced by a combination of course components and characteristics of students. The author proposes an alternate model to the dominant methods commonly used such as descriptive analysis and simple and multiple linear analysis. This article (a) challenges the dominant theory on the Outward Bound process,

(b) introduces a mixed-method study methodology for interpreting experiential education processes, and (c) proposes a new model for interpreting the Outward Bound process.

While no other published articles using this method of inquiry were found, it is relatively new in the outdoor education research arena and possibly more research using this methodology will surface in the near future.

In another unique study, a case study was conducted to determine how students on National Outdoor Leadership School (NOLS) programs learned on their course (Paisley, Furman, Sibthorp, & Gookin, 2008). The researchers picked six learning objectives and asked the students how they best learned each of the objectives. Five domains were identified. A structure-oriented domain was built into the course curriculum. An instructor oriented domain is defined by the modalities utilized by the instructors to teach lessons including coaching, framing, debriefing, and lesson structure. A student-oriented domain is generated ostensibly by the students with little interaction from the instructors. The student-instructor domain was often a one-on-one interaction between the student and the instructor. The last domain is directly related to the student's interaction with the natural environment.

Of the six learning objectives, outdoor skills were learned best by instructor-oriented and student-oriented interactions. Leadership was best learned through structure-oriented interactions. Judgment was best learned by instructor-oriented interactions. Students reported that expedition behavior was best learned through student-oriented interactions. Communication was best learned through instructor-oriented interactions such as coaching and role modeling. Environmental awareness was learned through a blend of student and instructor oriented interactions.

The authors point out that a better understanding of how students learn in an outdoor education setting is key to improving student learning outcomes. Being conscientious of course design, creating structures to develop leadership, honing formal classes to the highest quality, effective coaching, and purposeful delivery of the course experience in the natural environment can all lead to higher outcomes achievement.

Experiential Education in the Traditional Classroom

The next article and the next quantitative study explore the use of experiential education methods in more traditional classrooms. They are included in this review because some of the theoretical and practical underpinnings in the research can be generalized to the day-to-day teachings at Outward Bound and other outdoor education organizations. Breunig (2005) explored some of the ways experiential educators engage in more purposeful classroom practices based in theoretical foundations. Examples were given to develop classroom practices that act on the theoretical underpinnings of experiential education and critical pedagogy. There is incongruence between theory and practice. Breunig believes the purpose of schools is to challenge the hegemonic assumptions inherent in our reality. These same assumptions must be challenged in the curriculum. Teaching methodology represents another source of educational hegemony. Specifically Breunig reviewed Freire's banking model where the student is simply a repository of knowledge. This lead to a suggestion that a problem-posing method helps combat the banking model. Breunig also indicated that the teacher and the student are strong agents of social change and cautions about the risks of a student-directed classroom. Although this article is based on using experiential education theory and practices in a traditional classroom setting, it could be argued that the same relationship

between theory and practice exists in wilderness-based outdoor education programming. Specifically, I have observed younger and less experienced instructors at Outward Bound defaulting to traditional didactic methods of information delivery on some courses. Breunig reminds us that students come to the learning environment with a defined self-world view and one of the strengths of experiential education is to challenge those hegemonic assumptions through challenge and group experience.

Along a similar vein, Ives and Obenchain (2006) conducted a quantitative study that measured higher order thinking and lower order thinking skills in six 12th-grade American Government classrooms. A pre-test/post-test method was used with one predictor variable (experiential education events) and two outcome variables (LOTS & HOTS test). There was one experimental group of two classes taught by the same teacher using experiential education methods. There were two control groups of two classes taught by two other teachers using traditional teaching methods. A baseline demographic data set was created for all participating students.

An Anecdotal Record of Experiential Education Events (AREEE) was created to guide classroom observations. Each classroom was observed six times per semester by rotating pairs of investigators. Independent samples *t* tests were conducted to compare the means of the AREEE scores for the three teachers. An analysis of variance was conducted to analyze the pre-test/post-test groups. The first research hypothesis was that students in the experimental group would do better on the HOTS evaluation; scores indicated this was the case. The second hypothesis was that students in the experimental group would not do better on the LOTS evaluation; this was also the case. The findings from this study indicate that using experiential education methods may result in an

increase in higher order thinking without affecting scores on the lower order thinking examinations. This article looks at infusing experiential education practices into traditional classroom settings. Of interest in this article is measurement of two orders of knowing (LOTS & HOTS). None of the other articles reviewed for this study suggested measuring two orders of learning in outdoor education students. Outward Bound may want to look at developing orders for measuring different levels of individual learning outcomes as a different approach to measuring student learning outcomes. For example, the sub-variable of self-confidence could be broken down into two or three levels of self-confidence development to further define achievement of that outcome. Thus, they could move from a dichotomous variable (yes or no) towards a multi-level variable (low, medium, high).

Paraphrase of Research on Outdoor Education

There are literally thousands of outdoor education programs across the United States. The big three are Outward Bound, the National Outdoor Leadership School, and the Student Conservation Association. As diverse as each of these programs are in their mission and pedagogy they are equally diverse in their methods of assessing learning outcomes. Many programs rely on a post-course 'satisfaction survey.' Some programs will use a pre-test/post-test methodology; very few use a control group. The meta analyses included in this section point to a general finding that outdoor education programs are effective at delivering their intended learning outcomes (Hattie et al., 1997). That said there is a broad spectrum of what the learning outcomes are, how they are achieved, and how they are measured.

The variable of character development, as defined in Outward Bound's educational framework, is not well studied in the literature reviewed. Often individual sub-variables can be found in some articles, but again they are not extensively studied. For example, self-confidence was measured by a few studies, but typically under the auspices of self-esteem and self-concept; these variables often had positive findings. The sub-variables of self-actualization, compassion towards others, and living a healthier and more balanced life were not studied by any of the research and there was not a measured outcome that came close to being similar to these sub-variables.

Some research was found studying leadership as a learning outcome of an outdoor education program and each of these studies had positive findings. Again, when looking at the sub-variables for leadership as defined by Outward Bound in the educational framework, there was no research on goal setting, group collaboration, or effective communication. There were little conclusive findings measuring conflict resolution and problem solving as an outcome variable.

There was research measuring service mostly as it pertains to social and environmental responsibility; each had positive findings. The sub-variable of active service to others was typically directly associated with the service parent variable and there was no research studying "active" service as a specific learning outcome.

Overall, course characteristics are well studied in the outdoor education literature. Course length and type did have some influence on student learning outcomes. None of the studies identified an optimal course length or course type. Student demographics (age, gender, and ethnicity) did not prove to influence student learning outcomes in the research reviewed.

Many studies looked at instructor demographics (age, education, tenure, and training), but none of them measured these variables against student learning outcomes. Some studies did compare instructor demographics to student satisfaction. These studies show that the instructor is an important factor in the students' rating of satisfaction for a particular course.

Critiques of the current research on measuring learning outcomes on outdoor education programs cite poor research design, lack of a control group, lack of well defined dependent and independent variables, a heavy reliance on inferential statistics, and a lack of qualitative research as barriers to moving the field of study forward. Next it is important to look at the foundational research that looks specifically at measuring learning outcomes and establishing a working theory for Outward Bound programs.

Measuring Learning Outcomes of an Outward Bound Experience

The first empirical evidence “proving” outcomes of an Outward Bound course were simply the increased survival rates of merchant seamen that had completed an Outward Bound program prior to being shipped out to sea. The first studies recorded measuring the outcomes of Outward Bound experiences emerge in the early 1970s.

Most of the Outward Bound schools in the United States were just starting to get their feet under them in the early to mid 1960s. These schools expanded their offerings and reach during the 1970s. Many of the OB centers were established in the 1980s. The Expeditionary Learning Schools (ELS) really started to gain traction in the 1990s. There are a handful of papers and research projects considered foundational to understanding the current state of Outward Bound in the United States.

Foundational Research

Kelly and Baer's 1968 quantitative study of 120 "delinquent" youth is considered a foundational study (Neill, 2007) in research on the outcome of an Outward Bound experience for youth. The 120 youth studied were wards of the Division of Youth Service in Massachusetts. Sixty of the youth attended rehabilitation and remediation or an industrial school, and the experimental group of 60 attended a 26-day Outward Bound program. Of note, only one delinquent was put with 11 non-delinquents on each Outward Bound patrol in the field. The experimental group had a 20% recidivism rate and the control group had a 34% recidivism rate. They also looked at commitment rates, rates by type of offense, background variables, family dynamics, and performance on an "attitude" test. The authors point out those background variables such as childhood history of delinquency, prior institutionalization, and/or absence of both parents can outweigh the benefits of an Outward Bound experience. This was the only study reviewed that made such a claim. An interesting side note, adjudicate youth make-up a small proportion of Outward Bound's student make-up, yet when talking with people about Outward Bound most often the first thing out of their mouth is "oh yeah – that is the program that works with hoods in the woods." It may be that much of the early published research on Outward Bound (along with press covering these findings) did a lot to paint the national reputation of the schools early on. This study was conducted in the early years of Outward Bound in the United States. At the same time Fletcher (1970) was conducting studies in Great Britain assessing the learning outcomes of Outward Bound students.

Fletcher (1970) reviewed prior studies of the student learning outcomes of an Outward Bound course in the mid-sixties and a pilot study from 1968. The main research was a descriptive follow-up study in 1969. Follow-up questionnaires were sent to 3,000 students (78% return rate) and their sponsors (87% return rate) from a 10% sample of courses run in 1968. Eight-six percent of the students felt they experienced an increase in self-confidence, 74% experienced an increase in initiative, and 78% experienced an increase in maturity as a result of the course (p. 41). Interestingly this study looked at the personal education, higher education, instructor skills, teaching experience, and life experience of the instructors. Unfortunately the methodology did not include an analysis tying the student's reported outcomes to the instructor's qualifications. That would have made an interesting historical parallel to this study.

In 1976, Victor Walsh and Gerald Golins wrote a paper attempting to define the process of Outward Bound. They defined Outward Bound as a process (see Figure 2.1) where a learner is placed into a unique physical and social environment. The students were given a characteristic set of problem-solving tasks and these tasks created a state of adaptive dissonance. This dissonance challenged the learner to adapt through mastery, which in turn reorganizes the meaning and direction of the learner's experience (Walsh & Golins, 1976). They also stated that the student's motivation to learn is the "crux" of achieving this process.

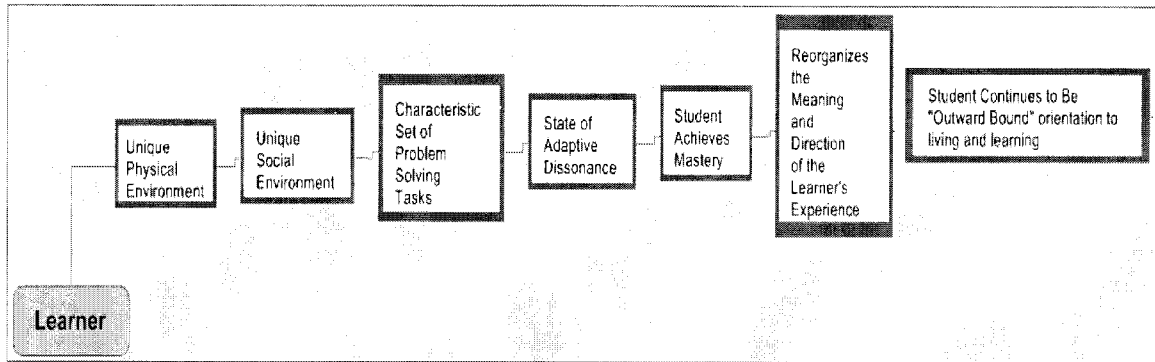


Figure 2.1. Walsh & Golins Outward Bound Educational Process Model

The instructor of the Outward Bound experience is instrumental in facilitating the students through the process described above. The learner then continues to be “outward bound” in his orientation to living and learning (Walsh & Golins, 1976). Walsh and Golins ask two important questions toward the end of their paper. First they ask how lasting is this reorganization of meaning and second they ask if this change can be sustained. They do not answer these questions but in a way challenge other researchers to explore these ideas. Joe Nold was an Outward Bound instructor in the early 1960s as the school was beginning in the U.S.; Nold went on to run the school years later. Nold wrote a paper in 1978 that emphasized the work of John Dewey, Kurt Hahn, and Piaget and built upon Walsh and Golins’ original work. Nold added a belief that the defined process was actually spherical or helical and not just linear as prescribed by Walsh and Golins (1976). Nold also felt that more attention needed to be given to the problem of transference, or how the learning would be carried over into future experience.

This is essentially the foundational research specific to measuring learning outcomes on Outward Bound courses. There are many unpublished thesis and dissertations that have a wide spectrum of quality and methodological soundness. The

next studies are much more contemporary and set the research framework for discussion in Chapter 5.

Paxton and McAvoy (1998) conducted a study to measure the long-term effects of a 21-day Outward Bound course on college age students. They specifically measured an increase in self-efficacy as indicated in pre-test/post-test/6-month post test method. The instrument used the Self-Efficacy Scale (Bandura, 1995, in Paxton & McAvoy, 1998), the Sphere-Specific Measures of Perceived Control (Paulhus, 1983, in Paxton & McAvoy, 1998), and the Multi-Attributal Causality Scale (Lefcourt, 1979, in Paxton & McAvoy, (1998)). They used a control group of college students that did not participate in an Outward Bound experience. Increases were seen from pre-test to post-test in leadership ($p < .001$), work ($p = <.001$), general ($p = <.05$), interpersonal ($p = <.10$), and socio-political ($p = <.05$) t -test measures and again substantial increases were realized post-test to 6-month post-test. Combined with qualitative feedback the researchers concluded that an Outward Bound course has a lasting impact on the attitudes of participants in specific regard to their concept of self. This includes an increase in self-confidence, self-definition, task and goal completion, a connection to the wilderness, and a desire to preserve wilderness.

In 1997 John Hattie, H.W. Marsh, James Neill, and Garry Richards published a meta-analysis based on 1,728 effect sizes from 96 studies (80 studies were with Outward Bound) with an average effect size of .34. The authors identified 40 major outcomes, which can be placed in six categories: leadership, self-concept, academic, personality, interpersonal, and adventuresomeness. A common theme in the studies they included was that the researchers had overestimated the power of the studies as compared to the

relatively low sample sizes and many reported significant findings when the data did not prove statically significant.

Hattie et al. (1997) used effect size as the basis for their meta-analysis. They had approximately 12,057 unique participants (72% male/28% female) and 75% were classified as adults with an average age of 22 (p. 51). They measured prior to program effects, immediate effects (.34 from pre-course), and follow-up effects (.17 from follow up and .51 from pre-course). Hattie et al. (1994) concluded that 65% of students completing an outdoor education program were better off than those that did not. They point out that an overall effect size of .34 is similar to effect sizes found in general educational interventions, with the highest impact for outdoor education programs being an increase in self-concept. They also state that the long-term effects of standard educational programs are typically negative or zero out, where the long-terms effects of outdoor education programming appear to continue to increase over time.

Hattie et al. (1997) found that the quality of the study was not a major factor. There was no difference in effect size for participant type (“normal,” managers, delinquents), and not enough information was available to analyze the age of the participants effect on effect size. Program length did appear to have a correlation with effect size. It also appeared that Outward Bound programs have a positive impact on leadership competencies, academic achievement, personality, interpersonal, and adventuresomeness with the greatest effect observed during the meta-analysis on the student’s self-concept (Hattie et al., 1997).

Hattie et al. (1997) made eight recommendations for successful future adventure education research. First they urge researchers to use dependable measurements and use

large enough sample sizes to gain a power of at least .80. They caution researchers to be conscious of the Hawthorne effect and provide clear documentation and analysis to the background of the participants. The Hawthorne effect is a condition where the subjects of a study change (often increase) their performance when they know they are part of a study. Few studies looked at the effects of the instructor on learning outcomes achievement and instructor background such as education, training, and tenure. Many write-ups gave no description of the nature of the programs. The authors stated that this area of research is the most critical for future study. They encouraged researchers to look at interaction with major independent variables (student age, length of program, and program type). And finally they urged researchers to look at more formative methods of research and to alternative research design methods both quantitative and qualitative.

Killert (1998) conducted a mixed-method retrospective and longitudinal study of National Outdoor Leadership School, Student Conservation Association, and Outward Bound students. In the retrospective study all elements observed (outdoor recreation, personal development, interest in environment, intellectual development, community service, and career choice) reported substantial value increases (percent responding very worthwhile). Most notable was that 70% of the respondents believed that their course experience was the best experience in their life. The longitudinal study used a pre/post/6-month post survey. Similar to the retrospective study, 80% of the respondents rated the overall impact of the course as very worthwhile and actually reported a significant increase over the six month interval. At the end of their course, 52% of participants considered the course one of the very best experiences in their life and a remarkable 75%

rated it as such six months later. This study has 269 pages of research findings and graphs that delve deeply into the student experience—all findings are descriptive.

Neill and Dias (2001) conducted a study to measure change in resilience, a psychological quality that allows a person to cope with life stressors. A resilience scale tool was administered in a pre-test/post-test study of 41 Outward Bound students. They noted a three-fold increase in a student's resilience score compared to the average outcome in adventure education research; this increase was much larger than for the control group. Interestingly the 14 students that left the course early for medical and personal reasons had significantly lower resilience scores on the pre-test!

McKenzie (2003) explored the means by which students learn at Outward Bound. Multiple sources were cited that demand further research on the means by which outcomes is achieved. This case study used questionnaires, interviews, and observation techniques to define the course components that contribute to positive outcomes. The methods determined which course components contribute to specific outcomes and which course components negatively affect course outcomes. This study also showed how student characteristics influence course outcomes. The questionnaire measured impact on a negative to highly positive scale and also offered open-ended questions. The major areas measured were self-concept (self-confidence and self-reliance), motivation (desire to learn and achieve), and interpersonal skills. The open ended questions addressed concern for others and concern for the environment. McKenzie (2003) used a triangulation method between the quantitative and qualitative data to develop a picture of the means through which course outcomes are achieved (p. 12). Top ranked qualities of course activities include: achieving success, challenge, learning new skills, being

responsible for oneself, and fun. In order of significance, these activities are backpacking/mountaineering, solo, rock climbing, leadership responsibilities, camp set-up, course end run, group discussions, games/initiatives, service project, and the final expedition. The environmental factors found to influence course outcomes include the wilderness setting, unfamiliarity of the environment, and weather. Instructors play a large role in setting expectations, acting as a role model, and giving feedback. The group influenced the outcomes by working as group, interaction, reliance, care giving, and trying new behaviors. Course components that negatively affected outcomes were: failing to achieve success, the course end run, and negative group dynamics. Student characteristics that affect outcomes include gender, age, and population diversity. The five aspects of OB courses that influence course outcomes are course activities, the physical environment, instructors, and the group and student characteristics. McKenzie suggested changes to the Walsh and Golins' model that apply specifically to the student population studied.

An Outward Bound New Zealand (NZOB) study looked at measuring specific learning outcomes and methodological issues associated with studying experiential education programs (Martin & Leberman, 2005). The authors utilized a longitudinal mixed-method methodology that determined a student's self-confidence and self-awareness was increased by the group and the facilitator. To highlight the learning that participants had gained from attending an Outward Bound New Zealand (NZOB) course, the authors used a mixed-method (quantitative/qualitative) longitudinal study approach. The data were collected from students via an open ended life effectiveness questionnaire (LEQ). The LEQ results were entered into PASW computer software and analyzed for

effect size. The results were then transcribed and coded using the Hyper-RESEARCH computer software package and then grouped into themes and converted into descriptive statistics. The authors found that participating in the NZOB resulted in an increase in self-awareness and self-confidence. The group played a critical role in achieving these outcomes. The role of the facilitator was also deemed valuable. The authors indicated that in order to gain a true insight into how experiential learning affects student learning we need to move away from quantitative research and towards qualitative research methods.

Goldenberg, McAvoy, and Klenosky (2005) utilized a self-administered questionnaire and a “laddering” procedure to determine that interpersonal relationships and teamwork in problem solving skills were effective to meet learning outcomes. They demonstrate how the “means-ends” research perspective can enhance our understanding of the outcomes associated with outdoor adventure programming. Data were collected from 216 respondents who were enrolled in an Outward Bound course. Data were collected via a self-administered questionnaire. The means-ends data were collected using a technique known as laddering. The first section of the questionnaire collected data on participant demographics and program experiences. The second section of the questionnaire operationalized the laddering procedure. The participants’ demographics were analyzed by simple descriptive statistics. The initial outcomes analysis was also done by descriptive statistics. Then the 216 responses, which consisted of 711 ladders, were plugged into Ladder Map computer software. A series of hierarchical value maps were created from this data to assess the means-ends relations. It was found that it is important for experiential educators to use the knowledge of the outcomes associated with specific course elements during program design. Also there was value found in the

development of interpersonal relationships and in utilizing team-work in solving problems.

Paraphrase of Measuring Learning Outcomes on Outward Bound Courses

This section of the literature review looked at the historical and current research on measuring the learning outcomes of students that participate on an Outward Bound course. Most of the studies focused on measuring changes from pre-exposure to post-exposure to an Outward Bound course on the dependent variables. In a gross summary the dependent variables from these studies are: self-efficacy, self-concept, motivation, leadership, interpersonal skills, and environmental ethic. To a lesser degree academic achievement, career choice, and adventuresomeness were explored. Independent variables such as course characteristics and student demographics were also explored. Very little is written about how an instructor's background directly impacts students achieving the desired learning outcomes. The evolution of the theory of Outward Bound has remained quite static, with Walsh and Golins' work still the predominate theory in practice.

Most of the research measuring learning outcomes on Outward Bound courses is very monochromatic in nature. The studies look specifically at 'satisfaction surveys' and then attempt to draw definitive conclusions from non-experimental designs, or use a weak pre-exposure to post-exposure method. Very little follow-up research is conducted to address the concern for post group euphoria or halo effect inflated post-exposure scores. And finally, very few of these studies use any form of a control group.

Research Outside of Outward Bound and Outdoor Education

The bulk of existing research on the parent variables (character development, leadership development, and service) and the sub-variables (self-confidence, self-actualization, compassion, healthy/balanced life, goal setting, group collaboration, effective communication, conflict resolution, problem solving, social responsibility, environmental responsibility, and active engagement in service) in this study has been conducted outside of Outward Bound and outdoor education. It is important to acknowledge this body of research and the contributions this research offers the study of outdoor education.

Examples of research outside Outward Bound / outdoor education are studies on student self-actualization. Many of the studies measuring a student's self-actualization reference Maslow's Hierarchy of Needs (Maslow, 1943), which provides a progression of human needs from physiological to self-actualization. The physiological needs or drives are needs such as breathing, food, water, sleep, and others are necessary for the human body to function. The safety needs, love and belonging needs, esteem needs are intermediate needs that help a person develop. Self-actualization is the highest level of needs and this level is identified by a person that has attributes such as morality, creativity, problem solving, and lack of prejudice (Maslow, 1943). Critics of Maslow's Hierarchy of Needs argue that these needs cannot be scientifically proven, and that the order used to describe the needs has no basis (Drenth, P., Thierry, H., Willems, P., and de Wolff, C., 1984).

Another example of research outside of Outward Bound / outdoor recreation is studies focused on developing compassion in people. A large body of research exists in

the health and nursing field addressing compassion. One study (Johnson, 2008) discusses multiple studies indicating that nursing students lost compassion over the period of their nursing training. In the end the author questions if nurses are born not made. Research on the development of compassion in many different types of students may offer a new perspective to outdoor educators on teaching compassion in the field.

There are also many different theories on traditional education, experiential learning, experiential education, and outdoor education that differ from the Outward Bound theory described in this report. These theories have both informed the practice of Outward Bound and some have been influenced by Outward Bound theory. Kolb's experiential learning cycle is an excellent example of a theory that has both influenced and been influenced by outdoor education. Kolb's theory has four stages (concrete experience, observation and reflection, forming abstract concepts, and testing in new situations) that allow the learner to enter the cycle at any point (Miller, Corcoran, Kovacs, Rosenblum, and Wright, 2005). The strengths of the theory are that it is flexible and applicable to a wide variety of learning environments. Critics of this theory argue the theory does not include many possible learning approaches and does not address the reflection often involved in adult learning (Miller, Corcoran, Kovacs, Rosenblum, and Wright, 2005). The authors pose several modified learning cycles as a result of their inquiry.

Much of the early research in the parent variables (character development, leadership development, and service) and the sub-variables (self-confidence, self-actualization, compassion, healthy/balanced life, goal setting, group collaboration, effective communication, conflict resolution, problem solving, social responsibility,

environmental responsibility, and active engagement in service) has influenced the practices of Outward Bound. The organization is at a stage where they are now assessing and seeking empirical evidence of the success of the practices that they have put into place. Current research outside of Outward Bound and outdoor education brings different perspectives and unique tools to explore some of the challenges uncovered in the research on student learning outcomes. Theories developed in other forms of education, administration, social sciences, and psychology offer a different perspective and unique tools to explore some of the long standing problems in the research student learning outcomes.

Summary

All learning outcomes for outdoor education programs and Outward Bound programs, the majority from peer reviewed journals, were analyzed for this review. Many thesis and dissertations exist, but they reported high levels of effect from small sample sizes and poor research methods. From this global picture of measuring learning outcomes on these types of programs the outcomes of character, leadership, and service development were further scrutinized. In general character development and leadership development have been extensively studied and service development much less so.

Studies that looked at character development found a positive change in character after experiencing an outdoor education/Outward Bound program. Self-confidence was often reported on and showed effect sizes between .3 and .47. Self-actualization was not reported on under that title, although findings were reported under self-concept with strong positive increases. Compassion towards others was not measured directly by any study, nor was measuring an improvement in living a healthier and more balanced life.

Leadership was also extensively explored in the peer reviewed research. Again effect sizes were between .3 and .4. The ability to set goals was studied and showed positive changes. Interestingly group collaboration and effective communication were not studied to a large extent. Conflict resolution and problem solving were mentioned in a few studies but were not shown as major outcomes.

Service and the development of a service ethic were not studied, but social and environmental responsibility was. Students completing an outdoor education program or an Outward Bound program reported significant increases in environmental responsibility. Often students described this outcome as an increase in their environmental ethic. Similar, but less significant findings held for social responsibility.

Course characteristics such as course length and course type were extensively studied. In general the longer a course the higher the learning outcome achievement although none of the studies could identify a target course length for highest outcome achievement. To a much lesser extent course type had an impact on the achievement of student learning outcomes. Only Neill's study showed that some of the youth course types had a higher overall learning outcome achievement than did the adult courses.

The measurement of student learning outcomes in comparison to the student characteristics of age, gender, and ethnicity were very similar between all studies. Age and gender does not have an overall impact on the achievement of student learning outcomes on outdoor education and Outward Bound courses. Student ethnicity was not extensively studied as specifically tied to achievement of student learning outcomes as much as it was used for demographic description.

Some of the studies did look at instructor background such as age, educational background, tenure, and days of training but none of them directly tested these variables against student learning outcomes. The closest correlation found was between instructor background and a student's overall satisfaction with their course.

It is evident from this review of literature that a study that examines student learning outcomes, as described and supported by a sound method of delivery (educational framework), is necessary and relevant to this field of study. This study should have a well-described theory and standards of practice, measure variables that are well-defined and relevant to the program, conduct a pre, post, and follow-up method of data collection, have a control group, and be grounded in a strong qualitative or quantitative method (or both). The method section of this dissertation outlines this type of a study.

CHAPTER 3:

METHOD

Outward Bound has been delivering outdoor education to thousands of students each year for over 50 years. These courses focus on character development, leadership development, and the establishment of a strong service ethic. Outward Bound runs courses from one day in length to eighty-two days in length. They travel in the mountains, over the seas, through the deserts, and across the frozen alpine tundra. The courses that were surveyed for this research project are in the Rocky Mountain Region and all took place in the high country of Colorado.

This chapter begins with a brief introduction to participants in the study. The primary data collection is then described for the experimental group and the control group. The secondary data collection is then described. The next section outlines the instruments and measures that were utilized in gathering and examining the data and explores validity and reliability. Finally there is a summary of the methods section.

Introduction

This project utilizes a quasi-experimental research approach via a quantitative method of inquiry (Morgan, Gliner, & Harmon, 2006) that is supplemented with a qualitative component to analyze data collected by the researcher and Outward Bound. There were two groups: an experimental group ($n = 193$) and a control group ($n = 51$). The primary data collection encompasses the dependent variables (character development, leadership, and service). The secondary data collection encompasses the independent variables (course characteristics, student demographics, and instructor demographics).

Participants

There were two sets of participants, the experimental group and the control group. There was an age disparity and a gender disparity between the experimental and control groups.

Experimental Group

The participants in the experimental group were students enrolled in open enrollment and contract programs in the Rocky Mountain Region of Outward Bound. The goal was to survey all of the students on all of the courses running during the second half of the 2008 summer season in the Rocky Mountain Region. These participants sign-up for an Outward Bound course through the enrollment department thus they are not a general random sample. They choose which course-type they would like to attend and the duration of that program. Students are screened by the enrollment department for suitability to the OB experience. From this point students are randomly put into patrols; some separation is conducted to ensure gender balance and cultural diversity within the patrols. Tables 3.1 and 3.2 show the gender and age of the experimental and control groups; Table 3.3 shows the ethnicity of the students in the experimental group.

Table 3.1

Gender of Experimental and Control Group Students

Gender	Number of Students	Percentage
<i>Experimental Group</i>		
Male	123	.64
Female	70	.36
Total	193	1.00
<i>Control Group</i>		
Male	19	.37
Female	32	.63
Total	51	1.00

Table 3.2

Age of Experimental and Control Group Students

Age Range	Number of Students	Percentage
<i>Experimental Group</i>		
14 – 15	63	.33
16 – 17	96	.50
19 – 22	14	.07
23 and older	20	.10
Total	193	1.00
<i>Control Group</i>		
14 – 15	0	0
16 – 17	0	0
19 – 22	41	.80
23 and older	10	.20
Total	51	1.00

Table 3.3

Ethnicity of Experimental Group Students

Ethnicity	Number of Students	Percentage
Black or African American	5	.03
Hispanic or Latino	24	.12
American Indian or Alaskan	2	.01
Native Hawaiian or Pacific	1	.005
Asian	1	.005
White	139	.72
Two or More Races	21	.11
Total	193	1.00

The experimental group participants are typical of the participants found across the Outward Bound system in the United States. The Rocky Mountain Region does not run courses for students less than 14 years old while programs in other regions of the

country do. The age distribution is very similar to that of the national demographic. The urban program of Outward Bound comprises two-thirds of the total student numbers. The ethnicity of the experimental group is not representative of national enrollment as inclusion of the urban programs would reflect more diversity than the courses represented by the Rocky Mountain Region.

Control Group

The control group participants were Colorado State University students in a School of Education course. They mirror the demographic make-up of the experimental group and in some cases may be slightly older than the experimental group. They did not actually enroll in or participate in an Outward Bound course. The control group was comprised of 54 students. See Table 3.4 for the gender and Table 3.5 for the age of the experimental and control groups.

Table 3.4

Gender of Experimental and Control Group Students

Gender	Number of Students	Percentage
<i>Experimental Group</i>		
Male	123	.64
Female	70	.36
Total	193	100
<i>Control Group</i>		
Male	19	.37
Female	32	.63
Total	51	1.00

Table 3.5

Age of Experimental and Control Group Students

Age Range	Number of Students	Percentage
Experimental Group		
14 – 15	63	.33
16 – 17	96	.50
19 – 22	14	.07
23 and older	20	.10
Total	193	1.00
Control Group		
14 – 15	0	0
16 – 17	0	0
19 – 22	41	.80
23 and older	10	.20
Total	51	1.00

Primary Data Collection Procedure for the Experimental Group

All of the following data collection procedures were approved by Human Subjects at Colorado State University prior to initiating research. A pre-exposure, post-exposure, and follow-up to exposure surveying technique was utilized for the experimental group. The pre-exposure survey was administered when the students arrived for the Outward Bound experiences in July and August of 2008. The post-exposure survey was administered on the last day of the courses in July and August of 2008 prior to boarding the bus to head home. The follow-up survey was administered in January 2009 via the electronic survey instrument Survey Monkey. A letter from Outward Bound (Appendix B) grants permission to use the primary data collected from the students for this research.

The pre and post course survey was comprised of 24 questions that measured the students' prior exposure to character development, leadership, and service (Appendix C & D). Outward Bound was not amenable to doing the pre-course survey electronically because they felt there was a better chance of a 100% completion rate if the student was handed the survey once they were physically on course. The surveys were put in an 8 ½ x 11 envelope and transported to the supporting base camp (Marble or Leadville, Colorado). The surveys were then mailed or sent by courier to Outward Bound headquarters in Golden, Colorado. The respondent answers were manually transferred from the paper survey into an electronic Microsoft Excel document stored on the secured Outward Bound server located at 910 Jackson Street, Golden, Colorado. The data were secured and backed up. The paper documents will be stored in secure storage by Outward Bound for 10 years. There was a second course satisfaction survey administered post course that served as a feedback tool to the student services and marketing departments of OB and was not part of this inquiry (See Appendix A).

A link to the follow-up survey (Appendix E) was emailed to the experimental group student's approximately six months after the end of their course. Twelve of the questions were from the original pre/post survey and were answered on a 7-point Likert Scale. The second 12 questions were more specific and allowed for comments. The data were stored on the researcher's advisor's computer. The data were secured and backed up.

Confidentiality was maintained throughout the study. Although the student's names were indicated on the surveys for the experimental group, these were only handled by Outward Bound staff other than the researcher. They were input into an Outward

Bound spread sheet that is stored on Outward Bound's main server and the paper surveys were stored in a secure location in the Outward Bound main office. Student names were converted to a numeric code prior to being provided to the researcher, for example: Jon Doe = 0300.

The researcher ensured that the study was conducted according to the protocol by working with the Outward Bound Training Institute's (OBTI) Research & Development manager. Instructions regarding the importance of confidentiality and handling of the documents were provided to the Outward Bound staff that distributed and collected the surveys and input the data. Although not anticipated, any variations were reported to the researchers by the OBTI Research & Development manager and these were handled on a case-by-case basis. Clear instructions were provided regarding removal of the participants' names from the spread sheet provided to the researcher. In the Rocky Mountain Region of OB the staff administering the survey (other than the researcher) had the student write the lead instructor's name at the top of the survey. Outward Bound consented in writing to the use of the following data: student survey answers, course length, course type, student age, student gender, student ethnicity, instructor age, instructor's educational background, instructor's tenure, and instructor's days of training (Appendix B).

Primary Data Collection Procedure for the Control Group

A control group consisted of 54 Colorado State University students in an undergraduate education course in the fall of 2008. Dr. Jean Radin agreed to allow the researcher to administer a paper survey to students in a School of Education ED275 course. The control group had no exposure to an Outward Bound experience during the

control phase. The control group completed the same pre and post instrument as the experimental group. The first survey was administered in October 2008 and the second survey was administered in November 2008. The control group did not complete a follow-up survey.

The surveys were put in an 8 ½ x 11 envelope and transported to the researcher's home. The original documents are stored in a locked file cabinet at the researcher's advisor's office for three years. The documents will be destroyed after three years.

The primary data for the experimental group pre and post survey was transcribed by the researcher from the instrument to a Microsoft Excel sheet stored in the Outward Bound server. The researcher input the control group data into a Microsoft Excel sheet and stored it on his computer. The data were analyzed using PASW utilizing both descriptive and inferential statistics.

Secondary Data Collection

The secondary data (independent variables) survey included three areas of information. The course information consisted of the course length and course type. The student information consisted of the student's age, gender, and ethnicity. The instructor information consisted of the instructor's age, level of education, years of experience with Outward Bound, and days of training with Outward Bound.

Course Information

The first area of information is the course data set includes the course length (Table 3.7). Courses varied in length from 5 to 22 days.

Table 3.7

Course Length and Number of Students

Course Length	Number of Students
5 Days	13
7/8 Days	73
15 Days	73
22 Days	34

There were two course types in this study. Open enrollment students ($n = 124$, 65%) signed up for courses that had no pre-determined composition. An example of an open enrollment course is a fourteen day youth course that follows a standard backpacking and mountaineering itinerary. Contract enrollment students ($n = 68$, 35%) signed up for courses that had a particular student population make-up (veterans, survivors of violence). Contract courses are often shorter (4–8 days in length) and follow a modified itinerary to meet the needs of the specific group. The course information was compiled by the researcher from the Outward Bound Wilderness 07-08 Course Catalog and verified against the Outward Bound enrollment report. This information was recorded in an Excel spreadsheet and entered by the researcher by matching the course number on each survey to the course catalog published by Outward Bound.

Student Demographics

The second area of information collected was the student’s age, gender, and ethnicity. This information was filled out by the participant on the instrument and was coded to the student by an assigned number and entered by an Outward Bound employee other than the researcher. The student responses were coded by Outward Bound staff other than the researcher to indicate the course number and patrol number they participated in.

Instructor Demographics

The third area of information collected was the instructor demographics. The instructor's ages (Table 3.9), educational background (Table 3.10), tenure (Table 3.11), and days of training (Table 3.12) were stored in the Outward Bound data base and tied to the patrol of students with whom they worked by the course number. The instructor information was accessed by the researcher and the Rocky Mountain Staffing Director via the OBHRS data management system. This data were entered into the Excel spreadsheet along with the course information listed above. The researcher transcribed the information from the Excel spreadsheet to PASW.

Table 3.9

Instructor's Age

Age	Frequency
21 – 25	47
26 - 30	55
31 – 35	32
36 – 40	38
45 and older	19

Table 3.10

Instructor Level of Education

Degree Attained	Frequency
None	32
Bachelor's	100
Master's	49
Doctorate	10

Table 3.11

Instructor Tenure

Years of Tenure	Frequency
1 – 2	82
3 – 4	66
5 – 6	6
7 – 8	7
Over 8 years	30

Table 3.12

Instructor Tenure

Days of Training	Frequency
1 – 10	9
11 – 20	48
21 – 30	120
31 – 40	6
41 – 50	6

The secondary data were collected for the experience group and not for the control group. A letter from Outward Bound (Appendix B) gives permission to the researcher to use the secondary data collected by the researcher and Outward Bound once the data were coded to conceal the student’s name.

Risks and Benefits

There were no known risks to the participants of this study. Participation was totally voluntary. Any participant could discontinue participation in this study at any time. There was no known risk related to a breach of confidentiality. Yet, as described above, all surveys with identifying information were collected by Outward Bound staff and immediately sent to the main office. There all data were stored in a secure place. While there are no known benefits in participating in this study, participants may have

gained more knowledge on the educational framework of OB. Outward Bound courses may improve for future participants, which may include those in this study.

Instruments and Measures

The primary instruments were the pre/post and follow-up surveys. These instruments were designed to record the dependent variables with the participant indicating the achievement, or lack of achievement, of the learning outcomes outlined in the educational framework. The course number served to ensure that the dependent variables collected for a particular student were matched to the appropriate independent variables for the course taken (length and type). Recording which patrol the student was in assisted in matching the dependent variables to the instructor information (instructor age, educational background, tenure, and days of training). This information was entered by the Outward Bound Research Director and/or his designee into an Excel spreadsheet with the data collected on the dependent variables in the survey.

Design/Analysis

The data entered from the surveys into the Microsoft Excel spreadsheet was imported into and analyzed utilizing PASW (2004). Data from the primary and secondary surveys were combined into one spreadsheet and then loaded into PASW.

Descriptive Statistics

The first set of statistics analyzed the mean, median, mode, skewness, and standard deviation of the individual responses. The descriptive statistics set a foundation for understanding the base levels and characteristics of responses from students. This data set was compared against the control group by running comparative statistics in PASW.

This data were used for the descriptive section of Chapter Four and in this chapter (Morgan, Leech, Gloeckner, & Barrett, 2004).

Inferential Statistics

The second set of statistics analyzed the relationship, or lack of a relationship, between the dependent variables and the experimental and control groups. The third set of statistics analyzed the independent variables. First independent and paired *t*-tests were run to determine a *t* value and a *p* value. These tests pointed towards the use of a 2 X 2 factorial ANOVA for each parent variable and sub-variable. Then all data were analyzed from the longitudinal perspective repetitive measures ANOVA's (Morgan, Leech, Gloeckner, & Barrett, 2004).

Variables

The active independent variable was manipulated by delivering an Outward Bound course to the experimental group and not delivering an Outward Bound course to the control group (Morgan, Gliner, & Harmon, 2006). The attribute independent variables were the student's age, gender, and ethnicity. Other independent variables were the instructor's age, educational background, tenure, and days of training. These were not manipulated during the experiment.

The dependant variables in this study were the survey results from the pre/post/follow-up instruments. Specifically they are the experimental group and control group responses to the series of questions measuring character development, leadership, and service and the sub-sets of each of these variables. The extraneous variables of weather, logistics, and student group make-up cannot be controlled for this study.

Independent Variables

Outward Bound Course

Length

Type

Student

Age

Gender

Ethnicity (Attribute)

Instructors

Age

Educational Background

Tenure

Days of Training

Dependent Variables

Character Development

Self-Confidence

Self-Actualization

Compassion toward Others

Healthier and More Balanced Life

Leadership

Set Goals

Collaborate

Communicate

Resolve Conflicts

Service

Social Responsibility

Environmental Responsibility

Service to Others

Extraneous Variables

Weather on Course

Food / Equipment (Logistics) on Course

Student group make-up (dynamics)

These variables set the stage and structure for the data analysis along with the research design. Figure 1 represents the concept map that the researcher worked with for the entire project. Each of the dependent variables are listed on the left hand side with the parent variable (Character Development, Leadership Development, Service Development) being the first branch out. Each dependent parent variable has three to five sub-variables. An example is that Service has three sub-variables (social responsibility, environmental responsibility, and active engagement in service). Each sub-variable consists of two questions. Each question uses a Likert scale of 1 to 7.

The independent parent variables, Course Characteristics, Student Demographics, and Instructor Demographics, branch out on the right of the diagram. Each parent independent parent variable has a sub-variable. An example is that Course Characteristics has two sub-variables: course type and course length. Each sub-variable has a scale. These scales are specific to the sub-variable. An example is that course type is broken into open enrollment and contracts courses.

The experimental group and the control group only share three variables: student age, gender, and ethnicity. The other variables (i.e. instructor tenure, course type) were not applicable to the control group.

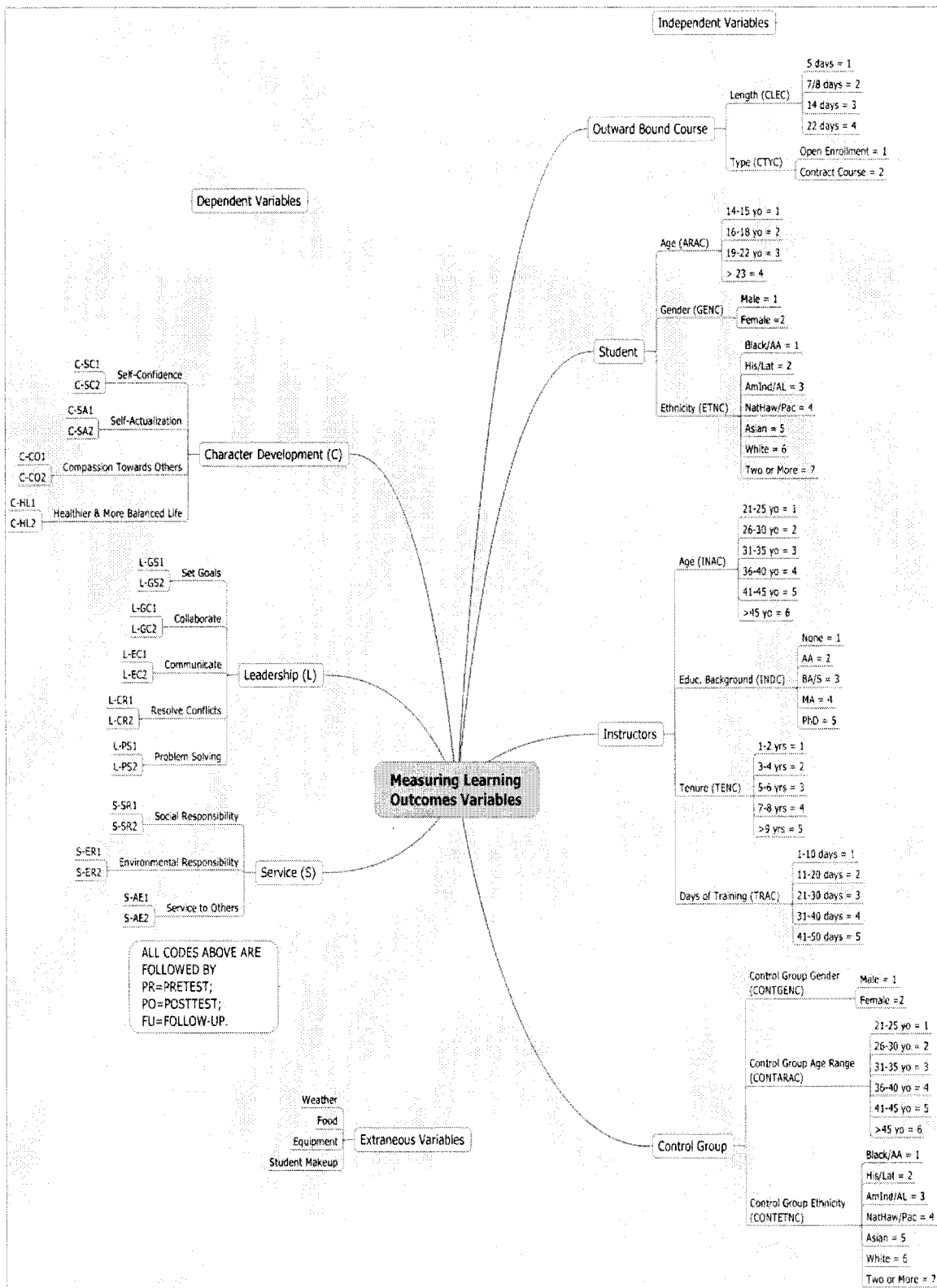


Figure 3.1. Mind map of all dependent and independent variables.

Design Diagram

The design for this study was a pre-test/post-test/follow-up test quasi-experimental design. The treatment was given to students on an Outward Bound Course and not to the control group. The treatment was not randomized for the experimental group.

NR	E:	01	X	02	X	03
NR	C:	01	~X	02		

Effect Size

Effect size was addressed by determining the effect, how large the effect was, and if the effect was of practical importance. Eta squared was automatically calculated by PASW when running the 2 X 2 Factorial ANOVA.

Measurement Validity and Reliability

Three broad types of evidence for validity were explored: content validity, construct validity, and predictive validity (Morgan, Gliner, & Harmon, 2006). There was a strong utilization of evidence based on the content of the measure to validate the research method. The questions on the instrument were derived directly from the educational framework outlined in the introduction. This content was validated by senior administration within Outward Bound and two separate panels of experts and all concurred to the level of content validity (Frankel & Ewert, 2009). Construct validity was explored by determining that the parent variables (Character Development, Leadership Development, and Service) were positively correlated to each other. No negative correlated variables were measured. Because of the high correlation of the parent variables the research group at Outward Bound was unsure if the variables were

measuring the stated parent variable (Frankel & Ewert, 2009). The limited longitudinal data made it difficult to generate any form of predictive validity.

Of note, the researcher and the committee for research at Outward Bound put a tremendous amount of time and energy into determining if an existing instrument and method that had already been validated could be used for this experiment. Instruments such as the Life Effectiveness Questionnaire (LEQ) and others were scrutinized for this study. In the end it was determined that an original instrument specifically designed to measure the agreed upon Outward Bound learning outcomes was necessary.

The Outward Bound Research Department used Chronbach's Alpha value analysis to determine measurement validity for the instruments. They found the values for the parent variables to be low but acceptable (Frankel and Ewert, 2009). They did note that the responses on the post-exposure surveys were very high on the Likert scale, but so were the scores on the pre-exposure surveys, indicating a ceiling effect.

The instrument is currently being validated by the Outward Bound Research and Development Department (Frankel & Ewert, 2009). The Outward Bound Outcomes Instrument (OBOI) was pilot tested across the Outward Bound system in the United States in the summer of 2008 with 577 (post eliminating responses) students participating in 50 courses across the United States. The instrument underwent further development in early 2009 that included modifying individual questions that rated with low Chronbach's coefficient alpha values, attempted to address a perceived 'ceiling effect', and implemented a longitudinal surveying system.

External Validity

The accessible population includes students taking courses during the 2008 Rocky Mountain Region summer season. This population does not represent all students taking courses across the Outward Bound system in the 2008 summer season. The selection of the sample was influenced by course timing and ease of access to course end activities. The actual non-probability sample was the actual students surveyed. The results were not generalized against all adventure organizations or even outside the Outward Bound student population from the Rocky Mountain Region.

Summary

This study measured the change on a pre-exposure, post-exposure, follow-up to exposure survey for students completing an Outward Bound experience in the summer of 2008. An experimental group of 193 Outward Bound students and a control group of 54 Colorado State University students generated the data for the dependent variables in this research. The outcomes of the experimental group were contrasted with the outcomes for the control group first using *t* tests and finally using 2 X 2 factorial ANOVAs. The parent dependent variables are character development, leadership development, and service development. Each parent variable had three to five sub-variables. The sub-variables for character development were: self-confidence, self-actualization, compassion towards others, and living a healthier and more balance life. The sub-variables for leadership were: goal setting, group collaboration, effective communication, conflict resolution, and problem solving. The sub-variables for service were: social responsibility, environmental responsibility, and active engagement in service to others. On the pre-exposure and post-exposure surveys each sub-variable was represented by two questions on a 7- point Likert

Scale. On the follow-up survey each sub-variable was represented by one of the original questions on a Likert Scale and one question that required a definitive answer (less, more, reported no difference) to each question and allowed for student comments.

The parent independent variables for this study were course characteristics, student demographics, and instructor demographics. Course characteristics were defined by the sub-variables of course length and type. Student demographics were defined by the sub-variables of student age, gender, and ethnicity. The instructor sub-variables were: age, educational background, tenure, and days of training. All of these parent and sub-variables were collected for the experimental group. Only the student characteristics were collected for the control group.

Descriptive statistics and ANOVAs were used to analyze the data in PASW. The findings for this analysis are outlined in Chapter Four.

CHAPTER 4:

FINDINGS

The research questions of this study attempts to (a) determine if a student completing an Outward Bound course experienced character development by looking at changes in self-confidence, self-actualization, compassion towards others, and living a healthier and more balanced life; (b) determine if a student completing an Outward Bound course demonstrated increased leadership abilities by looking at changes in the ability to set goals, collaborate with others, communicate effectively, and resolve conflicts effectively; (c) determine if a student completing an Outward Bound course demonstrated an increased level of service by looking at changes in social responsibility, environmental responsibility, and actively engaging in service to others; (d) determine if an instructor's background/life experience affect the student outcomes by looking at the instructor's age, educational background, tenure with Outward Bound, and days of training with Outward Bound; (e) determine if student demographics affect learning outcomes achievement by looking at student gender, age, and ethnicity; and (f) determine if course length and type affect learning outcomes achievement by looking at how course length and course type effect student learning outcomes achievement.

Student learning outcomes achievement was measured using a pre-exposure survey given the first day of the course, a post-exposure survey given the last day of the course, and a follow-up survey, delivered electronically via the world wide web, approximately six months after the course completion. The pre and post survey

instrument contained twenty-four questions that focused on the Outward Bound learning outcomes. The follow-up survey asked twelve of the original questions from the pre and post survey and twelve new questions. The twelve new questions directly asked if the student had gotten better at, gotten worse at, or seen no change in each of the sub-variables of character, leadership, and service development. In addition there was a comments box for each of the twelve new questions to provide some qualitative feedback for each of the sub-variables. A control group, which did not experience an Outward Bound course, was given the pre-exposure survey, and a month later was given the post-exposure survey.

This chapter is organized to flow with the order of the research questions. The very base level descriptive statistics (for example age and gender) are woven into Chapter 3. The first section of this chapter takes each research question one at a time and looks at changes in the character development, leadership development, and service development between the experimental group and the control group. This section reports if there was a different learning outcome for those students exposed to an Outward Bound experience in comparison to those that have not. The second section of this chapter takes the combined totals for character development, leadership development, and service development and looks specifically at each independent variable under the main variables of student demographics, instructor demographics, and course characteristics. This section determines if changes in the dependent variable were influenced by specific independent variables. The third section looks for a difference between the dependent variables and the independent variables.

Organization of Data Analysis

The first section of Chapter 4 uses inferential statistics to look at the outcomes of the dependent variables in comparison to the experimental and control group. Each of the parent variables (character, leadership, and service) and sub-variables were analyzed with a 2 X 2 factorial ANOVA to look at the degree of variance between the pre and post survey in comparison to the experimental and control group. The dependent sub-variables were also run through repeated measures ANOVA to determine the statistical significance of the pre to post to follow-up relationship. Then the quantitative data from the follow-up survey is described in simple percentages. The second section of Chapter 4 uses inferential statistics to look at the outcomes for the dependent variables in comparison to the independent or secondary data collected (student demographics, instructor demographics, course characteristics). A 2 X 2 factorial ANOVA was used to analyze the data, and the output was reported.

There are two assumptions for presenting the data in this chapter. First is that a p value of .001 to .050 is considered statistically significant and a p value of .051 and above is considered not statistically significant. A p value of .051 to .10 will be reported as near significant, and all p values will be shown as " $p < .10$." The ANOVAs generate an eta squared (η^2), and an eta value was calculated by taking the square root of eta squared. An eta value of .01 is small, an eta value of .24 is medium, an eta value of .37 is considered large, and an eta value of .45 and above is considered much larger than typical (Morgan et al., 2004). Effect size (eta value) was calculated for any p value to .099, and not for p values above .10.

Descriptive Statistics

A descriptive statistics analysis was performed that looked specifically at overall gross mean comparisons and the skewness of the individual questions. Then the individual questions were combined to create a sub-variable. There was a clear negative skewness for the pre, post, and follow-up responses on both the experimental and control group. The difference in mean between the pre and post exposure surveys for the experimental group on individual questions showed a mostly positive trend from -.11 to .79. The difference in mean between the pre and post exposure surveys on the experimental group sub-variables showed a mostly positive trend from 33 to 15.35. The skewness, in general, was much more positive with the combined variables as compared to the individual questions for the experimental group. By combining the individual questions into a new variable the skewness was more positive.

The difference in mean between the post exposure surveys for the control group shows a mostly negative trend -.14 to .33. The difference in mean between the pre and post exposure surveys for the control group showed a mostly positive trend from -.06 to 11.92. The skewness, in general, was much more positive with the combined variable as compared to the individual questions for the control group. The difference in mean between the pre and post showed a mostly positive trend from -.06 to 11.92.

Inferential Statistics for the Dependent Variables as Compared to the Experimental and Control Groups

Inferential statistics make inferences about population values based on the sample data collected and analyzed (Morgan, Leech, Gloeckner, & Garrett (2004). This section

used inferential statistics to answer an overall research question: Does a student completing an Outward Bound course experience character development, leadership development, and service development? Research Question 1, Research Question 2, and Research Question 3 took the dependant variables individually (character, leadership, service development) and looked at the combined variables for each sub-variable (for example, character development = self-confidence + self-actualization + compassion + lifestyle) and used 2 X 2 factorial ANOVAs to compare the experimental group to the control group. Research Question 4 took the total aggregate responses for character, leadership, and service development and compared the experimental and control groups.

Research Question 1

Research Question 1 asks if there was a significant change in pre-test to post-test scores for character development in the experimental group as compared to the control group.

Research Questions

1. Is there a difference between the experimental group and the control group in regard to the average character development pre-test and post-test scores?
2. Is there a difference from pre-test to post-test scores (gains or losses) between the experimental group and the control group for character development?
3. Is there an interaction of the experimental group and the control group in regard to character development pre-test scores and post-test scores?

Variables Tested

The parent variable of character development consists of four sub-variables: self-confidence, self-actualization, compassion towards others, and living a healthier and

more balanced life. On the pre and post exposure surveys each of the sub-variables consisted of two questions. The scores from the two questions were combined to create each sub-variable. All four sub-variables were combined to create the parent or variable of interest character development.

Mixed ANOVA

Following a General Linear Model procedure, a mixed ANOVA was conducted to assess whether there were differences between the mean scores, and between the experimental and control group. Results indicated a significant change from pre to post exposure mean scores, $F(1, 231) = 39.585, p < .001, \eta^2 = .146$ (large), and a near significant difference between the experimental group and the control group $F(1, 231) = 3.157, p = .077, \eta^2 = .013$ (small). The mean effect was qualified by a significant interaction between mean scores and the group, $F(1, 231) = 20.281, p < .001, \eta^2 = .081$ (medium). This indicates that the experimental group rated character development questions significantly higher than the control group. There is a 4-point difference between the pre and post exposure scores for the experimental group, and less than one point difference between the post-test scores for the control group. See Figure 4.1.

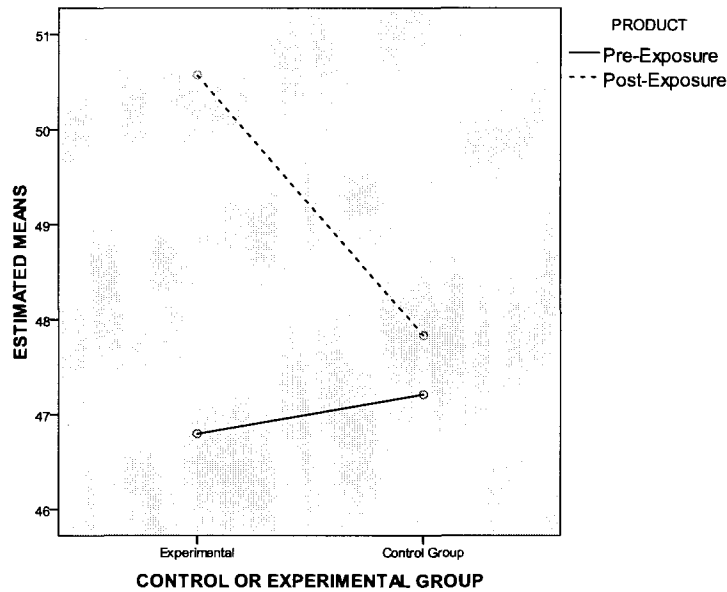


Figure 4.1. Total character development and group (experimental/control).

Research Question 1: Sub-question (a) Self-Confidence

Research Question 1, sub-question (a), asked if there was a significant change in pre-test to post-test self-confidence scores in the experimental group as compared to the control group.

Research Questions

1. Is there a difference between the experimental group and the control group in regard to the average self-confidence pre-test and post-test scores?
2. Is there a difference from pre-test to post-test scores (gains or losses) between the experimental group and the control group for self-confidence?
3. Is there an interaction of the experimental group and the control group in regard to the self-confidence pre-test scores and post-test scores?

Variables Tested

The sub-variable of self-confidence consists of two questions on the pre-exposure and post-exposure surveys. The scores from the two questions were combined to create the sub-variable self-confidence.

Mixed ANOVA

Following a General Linear Model procedure, a mixed ANOVA was conducted to assess whether there were differences between the mean scores and between the experimental group and control group. Results indicated a significant change from pre to post exposure mean scores, $F(1, 231) = 46.891, p < .001, \eta^2 = .165$ (large), and a non-significant difference between the experimental and control group $F(1, 231) = 1.987, p = .160$. The main effect was qualified by a near significant interaction between mean scores and group, $F(1, 231) = 2.969, p = .086, \eta^2 = .012$ (small). This indicates that the experimental group rated self-confidence questions significantly higher than the control group. There was a one point difference between the pre-test scores and post-test scores for the experimental group, and there was a .40 difference from the pre to post test scores for the control group. See Figure 4.2.

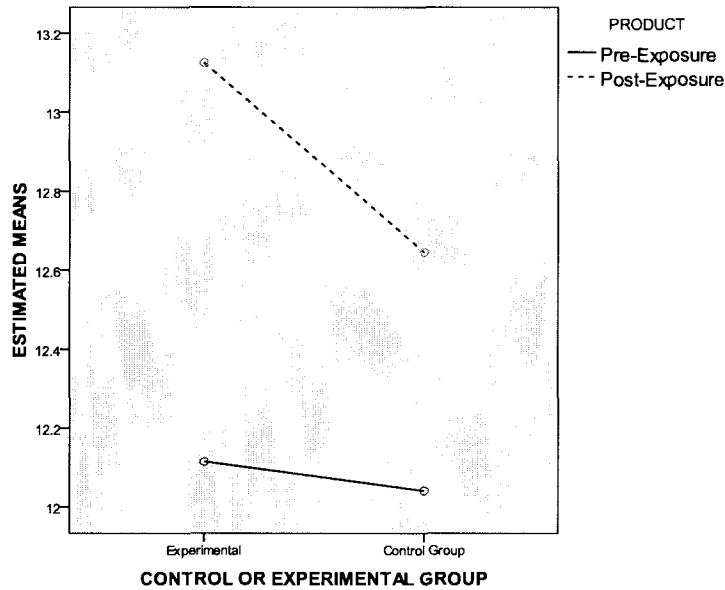


Figure 4.2. Total self-confidence and group (experimental/control).

Follow-up Survey Quantitative Data

On the follow-up survey only one question was used from each sub-variable. The follow-up survey data consist of the pre-test/post-test/follow-up scores for one of the two original questions.

1. Is there a difference from pre-test to post-test to follow-up scores (gains or losses) between the experimental group and the control group for self-confidence?

Repeated Measures ANOVA

A repeated measures ANOVA, with Greenhouse-Geisser correction, was conducted to assess whether there were differences between average ratings of the pre-test, post-test, and follow-up mean scores. Results indicated that participants did not rate the three surveys differently, $F(1.70, 47.65) = 2.698, p = .086$. The means for pre-test ($M = 6.00, SD = 1.000$), post-test ($M = 6.45, SD = .736$), and follow-up ($M = 5.86, SD = 1.457$) suggest an increase in scores from pre-test to post-test and a drop in scores from

post-test to follow-up test. The follow-up score was lower than the pre-test score.

Polynomial contrasts indicated, in support of this, there was a significant quadratic trend

$F(1, 28) = 5.172, p = .013, \eta^2 = .199$ (large). See Figure 4.3.

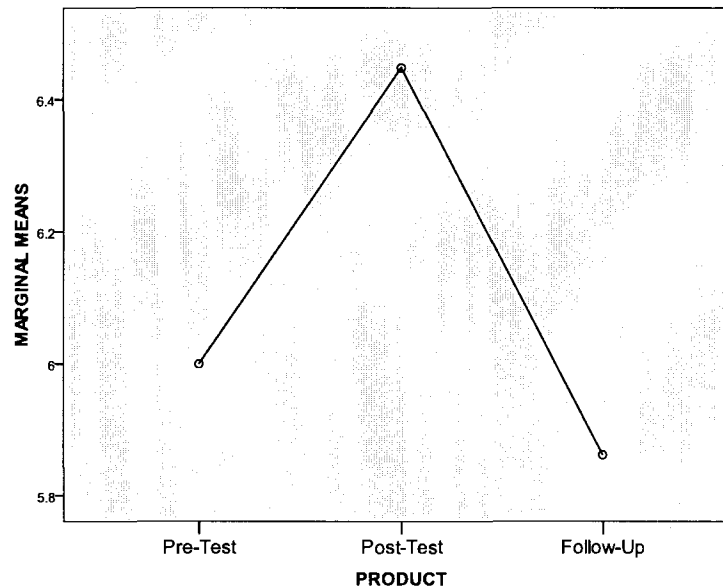


Figure 4.3. Pre/post/follow-up not statistically significant mean scores for self-confidence.

Follow-up Survey Short Answer Question

Eighty-four percent ($n = 45$) of students indicated they were more self-confident as a result of their Outward Bound experience. None of the students indicated they were less self-confident as a result of their Outward Bound experience. And, 16% of students indicated that they had experienced no change in their self-confidence as a result of their Outward Bound experience.

Research Question 1: Sub-question (b) Self Actualization

Research Question 1, sub-question (b), asked if there was a significant change in pre-test to post-test self-actualization scores in the experimental group as compared to the control group.

Research Questions

1. Is there a difference between the experimental group and the control group in regard to the average self-actualization pre-test and post-test scores?
2. Is there a difference from pre-test to post-test scores (gains or losses) between the experimental group and the control group for self-actualization?
3. Is there an interaction of the experimental group and the control group in regard to the self-actualization pre-test scores and post-test scores?

Variables Tested

The sub-variable of self-actualization consisted of two questions on the pre-exposure and post-exposure surveys. The scores from the two questions were combined to create the sub-variable self-actualization.

Mixed ANOVA

Following a General Linear Model procedure, a mixed ANOVA was conducted to assess whether there were differences between the mean scores and between the experimental and control group. Results indicated a significant change from pre to post exposure mean scores, $F(1, 233) = 10.00, p = .002, \eta^2 = .041$ (small), and a non-significant difference between the experimental and control group $F(1, 233) = .216, p = .643$. The main product effect was qualified by a significant interaction between the mean scores and group, $F(1, 233) = 20.460, p < .001, \eta^2 = .081$ (medium). This indicates that

the experimental group did rate self-actualization questions significantly higher than the control group. The pre-test score increased by one point to the post-test score for the experimental group, and the pre-test score was actually higher than the post-test score for the control group. See Figure.4.4.

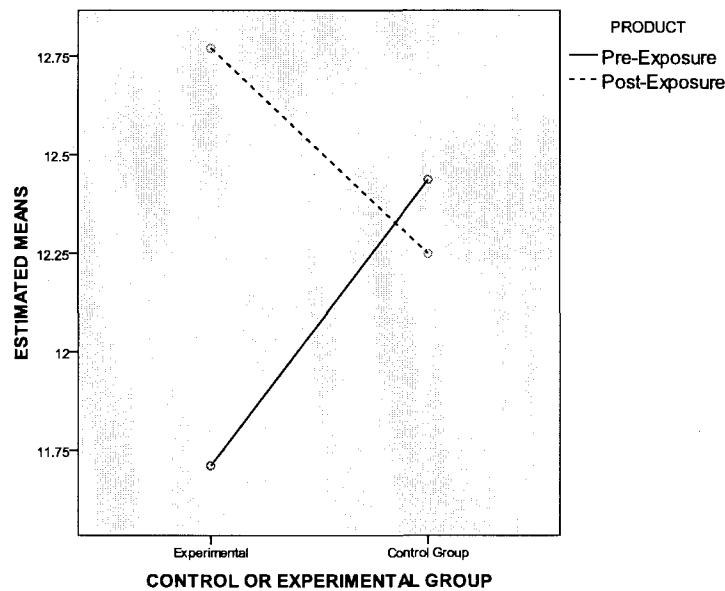


Figure 4.4. Total self-actualization and group (experimental/control).

Follow-up Survey Quantitative Data

On the follow-up survey only one question was used from each sub-variable. The follow-up survey data consist of the pre-test/post-test/follow-up scores for one of the two original questions.

1. Is there a difference from pre-test to post-test to follow-up scores (gains or losses) between the experimental group and the control group for self-actualization?

Repeated Measures ANOVA

A repeated measures ANOVA, with Greenhouse-Geisser correction, was conducted to assess whether there were differences between average ratings of the pre-

test, post-test, and follow-up mean scores. Results indicated that participants did rate the three surveys differently, $F(1.61, 45.10) = 4.480, p = .023, \eta^2 = .138$ (large). The means for pre-test ($M = 6.17, SD = .966$), post-test ($M = 6.66, SD = .614$), and follow-up ($M = 6.31, SD = .806$) suggest an increase in scores from pre-test to post-test and a drop in scores from post-test to follow-up test. The mean follow-up score was slightly higher (.14) than the mean pre-test score. Polynomial contrasts indicated, in support of this, there was a significant quadratic trend $F(1, 28) = 16.291, p < .001, \eta^2 = .368$ (much larger than typical). See Figure 4.5.

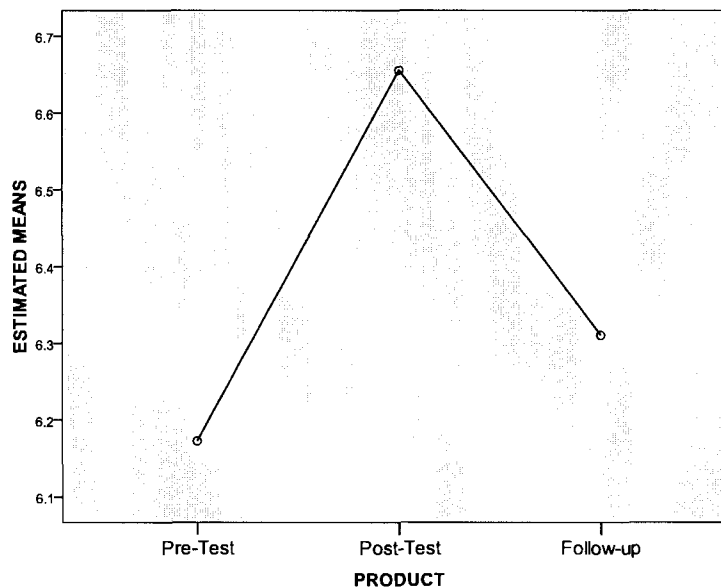


Figure 4.5. Pre/post/follow-up statistically significant mean scores for self-actualization.

Research Question 1: Sub-question (c) Compassion toward Others

Research question one, sub-question (c), asked if there was a significant change in pre-test to post-test compassion scores in the experimental group as compared to the control group.

Research Questions

1. Is there a difference between the experimental group and the control group in regard to the average compassion pre-test and post-test scores?
2. Is there a difference from pre-test to post-test scores (gains or losses) between the experimental group and the control group for compassion?
3. Is there an interaction of the experimental group and the control group in regard to the compassion pre-test scores and post-test scores?

Variables Tested

The sub-variable of compassion consisted of two questions on the pre-exposure and post-exposure surveys. The scores from the two questions were combined to create the sub-variable self-confidence.

Mixed ANOVA

Following a General Linear Model procedure, a mixed ANOVA was conducted to assess whether there were differences between the mean scores and between the experimental group and control group. Results indicated a significant change from pre to post exposure mean scores, $F(1, 236) = 9.024, p = .003, \eta^2 = .037$ (small), and a non-significant difference between the experimental and control group $F(1, 236) = .411, p = .522$. The main effect was qualified by a significant interaction between the mean scores and the group, $F(1, 236) = 12.084, p = .001, \eta^2 = .049$ (small). This indicates that the experimental group rated compassion questions significantly higher than the control group. The experimental group showed a one point gain between the pre and post exposure scores; the control groups reported a slight decrease between the pre-exposure and post-exposure scores. See Figure 4.6.

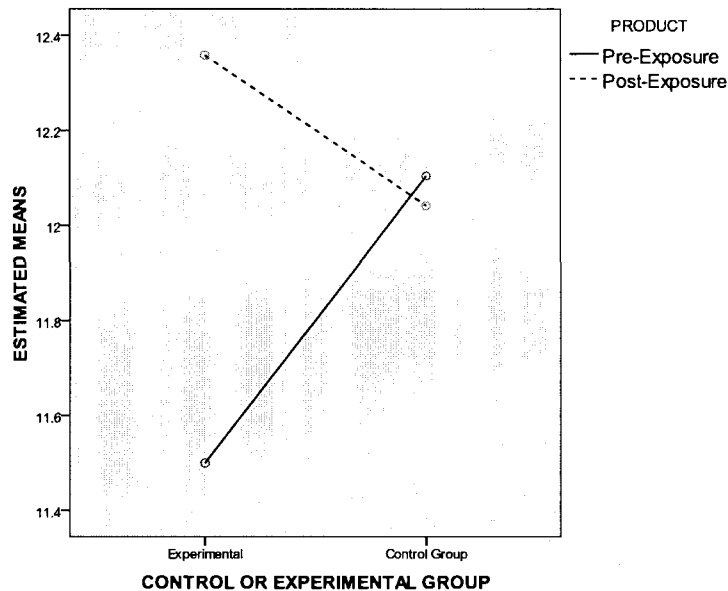


Figure 4.6. Total compassion toward others and group (experimental/control).

Follow-up Survey Quantitative Data

On the follow-up survey only one question was used from each sub-variable. The follow-up survey data consisted of the pre-test/post-test/follow-up scores for one of the two original questions.

1. Is there a difference from pre-test to post-test to follow-up scores (gains or losses) between the experimental group and the control group for compassion?

Repeated Measures ANOVA

A repeated measures ANOVA, with Greenhouse-Geisser correction, was conducted to assess whether there were differences between average ratings of the pre-test, post-test, and follow-up scores. Results indicated that participants did not rate the three surveys differently, $F(1.98, 55.41) = .781, p = .462$. The means for pre-test ($M = 5.93, SD = .923$), post-test ($M = 6.07, SD = 1.10$), and follow-up ($M = 6.17, SD = .848$) suggest an increase in scores from pre-test to post-test to follow-up test. Polynomial contrasts indicated, in support of this, there was a non-significant linear trend $F(1, 28) =$

1.511, $p = .229$. The net gain from pre-test to follow-up test scores was less than .20 of a point. See Figure 4.7.

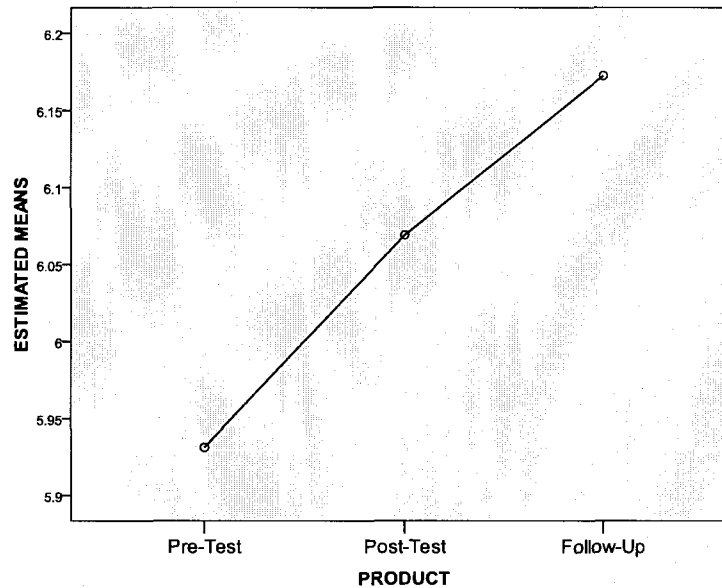


Figure 4.7. Pre/post/follow-up not statistically significant mean scores for compassion toward others.

Follow-up Survey Short Answer Question

Sixty-six percent of students ($n = 44$) indicated they were more compassionate towards others as a result of their Outward Bound experience. None of the students indicated they were less compassionate towards others as a result of their Outward Bound experience and 34 % indicated that they had experienced no change in their compassion towards others as a result of their Outward Bound experience.

Research Question 1: Sub-question (d) Healthy and More Balanced Life

Research question one, sub-question (d), asked if there was a significant change in pre-test to post-test healthy and more balanced life scores in the experimental group as compared to the control group.

Research Questions

1. Is there a difference between the experimental group and the control group in regard to the average healthy and more balanced life pre-test and post-test scores?
2. Is there a difference from pre-test to post-test scores (gains or losses) between the experimental group and the control group for healthy and more balanced life?
3. Is there an interaction of the experimental group and the control group in regard to the healthy and more balanced life pre-test scores and post-test scores?

Variables Tested

The sub-variable of compassion consisted of two questions on the pre-exposure and post-exposure surveys. The scores from the two questions were combined to create the sub-variable healthy and more balanced life.

Mixed ANOVA

Following a General Linear Model procedure, a mixed ANOVA was conducted to assess whether there were differences between the mean scores, and between the experimental group and control group. Results indicated a significant change from pre to post exposure scores, $F(1, 238) = 18.017, p < .001, \eta^2 = .070$ (small), and a significant difference between the experimental and control groups $F(1, 238) = 20.180, p < .001, \eta^2 = .078$ (small). The main product effect was qualified by a significant interaction between the mean scores and the group, $F(1, 238) = 5.211, p = .023, \eta^2 = .021$ (small). This indicates that the experimental group rated healthier and more balanced life questions significantly higher than the control group. The total gain for the experimental group from pre to post test was .90. The total gain for the control group from pre to post test was approximately .27. See Figure 4.8.

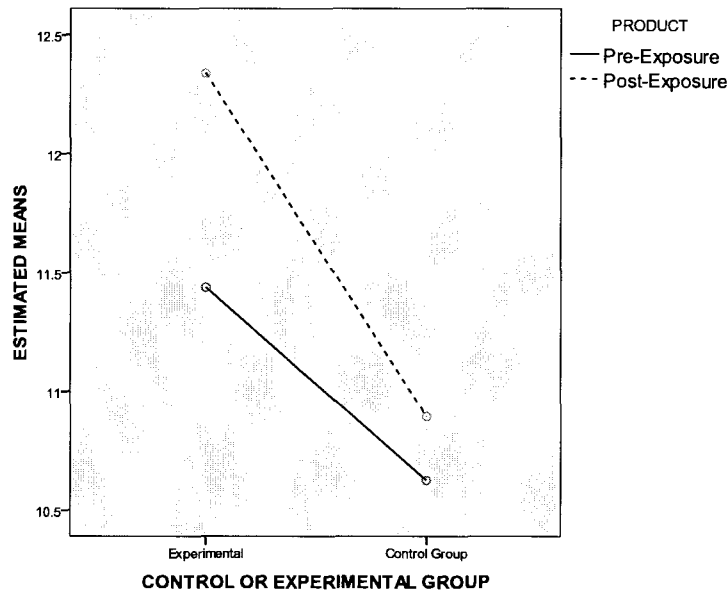


Figure 4.8. Total healthy and more balanced life and group (experimental/control).

Follow-up Survey Quantitative Data

On the follow-up survey only one question was used from each sub-variable. The follow-up survey data consisted of the pre-test/post-test/follow-up scores for one of the two original questions.

1. Is there a difference from pre-test to post-test to follow-up scores (gains or losses) between the experimental group and the control group for healthy and more balanced life?

Repeated Measures ANOVA

A repeated measures ANOVA, with Greenhouse-Geisser correction, was conducted to assess whether there were differences between average ratings of the pre-test, post-test, and follow-up scores. Results indicated that participants did not rate the three surveys differently, $F(1.43, 40.16) = .834, p = .406$. The means for pre-test ($M = 5.38, SD = 1.449$), post-test ($M = 5.66, SD = 1.289$), and follow-up ($M = 5.34, SD = 1.587$) suggest an increase in scores from pre-test to post-test and a decrease to follow-up

test. The follow-up test scores fell below the pre-test scores. Polynomial contrasts indicated, in support of this, there was a non-significant quadratic trend $F(1, 28) = 2.036$, $p = .165$. See Figure 4.9.

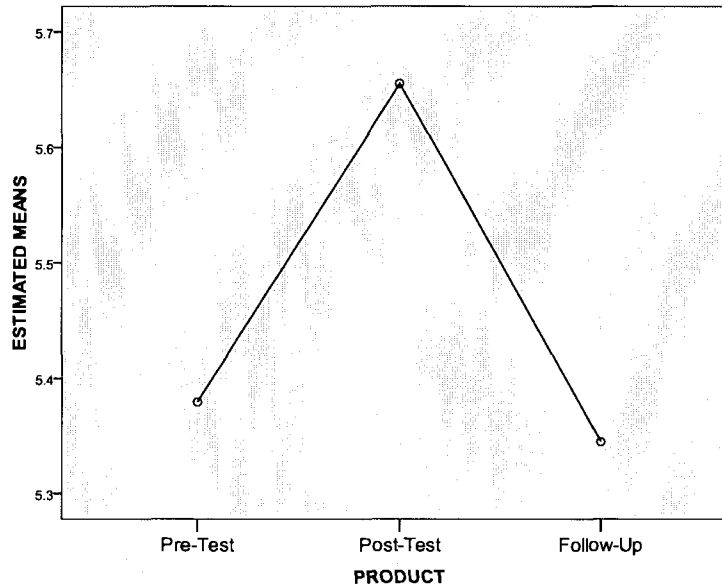


Figure 4.9. Pre/post/follow-up not statistically significant mean scores for healthy and more balanced life.

Follow-up Survey Short Answer Question

Sixty percent of students ($n = 45$) indicated they live a more healthy and balanced life as a result of their Outward Bound experience. Four percent indicated they live a less healthy and balanced life as a result of their Outward Bound experience and 36% indicated that they had experienced no change in living a healthy and more balanced life as a result of their Outward Bound experience.

Research Question 2

Research Question 2 asked if there was a significant change in pre-test to post-test scores for leadership development in the experimental group as compared to the control group.

Research Questions

1. Is there a difference between the experimental group and the control group in regard to the average leadership development pre-test and post-test scores?
2. Is there a difference from pre-test to post-test scores (gains or losses) between the experimental group and the control group for leadership development?
3. Is there an interaction of the experimental group and the control group in regard to leadership development pre-test scores and post-test scores?

Variables Tested

The parent variable of leadership development consists of five sub-variables: goal setting, group collaboration, effective communication, conflict resolution, and problem solving. On the pre and post exposure surveys each of the sub-variables consisted of two questions. The scores from the two questions were combined to create each sub-variable. All five sub-variables were combined to create the parent or variable of interest character development.

Mixed ANOVA

Following a General Linear Model procedure, a mixed ANOVA was conducted to assess whether there were differences between the mean scores, and between the experimental group and control group. Results indicated a significant change from pre to post exposure mean scores, $F(1,226) = 1164, p < .001, \eta^2 = .837$ (much larger than typical) and a significant difference between the experimental and control groups $F(1,226) = 5.630, p = .018, \eta^2 = .024$ (small). The main effect was qualified by a significant interaction between mean scores and group, $F(1,226) = 14.409, p < .001, \eta^2 = .060$ (small). This indicates that the experimental group rated leadership development

questions higher than the control group. Although there is a fifteen point gain in the experimental group pre to post exposure, there was also a thirteen point gain in the control group pre to post exposure. See Figure 4.10.

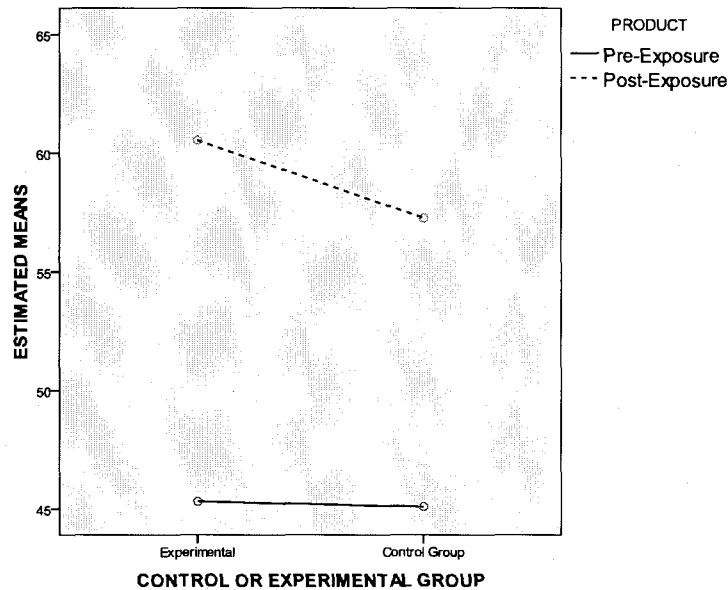


Image 4.10. Total leadership development and experimental/control graph.

Research Question 2: Sub-Question (a) Goal Setting

Research Question 2, sub-question (a), asked if there was a significant change in pre-test to post-test goal setting scores in the experimental group as compared to the control group.

Research Questions

1. Is there a difference between the experimental group and the control group in regard to the average goal setting pre-test and post-test scores?
2. Is there a difference from pre-test to post-test scores (gains or losses) between the experimental group and the control group for goal setting?

3. Is there an interaction of the experimental group and the control group in regard to the goal setting pre-test scores and post-test scores?

Variables Tested

The sub-variable of goal setting consists of two questions on the pre-exposure and post-exposure surveys. The scores from the two questions were combined to create the sub-variable goal setting.

Mixed ANOVA

Following a General Linear Model procedure, a mixed ANOVA was conducted to assess whether there were differences between the mean scores, and between the experimental group and control group. Results indicated a significant change from pre to post exposure, $F(1, 237) = 33.458, p < .001, \eta^2 = .124$ (medium), and a near significant difference between the experimental and control group $F(1,237) = 3.658, p = .057, \eta^2 = .015$ (small). The main effect was qualified by a significant interaction between the mean scores and group, $F(1,237) = 14.779, p < .001, \eta^2 = .059$ (small). This indicates that the experimental group rated goal setting questions significantly higher than the control group. The total gain for the experimental group from pre to post test was 1.24 points. The total gain for the control group from pre to post test was approximately .25 of one point. See Figure 4.11.

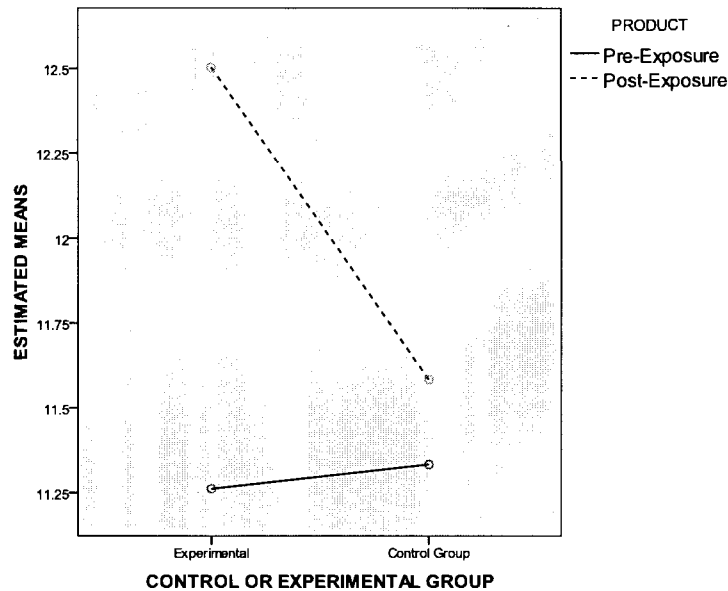


Figure 4.11. Total goal setting and group (experimental/control).

Follow-up Survey Quantitative Data

On the follow-up survey only one question was used from each sub-variable. The follow-up survey data consisted of the pre-test/post-test/follow-up scores for one of the two original questions.

1. Is there a difference from pre-test to post-test to follow-up scores (gains or losses) between the experimental group and the control group for goal setting?

Repeated Measures ANOVA

A repeated measures ANOVA, with Greenhouse-Geisser correction, was conducted to assess whether there were differences between average ratings of the pre-test, post-test, and follow-up scores. Results indicated that participants did not rate the three surveys differently, $F(1.93, 53.98) = 1.879, p = .164$. The means for pre-test ($M = 6.07, SD = .923$), post-test ($M = 6.45, SD = .910$), and follow-up ($M = 6.31, SD = .930$) suggest an increase in scores from pre-test to post-test and a decrease to follow-up test. The follow-up test scores end up slightly (.24) above the pre-test scores. Polynomial

contrasts indicated, in support of this, there was not a significant quadratic trend $F(1, 28) = 2.234, p = .146$. See Figure 4.12.

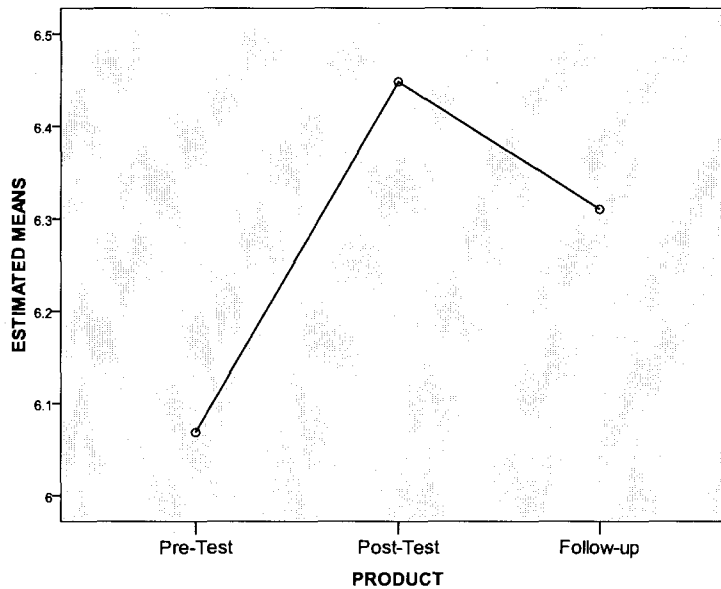


Figure 4.12. Pre/post/follow-up not statistically significant mean scores for goal setting.

Follow-up Survey Short Answer Question

Forty-four percent of students ($n = 45$) indicated they are better at setting personal goals as a result of their Outward Bound experience. No one indicated they were worse at setting personal goals as a result of their Outward Bound experience; 60% indicated that they had not experienced a change in their ability to set personal goals as a result of their Outward Bound experience.

Seventy-one percent of students ($n = 45$) indicated they are better able to inspire others and guide others as a result of their Outward Bound experience. No one indicated they were worse at inspiring others and guiding others as a result of their Outward Bound experience; 29% indicated that they had not experienced a change in their ability to inspire others and guide others as a result of their Outward Bound experience.

Research Question 2: Sub-Question (b) Problem Solving

Research Question 2, sub-question (b), asked if there was a significant change in pre-test to post-test problem solving scores in the experimental group as compared to the control group.

Research Questions

1. Is there a difference between the experimental group and the control group in regard to the average problem solving pre-test and post-test scores?
2. Is there a difference from pre-test to post-test scores (gains or losses) between the experimental group and the control group for problem solving?
3. Is there an interaction of the experimental group and the control group in regard to the problem solving pre-test scores and post-test scores?

Variables Tested

The sub-variable of problem solving consists of two questions on the pre-exposure and post-exposure surveys. The scores from the two questions were combined to create the sub-variable problem solving.

Mixed ANOVA

Following a General Linear Model procedure, a mixed ANOVA was conducted to assess whether there were differences between the mean scores, and between the experimental group and control group. Results indicated a significant change from pre to post exposure mean scores $F(1, 236) = 19.820, p < .001, \eta^2 = .077$ (medium), and a significant difference between the experimental and control groups $F(1, 236) = 16.08, p < .001, \eta^2 = .064$ (medium). The main effect was qualified by a significant interaction between mean scores and group, $F(1, 236) = 7.85, p = .006, \eta^2 = .032$ (small). This

indicates that the experimental group rated problem solving questions significantly higher than the control group. The total gain for the experimental group from pre to post was approximately one point. The total gain for the control group from pre to post test was approximately .21. See Figure 4.13.

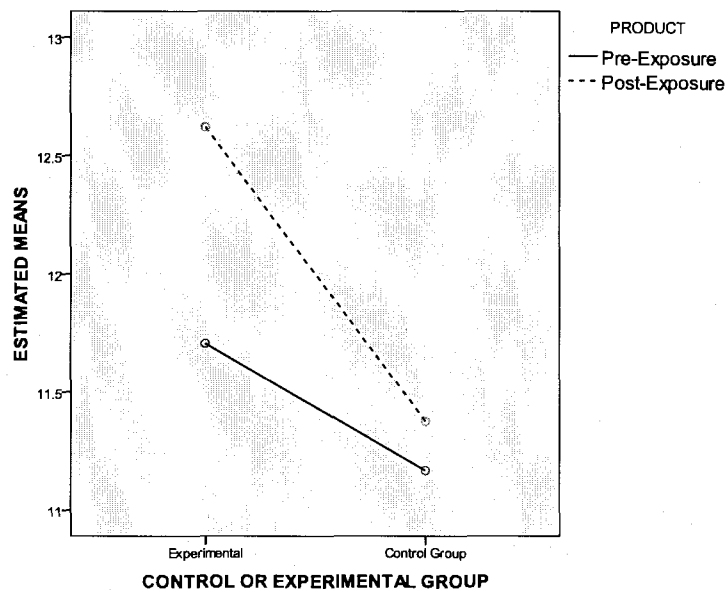


Figure 4.13. Total problem solving and group (experimental/control).

Follow-up Survey Quantitative Data

On the follow-up survey only one question was used from each sub-variable. The follow-up survey data consisted of the pre-test/post-test/follow-up scores for one of the two original questions.

1. Is there a difference from pre-test to post-test to follow-up scores (gains or losses) between the experimental group and the control group for problem solving?

Repeated Measures ANOVA

A repeated measures ANOVA, with Greenhouse-Geisser correction, was conducted to assess whether there were differences between average ratings of the pre-

test, post-test, and follow-up scores. Results indicated that participants did not rate the three surveys differently, $F(1.72, 48.17) = 2.610, p = .091$. The means for pre-test ($M = 5.52, SD = 1.18$), post-test ($M = 5.97, SD = 1.09$), and follow-up ($M = 5.48, SD = 1.24$) suggest an increase in scores from pre-test to post-test and a decrease to follow-up test. The follow-up test scores end up slightly (.02) below the pre-test scores. Polynomial contrasts indicated, in support of this, there was a near significant quadratic trend $F(1, 28) = 3.707, p = .064, \eta^2 = .117$ (medium). See Figure 4.14.

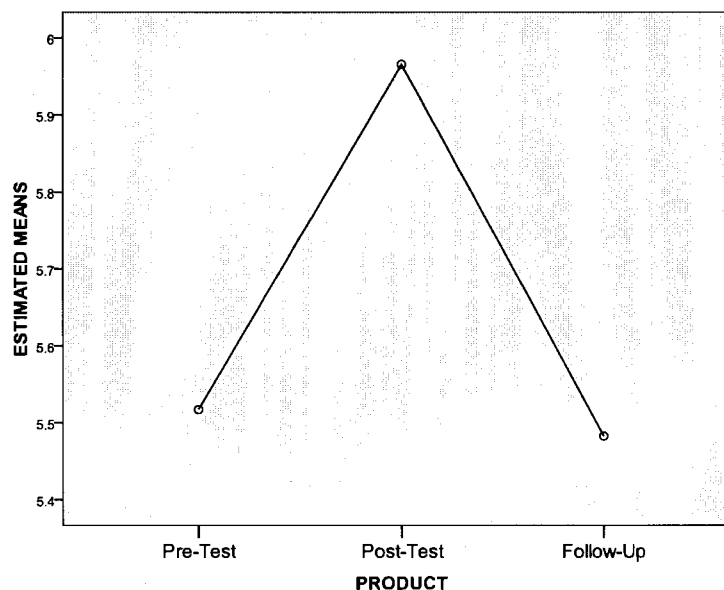


Figure 4.14. Pre/post/follow-up not statistically significant mean scores for problem solving.

Follow-up Survey Short Answer Question

Fifty-four percent of students ($n = 45$) indicated they are better able to problem solve as a result of their Outward Bound experience. None of the respondents indicated that they are less able to problem solve as a result of their Outward Bound experience; 46% indicated that they had experienced no change in their ability to problem solve as a result of their Outward Bound experience.

Research Question 2: Sub-Question (c) Group Collaboration

Research Question 2, sub-question (c), asked if there was a significant change in pre-test to post-test group collaboration scores in the experimental group as compared to the control group.

Research Questions

1. Is there a difference between the experimental group and the control group in regard to the average group collaboration pre-test and post-test scores?
2. Is there a difference from pre-test to post-test scores (gains or losses) between the experimental group and the control group for group collaboration?
3. Is there an interaction of the experimental group and the control group in regard to the group collaboration pre-test scores and post-test scores?

Variables Tested

The sub-variable of group collaboration consisted of two questions on the pre-exposure and post-exposure surveys. The scores from the two questions were combined to create the sub-variable group collaboration.

Mixed ANOVA

Following a General Linear Model procedure, a mixed ANOVA was conducted to assess whether there were differences between the mean scores, and between the experimental group and control group. Results indicated a significant change from pre to post exposure means, $F(1, 235) = 7.069, p = .008, \eta^2 = .029$ (small), and a significant difference between the experimental and control groups $F(1, 235) = 5.167, p = .024, \eta^2 = .022$ (small). The main product effect was qualified by a significant interaction between mean scores and group, $F(1, 235) = 4.311, p = .039, \eta^2 = .018$ (small). This indicates that

the experimental group rated group collaboration questions significantly higher than the control group. The total gain for the experimental group from pre to post was 1.51 points. The total gain for the control group from pre to post test was approximately .06. See Figure 4.15.

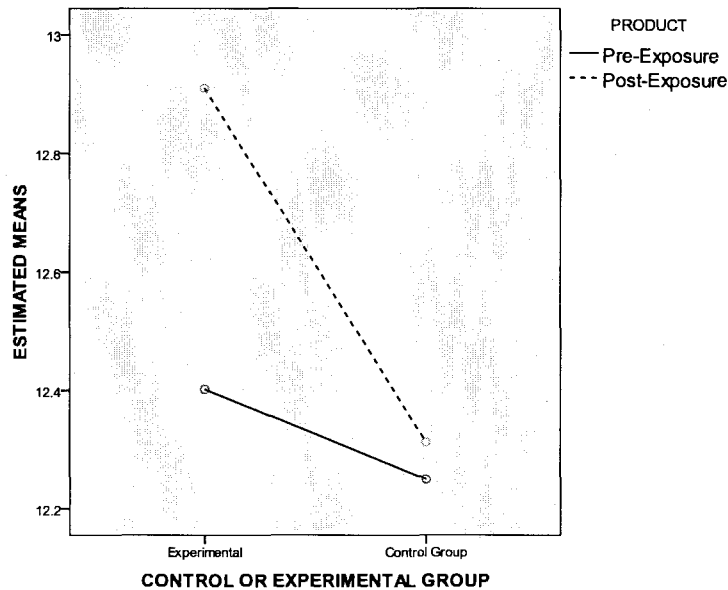


Figure 4.15. Total group collaboration and group (experimental/control).

Follow-up Survey Quantitative Data

On the follow-up survey only one question was used from each sub-variable. The follow-up survey data consisted of the pre-test/post-test/follow-up scores for one of the two original questions.

1. Is there a difference from pre-test to post-test to follow-up scores (gains or losses) between the experimental group and the control group for group collaboration?

Repeated Measures ANOVA

A repeated measures ANOVA, with Greenhouse-Geisser correction, was conducted to assess whether there were differences between average ratings of the pre-

test, post-test, and follow-up scores. Results indicated that participants did not rate the three surveys differently, $F(1.67, 47.19) = 1.780, p = .184$. The means for pre-test ($M = 6.21, SD = 1.18$), post-test ($M = 6.48, SD = .668$), and follow-up ($M = 6.28, SD = .797$) suggest an increase in scores from pre-test to post-test and a decrease to follow-up test. The follow-up test scores end up slightly (.07) above the pre-test scores. Polynomial contrasts indicated, in support of this, there was a significant quadratic trend $F(1, 28) = 5.370, p = .028, \eta^2 = .161$ (large). See Figure 4.16.

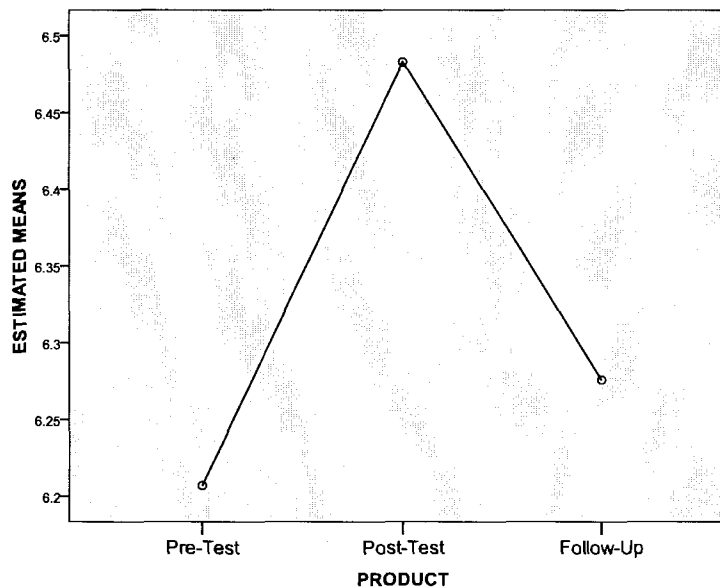


Figure 4.16. Pre/post/follow-up not statistically significant mean scores for group collaboration.

Follow-up Survey Short Answer Question

Seventy-seven percent of students ($n = 45$) indicated they were better able to collaborate with others as a result of their Outward Bound experience. None of the students indicated they were less able to collaborate with others as a result of their Outward Bound experience; 33% of students indicated that they had experienced no

change in their ability to collaborate with others as a result of their Outward Bound experience.

Research Question 2: Sub-Question (d) Effective Communication

Research Question 2, sub-question (d), asked if there was a significant change in pre-test to post-test effective communication scores in the experimental group as compared to the control group.

Research Questions

1. Is there a difference between the experimental group and the control group in regard to the average effective communication pre-test and post-test scores?
2. Is there a difference from pre-test to post-test scores (gains or losses) between the experimental group and the control group for effective communication?
3. Is there an interaction of the experimental group and the control group in regard to the effective communication pre-test scores and post-test scores?

Variables Tested

The sub-variable of effective communication consisted of two questions on the pre-exposure and post-exposure surveys. The scores from the two questions were combined to create the sub-variable effective communication.

Mixed ANOVA

Following a General Linear Model procedure, a mixed ANOVA was conducted to assess whether there were differences between the mean scores, and between the experimental group and control group. Results indicated a significant change from pre to post exposure mean scores, $F(1, 236) = 11.730, p < .001, \eta^2 = .047$ (small), and a non-significant difference between the experimental and control groups $F(1, 236) = 1.488, p =$

.224. The main effect was qualified by a near significant interaction between mean scores and group, $F(1,236) = 3.052, p = .082, \eta^2 = .013$ (small). This indicates that the experimental group rated effective communication products significantly higher than the control group. The total gain for the experimental group from pre to post was .64. The total gain for the control group from pre to post test was approximately .20. See Figure 4.17.

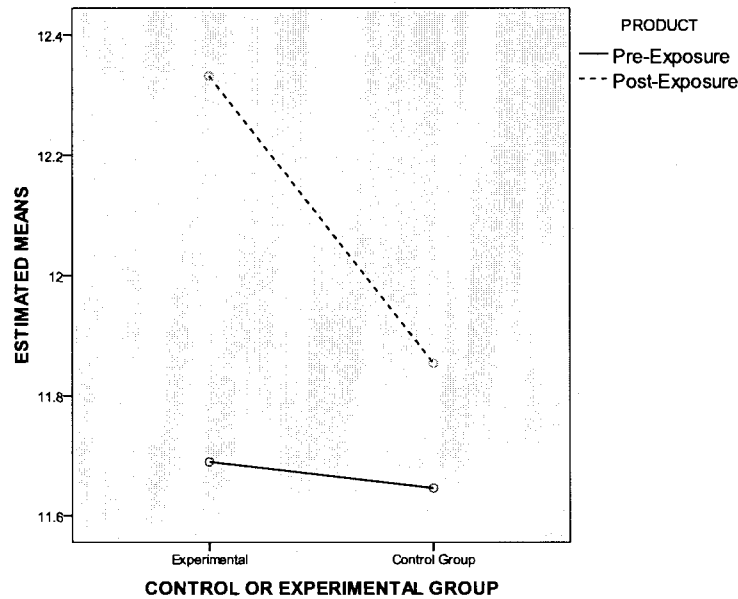


Figure 4.17. Total effective communication and group (experimental/control).

Follow-up Survey Quantitative Data

On the follow-up survey only one question was used from each sub-variable. The follow-up survey data consisted of the pre-test/post-test/follow-up scores for one of the two original questions.

1. Is there a difference from pre-test to post-test to follow-up scores (gains or losses) between the experimental group and the control group for effective communication?

Repeated Measures ANOVA

A repeated measures ANOVA, with Greenhouse-Geisser correction, was conducted to assess whether there were differences between average ratings of the pre-test, post-test, and follow-up scores. Results indicated that participants did not rate the three surveys differently, $F(1.79, 50.02) = .855, p = .420$. The means for pre-test ($M = 5.79, SD = .978$), post-test ($M = 5.79, SD = .902$), and follow-up ($M = 5.55, SD = .985$) suggest no increase in scores from pre-test to post-test and a decrease to follow-up test. The follow-up test scores fell below (.24) the pre-test scores. Polynomial contrasts indicated, in support of this, there was not a significant linear trend $F(1, 28) = 1.000, p = .326$. See Figure 4.18.

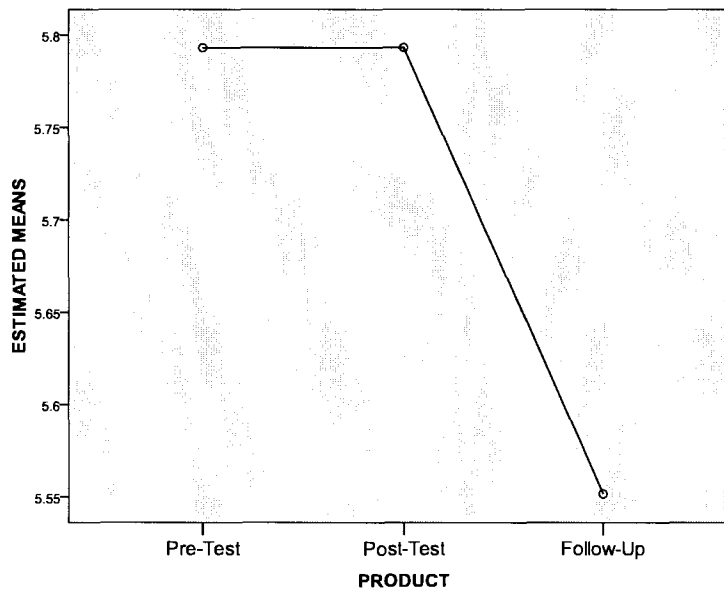


Figure 4.18. Pre/post/follow-up not statistically significant mean scores for effective communication.

Follow-up Survey Short Answer Question

Sixty percent of students ($n = 45$) indicated they communicate better with others as a result of their Outward Bound experience. None of the students indicated they

communicate worse with others as a result of their Outward Bound experience; 40% indicated that they communicate the same as before with others as a result of their Outward Bound experience.

Research Question 2: Sub-Question (e) Conflict Resolution

Research Question 2, sub-question (e), asked if there was a significant change in pre-test to post-test conflict resolution scores in the experimental group as compared to the control group.

Research Questions

1. Is there a difference between the experimental group and the control group in regard to the average conflict resolution pre-test and post-test scores?
2. Is there a difference from pre-test to post-test scores (gains or losses) between the experimental group and the control group for conflict resolution?
3. Is there an interaction of the experimental group and the control group in regard to the conflict resolution pre-test scores and post-test scores?

Variables Tested

The sub-variable of conflict resolution consisted of two questions on the pre-exposure and post-exposure surveys. The scores from the two questions were combined to create the sub-variable conflict resolution.

Mixed ANOVA

Following a General Linear Model procedure, a mixed ANOVA was conducted to assess whether there were differences between the mean scores, and between the

experimental group and control group. Results indicated a non-significant change from pre to post exposure mean scores, $F(1, 231) = 1.989, p < .160$, and a non-significant difference between the experimental and control groups $F(1, 231) = .049, p = .824$. The main effect was qualified by a non-significant interaction between mean scores and group, $F(1, 231) = .013, p = .911$. This indicates that the experimental group did not rate conflict resolution products significantly higher than the control group. See Figure 4.19.

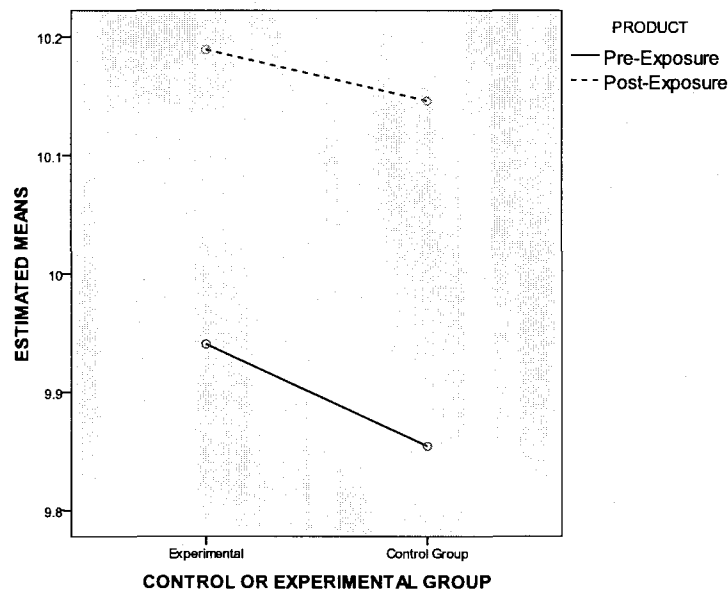


Figure 4.19. Total conflict resolution and group (experimental/control).

Follow-up Survey Quantitative Data

On the follow-up survey only one question was used from each sub-variable. The follow-up survey data consisted of the pre-test/post-test/follow-up scores for one of the two original questions.

1. Is there a difference from pre-test to post-test to follow-up scores (gains or losses) between the experimental group and the control group for conflict resolution?

Repeated Measures ANOVA

A repeated measures ANOVA, with Greenhouse-Geisser correction, was conducted to assess whether there were differences between average ratings of the pre-test, post-test, and follow-up scores. Results indicated that participants did rate the three surveys differently, $F(1.95, 54.54) = 4.021, p = .024, \eta^2 = .126$ (medium). The means for pre-test ($M = 5.55, SD = 1.429$), post-test ($M = 6.17, SD = .889$), and follow-up ($M = 5.83, SD = 1.28$) suggest an increase in scores from pre-test to post-test and a decrease to follow-up test. The follow-up test scores were higher (.28) than the pre-test scores. Polynomial contrasts indicated, in support of this, there was a significant quadratic trend $F(1, 28) = 5.693, p = .024, \eta^2 = .169$ (large). See Figure 4.20.

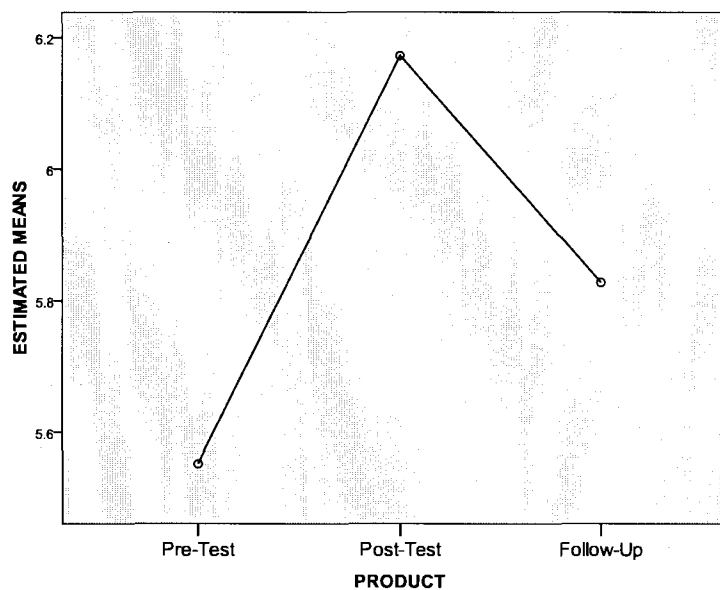


Figure 4.20. Pre/post/follow-up statistically significant mean scores for conflict resolution.

Follow-up Survey Short Answer Question

Sixty-two percent of students ($n = 45$) indicated they are better able to resolve conflicts as a result of their Outward Bound experience. None of the respondents

indicated they are less able to resolve conflicts as a result of their Outward Bound experience; 38% of the students indicated that they had experienced no change in their ability to resolve conflicts as a result of their Outward Bound experience.

Research Question 3

Research Question 3 asked if there was a significant change in pre-test to post-test service scores in the experimental group as compared to the control group.

Research Questions

1. Is there a difference between the experimental group and the control group in regard to the average service pre-test and post-test scores?
2. Is there a difference from pre-test to post-test scores (gains or losses) between the experimental group and the control group for service?
3. Is there an interaction of the experimental group and the control group in regard to the service pre-test scores and post-test scores?

Variables Tested

The parent variable of service consisted of three sub-variables: social responsibility, environmental responsibility, and active engagement in service. On the pre and post exposure surveys each of the sub-variables consisted of two questions. The scores from the two questions were combined to create each sub-variable. Next all three sub-variables were combined to create the parent or variable of interest character development.

Mixed ANOVA

Following a General Linear Model procedure, a mixed ANOVA was conducted to assess whether there were differences between the mean scores, and between the

experimental group and control group. Results indicated a significant change from pre to post exposure mean scores, $F(1,231) = 49.126, p < .001, \eta^2 = .175$ (large), and a significant difference between the experimental and control groups $F(1,231) = 8.103, p = .005, \eta^2 = .034$ (small). The main effect was qualified by a significant interaction between mean scores and group, $F(1,231) = 13.106, p < .001, \eta^2 = .054$ (small). This indicates that the experimental group rated character development products higher than the control group. The experimental group was approximately three points higher than the pre-test scores on the post-tests scores, and the control group was less than one point higher than the pre-test scores on the post-tests scores. See Figure 4.21.

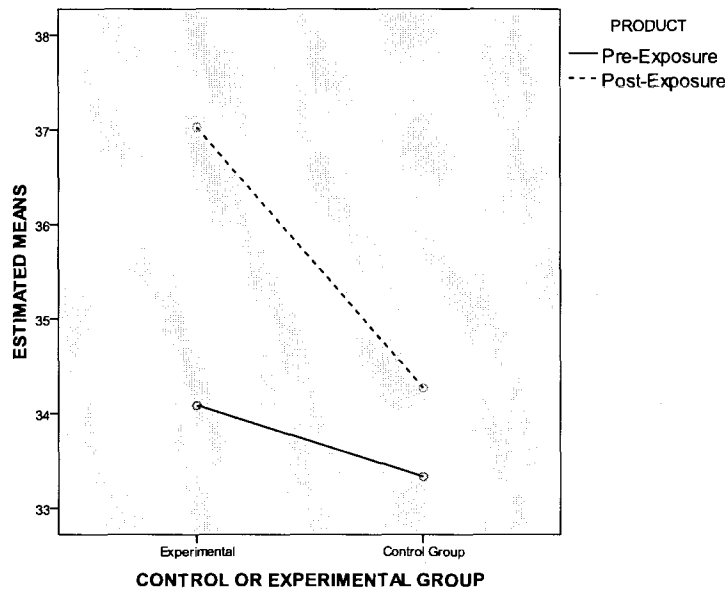


Figure 4.21. Total service development and group (experimental/control).

Research Question 3: Sub-Question (a) Social Responsibility

Research Question 3, sub-question (a), asked if there was a significant change in pre-test to post-test social responsibility scores in the experimental group as compared to the control group.

Research Questions

1. Is there a difference between the experimental group and the control group in regard to the average social responsibility pre-test and post-test scores?
2. Is there a difference from pre-test to post-test scores (gains or losses) between the experimental group and the control group for social responsibility?
3. Is there an interaction of the experimental group and the control group in regard to the social responsibility pre-test scores and post-test scores?

Variables Tested

The sub-variable of social responsibility consisted of two questions on the pre-exposure and post-exposure surveys. The scores from the two questions were combined to create the sub-variable social responsibility.

Mixed ANOVA

Following a General Linear Model procedure, a mixed ANOVA was conducted to assess whether there were differences between the mean scores, and between the experimental group and control group. Results indicated a significant change from pre to post exposure mean scores, $F(1, 236) = 16.585, p < .001, \eta^2 = .065$ (medium), and a near significant difference between the experimental and control groups $F(1, 237) = 3.686, p = .56, \eta^2 = .015$ (small). The main effect was qualified by a significant interaction between mean scores and group, $F(1, 236) = 19.480, p < .001, \eta^2 = .076$ (medium). This indicates

that the experimental group rated social responsibility products significantly higher than the control group. The total gain for the experimental group from pre to post was 1.03 points. There was a loss of .04 points for the control group from pre to post test. See Figure 4.22.

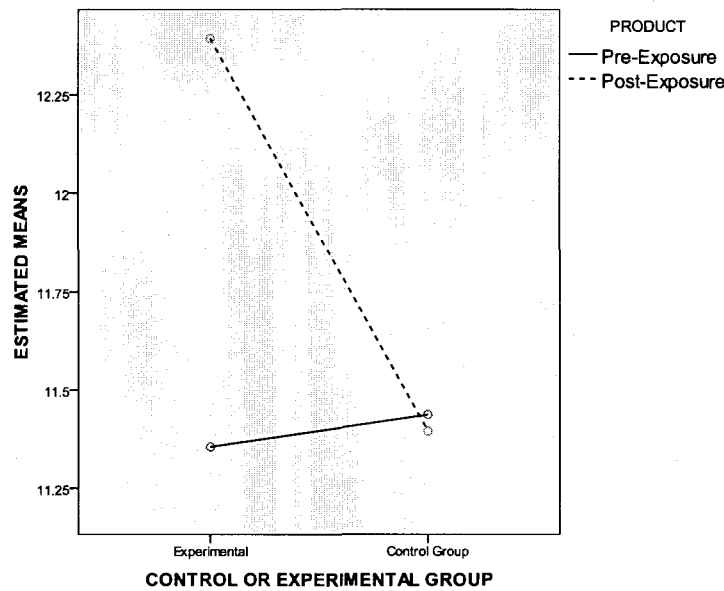


Figure 4.22. Total social responsibility and group (experimental/control).

Follow-up Survey Quantitative Data

On the follow-up survey only one question was used from each sub-variable. The follow-up survey data consisted of the pre-test/post-test/follow-up scores for one of the two original questions.

1. Is there a difference from pre-test to post-test to follow-up scores (gains or losses) between the experimental group and the control group for social responsibility?

Repeated Measures ANOVA

A repeated measures ANOVA, with Greenhouse-Geisser correction, was conducted to assess whether there were differences between average ratings of the pre-test, post-test, and follow-up scores. Results indicated that participants did not rate the three surveys differently, $F(1.99, 55.93) = .300, p = .742$. The means for pre-test ($M = 5.69, SD = .891$), post-test ($M = 5.83, SD = 1.002$), and follow-up ($M = 5.69, SD = .967$) suggest an increase in scores from pre-test to post-test and a decrease to follow-up test. The follow-up test scores are exactly that of the pre-test scores. Polynomial contrasts indicated there was not a significant quadratic trend $F(1, 28) = .368, p = .595$. See Figure 4.23.

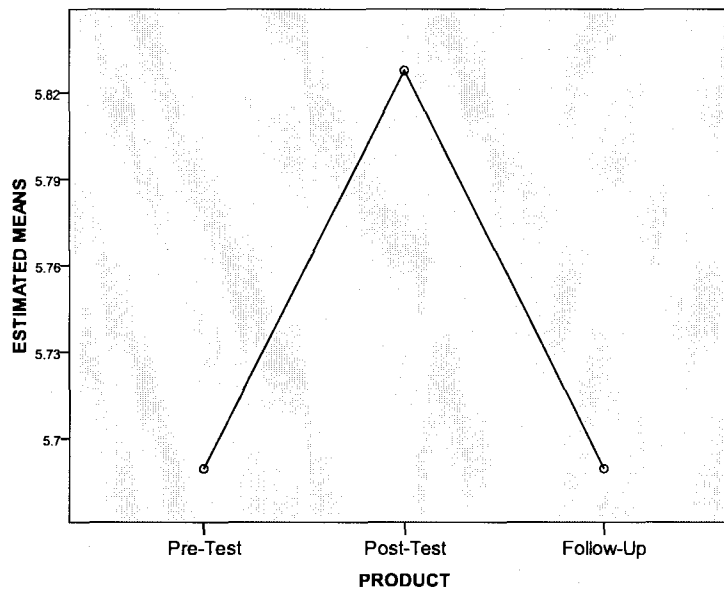


Figure 4.23. Pre/post/follow-up not statistically significant mean scores for social responsibility.

Follow-up Survey Short Answer Question

Fifty-five percent of students ($n = 45$) indicated that they are more socially responsible as a result of their Outward Bound experience. None of the students indicated they were less socially responsible as a result of their Outward Bound experience; 45% indicated that they had experienced no change in their ability to be socially responsible as a result of their Outward Bound experience.

Research Question 3: Sub-Question (b) Environmental Responsibility

Research Question 3, sub-question (b), asked if there was a significant change in pre-test to post-test environmental responsibility scores in the experimental group as compared to the control group.

Research Questions

1. Is there a difference between the experimental group and the control group in regard to the average environmental responsibility pre-test and post-test scores?
2. Is there a difference from pre-test to post-test scores (gains or losses) between the experimental group and the control group for environmental responsibility?
3. Is there an interaction of the experimental group and the control group in regard to the environmental responsibility pre-test scores and post-test scores?

Variables Tested

The sub-variable of environmental responsibility consisted of two questions on the pre-exposure and post-exposure surveys. The scores from the two questions were combined to create the sub-variable environmental responsibility.

Mixed ANOVA

Following a General Linear Model procedure a mixed ANOVA was conducted to assess whether there were differences between the mean scores and between the experimental group and control group. Results indicated a non-significant change from pre to post exposure mean scores, $F(1, 197) = 1.381, p = .241$, and a non-significant difference between the experimental and control groups $F(1,197) = .383, p = .537$. The main product effect was qualified by a significant interaction between mean scores and group, $F(1,197) = 6.610, p = .011, \eta^2 = .032$ (small). This indicates that the experimental group did not rate environmental responsibility questions significantly higher than the control group. The gain for the experimental group from pre to post was .32 points. The gain for the control group from pre to post test was .10. See Figure 4.24.

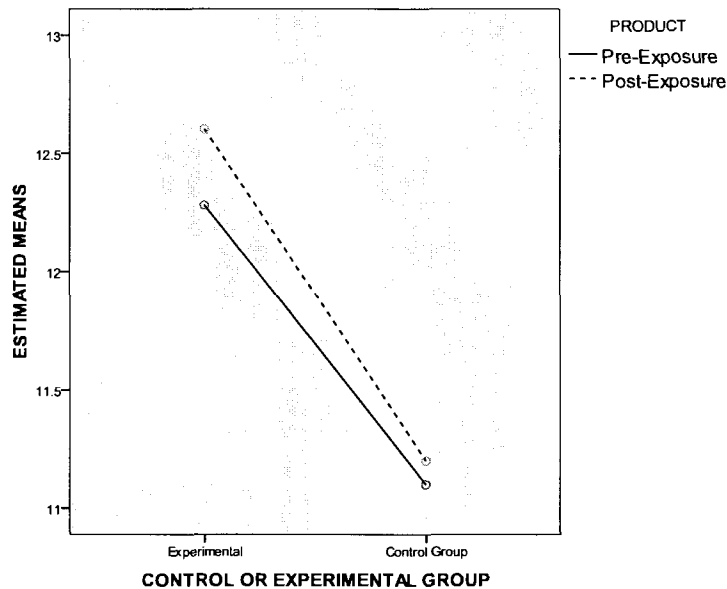


Figure 4.24. Total environmental responsibility and group (experimental/control).

Follow-up Survey Quantitative Data

On the follow-up survey only one question was used from each sub-variable. The follow-up survey data consisted of the pre-test/post-test/follow-up scores for one of the two original questions.

1. Is there a difference from pre-test to post-test to follow-up scores (gains or losses) between the experimental group and the control group for environmental responsibility?

Repeated Measures ANOVA

A repeated measures ANOVA, with Greenhouse-Geisser correction, was conducted to assess whether there were differences between average ratings of the pre-test, post-test, and follow-up scores. Results indicated that participants did rate the three surveys differently, $F(1.62, 45.48) = 5.440, p = .012, \eta^2 = .163$ (large). The means for pre-test ($M = 5.97, SD = 1.451$), post-test ($M = 6.28, SD = 1.162$), and follow-up ($M = 6.55, SD = .736$) suggest an increase in scores from pre-test to post-test to follow-up test. The post-test scores are .31 higher than the pre-test, and the follow-up scores are .27 higher than the post-test score. Polynomial contrasts indicated, in support of this, there was a significant linear trend $F(1, 28) = 7.534, p = .010, \eta^2 = .212$ (much larger than typical). See Figure 4.25.

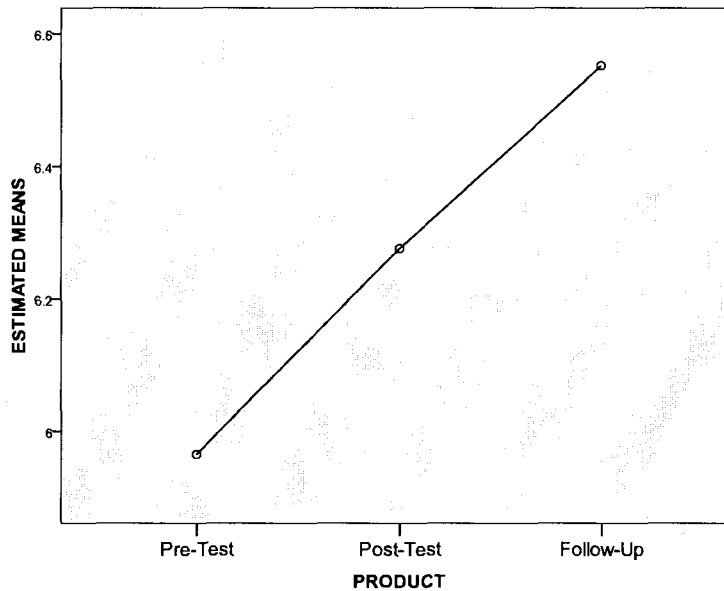


Figure 4.25. Pre/post/follow-up statistically significant mean scores for environmental responsibility.

Follow-up Survey Short Answer Question

Eighty-two percent of students ($n = 45$) indicated they were more environmentally responsible as a result of their Outward Bound experience. None of the students indicated they were less environmentally responsible as a result of their Outward Bound experience; 18% indicated that they had experienced no change in being environmentally responsible as a result of their Outward Bound experience.

Research Question 3: Sub-Question (b) Active Engagement

Research Question 3, sub-question (b), asked if there was a significant change in pre-test to post-test active engagement in service to others scores in the experimental group as compared to the control group.

Research Questions

1. Is there a difference between the experimental group and the control group in regard to the average active engagement in service to others pre-test and post-test scores?
2. Is there a difference from pre-test to post-test scores (gains or losses) between the experimental group and the control group for active engagement in service to others?
3. Is there an interaction of the experimental group and the control group in regard to the active engagement in service to others pre-test scores and post-test scores?

Variables Tested

The sub-variable of active engagement in service to others consisted of two questions on the pre-exposure and post-exposure surveys. The scores from the two questions were combined to create the sub-variable active engagement in service to others.

Mixed ANOVA

Following a General Linear Model procedure, a mixed ANOVA was conducted to assess whether there were differences between the mean scores and between the experimental group and control group. Results indicated a significant change from pre to post exposure mean scores, $F(1, 233) = 42.698, p < .001, \eta^2 = .155$ (large), and a non-significant difference between the experimental and control groups $F(1, 233) = 2.022, p = .156$. The main effect was qualified by a near significant interaction between mean scores and group, $F(1, 233) = 3.620, p = .058, \eta^2 = .015$ (small). This indicates that the experimental group did rate active engagement in service to others products significantly

higher than the control group. The gain for the experimental group from pre to post was 1.17 points. The gain for the control group from pre to post test was .65. See Figure 4.26.

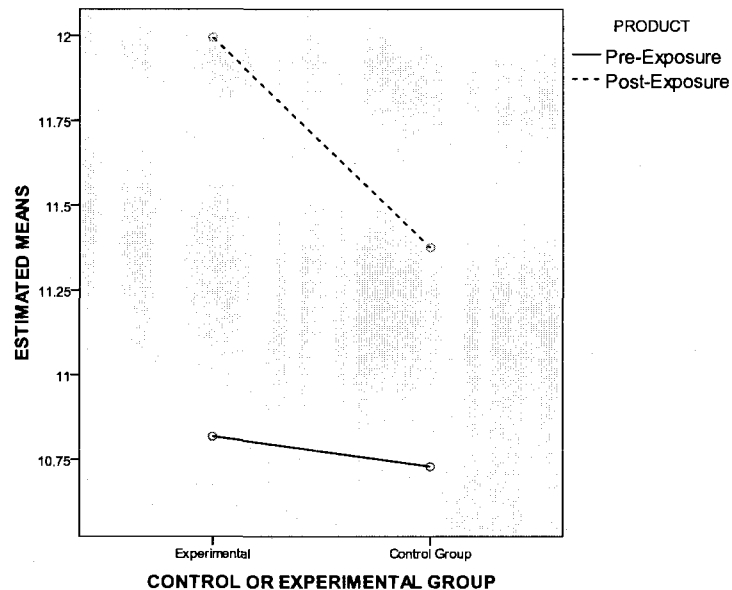


Figure 4.26. Total active engagement in service to others and group (Experimental/control).

Follow-up Survey Quantitative Data

On the follow-up survey only one question was used from each sub-variable. The follow-up survey data consisted of the pre-test/post-test/follow-up scores for one of the two original questions.

1. Is there a difference from pre-test to post-test to follow-up scores (gains or losses) between the experimental group and the control group for active engagement in service to others?

Repeated Measures ANOVA

A repeated measures ANOVA, with Greenhouse-Geisser correction, was conducted to assess whether there were differences between average ratings of the pre-test, post-test, and follow-up scores. Results indicated that participants did rate the three

surveys differently, $F(1.99, 55.59) = 4.867, p = .011, \eta^2 = .148$ (large). The means for pre-test ($M = 5.62, SD = .820$), post-test ($M = 6.21, SD = .726$), and follow-up ($M = 5.86, SD = .953$) suggest an increase in scores from pre-test to post-test and a decrease to follow-up test. The post-test scores are .59 of a point higher than the pre-test, and the follow-up scores are .24 of a point higher than the pre-test score. Polynomial contrasts indicated, in support of this, there was a significant quadratic trend $F(1, 28) = 8.813, p = .006, \eta^2 = .239$ (much larger than typical). See Figure 4.27.

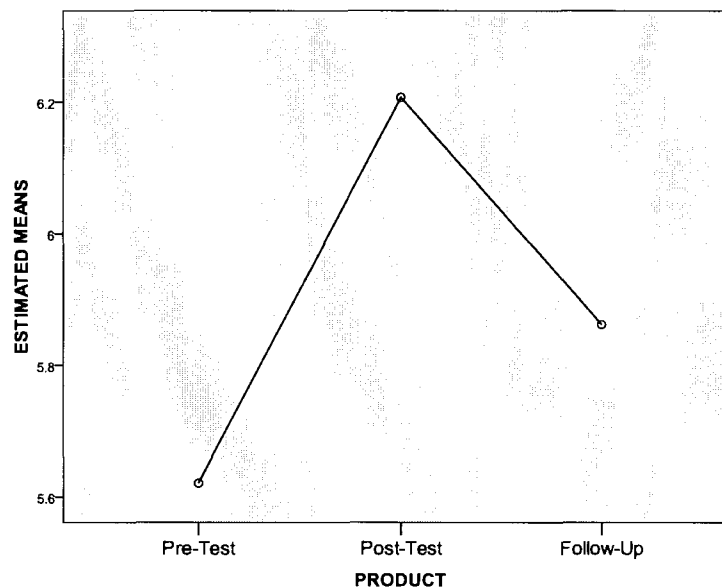


Figure 4.27. Pre/post/follow-up statistically significant mean scores for active engagement in service to others.

Follow-up Survey Short Answer Question

Sixty-four percent of students ($n = 45$) indicated they are more actively engaged in service to others as a result of their Outward Bound experience. None of the students indicated they are less actively engaged in service to others as a result of their Outward

Bound experience; 36% indicated that they had experienced no change in their being actively engaged in service to others as a result of their Outward Bound experience.

Research Question 4

Research Question 4 asked if there was a significant change in pre-test to post-test overall scores in the experimental group as compared to the control group.

Research Questions

1. Is there a difference between the experimental group and the control group in regard to the overall outcomes pre-test and post-test scores?
2. Is there a difference from pre-test to post-test scores (gains or losses) between the experimental group and the control group for overall outcomes?
3. Is there an interaction of the experimental group and the control group in regard to the overall outcomes pre-test scores and post-test scores?

Variables Tested

The overall learning outcomes (super variable) consisted of the sub-variables: self-confidence, self-actualization, compassion, healthy and balanced life, goal setting, group collaboration, effective communication, conflict resolution, problem solving, social responsibility, environmental responsibility, and active engagement in service. Each of the sub-variables consisted of two questions that were asked on the pre-test and post-test.

Mixed ANOVA

Following a General Linear Model procedure, a mixed ANOVA was conducted to assess whether there were differences between the mean scores and between the experimental group and control group. Results indicated a significant change from pre to post exposure mean scores $F(1,215) = 50.622, p < .001, \eta^2 = .191$ (large), and a

significant difference between the experimental and control groups $F(1,215) = 6.992, p = .009, \eta^2 = .031$ (small). The main effect was qualified by a significant interaction between mean scores and group, $F(1,177) = 18.097, p < .001, \eta^2 = .078$ (medium). This indicates that the experimental group rated the overall products (character, leadership, and service in combination) higher than the control group. The post-test score was 10.17 points higher than the pre-test scores for the experimental group, the post-test score was 2.58 points higher than the pre-test scores for the control group. See Figure 4.28.

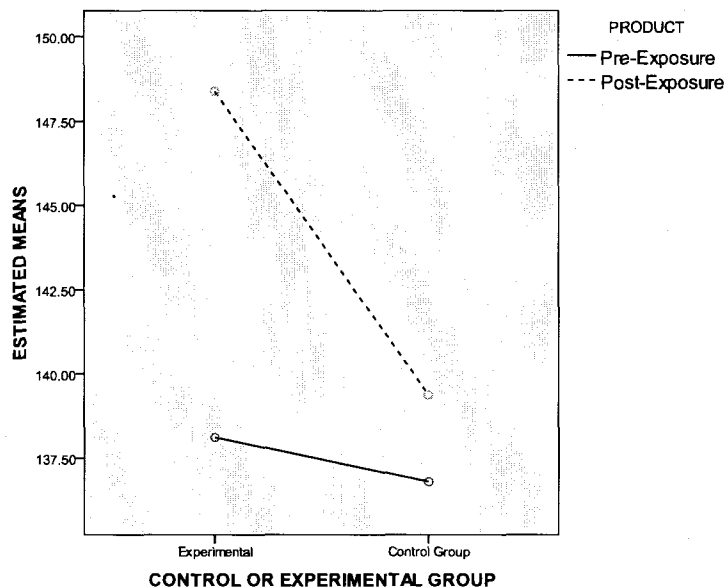


Figure 4.28. All combined variables and group (experimental/control).

Inferential Statistics for the Dependent Variables as Compared to the Independent Variables (Secondary Data Collection)

Inferential statistics make inferences about population values based on the sample data collected and analyzed (Morgan, Leech, Gloeckner, & Garrett, 2004). This section attempts to use inferential statistics to answer an overall research question of how instructor demographics, student demographics, and course characteristics affect the

dependent variables and the achievement of Outward Bound's intended learning outcomes.

Research Question 5 looks at how an instructor's background/life experiences affect the achievement of Outward Bound's intended learning outcomes. Question 6 looks at how the student demographics affect the achievement of Outward Bound's intended learning outcomes. And Question 7 looks at how course characteristics affect the achievement of Outward Bound's intended learning outcomes. Each question uses an ANOVA to compare the experimental group to the control group on these independent variables.

Research Question 5

Research Question 5 asked if instructor background (age, education, tenure, and training) affected student learning outcomes.

Research Question 5: Sub-Question (a) Instructor Age

Research Question 5, sub-question (a), asked if there was a significant change in pre-test to post-test in overall scores in the older instructors as compared to younger instructors.

Research Questions

1. Is there a difference between older instructors and younger instructors in regard to the average overall outcomes pre-test and post-test scores?
2. Is there a difference from pre-test to post-test scores (gains or losses) between the older instructors and the younger instructors for the overall outcomes score?
3. Is there an interaction of the older instructors and younger instructors in regard to the overall outcome scores for pre-test scores and post-test scores?

Variables Tested

The overall outcomes (super variable) consisted of the sub-variables: self-confidence, self-awareness, compassion, healthy and balanced life, goal setting, group collaboration, effective communication, conflict resolution, problem solving, social responsibility, environmental responsibility, and active engagement in service. The initial instructor age breakout of six variables (age ranges) were combined to create a dichotomous variable (21 to 30 years old; 30 years and older). Instructor age was only collected for the experimental group.

Mixed ANOVA

Following a General Linear Model procedure, a mixed ANOVA was conducted to assess whether there were differences between the mean scores and between the younger instructors and older instructors. Results indicated a significant change from pre to post exposure mean scores, $F(1,149) = 129.618, p < .001, \eta^2 = .465$ (much larger than typical), and a non-significant difference between the age groups $F(1,149) = .121, p = .729$. The main product effect was qualified by a near significant interaction between product and group, $F(1,149) = 3.245, p = .074, \eta^2 = .021$ (small). This indicates that instructor age made no difference concerning students' achievement of student learning outcomes. The post-test score was 12.01 points higher than the pre-test scores for older instructors, whereas the post-test score was 8.73 points higher than the pre-test scores for younger instructors. See Figure 4.29.

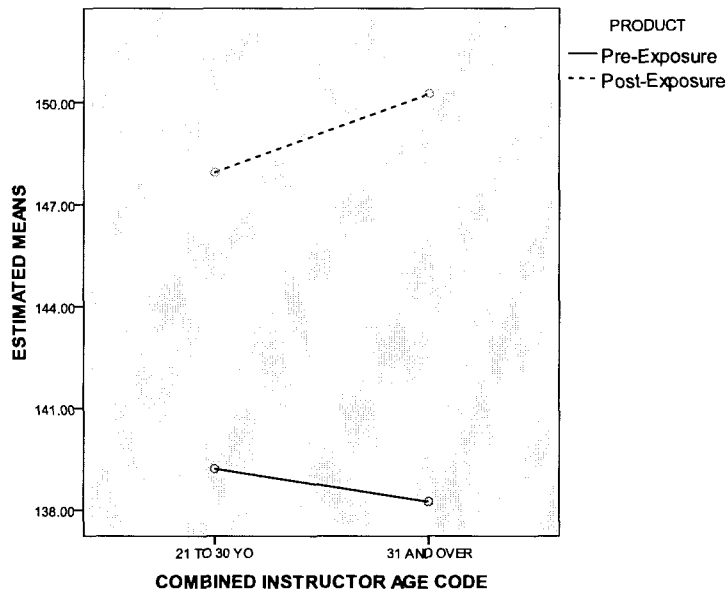


Figure 4.29. All combined variables and instructor age (experimental only).

Research Question 5: Sub-Question (b) Instructor Education

Research Question 5, sub-question (b), asked if there was a significant change in pre-test to post-test in overall scores for instructors with a bachelor's degree as compared to the instructors with a master's degree or higher.

Research Questions

1. Is there a difference between instructors with a bachelor's degree compared to the instructors with a master's degree or higher in regard to the average overall outcomes pre-test and post-test scores?
2. Is there a difference from pre-test to post-test scores (gains or losses) between the instructors with a bachelor's degree compared to instructors with a master's degree or higher for the overall outcomes score?

3. Is there an interaction of the instructors with a bachelor's degree compared to the instructors with a master's degree or higher in regard to the overall outcome scores for pre-test scores and post-test scores?

Variables Tested

The overall outcomes (super variable) consisted of the sub-variables: self-confidence, self-awareness, compassion, healthy and balanced life, goal setting, group collaboration, effective communication, conflict resolution, problem solving, social responsibility, environmental responsibility, and active engagement in service. The demographic data on instructor educational background reflects an uneven spread of educational achievement when looked at in terms of frequency (number of students paired with an instructor with a specific type of degree). The initial instructor educational background breakout of five variables (None, AA, BA/S, MA/S, Ph.D.) were combined to create a dichotomous variable (Group 1 = AA / BA; Group 2 = MA/Ph.D.); instructors with no higher education were dropped. Instructor educational background was only collected for the experimental group and not the control group.

Mixed ANOVA

Following a General Linear Model procedure, a mixed ANOVA was conducted to assess whether there were differences between the mean scores and between the less and more educated instructors. Results indicated a significant change from pre to post exposure mean scores, $F(1,138) = 98.388, p < .001, \eta^2 = .416$ (much larger than typical), and a non-significant group effect $F(1,138) = .084, p = .773$. The main product effect was qualified by a significant interaction between product and group, $F(1,138) = 3.748, p = .050, \eta^2 < .001$ (small). This indicates that the less educated instructors reported the

same increases in student learning outcomes as the more educated instructors. The post-test score was 10.77 points higher than the pre-test scores for instructors with a bachelor's degree; the post-test score was 10.06 points higher than the pre-test scores for instructor's with a master's degree or above. See Figure 4.30.

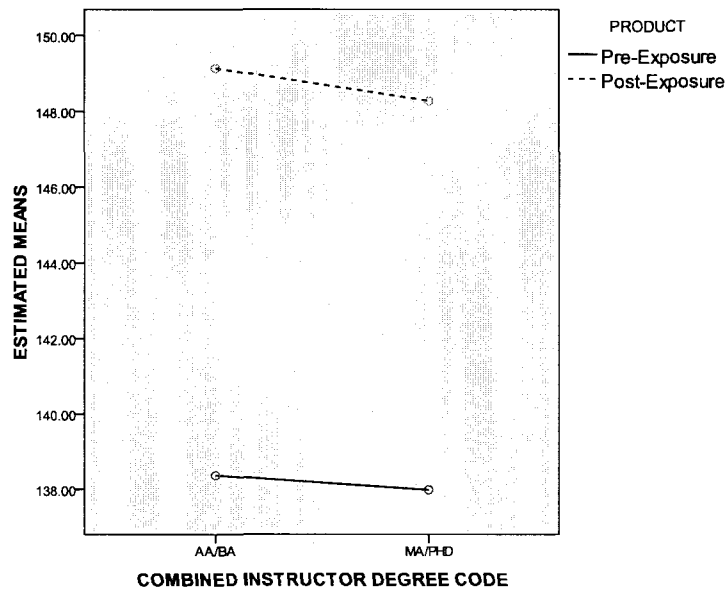


Figure 4.30. All combined variables and instructor education (experimental only).

Research Question 5: Sub-Question (c) Instructor Tenure

Research Question 5, sub-question (c), asked if there was a significant change in pre-test to post-test in overall scores in the lower tenure instructors in comparison to the higher tenure instructors.

Research Questions

1. Is there a difference between the lower tenure instructors in comparison to the higher tenure instructors in regard to the average overall outcomes pre-test and post-test scores?

2. Is there a difference from pre-test to post-test scores (gains or losses) between the lower tenure instructors in comparison to the higher tenure instructors for the overall outcomes score?
3. Is there an interaction of the lower tenure instructors in comparison to the higher tenure instructors in regard to the overall outcome scores for pre-test scores and post-test scores?

Variables Tested

The overall outcomes (super variable) consisted of the sub-variables: self-confidence, self-awareness, compassion, healthy and balanced life, goal setting, group collaboration, effective communication, conflict resolution, problem solving, social responsibility, environmental responsibility, and active engagement in service. The demographic data on instructor tenure with Outward Bound reflected an uneven spread of years of service when looked at in terms of frequency (number of students paired with an instructor with a specific tenure). The initial instructor tenure breakout of five variables (1-2 years, 3-4 years, 5-6 years, 7-8 years, and over 8 years) were combined to create a dichotomous variable (Group 1 = 1-4 years; Group 2 = 5 or more years).

Mixed ANOVA

Following a General Linear Model procedure, a mixed ANOVA was conducted to assess whether there were differences between the mean scores and between the lower and higher tenure instructors. Results indicated a significant main effect of product, $F(1,138) = 23.603, p < .001, \eta^2 = .146$ (large), and a non-significant difference between the lower and higher tenure instructors $F(1,138) = 1.539, p = .217$. The main product effect was qualified by a non-significant interaction between product and group, F

(1,138) = .022, $p = .882$. This indicates that the lower tenure instructors reported the same increases in student learning outcomes as the higher tenure instructors. The post-test score was 10.75 points higher than the pre-test scores for lower tenure instructors, whereas the post-test score was 10.11 points higher than the pre-test scores for higher tenure instructors. See Figure 4.31.

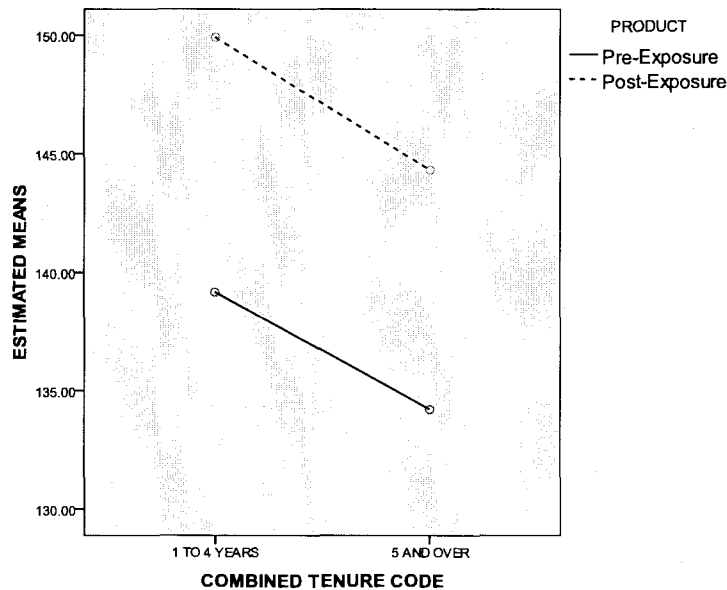


Figure 4.31. All combined variables and instructor tenure (experimental only).

Research Question 5: Sub-Question (d) Instructor Training

Research Question 5, sub-question (d), asked if there was a significant change in pre-test to post-test in overall scores in the instructors with less days of training in comparison to instructors with more days of training.

Research Questions

1. Is there a difference between the instructors with less days of training in comparison to instructors with more days of training in regard to the average overall outcomes pre-test and post-test scores?

2. Is there a difference from pre-test to post-test scores (gains or losses) between the instructors with less days of training in comparison to instructors with more days of training for the overall outcomes score?
3. Is there an interaction of the instructors with less days of training in comparison to instructors with more days of training in regard to the overall outcome scores for pre-test scores and post-test scores?

Variables Tested

The overall outcomes (super variable) consisted of the sub-variables: self-confidence, self-awareness, compassion, healthy and balanced life, goal setting, group collaboration, effective communication, conflict resolution, problem solving, social responsibility, environmental responsibility, and active engagement in service. The demographic data on instructor days of training with Outward Bound reflected an uneven spread of days of training when looked at in terms of frequency (number of students paired with an instructor with a specific number of days of training).

The initial instructor training breakout of five variables (1 – 10 days; 11-20 days; 21-30 days; 31-40 days; 41-50 days) was combined to create a dichotomous variable (Group 1 = 1-20 days; Group 2 = 21-50 days). Instructor training with Outward Bound was only collected for the experimental group and not the control group

Mixed ANOVA

Following a General Linear Model procedure, a mixed ANOVA was conducted to assess whether there were differences between the mean scores, and between the instructors with less days of training and the instructors with greater days of training. Results indicated a significant main effect of product, $F(1,166) = 96.325, p < .001, \eta^2 =$

.367 (much larger than typical), and a non-significant group effect $F(1,166) = .203, p = .653$. The main product effect was qualified by a non-significant interaction between product and group, $F(1,166) = 1.212, p = .273$. This indicates that the instructors with less days of training reported the same increases in student learning outcomes as instructors with more days of training. The post-test score was 8.71 points higher than the pre-test scores for instructors with less days of training, whereas the post-test score was 10.92 points higher than the pre-test scores for instructors with more days of training. See Figure 4.32.

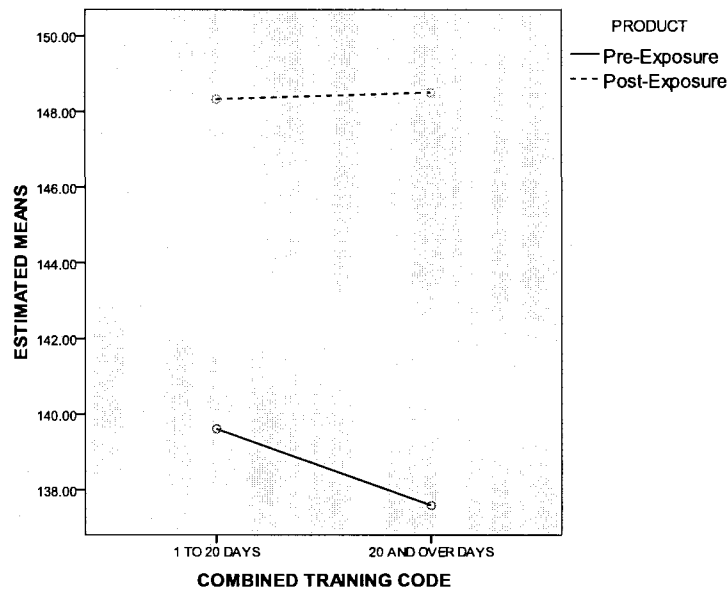


Figure 4.32. All combined variables and instructor training (experimental only).

Research Question 6

Research Question 6 asked if the student demographics of age and gender affect student learning outcomes.

Research Question 6: Sub-Question (a) Student Age

Research Question 6, sub-question (a), asked if there was a significant change in pre-test to post-test in overall scores in younger students compared to older students.

Research Questions

1. Is there a difference between the younger students compared to older students in regard to the average overall outcomes pre-test and post-test scores?
2. Is there a difference from pre-test to post-test scores (gains or losses) between the younger students compared to older students for the overall outcomes score?
3. Is there an interaction of younger students compared to older students in regard to the overall outcome scores for pre-test scores and post-test scores?

Variables Tested

The overall outcomes (super variable) consisted of the sub-variables: self-confidence, self-awareness, compassion, healthy and balanced life, goal setting, group collaboration, effective communication, conflict resolution, problem solving, social responsibility, environmental responsibility, and active engagement in service. Student age was broken out into 14 to 18 year old (younger) or 19 and over (older) age groups. Student age was only examined for the experimental group and not the control group.

Mixed ANOVA

Following a General Linear Model procedure, a mixed ANOVA was conducted to assess whether there were differences between the mean scores, and between the younger and older students. Results indicated a significant change between pre and post exposure mean scores $F(1,168) = 99.464, p < .001, \eta^2 = .372$ (much larger than typical), and a near-significant difference between the younger and older students $F(1,168) = 2.937, p = .088, \eta^2 = .017$ (small). The main effect was qualified by a non-significant interaction between mean scores and group, $F(1,168) = 2.171, p = .143$. This indicates that the older students did not report a greater increase in overall outcomes scores than did the younger

students. The post-test score was 9.54 points higher than the pre-test scores for younger students, whereas the post-test score was 12.85 points higher than the pre-test scores for older students. See Figure 4.33.

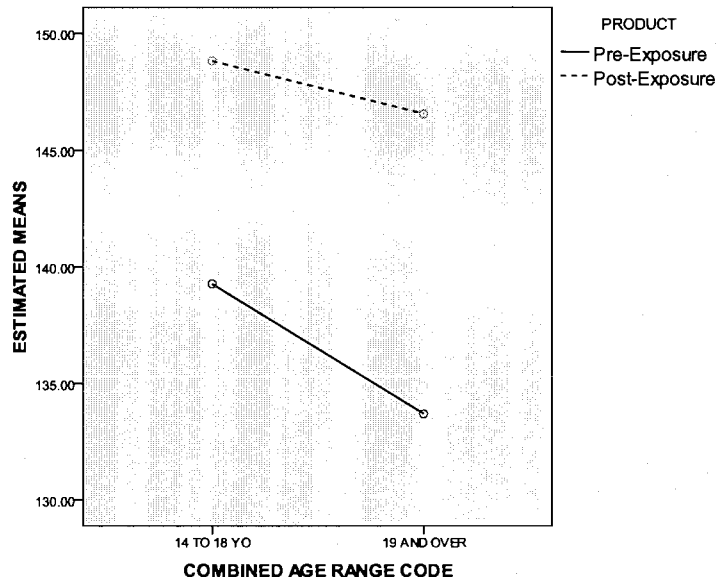


Figure 4.33. All combined variables and student age (experimental only).

Research Question 6: Sub-Question (b) Student Gender

Research Question 6, sub-question (b), asked if there was a significant change in pre-test to post-test in overall scores in the males students compared to the female students.

Research Questions

1. Is there a difference between the male students compared to the female students in regard to the average overall outcomes pre-test and post-test scores?
2. Is there a difference from pre-test to post-test scores (gains or losses) between male students compared to the female students for the overall outcomes score?

3. Is there an interaction between male students compared to the female students in regard to the overall outcome scores for pre-test scores and post-test scores?

Variables Tested

The overall outcomes (super variable) consisted of the sub-variables: self-confidence, self-awareness, compassion, healthy and balanced life, goal setting, group collaboration, effective communication, conflict resolution, problem solving, social responsibility, environmental responsibility, and active engagement in service. Gender was only analyzed for the experimental group and not the control group.

Mixed ANOVA

Following a General Linear Model procedure, a mixed ANOVA was conducted to assess whether there were differences between the mean scores and between the experimental group and control group. Results indicated a significant change from pre to post exposure mean scores, $F(1,168) = 113.530, p < .001, \eta^2 = .403$ (much larger than typical), and a non-significant difference between male and female students $F(1,168) = .964, p = .328$. The main product effect was qualified by a non-significant interaction between mean scores and group, $F(1,168) = .770, p = .382$. This indicates that male students reported similar increases in overall outcomes scores to the female students. The post-test score was 10.81 points higher than the pre-test scores for male students; the post-test score was 9.16 points higher than the pre-test scores for female students. See Figure 4.34.

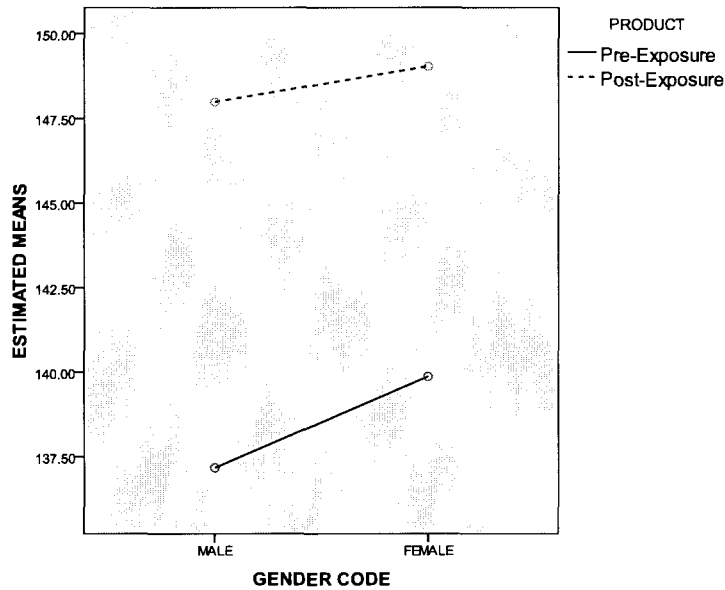


Figure 4.34. All combined variables and student gender (experimental only).

Research Question 7

Research Question 7 asked if course characteristics of course length and course type affect student learning outcomes.

Research Question 7: Sub-Question (a) Course Length

Research Question 7, sub-question (a), asked if there was a significant change in pre-test to post-test in overall scores in shorter courses compared to longer courses.

Research Questions

1. Is there a difference between shorter courses compared to longer courses in regard to the average overall outcomes pre-test and post-test scores?
2. Is there a difference from pre-test to post-test scores (gains or losses) between shorter courses compared to longer courses for the overall outcomes score?
3. Is there an interaction of shorter courses compared to longer courses in regard to the overall outcome scores for pre-test scores and post-test scores?

Variables Tested

The overall outcomes (super variable) consisted of the sub-variables: self-confidence, self-awareness, compassion, healthy and balanced life, goal setting, group collaboration, effective communication, conflict resolution, problem solving, social responsibility, environmental responsibility, and active engagement in service. The initial course length breakout of four variables (5 days, 7-8 days, 15 days, 22 days) was combined to create a dichotomous variable (Group 1 = 5-8 days; Group 2 = 9-22 days). Course length data were only collected for the experimental group and not the control group.

Mixed ANOVA

Following a General Linear Model procedure, a mixed ANOVA was conducted to assess whether there were differences between the mean scores and between shorter and longer courses. Results indicated a significant change from pre to post exposure mean scores, $F(1,168) = 130.025, p < .001, \eta^2 = .436$ (much larger than typical), and a non-significant difference between shorter and longer courses $F(1,168) = .010, p = .921$. The main product effect was qualified by a non-significant interaction between mean scores and group, $F(1,168) = 1.751, p = .187$. This indicates that shorter courses reported the same increases in student learning outcomes as longer courses. The post-test score was 11.06 points higher than the pre-test scores for short courses; the post-test score was 9.21 points higher than the pre-test scores for longer courses. See Figure 4.33.

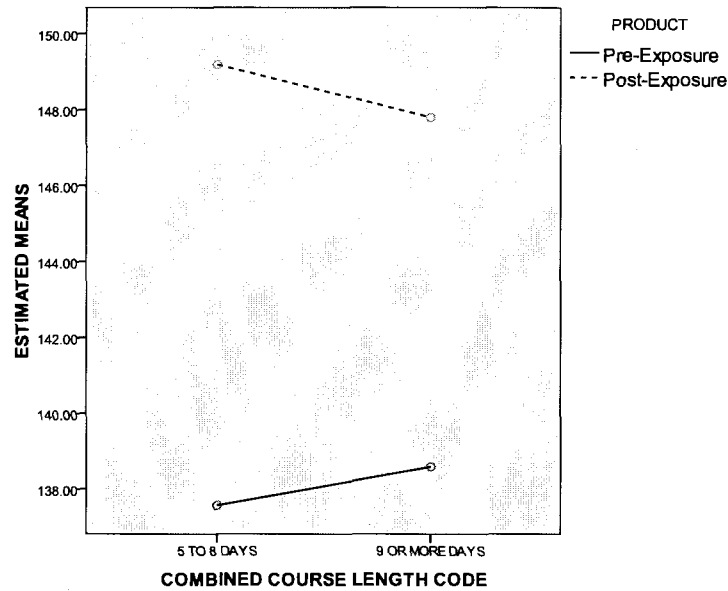


Figure 4.33. All combined variables and course length (experimental only).

Research Question 7: Sub-Question (b) Course Type

Research Question 7, sub-question (b) asked if there was a significant change in pre-test to post-test in overall scores in open enrollment compared to contract courses.

Research Questions

1. Is there a difference between open enrollment compared to contract courses in regard to the average overall outcomes pre-test and post-test scores?
2. Is there a difference from pre-test to post-test scores (gains or losses) between open enrollment compared to contract courses for the overall outcomes score?
3. Is there an interaction of open enrollment compared to contract courses in regard to the overall outcome scores for pre-test scores and post-test scores?

Variables Tested

The overall outcomes (super variable) consisted of the sub-variables: self-confidence, self-awareness, compassion, healthy and balanced life, goal setting, group

collaboration, effective communication, conflict resolution, problem solving, social responsibility, environmental responsibility, and active engagement in service. Course type was a naturally dichotomous independent variable. Course type is only applicable to the experimental group thus no data were collected for the control group.

Mixed ANOVA

Following a General Linear Model procedure, a mixed ANOVA was conducted to assess whether there were differences between the mean scores and between the open enrollment students and the contract course types. Results indicated a significant change from pre to post exposure mean scores, $F(1,168) = 111.422, p < .001, \eta^2 = .399$ (much larger than typical), and a near-significant difference between open enrollment and contract course types $F(1,168) = 3.105, p = .080, \eta^2 = .018$ (small). The main product effect was qualified by a near-significant interaction between mean scores and group, $F(1,168) = 2.930, p = .089, \eta^2 = .017$ (small). This indicates that open enrollment courses reported the same increases in student learning outcomes as contract courses. The post-test score was 11.38 points higher than the pre-test scores for open enrollment courses; the post-test score was 8.21 points higher than the pre-test scores for contract courses. See Figure 4.34.

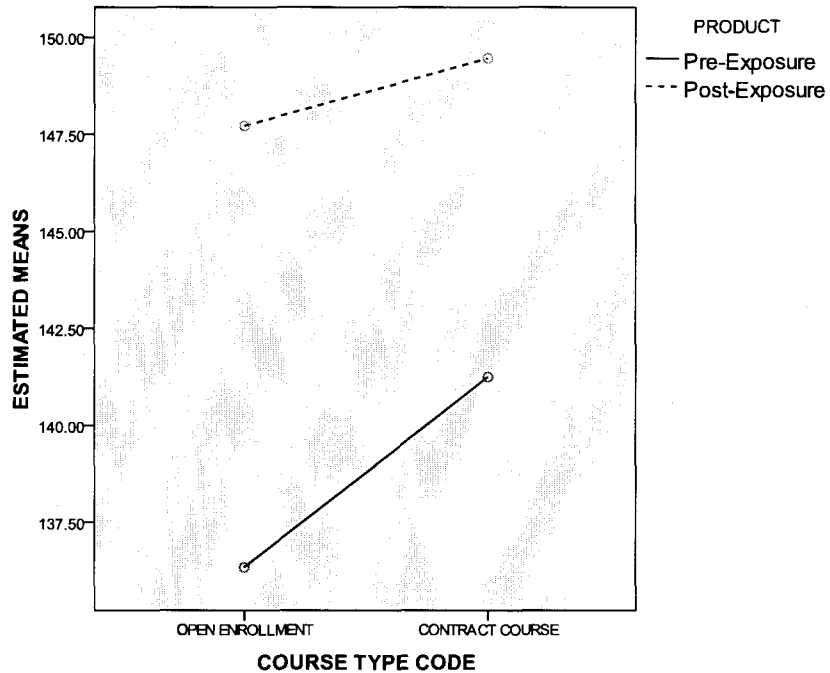


Figure 4.34. All combined variables and course type (experimental only).

Summary

The goal of this chapter was to present the different ways to look at the dependent and independent variables in this study and to determine if there was a difference between them as reported by the experimental group and the control group. The first section described the dependant variables in terms of gross mean and skewness for the experimental and control groups. The second section explored the outcomes of the experimental group and the control group as reported on the pre/post/follow-up instruments and comments made on the follow-up survey. The third section looked for a difference between the dependent variables and the independent variables with particular attention being paid to instructor background, student demographics, and course characteristics. Chapter 5 will take the findings from this chapter and the current

literature reviewed in Chapter 2 and draw final conclusions to the overall research questions for this study.

CHAPTER 5:

DISCUSSION

This study was designed to (a) determine if students completing an Outward Bound course have experienced a change in character development by measuring changes in the measures of self-confidence, self-actualization, compassion towards others, and living a healthier and more balanced life; (b) determine if a student completing an Outward Bound course has demonstrated increased leadership abilities by measuring changes in the student's ability to set goals, collaborate with others, communicate effectively, and resolve conflicts effectively; (c) determine if a student completing an Outward Bound course has demonstrated an increased level of service by looking at changes in measures of social responsibility, environmental responsibility, and actively engaging in service to others; (d) determine if an Instructor's background/life experience affect student outcomes by looking at the instructor's age, educational background, tenure with Outward Bound, and days of training with Outward Bound; (e) determine if student demographics affect learning outcomes achievement by looking at student gender, age, and ethnicity; and (f) determine if course length and type affect learning outcomes achievement by looking at how course length and course type affect student learning outcomes achievement. This project utilized a quasi-experimental research approach via a quantitative method of inquiry that was supplemented with a qualitative component to analyze data collected by the researcher and Outward Bound.

Students enrolled in Outward Bound programs in the Rocky Mountain region during the summer of 2008 comprised the experimental group ($n = 193$) and undergraduate students enrolled in an introductory teacher licensure course at Colorado State University comprised the control group ($n = 51$). The primary data collection encompassed the dependent variables (character development, leadership, and service). The secondary data collection encompassed the independent variables (course characteristics, student demographics, and instructor demographics).

Findings and Conclusions

Table 5.1 provides a summary of the changes between pre and post exposure surveys for each of the attribute for the experimental and control groups. While the pre test data reported by both the experimental and control group were very close, the participants in an Outward Bound experience reported a significant change in each attribute except conflict resolution and environmental responsibility at the end of the course while the control group did not report any significant changes.

This data set is using sub-variables which were created by combining the results from two survey questions about the same attribute into one sub-variable. The scale below the table presents the range of possible scores for each type of variable. For example, the range of scores for the sub-variables is 1 to 14 because two 1 to 7 point Likert scales were combined to get create the sub-variable. The parent variables (character, leadership, service) use the combined scores of all of the sub-variables for that parent variable and have higher ranges.

Table 5.1.

Pre to post scores for the experimental and control groups for each parent and sub-variables.

Combined Variable	Exper Pre- Test	Control Pre-Test	Exper Post- Test	Control Post- Test	Δ Exper Pre to Post	Δ Cont Pre to Post	η ²
Character - Self-Confidence	12.12	12.00	13.12*	12.65	1.0	.65	.165
Character – Self-Actualization	11.67	12.47	12.77*	12.25	1.1	-.22	.041
Character – Compassion	11.52	12.10	12.36*	12.04	.84	-.06	.037
Character – Healthy/Balanced Life	11.44	10.61	12.34*	10.90	.90	.29	.070
All Character	46.77	47.18	50.58*	47.83	3.81	.65	.146
Leadership – Goal Setting	11.26	11.35	12.50*	11.58	1.24	.23	.124
Leadership – Group Collaboration	12.40	12.31	12.90*	12.31	.5	0	.029
Leadership – Effective Commun.	11.70	11.71	12.35*	11.85	.65	.14	.047
Leadership – Conflict Resolution	09.95	09.98	10.22	10.15	.27	.17	N/A
Leadership – Problem Solving	11.71	11.18	12.63*	11.38	.92	.20	.077
All Leadership	45.32	45.35	60.67*	57.27	15.35	11.92	.837
Service – Social Responsibility	11.36	11.49	12.40*	11.40	1.04	-.09	.065
Service – Environmental Respon.	12.28	11.10	12.61	11.50	.33	.40	N/A
Service – Active Engagement	10.80	10.73	12.00*	11.38	1.2	.65	.155
All Service	34.11	33.51	37.03*	34.27	2.92	.76	.175

Scale: 1 to 14 for Sub-variables

1 to 56 for Character Parent Variable

1 to 70 for Leadership Parent Variable

1 to 42 for Service Parent Variable

** Statistically Significant Change Pre to Post ($p < .01$)*

There could be a number of reasons for the significant changes in the experimental group. The first possibility is that the students had increased knowledge and skills in each of these areas. As discussed in the literature (Marsh et al., 1984; Neill, 2008) another possibility is the halo effect. The participants were immersed in the experience and are euphoric when completing the post-exposure survey. While these pre to post changes are significant, many do not endure over time.

Twenty nine students from the experimental group completed follow-up surveys. The pre, post, and follow-up mean scores and change in scores are represented in Table 5.2. The attributes are grouped together by: attributes that increased from pre to post to follow-up; attributes that increased from pre to post and the follow-up was higher than

pre yet lower than post; attributes that increased from pre to post and the follow-up was lower than the pre-test score.

Table 5.2

Pre, post, and follow-up scores for the experimental group.

Sub-Variable	Mean Pre Score	Mean Post Score	Mean F/U Score	Δ Pre to Post Mean	Δ Post to F/U Mean	Δ Pre to F/U Mean	η^2
Pre-Post-Follow-up							
Compassion Toward Others	5.93	6.07	6.17	.14	.10	.24	N/A
Environmental Responsibility	5.97	6.28	6.55	.31	.27	.58*	.163
Pre-Post-FU is Above Pre							
Self-Actualization	6.17	6.66	6.31	.49	-.35	.14*	.138
Goal Setting	6.07	6.45	6.31	.3	-.14	.24	N/A
Group Collaboration	6.21	6.48	6.28	.27	-.20	.07	N/A
Conflict Resolution	5.55	6.17	5.83	.62	-.34	.28*	.126
Active Engagement	5.62	6.21	5.86	.59	-.35	.24*	.146
Pre-Post- FU is Below Pre							
Self-Confidence	6.00	6.45	5.86	.45	-.59	-.14	N/A
Healthy & Balanced Life	5.38	5.66	5.34	.28	-.32	-.04	N/A
Problem Solving	5.52	5.97	5.48	.45	-.49	-.04	N/A
Effective Communication	5.79	5.79	5.55	0	-.24	-.24	N/A
Social Responsibility	5.69	5.83	5.69	.14	-.14	0	N/A

n = 29

Scale: 1 to 7 (Likert)

* Statistically Significant Change Pre/Post/Follow-up (*p* < .05)

Four of the sub-variables had significant between pre to post to follow-up. These are environmental responsibility, self-actualization, and conflict resolution, and active engagement in service. Since the wilderness environment is so unique to many of the students, and such a strong emphasis is put on Leave No Trace (environmental rules and ethics) curriculum, this may have more permanence for the students. It is difficult to determine why self-actualization is statistically significant from pre to post and pre to follow-up. The survey question asks about striving to be a better person. It is possible that this question is more encompassing of the entire Outward Bound experience. There is no existing research that looks at self-actualization in Outward Bound or outdoor education. Conflict resolution scored well in both the pre to post and the follow-up

surveys. Quite a bit of energy was put into teaching instructors how to facilitate conflict resolution during the student management skills training in the spring of 2008; this score may be a reflection of that training. Active engagement in service is another topic that receives quite a bit of emphasis on course often through completing service projects.

There are two attributes that rose from pre to post and then again to follow-up: compassion toward others and environmental responsibility. Both of these attributes could be considered internal and the skills for these are practiced continuously during the Outward Bound experience. The literature reviewed did not contain data for compassion toward others in the Outward Bound or outdoor education research. While none of the research reviewed for this study had any reference to measuring an outcome of environmental responsibility within students on an Outward Bound or outdoor education program, Paisley et al. (2008) reported that 24% of students reported they learned environmental awareness through the Leave No Trace curriculum taught at NOLS. Killert (1998) showed that outdoor education courses stimulated an interest in the environment and environmental conservation in students.

The follow-up survey contained twelve of the original questions from the pre and post exposure survey, and also included twelve questions that asked students which category they fell into (example – more self-confident, less self-confident, no change in self-confidence). For the purpose of this section these questions will be referred to as the “follow-up survey categorical questions.” Table 5.3 summarizes the responses to the follow-up survey categorical questions. The change from pre-test to follow-up tests scores was brought down from Table 5.2 as a reference.

Table 5.3

Follow-up survey categorical responses.

Sub-Variable	% More	% Less	% No Change	Δ Pre to F/U
Character - Self-Confidence	84	0	16	-.14
Character – Self-Actualization	N/A*	N/A*	N/A*	.14
Character – Compassion	66	0	34	.24
Character – Healthy & Balanced Life	60	4	36	-.04
Leadership – Goal Setting	44	0	66	.24
Leadership – Group Collaboration	77	0	33	.07
Leadership – Effective Communication	60	0	40	-.24
Leadership – Conflict Resolution	62	0	38	.28
Leadership – Problem Solving	54	0	46	-.04
Service – Social Responsibility	55	0	45	0
Service – Environmental Responsibility	82	0	18	.58
Service – Active Engagement	64	0	36	.24

n = 45

**Note. There was not a categorical question for Self-Actualization.*

The responses to the follow-up survey categorical questions show an overall positive trend from 54% to 84 % of the respondents indicating some positive long-term effect for the attributes. It is difficult to explain how students can have a -.14 pre to follow-up survey score, and yet rate self-confidence with 84% of students saying they are more positive six months after their course. On the other end of this spectrum students demonstrated a .58 increase from pre to follow-up survey score, and rated environmental responsibility with 82% of students saying they are more positive six months after their course. It is possible that six months after the course end the students may still have a difficult time choosing where they are on a seven point Likert scale in the context of the survey questions provided. In contrast the categorical questions allow the student to say with some confidence that “I did/did not experience a change in my self-confidence because of my Outward Bound course.”

The categorical questions on the follow-up survey allowed for student comments. Approximately half of the students that completed the follow-up survey made comments each of the sub-variables. Comments on self-confidence that were positive and many indicated a change in their self-confidence in school, at home, and with friends. For example, one student pursued an editor position with the school newspaper. Many commented on feeling more comfortable talking and interacting within peer groups and asking for help. One student commented “I know I can take my life into my own hands and it will be O.K.” In general many of the students believed they could achieve things that they did not believe possible prior to their course.

On the follow up survey respondents commented on having a greater level of compassion towards others since their Outward Bound course. Statements such as “I help people a lot more now without being asked” and “I feel I understand people’s hardships more” indicate an increase in compassion towards others. Many students talked about having more understanding and concern for other people and trying to understand their reality and life challenges.

Over half of the respondents to the follow-up survey commented positively on living a healthy and more balanced life. Students generally reported that they exercise more, eat a better diet, and find a balance between work and play. One student commented that “I try to work harder to center myself, give myself time to work hard outdoors, and just be by myself.” A few students noted that they initially worked out and ate better right after the course, but they did not continue this trend.

Some respondents made comments about being better at setting goals for themselves. One student commented “I find myself setting goals for myself more often

than I did before.” Another student commented “I used to just think about my goals but now I write them down and try more to achieve them.” Nineteen of the forty-five students that responded to the follow-up survey commented on their ability to problem solve. Many students commented on having an increased ability to solve problems after their Outward Bound experience and quite a few said this was a skill they had prior to Outward Bound. One student stated “I can concentrate harder and find ways to work things out, alone or with a team.” Quite a few students commented that they have a better ability to “think things through” as a result of their Outward Bound experience.

A third of the respondents to the follow-up survey made mostly positive comments focusing on an increase in patience, understanding, respecting others opinions, and tolerance. One student wrote “I am a bit more tolerant of those with different opinions versus my own.” Again, a third of the respondents added comments in the follow-up study. Some students expressed that they feel they are a better listener, respect diversity better, and have a better tone.

A great example of improvement in communication was “I try to make eye contact and actually have a discussion instead of avoiding it.” Another student mentioned “Because you realize how different everyone is, and everyone needs something different.” Only eight of the respondents to the follow-up survey added comments to the social responsibility question. Only a few of the responses directly addressed social responsibility. One student wrote “since my Outward Bound course I believe I have become more socially responsible.” The other statements focused on leadership, being in a group, and how to act around other people. Half of the respondents on the follow-up survey made comments on environmental responsibility. Many of the comments reflect

the student's investment in environmental conservation and changes in behavior that was more environmentally conscious. One student said "I do more than I was able to before because I understand a lot better now." Another student commented "I am more aware, and more educated."

The student comments paint a little different picture than the quantitative findings. In summary, a student completing an Outward Bound course experiences an increase in ten of the twelve sub-variables from the pre to post course surveys. This increase is most likely attributed to the halo effect. On the follow-up study, students showed small long-term gains in seven of the twelve sub-variables. Environmental responsibility, self-actualization, conflict resolution, and active engagement in service had statistically significant change and a large effect size on the follow-up survey.

Instructor Background, Student Demographics, and Course Characteristics

All of the students showed a change in the measurement of the dependent variables from pre to post course surveys. None of the independent variables generated statistically significant changes from pre to post exposure survey scores. In conclusion, the independent variables had no measureable effect on the student's achievement of the student learning outcomes.

Instructor age, education, tenure, and days of training did not affect the learning outcomes in the areas of character development, leadership development, or service development for a student completing an Outward Bound course. The literature reviewed for this study did not investigate the effect of instructor age, education, tenure, and days of training on the achievement of specified student learning outcomes.

Student demographics did not affect the learning outcomes in the areas of character development, leadership development, or service development for a student completing an Outward Bound course. Hattie et al. (1997) found that student gender and student age did not have an effect on student learning outcomes achievement. The findings for student age are the same Neill's (2008) overall findings. Cason and Gillis (1994) found that younger students ($r = -.18, p = .01$) benefited more than older students from participating in adventure programming; however, this was a relatively weak finding.

Course characteristics of course length and course type did not affect the learning outcomes in the areas of character development, leadership development, or service development for a student completing an Outward Bound course. Neill (2008) found that program length was not significantly correlated with achievement of learning outcomes. In contrast, Cason and Gillis (1996) concluded after a meta analysis of 43 studies that longer programs are more effective but could not determine an optimal length. Hattie et al. (1997) concluded after a meta-analysis ($n = 96$) that the effects were greater for programs 20 days or longer. When considering program type, Neill (2008) looked at six program types (adolescent, young adult, adult, family, corporate, and special) and found positive short-term overall LEQ scores for all program types. In the end young adult courses were more effective both short-term and long-term. Cason and Gillis (1994) found no statistical significance in a meta analysis looking at different population groups. Hattie et al. (1997) compared course type by Outward Bound and non-Outward Bound programs, which did not apply to this study.

Implications for Praxis and Future Research

This section asks how the findings from this study can impact the delivery of Outward Bound, and how the findings can inform future research. While the mission and educational framework of Outward Bound are well defined and well articulated, they are not thoroughly disseminated throughout the practice of Outward Bound. The job of the Outward Bound instructor is a very complex one. They are responsible for the physical and emotional safety of each student 24 hours a day. They must ensure that the student eats well, is clothed appropriately, is sheltered, and has the basic skills to survive in the wilderness. In addition they engage in technical activities such as rock climbing, whitewater rafting, and mountaineering where not only the base level of human needs must be met, but also the subjective (fear, anger, perceived danger) and objective (rock fall, gravity, and class IV rapids) hazards must be managed and controlled for. With all of this on the instructor's plate it can be difficult to make time and find energy to address the eleven stated learning outcomes of this study. Some of these outcomes are inherent in the activities and course elements of an Outward Bound course. But the ability of the instructor to facilitate some level of transference for the student to the life they enter after the course is over is often an unmet challenge. To address this challenge I believe it is important to explore the impact of specific instructor characteristics on the achievement of student learning outcomes.

For some time program and human resources personnel at Outward Bound have believed that the more mature an instructor was, in conjunction with higher days of training and higher tenure, would lead to higher levels of student outcomes achievement. This study has shed some new light on that theory and more research is necessary. It is

possible that Outward Bound is putting training and retention monies and energy into the wrong place. To test this, the research on the impact of the instructor characteristics of age, education, tenure, and days of training should be run again with a larger and more representative sample of Outward Bound and through a pre / post / 6 month follow-up / 2 year follow-up research design. Then a better analysis, with a greater sample, and stronger longitudinal data can paint a clearer picture of the interaction of these variables. If it is found that these instructor characteristics do not have a significant effect on student learning outcomes achievement, then a new set of variables would need to be focused on. The next logical sets of instructor traits are leadership style, facilitation style, and emotional intelligence. Prior to looking at this new set of variables, the instructor's role in the Outward Bound student learning environment must be looked at more closely.

I would argue that in a student-centered learning paradigm it is possible that the role of the instructor is generally misplaced in the Outward Bound learning environment. In a student-centered paradigm the student interacts directly with knowledge, experience, other students, and the environment (Figure 5.1). In this manner the student is free to utilize past life experience, passion, excitement, anxiety, and fear directly with the learning challenge versus viewing the learning challenge through the lens of the instructor. Character, leadership, and service are generated via this interaction. The role of the instructor is that of a facilitator. They are there to facilitate interaction between the known and the unknown when it is needed; otherwise the experience speaks for itself and the facilitator is there to help interpret meaning. This allows the student to directly own and internalize the experience. The student is ultimately responsible for transference back to the home (school, family, and friends) environment. This dynamic does exist as a

natural dynamic in the Outward Bound experience. If more attention was paid to facilitating learning through this paradigm, I believe it is possible to increase the effect that an Outward Bound course has on achieving the intended learning outcomes.

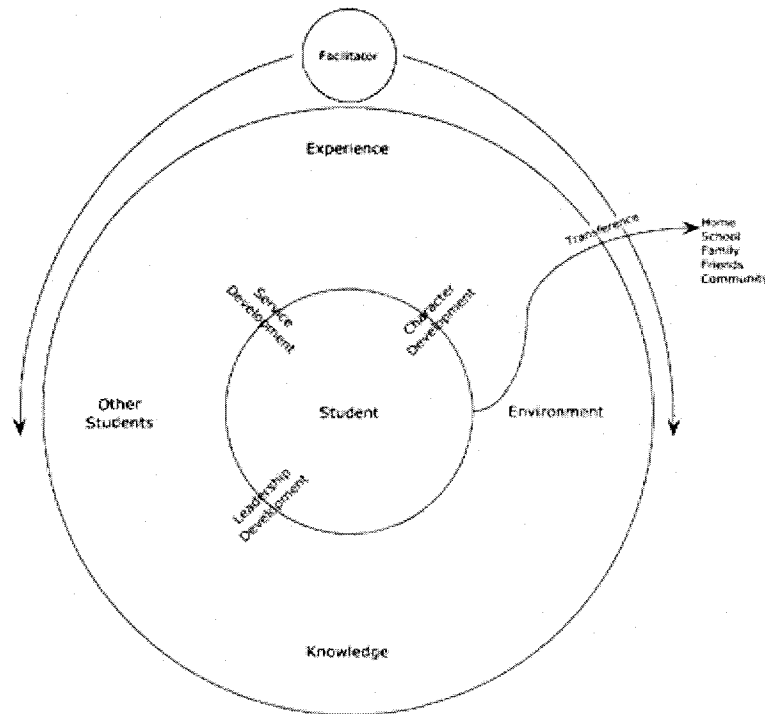


Figure 5.1. Student centered learning paradigm and transference of Outward Bound

Currently much of the instructor training at Outward Bound is focused on how to influence student behavior, how to deliver the stages and processes of the Outward Bound experience, and how to keep the students safe while adventuring. A more unilateral shift toward the instructor playing the role of facilitator could help shift the ownership of student change more on the student (Figure 5.2). Here the instructor helps the individual student and the entire group towards higher levels of leadership, character, and service development.

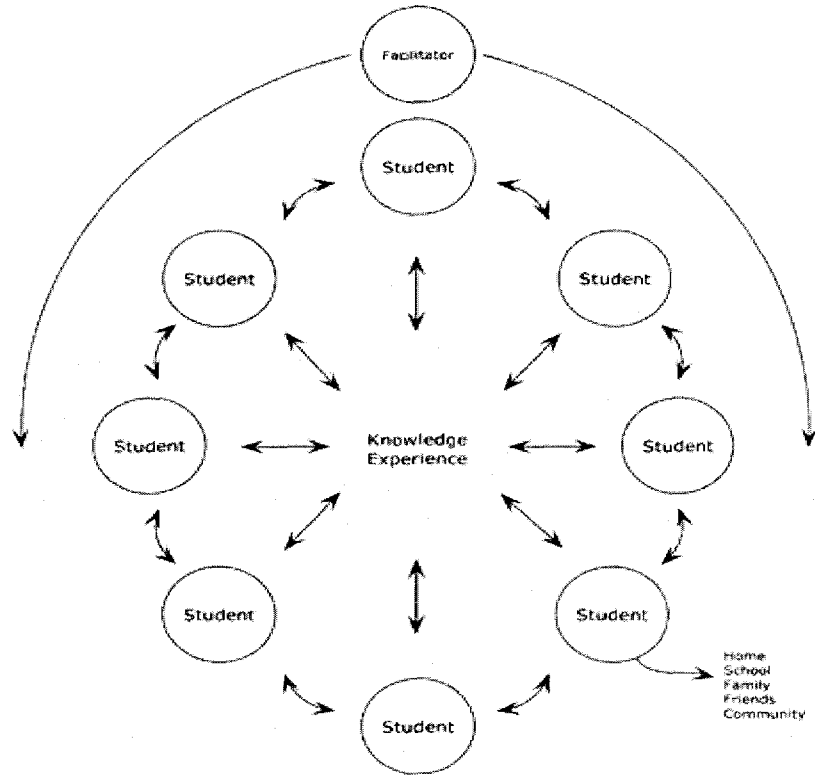


Figure 5.2. The facilitator's role in student centered learning on an Outward Bound course.

This study was unique among all of the other studies that measured student learning outcomes because of the inclusion of the instructor characteristics as independent variables. None of the research to date had measured these variables against student learning outcomes scores. Some research did look at how instructor traits improved student course satisfaction, but that is not what was measured here. Finding that instructor age, education, tenure, and training level does not have a measureable effect on the achievement of student learning outcomes opens up a whole new set of questions. Outward Bound puts a tremendous amount of energy into staff hiring, training, and retention. Maybe alternatives that deserve attention are in-field supervision and mentoring for staff, measuring the most effective leadership and facilitation styles and

hiring to those standards, less formal training, and a longer internship and assistant training phase. The literature suggests more research focusing on the instructor's dominant leadership style, dominant facilitation style, dominant teaching style, and learning assessment methods. These traits would be even more difficult to track than the instructor characteristics measured in this study. On a given summer with 4,000 to 5,000 students, this would necessitate collecting data on over 500 instructor groups if the study were to be system-wide. The outcome of this type of research would be very beneficial to outdoor leadership instructional programs at many of the community colleges and universities across the United States, but may not be practical with the current research resources in Outward Bound.

It is very important to the future of Outward Bound, and the outdoor education industry, to formalize and publish the research processes and findings measuring student learning outcomes at Outward Bound. Representatives of the upper administration in Outward Bound have stated that the current educational framework will serve the organization for the next ten years. If that is the case, then the potential for useful and long-term data collection and analysis is very exciting. The current instrument (Outward Bound Outcomes Instrument) for collecting the dependent variables still needs to be validated. The parent topics and the sub-variables are aptly described in the learning outcomes. It may be necessary to change the verbiage in some of the questions to better reflect the measurability of the sub-variables. Once the instrument meets the validity levels appropriate to this kind of a study, Outward Bound could collect data on 4,000 to 5,000 students a year. A consistent pre-course, post course, and 6-month and 2-year follow-up would be adequate. And the exact same questions should be asked on the

pre/post/follow-up instruments. Outward Bound is currently setting-up to pilot the second version of this instrument and plans to run a second pilot study on 1,500 to 2,000 students during the summer of 2009; the updated instrument has changed verbiage in some of the questions to better address the specific learning outcome. Establishing an ongoing control group would allow a more powerful type of statistic to be used to determine overall effect. Having the demographics of the control group directly mirror the overall experimental group would also create a more accurate picture of the groups being compared. A suggestion would be to set up a project with a few high schools and community colleges to collect control data on an ongoing basis.

Future research should collect the student demographics information of age and gender for posterity's sake. Finding natural breakouts for age and tracking learning outcomes achievement by those breakouts may make reporting outcomes more accurate. Other possibilities of student demographics include social economic status and self-reported motivation. These independent variables will offer a better insight into the learner's make-up and possibly to their learning needs.

Although not directly related to student demographics, Paisley et al. (2008) conducted very interesting research on how student's best learn materials presented on a National Outdoor Leadership school course. This is an exciting and relatively unexplored method of inquiry to outdoor education student learning and it is worth monitoring progress on this research to see if there are implications for Outward Bound on this method of assessment. This type of research would allow Outward Bound design curriculum delivery approaches and methods that best align with the student's strongest learning modalities or when they are most open to learning. An example might be that

leadership is best learned by role modeling from the instructors. The Outward Bound Training Institute could then develop two or three lesson plans, or highlight opportunities for teachable moments, where facilitating a leadership topic will have the highest probability for success. Many instructors may not have had training on how to be aware of these opportunities and are simply bypassing very powerful possibilities for highly impactful student learning.

The course characteristics of course type and course length were collected for this research. Standardizing a typology of courses and collecting data along that vein would create a unique look into how the different course types affect student learning outcomes. Neill (2008) created such a typology for the different course types in Australia. Using the LEQ and looking at different course types allowed him to draw very clear conclusions about the effectiveness of each course type. A similar typology could be created for course areas (land, sea, winter) and course elements (rock climbing, mountaineering, rafting). One course characteristic that was not studied at all was weather and how the number of days of rain versus sun affected achievement of student learning outcomes.

The educational framework was introduced prior to the summer season in 2008. There was a clear expectation across the organization to introduce staff to the values, design principles, and learning outcomes outlined in the educational framework. Also, each of the sections of the staff manual was overviewed. Most staff attended a student management skills training where they spent two to three days reviewing methods of working with students to deliver the mission and outcomes to the students. An extension of the staff manual and the student management skills trainings resides on the Outward Bound Wiki. The Wiki is a Wikipedia-type website hosted by Outward Bound and

accessible to all staff through a secure web portal. The Wiki serves as an encyclopedia and repository of Outward Bound theory, practice, and curriculum. Staff can go to this site to augment the information in the staff manual and for information covered during staff trainings. In 2009 there is a national trainers' training that will bring the staff trainers together on how to facilitate staff in delivering the educational framework and Outward Bound curriculum to the students. All field staff will be required to attend both the student management skills training (SMST) and diversity training. The SMST training will specifically give staff tools to deliver the character, leadership, and service outcomes. Also, all staff trainings will work from standardized training syllabi.

The Baltimore program has been using student handbooks for quite a few years. This concept is being expanded to all courses serving 12 and 13 year olds in 2009. This handbook takes each of the parent variables, and each of the sub-variables, and has information, exercises, and journal activities that will be completed on course and after course to help students transfer learning to their home environment. This teaching method will be expanded to 14 to 20 year old students on Outward Bound courses over the next few years.

Outward Bound has made great strides in defining their educational outcomes, teaching to them, and evaluating success in achieving these outcomes with their students. Much of the theory, curriculum, and methods for delivering the Outward Bound educational framework exist through the staff manual, Wiki site, and staff trainings. The greatest challenge for Outward Bound is getting this information into praxis in the field with students with consistency and long-term effect. This study will inform Outward Bound practitioners in the Rocky Mountain Region on how effective the current

curriculum and delivery methods are in comparison to the measured student learning outcomes.

Summary

Outward Bound has been in existence for 47 years in the United States and has served thousands of students. Outward Bound uses a unified educational framework to deliver the Outward Bound experience to their students. This framework defines the values, design principles, and outcomes of an Outward Bound experience. This study focused on measuring the intended outcomes through pre/post/follow-up surveys of students in the Rocky Mountain Region of Outward Bound.

Overall, students experiencing an Outward Bound course in the Rocky Mountain Region reported an increase in their character development, leadership development, and service development from pre-test to post-test; these increases were not sustained in the long-term. Instructor background, student demographics, and course characteristics attributes did not have a substantial impact on student learning outcomes.

There are many opportunities for Outward Bound to improve upon the delivery of the educational framework and the achievement of the intended student learning outcomes. This study suggests that the emphasis on staff hiring and training may need to be supplanted by a greater focus on creating a more student –centered and learning-centered educational process at Outward Bound that focuses on transference of the Outward Bound experience to the student’s life. This study and parallel studies being completed by Outward Bound will help define a tested and valid set of assessment instruments, a well defined and critically reviewed research methodology, and an avenue

to share discoveries and findings with the rest of the outdoor education profession. From a research perspective we are truly Outward Bound.

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Appendix A: Outward Bound Course End Evaluation



Course-End Evaluation

Thank you for participating in an Outward Bound Wilderness course. The valuable feedback we get from our students contributes to the continuing success of our courses. Thank you for taking the time to answer the following questions.

Name (optional): _____ Course # _____

Course Title: _____ Course Length (days): _____

I received Scholarship support: Yes No I am a Pinnacle Scholar: Yes No

The following are statements that previous students have made about their Outward Bound experience. Using a scale of 1 to 7, where 7 means you strongly agree and 1 means you strongly disagree, indicate your level of agreement with each statement.

1=Strongly Disagree; 2=Disagree; 3=Somewhat Disagree; 4=Neutral; 5=Somewhat Agree; 6=Agree; 7=Strongly Agree

OVERALL...

1) I am satisfied with my course experience.	1	2	3	4	5	6	7
2) My experience met my expectations.	1	2	3	4	5	6	7
3) My course was worth the time and money.	1	2	3	4	5	6	7
4) I would recommend Outward Bound to someone else.	1	2	3	4	5	6	7

BEFORE THE COURSE...

1) I was satisfied with the customer service I received.	1	2	3	4	5	6	7
2) Based on my course information materials, my expectations matched what happened on course.	1	2	3	4	5	6	7
3) I received course materials in a timely manner.	1	2	3	4	5	6	7

MY INSTRUCTORS...

	Instructor Name: _____							Instructor Name: _____						
1) Were of overall high quality.	1	2	3	4	5	6	7	1	2	3	4	5	6	7
2) Were knowledgeable and effective teachers.	1	2	3	4	5	6	7	1	2	3	4	5	6	7
3) Led by example.	1	2	3	4	5	6	7	1	2	3	4	5	6	7
4) Related effectively with each student.	1	2	3	4	5	6	7	1	2	3	4	5	6	7

FOOD & GEAR

1) I was satisfied with the food provided on course.	1	2	3	4	5	6	7
2) The food ingredients were of good quality.	1	2	3	4	5	6	7
3) I was satisfied with the gear we used for activities.	1	2	3	4	5	6	7

EXPERIENCE

1) Other students contributed to a positive experience.	1	2	3	4	5	6	7
2) This course challenged me.	1	2	3	4	5	6	7
3) Other course participants were fit to fully engage in the course.	1	2	3	4	5	6	7
4) My confidence to engage in new activities has increased.	1	2	3	4	5	6	7
5) Other course participants were motivated to fully engage in the course.	1	2	3	4	5	6	7
6) I felt physically safe on the course.	1	2	3	4	5	6	7
7) I felt emotionally safe on the course.	1	2	3	4	5	6	7
8) The concept of service was meaningful.	1	2	3	4	5	6	7
9) I felt successful when I completed the course.	1	2	3	4	5	6	7
10) I gained knowledge that I can use in everyday life.	1	2	3	4	5	6	7

The following are topics that previous students have indicated were important areas of learning during their Outward Bound experience. Using a scale of 1 to 7, where 7 means you learned a lot and 1 means you learned very little, please rate each topic.

SKILLS & CONCEPTS LEARNED	Learned		Neutral			Learned	
	a Little					a Lot	
1) Practical wilderness skills.	1	2	3	4	5	6	7
2) Technical skills (climbing, rafting, sailing, etc.).	1	2	3	4	5	6	7
3) Leadership skills.	1	2	3	4	5	6	7
4) Teamwork.	1	2	3	4	5	6	7
5) Compassion and respect for others.	1	2	3	4	5	6	7
6) Greater appreciation for nature.	1	2	3	4	5	6	7
7) Acceptance of responsibility.	1	2	3	4	5	6	7

OPEN-ENDED RESPONSES

1) What were the POSITIVE highlights of your course?

2) What were the NEGATIVE highlights of your course?

3) What did you learn about yourself (or about life) as a result of your course?

4) How could Outward Bound have been more helpful to you in preparing for your course?

5) What was the most challenging part of your course? Why?

6) What will you tell other people about your course when you go home?

7) If you could change anything about your overall experience, what would it be?

8) Would you be willing to serve as a reference for potential Outward Bound students? Yes No
▪ If yes, please include your name on the front of this evaluation.

S:\Wilderness\PROGRAM\Paperwork\2007\Course End Evaluation.xls

Appendix B: Outward Bound Research Contract



External Research Contract

RESEARCHER NAME & CONTACT INFORMATION

- Jeff Foley
 - 719-239-1807
 - jfoley@bresnan.net

RESEARCHER ORGANIZATIONAL AFFILIATION

- Colorado State University; School of Education
- Advisor: Karen Kaminski, 970-491-3713, karen.kaminski@colostate.edu

RESEARCH TITLE:

- Measuring the Learning Outcomes on Outward Bound Courses

CONSENT

- OB Consent Form is applicable to this proposal, with addition added to background section

IRB APPROVAL

- Pending as of 5.12.08

DESIGNATED ACCESS & ASSISTANCE

- Outcomes data from ~300 OB students (adults and youth) during Summer 2008 in the Rocky Mountain Region
- Access to the OBHRS Database
 - OB Confidentiality Agreement

TIMEFRAME

- Primary data collection: September 2008
- Longitudinal data collection: March 2008
- Product completion: May 2009

IRB Approval Advisory Committee Approval Confidentiality Agreement Participant Consent

Researcher Signature: _____ Date: _____

Approved By:  _____ Date: 5.29.08
Jon Frankel, OBTI Research & Development Manager

Appendix C: Outward Bound Pre-Course Survey



Outcomes Questionnaire

*Pre-Course

Thank you for participating in an Outward Bound course. This questionnaire helps us evaluate our programs. Please remember that this is not a test. There are no correct or incorrect answers, and everyone will have different responses. It is important that you give your own views, that you are honest with your answers, and that you do not talk to others while you fill out the questionnaire. Be sure to 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.

Your responses will remain completely anonymous and confidential.

Course #: _____ Ethnicity: Black or African American Asian
 Hispanic or Latino White
Name (First, Last Initial): _____
Date of Birth (mm/dd/yy): _____
 American Indian or Alaska Native Two or more races
Gender: F M Native Hawaiian or other Pacific Islander

Using a scale of 1 to 7, where 1 means you strongly disagree and 7 means you strongly agree, please indicate your level of agreement with each statement by filling in the appropriate box.

1=Strongly Disagree; 2=Disagree; 3=Somewhat Disagree; 4=Neutral; 5=Somewhat Agree; 6=Agree; 7=Strongly Agree

1) When I apply myself, I am confident I will succeed.	1	2	3	4	5	6	7
2) I motivate others when a task needs to be accomplished.	1	2	3	4	5	6	7
3) I believe in my ability to make the world a better place.	1	2	3	4	5	6	7
4) I have a sense of direction and purpose in life.	1	2	3	4	5	6	7
5) I believe cooperating with others is important.	1	2	3	4	5	6	7
6) I have an understanding of how my actions affect the natural world.	1	2	3	4	5	6	7
7) I strive to be sensitive to the needs and feelings of others.	1	2	3	4	5	6	7
8) I listen when people talk to me.	1	2	3	4	5	6	7
9) I give of myself without being asked.	1	2	3	4	5	6	7
10) Being in good physical condition is important to me.	1	2	3	4	5	6	7
11) If there is a conflict, I try to improve the situation peacefully.	1	2	3	4	5	6	7
12) I know I have the ability to accomplish most things I set my mind to.	1	2	3	4	5	6	7
13) I am flexible in my thinking and ideas.	1	2	3	4	5	6	7
14) I believe that humans must live in harmony with nature in order to survive.	1	2	3	4	5	6	7
15) I contribute when I work in a group.	1	2	3	4	5	6	7
16) I strive to be a better person.	1	2	3	4	5	6	7
17) I have difficulty dealing with conflict.	1	2	3	4	5	6	7
18) I feel compelled to help others when I believe they are experiencing hardship.	1	2	3	4	5	6	7
19) I communicate effectively with other people.	1	2	3	4	5	6	7
20) It is important for me to be actively involved in serving my community.	1	2	3	4	5	6	7
21) I find enough time for both school/work and play.	1	2	3	4	5	6	7
22) I believe setting goals for myself is important.	1	2	3	4	5	6	7
23) I understand how my actions affect others.	1	2	3	4	5	6	7
24) I have confidence in my ability to deal effectively with unexpected events.	1	2	3	4	5	6	7

Appendix D: Outward Bound Post-Course Survey

Appendix E: Outward Bound Follow-up Survey

1. Default Section

1. Please enter your name :

Name:

2. When I apply myself, I am confident I will succeed.

1 - Strongly Disagree 2 - Disagree 3 - Somewhat Disagree 4 - Neutral 5 - Somewhat Agree 6 - Agree 7 - Strongly Agree

3. I believe cooperating with others is important.

1 - Strongly Disagree 2 - Disagree 3 - Somewhat Disagree 4 - Neutral 5 - Somewhat Agree 6 - Agree 7 - Strongly Agree

4. I give of myself without being asked.

1 - Strongly Disagree 2 - Disagree 3 - Somewhat Disagree 4 - Neutral 5 - Somewhat Agree 6 - Agree 7 - Strongly Agree

5. If there is a conflict, I try to improve the situation peacefully.

1 - Strongly Disagree 2 - Disagree 3 - Somewhat Disagree 4 - Neutral 5 - Somewhat Agree 6 - Agree 7 - Strongly Agree

6. I am flexible in my thinking and ideas.

1 - Strongly Disagree 2 - Disagree 3 - Somewhat Disagree 4 - Neutral 5 - Somewhat Agree 6 - Agree 7 - Strongly Agree

7. I believe that humans must live in harmony with nature in order to survive.

1 - Strongly Disagree 2 - Disagree 3 - Somewhat Disagree 4 - Neutral 5 - Somewhat Agree 6 - Agree 7 - Strongly Agree

8. I strive to be a better person.

1 - Strongly Disagree 2 - Disagree 3 - Somewhat Disagree 4 - Neutral 5 - Somewhat Agree 6 - Agree 7 - Strongly Agree

9. I feel compelled to help others when I believe they are experiencing hardship.

- 1 - Strongly Disagree 2 - Disagree 3 - Somewhat Disagree 4 - Neutral 5 - Somewhat Agree 6 - Agree 7 - Strongly Agree

10. I communicate effectively with other people.

- 1 - Strongly Disagree 2 - Disagree 3 - Somewhat Disagree 4 - Neutral 5 - Somewhat Agree 6 - Agree 7 - Strongly Agree

11. I find enough time for both school/work and play.

- 1 - Strongly Disagree 2 - Disagree 3 - Somewhat Disagree 4 - Neutral 5 - Somewhat Agree 6 - Agree 7 - Strongly Agree

12. I believe setting goals for myself is important.

- 1 - Strongly Disagree 2 - Disagree 3 - Somewhat Disagree 4 - Neutral 5 - Somewhat Agree 6 - Agree 7 - Strongly Agree

13. I understand how my actions affect others.

- 1 - Strongly Disagree 2 - Disagree 3 - Somewhat Disagree 4 - Neutral 5 - Somewhat Agree 6 - Agree 7 - Strongly Agree

14. As a result of my Outward Bound experience, I _____.

- am more self-confident
 am less self-confident
 have not experienced a change in my self-confidence

Please give examples:

--

15. As a result of my Outward Bound experience, I _____ towards others.

- am more compassionate
- am less compassionate
- have not experienced a change in my level of compassion

Please give examples:

16. As a result of my Outward Bound experience, I live _____ healthy and balanced life.

- a more
- a less
- the same

Please give examples:

17. As a result of my Outward Bound experience, I _____ setting personal goals.

- am better at
- am worse at
- have not experienced a change in my ability at

Please give examples:

18. As a result of my Outward Bound experience, I _____ to problem solve.

- am better able
- am less able
- have seen no change in my ability

Please give examples:

19. As a result of my Outward Bound experience, I _____ to inspire others and guide others.

- am better able
- am less able
- have seen no change in my ability

Please give examples:

20. As a result of my Outward Bound course, I _____ to collaborate with others.

- am better able
- am less able
- have seen no change in my ability

Please give examples:

21. As a result of my Outward Bound course, I communicate _____ with others.

- better
- worse
- the same as before

Please give examples:

--

22. As a result of my Outward Bound course, I _____ resolve conflicts.

- am better able to
- am less able to
- have seen no change in my ability to

Please give examples:

--

23. As a result of my Outward Bound course, I _____ environmentally responsible.

- am more
- am less
- have seen no change in my ability to be

Please give examples:

--

24. As a result of my Outward Bound course, I _____ socially responsible.

am more

am less

have seen no change in my ability to be

Please give examples:

25. As a result of my Outward Bound course, I _____ actively engaged in service to others.

am more

am less

have seen no change in my desire to be

Please give examples: