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The Academic Merit of Outdoor Education and Leadership Training for Undergraduate Environmental Studies Students: An Examination of the University of Colorado-Boulder and the National Outdoor Leadership School

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The Academic Merit of Outdoor Education and Leadership Training for Undergraduate Environmental Studies Students: An Examination of the University of Colorado Boulder and the National Outdoor Leadership School

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University of Colorado Boulder

A thesis submitted to the
University of Colorado Boulder
in partial fulfillment
of the requirement to receive
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Abstract

This paper seeks to examine the relationship between outdoor education and leadership training, and a traditional undergraduate environmental studies education. The research I conducted helped me answer the question: What is the academic merit of Environmental Studies and Leadership college credit earned through the National Outdoor Leadership School for undergraduate Environmental Studies students at the University of Colorado Boulder? Through a curriculum comparison of the University of Colorado, Boulder Environmental Studies Program and the National Outdoor Leadership School Environmental Studies and Leadership curriculums, combined with interviews of administrators and instructors from both programs and survey information gathered from current and former Environmental Studies Students at the University of Colorado Boulder, my research clearly shows a compatibility between the National Outdoor Leadership School and the University of Colorado Boulder Environmental Studies program and that outdoor education and leadership training provide a clear benefit to Environmental Studies Students.
Preface

As a lifelong lover of the outdoors, I was extremely excited when I signed up for my 30-day backpacking trip in northern Washington state with the National Outdoor Leadership School (NOLS). I was even more excited when I learned that NOLS offered college credit for the completion of NOLS courses, such as the one I was going to participate in. However, as I began to research online, it became clear that the Environmental Studies (ENVS) Program at the University of Colorado, Boulder (CU Boulder), which I was majoring in, did not accept college credit earned through NOLS, nor did any department within the university. This was confirmed by my academic advisor. As someone who has worked closely with the Environmental Studies Program at CU Boulder, working as a peer advisor and serving as the student representative on the Undergraduate Curriculum Committee, I was surprised that one of the most prestigious environmental studies programs in the country did not accept NOLS college credit. So, I decided to find out why. Through the help of my academic advisor, Nate Jones, I was put in touch with Dale Miller, who later became my lead thesis advisor for this project. As I did from the moment I decided to pursue an honors thesis, I sincerely hope that my work can, in some small way, help to improve the fields of outdoor education and environmental studies.

There are many people who were integral to the completion of this project who I would like to acknowledge. I want to start by thanking Dale Miller, without whom I would not have had pursued an honors thesis, much less completed one. I would also like to thank Nathan Jones for inspiring me to begin the process which lead me to working with Dale. Furthermore, I would like to thank my committee members Amanda Carrico and Joseph Polman who helped me answer questions I could not find the answers to in any article or book. Finally, I would like to thank all
of the people who took the time to participate in the interviews and surveys which formed the
basis for my research, without them this project would not have been possible.
Introduction

The field of environmental studies covers a large array of topics and has implications in many different fields of study and employment. Undergraduate students working towards this degree are required to be versed in traditional sciences, earth sciences, public policy, ethics, social justice, writing, and economics. However, there are some skills which are not normally included in undergraduate environmental studies programs, such as outdoor education and leadership training. This is the case at the University of Colorado, Boulder, where students cannot earn ENVS major credit by engaging in environmental education or leadership training through extracurricular outdoor education programs such as Outward Bound (OB) and the National Outdoor Leadership School (NOLS). This is a mainly a result of beliefs such as that outdoor education is too closely related to outdoor recreation or that it does not have an academic component worthy of earning academic credit. As a result, most environmental studies programs do not stress outdoor education or leadership training, and believe these skills should be pursued outside of a traditional environmental studies degree, through institutions specially designed to teach them, such as NOLS even when these institutions offer the opportunity to earn college credit.

The purpose of this paper is to examine the relationship between outdoor environmental studies and leadership training and a traditional environmental studies education through an analysis of the both the NOLS environmental studies and leadership curriculum and the Environmental Studies Program from the University of Colorado Boulder. NOLS stresses both environmental studies and leadership training as key components of all of their expeditions. I believe both of these aspects of their curriculum would benefit environmental studies students, and therefore these are the aspects of the NOLS program which I used for my analysis. Through
my research, I will answer the question: what is the academic merit of Environmental Studies and Leadership Training college credit earned through the National Outdoor Leadership School for undergraduate Environmental Studies students at the University of Colorado Boulder? I plan to conclude this examination with a recommendation to the Environmental Studies Program at CU Boulder regarding the relationship the program should have with outdoor environmental studies and leadership training. I hope this information can not only be useful for the CU Boulder Environmental Studies Program but for any institution wishing to better understand the relationship between outdoor environmental studies and leadership training and a traditional undergraduate education.

Background

This section provides the necessary background information to understand the ideas and concepts discussed in this paper. These topics include basic information about the University of Colorado Boulder Environmental Studies program and the National Outdoor Leadership School, as well as an introduction to experiential education and leadership training. Because of the breadth of these topics, the information provided is far from exhaustive, but rather just the basic information necessary for properly understanding this paper.

The University of Colorado, Boulder Environmental Studies Program

The University of Colorado, Boulder (CU Boulder) is the flagship university of the Colorado system and is a public research university located in Boulder, Colorado. Founded in 1876, CU Boulder now has an undergraduate population of about 27,000 students (How Does
CU, 2016). The Environmental Studies Department at CU Boulder comprises less than 3% of students, with 731 students currently declared as Environmental Studies majors.

While some universities differentiate between environmental studies and environmental science (the former usually focused on policy and ethics while the latter more focused on the natural sciences), CU Boulder’s environmental studies degree requires both of what are generally thought of as environmental studies and environmental science courses. The environmental studies major at CU Boulder is very interdisciplinary and requires students to take classes in earth science, mathematics, ethics, policy, etc.

The CU Boulder Environmental Studies major can be broken down into three parts: core requirements, major requirements, and electives (Environmental Studies Major, 2018). Core requirements are general requirements mandated by the College of Arts and Sciences, within which the Environmental Studies Program is housed, which includes categories such as history, literature, natural sciences, etc. The elective requirement can be fulfilled by courses from any department so students have the opportunity to pursue interests outside of their major.

The major requirements of the environmental studies degree can be broken down into several categories: natural science, earth science, social science, values, policy, math, writing, cornerstone, capstone, specialization and application, with each category requiring between 3 and 12 credits of specific content which can be fulfilled by many different classes (1 credit equals roughly 1 hour spent in class per week) (Environmental Studies Major, 2018). The categories most relevant for this paper are the specialization and application requirement categories. The purpose of the specialization requirement is to help students hone in on a particular aspect of Environmental Studies which they are particularly interested in (Environmental Studies Major, 2018). The purpose of the application credit is to give students
the opportunity to gain real-world experience related to Environmental Studies (Environmental Studies Major, 2018). The application credit can be completed by an internship, or a CU Boulder class which emphasizes fieldwork (Environmental Studies Major, 2018). Currently no forms of outdoor education outside of the university count for any credit within the Environmental Studies Program, including the application credit (Not Eligible).

The National Outdoor Leadership School (NOLS)

Unlike the University of Colorado Boulder (CU Boulder), the National Outdoor Leadership School (NOLS) is not a traditional 4-year university. NOLS is a non-profit outdoor education school which teaches outdoor skills, leadership, environmental studies, wilderness medicine, and risk management and judgment through wilderness expeditions and traditional classes. NOLS students, who normally range between 14 and 25 years of age, can participate in expeditions which range from 7-135 days, in wilderness areas all around the world (Courses). These courses cover terrain including mountain ranges, deserts, tundra and oceans. The expedition courses usually consist of 5-15 students and 2-3 instructors living and learning in the outdoors for an extended period of time (Courses, 2018). NOLS has headquarters in 9 states and 8 countries, and students can take courses which focus on 19 specific types of skills including rock climbing, whitewater rafting, backpacking and mountaineering (NOLS Expedition Locations; Courses, 2018). Students can also take first aid certification classes and leadership classes in the field or in a traditional classroom setting. Furthermore, NOLS offers prime and alumni courses for older adults or individuals who have already participated in a NOLS course and custom education courses which are crafted to meet the specific needs of various groups.
The most common NOLS course is a 30-day backcountry expedition, which will be the focus of comparison for this paper.

NOLS offers 9 classes for college credit which are taught both on expeditions and in traditional classrooms: Environmental Studies (ENVST 3011), Leadership Techniques (PRT 3041), Skills Practicum (PRT 3042), Risk Assessment (PRT 3043), Outdoor Educator (PRT 3044), Expedition Planning (PRT 3045), Cultural Studies (PRT 3045), Wilderness First Responder (HEDU 3980-31), and Wilderness EMT (HEDU 5980-31) (University of Utah, 2017). NOLS also teaches graduate level classes, which require additional work, such as a more extensive written component, which are not relevant for this paper (University of Utah, 2017). For the purpose of this paper, I will only be examining credit earned from ENVST 3011 and PRT 3041.

Currently, over 400 colleges and universities have accepted University of Utah credit earned on NOLS expeditions (Credits and Continuing). Furthermore, 20 colleges and universities offer their own, personal form of credit for NOLS courses and 14 colleges and universities have articulation agreements with NOLS allowing for the easy transfer of credit (University of Utah, 2017).

Outdoor Education

NOLS is one of many institutions which participates in the teaching of outdoor education. While there is no formal definition or curriculum to outdoor education, it can be broadly defined as “education in, about and for nature” (Ford, 1980). Although it may encompass these other forms of education, outdoor education is fundamentally different from outdoor recreation or environmental education (Ford, 1980). While outdoor recreation focuses on the enjoyment of
experiencing nature and environmental education focuses on the natural science of the environment as well as its destruction and protection, outdoor education seeks to promote a connection between humans and nature and educate people about the environment while also teaching hard outdoor skills through outdoor experiences (Martin, 2004; Irwin and Straker, 2014). Per the definition, outdoor education must occur in a natural space outside of a traditional classroom for it to be considered outdoor education. This education can take many forms, including trips from a classroom to a natural area for teaching purposes, but this paper will focus on immersive, long-term outdoor education, where students are living in the outdoor area where they are learning.

The first true institution of outdoor education in the United States was not created until 1962 when Joshua Minor, informed by the teachings of Kurt Hahn, whose ideas about education are considered by many to have laid the ground work for outdoor education, created Outward Bound (OB), the mission of which was and is to teach technical outdoor skills, personal development and environmental education to young adults (Freeman, 2012; Watters, 1986). This was soon followed by the creation of the National Outdoor Leadership School (NOLS) in 1965, which had similar goals. Around this same time, the importance of outdoor education was becoming clear around the world and similar programs began to develop in Europe, Australia and New Zealand (Polley and Pickett, 2001). Although this was the beginning of legitimate outdoor education as it exists today, experiential outdoor learning had been influencing traditional education for decades.
**Leadership Training**

NOLS is also one of many institutions which specialize in leadership training, and one of only a few organizations which focus specifically on outdoor leadership training. Leadership training, or leadership development, can be defined as “teaching of leadership qualities, including communication, the ability to motivate others, and management to an individual(s) who may or may not use the learned skills in a leadership position” (What is Leadership, 2016). NOLS not only prides itself on teaching leadership skills which have applications outside of the outdoors, but believes that the outdoors is an ideal place to teach leadership skills because it presents real-world learning opportunities not available in a traditional classroom (Personal Communication, 2017). The idea that learning theory in regards to leadership training is not enough and that experiential leadership training is significantly more effective is well researched and evident in industries from business to the military (Relevant Development, 2012; Allio 2006). Many studies have shown that effective leadership improves the performance of a group, and while traditional leadership training focuses on improving the leaders influence and control, NOLS leadership training focuses on all aspects of leadership, including aspects such as effective followership (Fiedler, 1972; Class Descriptions, 2017)

**Experiential Learning**

Outdoor environmental education and leadership training conducted through NOLS are examples of experiential education. Experiential education has many methods and offshoots, and is colloquially used to describe any type of learning which involves actively engaging in learning instead of passively learning it. Experiential education can be defined as broadly as “constructing knowledge and meaning from real-life experience” (Yardley, Teunissen & Dornan, 2012) or
more broadly as “education where educators purposefully engage with learners in direct experience and focused reflection in order to increase knowledge, develop skills, clarify values, and develop people's capacity to contribute to their communities” (What is Experiential Education). However, the central theoretical premise of all theories which fall under the umbrella of experiential education is that when students learn through actively engaging in learning through meaningful experiences in a real-world context, they retain the information they learned better than if it was taught to them through passive, conceptual learning (Ord, 2012).

The seminal piece of literature on the topic of experiential education is John Dewey’s book Experience and Education, which built on his prior publications regarding the philosophy of education and explained that experience must be at the center of effective education (Dewey, 1938). Dewey was critical of traditional education, explaining that students do not learn well when the learning is void of a real-world context and conducted in a situation vastly different from the one in which they will be applying the knowledge they are learning (Dewey, 1938). Dewey explained that a meaningful educational experience must involve a student actively interacting with information which is relevant to the students’ prior knowledge or experiences, so that students can reflect on this experience and understand how it is related to the context of what they are doing and learning in the future (Na and Song, 2013).

Dewey’s research and ideas about the importance of learning through experience and later reflecting on this contextual experience were reinforced by the work of David Kolb. Kolb developed a more modern model for how learning takes place through experiential education. Kolb’s 1984 book Experiential Learning: Experience as the Source of Learning and Development explains that experiential learning happens through a four stage cycle: First the student has an educational experience, second, the student reviews and reflects on this
experience called a “reflective observation”, third, the student comes to a conclusion and learns from the experience, called “abstract conceptualization” and finally, the student tries out what was learned from the experience, called “active experimentation”, which then leads to the student having a new educational experience, called a “concrete experience” (Ord, 2012). Kolb went on to conduct extensive research into the theory of experiential education. David Kolb and his wife Alice Kolb also created the Experiential Learning Theory Bibliography, which currently contains 2276 scholarly references to Experiential Learning and helps to organize the vast amount of research conducted about experiential learning (Kolb and Kolb, 2017). Kolb was also influential in two large reviews of experiential learning theory literature. A 1994 study which examined the results of 101 studies which focused specifically on Kolb’s theory of experiential learning found that 49 showed strong support for the theory, 40 showed mixed support and 12 showed no support (Kolb and Kolb, 2005). A broader review of 81 studies which focused on the application of general experiential learning in the fields of business, medicine, and education found that 61.7% of the studies supported experiential learning, 16.1% showed mixed support and 22.2% did not support it (Kolb and Kolb, 2005).

Offshoots of experiential education, such as “situated learning” further exhibit the importance of learning through relevant experiences. Situated Learning posits that skills are grounded in the situation in which people learned them and that it is easier to transfer learned knowledge into a situation if it was learned in the situation in which it is going to be applied (Lave and Wenger, 1991). Similarly, research into the theory of Situated Cognition by John Seely Brown, Allan Collins and Paul Duguid found that learning skills through the activity of performing these skills is far more beneficial than learning through being taught theoretical conceptualizations of these skills. (Brown, Collins and Duguid, 1989).
Review of Literature

The collection of research regarding the purpose and results of outdoor education can be broken up into two separate groups; the study of outdoor education for youth and outdoor education for young adults, all of which show positive results for those who participate. The line between these groups is usually drawn around 8th grade, with primary school, junior high and occasionally high school comprising the younger group and older high school students, high school graduates and college students comprising the older group. While younger children usually engage in outdoor education as an extension of traditional education in primary, middle, and high school, young adults tend to participate in outdoor education through institutions such as Outward Bound and The National Outdoor Leadership School.

Overall, the results of outdoor education are very positive for both groups. An analysis of 150 studies regarding outdoor education found that, for both children and young adults, outdoor education programs of all kinds result in increased independence, confidence and leadership abilities, as well as other personal strengths and many other interpersonal and behavioral improvements (Rickinson et. al., 2004)

Outdoor Education for Children

There have been many studies conducted regarding the results of outdoor education for children. Because outdoor education for children is taught as an extension of traditional education (bringing an elementary school class to a river basin for a day to learn about ecology and other similar activities) the results of this form of outdoor education tend to be related more to academic and behavioral improvements in the students. Overall, it is very clear that outdoor education has a positive effect on children.
Incorporating outdoor education into the curriculum for K-12 students leads to higher standardized test scores, reduced discipline and behavioral problems, and increased motivation in the classroom and enjoyment of activities (James & Williams, 2017). Furthermore, simply being in the outdoors has been shown to improve attentiveness and reduce hyperactive and impulsive behaviors for children as young as six and a half years old (Mårtensson et al., 2009). For elementary school students, research shows that outdoor education increases the development of basic scientific skills such as observing, classifying, measuring, communicating and inferring (Rios & Brewer, 2014). For middle school children, survey results show that children are more interested in scientific and environmental topics and more motivated to continue learning when they receive information through outdoor education versus traditional classroom settings (James & Williams, 2017).

These results are not just found in the United States. Survey results from students participating in a one-week outdoor education program in Scotland show positive increases in personal and social skills for up to 10 weeks after the initial one-week experience (Scrutton, 2014). Furthermore, interviews conducted with teachers in rural New Zealand, where outdoor education is part of the curriculum, reported that outdoor education was easily incorporated into children’s learning and a great way to teach young children about the outdoors in a way they will enjoy (Legge & Remington, 2016). Many articles have also been written about the success adolescent outdoor education has begun to and should continue to have in creating well rounded and environmentally conscious students in places as unlikely as Singapore and Hong Kong (Beams & Brown, 2005; Ho, 2013).

Youth outdoor education has also been found to have many benefits that extend outside of the classroom. Outdoor education has been found to benefit children’s mental health, self-
awareness and confidence; outdoor education was found to directly improve adolescences self-authorship, which is the ability to create a sense of identity independent of social pressures and capacity to form and believe in ideas and beliefs (McGowan, 2016). The available research clearly demonstrates that outdoor education for youth as an extension of traditional education has positive effects both academically and developmentally.

**Outdoor Education for Young Adults**

There is also a large amount of research on the results of established outdoor education programs such as Outward Bound and the National Outdoor Leadership School. Because these classes offer multiday outdoor experiences which teach survival skills, leadership skills, and environmental education, the recorded results tend to be related to basic outdoor skills, improved ability to work with a group, improved understanding of the environment and personal growth. Overall, both NOLS and OB have been shown to have very positive outcomes for young adult participants. Results from a survey of 216 OB participants showed that the majority of students saw improvement in their relationships with others, determination and physical fitness as a direct result of specific outdoor activities and new experiences from their time with OB (Goldenberg, McAvoy & Klenosky). Furthermore, a 2007 survey of 335 OB participants questioned about the OB solo experience (a time when participants spend between 12 and 62 hours by themselves in nature) responded positively to being given time to rest and think in nature and the effects this experience had on them (Bobilya, Daniel and Kalisch). Data gathered from international OB programs yield similar results. A study which gathered 149 responses from OB participants in Singapore found that the majority of respondents reported improved social, interpersonal and leadership skills as a result of their OB experience (Kahlid, Woon-Chai & Want, 2006).
A study of 663 NOLS participants with a mean age of 20 years old found that participants reported growth in leadership, judgment and basic outdoor skills as well as environmental awareness, with the largest growth occurring in outdoor skills and environmental awareness (Sibthorp, Paisley & Gookin, 2007). A similar study of 508 NOLS students found that students gained the most information regarding outdoor, communication and leadership skills, and that these skills were a direct result of the outdoor experiential learning, instead of learning in the informal class sessions during the NOLS experience (Paisley et al., 2008). Results from a study of 50 NOLS participants before, during and after participation in a course found the NOLS course had positive effects in the prosocial behavior of students and that the students found specific skills learned on their NOLS course were directly applicable to their life outside of the course (Furman & Sibthorp, 2013). Another study which consisted of interviews with 41 NOLS participant found that participants believed they left their NOLS course with many skills which have positive effects on their lives outside of NOLS, specifically in relation to leadership, self-confidence and teamwork (Subthorp et. al., 2008). All of these studies also work to show that there is a high degree of transfer of knowledge and skills from outdoor education to life outside of this field.

**Outdoor Education and Higher Education**

The majority of the available research regarding the results of outdoor education programs for young adults examines the growth in personal traits and outdoor skills gained by participants of the National Outdoor Leadership School and Outward Bound. However, despite the fact that the demand for and number of degrees related to outdoor education are increasing, there is significantly less research into the impact these outdoor education programs has on
participant’s academics (Potter, Socha & O’Connell, 2011). The available research notes the positive feedback from both professors and students of outdoor education programs in traditional higher education setting and the potential benefits of outdoor education for undergraduate and graduate students. However, currently, outdoor education programs are viewed more as recreation than legitimate education, and are highly undervalued (Potter & Dyment, 2016).

A study of the Wilderness Writing Program at Brigham Young University, one of the few outdoor education programs for college students that exists as an extension of their traditional education which has been studied, found that all but one of the participant felt that this experience was more meaningful than working in a traditional classroom and found improvements in personal strengths such as increases in their positive self-image (Taniguchi, Freeman & Richards, 2005).

Outdoor orientation experiences have been heavily studied and proven to be helpful in regards to student’s adaptation to and enjoyment of college (Lien & Goldenberg, 2012; Ribbe, Cyrus & Langan, 2016). These programs invite incoming freshman to participate in some form of outdoor recreation trip (usually camping, rafting, etc) in order for them to make friends and get acquainted the area they are soon going to be living in (Bell et. al., 2014). There has also been a study conducted regarding the impacts of a pre-college outdoor adventure trip on the college experience at the University of Colorado Boulder. This study found that the majority of participants in CU in the Rockies, an outdoor adventure orientation course, found that the majority of participants felt that the experience helped shape their sense of place and adjust to the college experience (Temes, 2016).

There has been very little research conducted regarding the importance of and success of outdoor education as it related to traditional education. However, an analysis of the outdoor
education opportunities for young adults and their relation to traditional higher education in the United Kingdom was conducted in 2007. This research found that outdoor education absolutely has a role in creating what the author calls “sustainably literate citizens” and that there are many opportunities to integrate outdoor education into traditional higher education for the purpose of increasing environmental and sustainability awareness. However, the conclusion of this analysis was that there has not been enough research conducted regarding the effects outdoor education has on the academic success of young adults to make a substantial claim (Lugg, 2007).

Methods

From my original research question, I generated three more specific questions which I hoped to answer in the conclusion of this paper: “Should the CU Boulder ENVS program accept college credit earned on NOLS courses?” “should CU Boulder’s ENVS program promote outdoor education and leadership training for their students?” and “should all college environmental studies programs embrace outdoor education and leadership training?” The research I conducted to answer these questions was divided into three sections. The first section consisted of a curriculum comparison between the Environmental Studies department at the University of Colorado, Boulder (CU Boulder) and the Environmental Studies (ENVS) and Leadership curriculum at the National Outdoor Leadership School (NOLS). As previously mentioned, I concluded that the environmental studies and leadership components of the NOLS curriculum were the most relevant for undergraduate ENVS students, and so these are the aspects I focused on for this analysis. The purpose of this comparison was to examine the similarities and differences between the two programs in order to assess their compatibility. I examined the goals and objective of each program, the method of instruction and assessment, and the logistics
regarding participating in each program. I used these factors to examine whether or not it would be feasible for CU Boulder to integrate NOLS college credit into the program, or if the programs were simply too different and therefore incompatible.

In order to gain a better understanding of each of these programs, the second section of my research consisted of a series of interviews with NOLS andCU Boulder instructors and administrators. These interviews not only asked questions to reinforce information gathered in the curriculum comparison, but also sought to examine how the programs actually operated on the ground and the various participant’s thoughts and opinions on outdoor education and leadership training. A copy of the general questions asked in these interviews can be found in Appendix A. For this section, I interviewed 2 administrators and 3 instructors from NOLS and 3 administrators and 4 instructors from the CU Boulder ENVS department. These interviews were conducted in person and over the phone, and lasted approximately 30 minutes each. This qualitative information helped me better understand the goals and practices of these institutions as understood by the people operating them.

The final section of my research consisted of the collection and analysis of qualitative and quantitative survey results from current and former CU Boulder Environmental Studies students. 731 surveys were administered to current students and 2545 surveys were administered to former students who had graduated from the program since it was created. These surveys were designed on the program Qualtrics and were administered by email. The survey of current students asked about participants’ thoughts and feelings about the Environmental Studies Program at CU Boulder, the impact of the program, their participation or lack thereof in outdoor education and leadership training and the outcome of this participation. The questions included on these surveys can be found in Appendix B. In the survey of ENVS graduates, many questions
were added, which I did not use for my project, for the purpose of gathering information to assist in the improvement of CU Boulder’s ENVS program. These questions are included in the complete list of questions in Appendix B, but are not discussed in my paper. I used this information to gauge the perceived effectiveness of outdoor education and leadership training as well as student interest in these activities.

**Data and Results**

This section will explain the information I gathered from the three sections of research I conducted; my program comparison, interviews and surveys. These were the three areas of research which I used to draw my final conclusions and recommendations. Many of these sections will be broken up into more specific sections, which will be labeled accordingly.

**Program Comparison**

The research I gathered for my program comparison was broken into three parts: the goals and objectives of the University of Colorado, Boulder Environmental Studies Program and the NOLS Leadership and Environmental Studies curriculum, the mode of instruction and examination of these two programs and the logistics of each program.

**Goals and Objectives**

To begin my curriculum comparison, I examined the stated goals and objectives of the University of Colorado, Boulder (CU Boulder) Environmental Studies (ENVS) program and the NOLS Environmental Studies and Leadership Curriculum. The goals of the Environmental
Studies program at CU Boulder are listed on the main web page for the program and explain that “the program is designed to provide a broad, but rigorous education in environmental issues and real-world problem-solving, as opposed to a traditional, discipline-based training” (*Undergraduate Students*). It goes on to say that the program aims to “train students in the cause, scale, and remediation strategies of the major environmental problems in the United States and the world” and hopes that student “will acquire an awareness of the complexity of factors relating to human interaction with the environment [and] will become acutely aware of the fact that environmental problems have both human and biophysical components, and gain knowledge of the general principles of human-environmental interaction, global habitability, environmental change, and sustainable human societies” (*Undergraduate Studies*).

To further examine the curriculum of the University of Colorado, Boulder Environmental Studies Program, I examined the different categories of classes which Environmental Studies Students must take in order to graduate and examined the goals of these particular requirements. From this examination, it became clear that the two requirement categories most related to outdoor education and leadership training are the Specialization and Application requirements. The Specialization requirement aims to “allow more advanced students to focus on one aspect of environmental studies to develop a deeper understanding” (*Environmental Studies Major*, 2018). Examples of focus areas for the Specialization requirement include Climate, Energy, Hydrology, Natural Resources and Sustainable development (*Environmental Studies Major*, 2018). The purpose of the Application requirement is to allow students to “acquire practical hands-on experience applying knowledge and skills outside the classroom. Improve the ability to integrate the knowledge and skills taught in the ENVS major and emphasize their real-world applications” (*Environmental Studies Major*, 2018). Examples of classes which fulfill this requirement include
Mountain Research Station field course, Introduction to Field Geology and an environmentally focused internship (*Environmental Studies Major, 2018*)

The goals of the National Outdoor Leadership School are explicitly stated in their Learning Goals and Objectives publication. This document outlines general learning goals, which are that graduates will be able to: “assume leadership roles; live and travel in the outdoors; act with confidence and competence; respect and collaborate with others on expeditions, on teams and in communities; care for themselves and others; understand their strengths habits, and areas for growth; function under difficult circumstances; make informed and thoughtful decisions; communicate effectively; connect with natural places; appreciate living simply” (*Learning Goals and Objectives, 2016*). This document also outlines clear learning objectives for the NOLS Leadership, Wilderness Skills, Environmental Studies and Risk Management curricula. For my analysis, I focused only on Leadership and Environmental Studies. For Leadership, the learning goals are that students will be able to: “Serve a team in a variety of roles: self-leader, peer leader, designated leader, and active follower; Demonstrate good expedition behavior; take initiative; balance group and personal goals; remain respectful and inclusive of their team members; demonstrate competence; communicate effectively; make sound decisions; display a tolerance for adversity and uncertainty; demonstrate self- awareness; display initiative by setting and achieve goals” (*Learning Goals and Objectives, 2016*). For Environmental studies, the learning goals are that students will be able to: “explore the natural world through observation and application of ecological concepts; develop a sense of place by experiencing wilderness and exploring relationships with their surroundings; articulate an environmental ethic; Understand land management and environmental issues; apply Leave No Trace principles to camping and travel” (*Learning Goals and Objectives, 2016*).
While these learning goals and objectives are quite broad, the description of the leadership and environmental studies classes which NOLS provides further explains the goals of these classes and the content covered within them. ENVST 3011 (environmental studies) usually covers natural history and environmental science of the area where the expedition is taking place, involves completing sense of place writing assignments, covers environmental ethics (which usually include readings from writers such as Edward Abbey, Aldo Leopold, etc.), examines Land management and Environmental Policy, and teaches Leave No Trace and sustainability (Class Descriptions, 2017). PRT 3041 (leadership training) requires students to engage in a number of activities to improve their leadership skills such as creating and executing daily plans for the group, creating and presenting presentations to educate the group on various topics, conflict resolution exercises and formal classes on various leadership techniques (Class Descriptions, 2017).

Mode of Instruction and Evaluation

The instruction and evaluation in the Environmental Studies Program at the University of Colorado, Boulder are standard for a state university such as CU Boulder. The majority of classes are taught in traditional lecture or seminar structure, with a professor instructing and usually a teaching assistant or learning assistant for support. These instructors have, at the very least, a Master and usually a Ph.D., and are usually lifelong academics in the field in which they are instructing. Students are graded on attendance, participation, projects, exams and other assignments on a traditional A-F, 4.0 grading scale.

However, some classes differ from this norm, allowing students to receive a different form of instruction and be graded based on different criteria. These classes usually grant ENVS
students credit in the Application requirement category. Classes such as ENVS 4795, a class on
the field methods in zoology and biology which requires students to participate in 5 field labs
and 2 weekend trips to conduct fieldwork, and EBIO 4100, a class which requires hikes in
Chautauqua and Rocky Mountain National Park as well as a weekend stay in the mountain
research station, allow students to learn through more experiential learning and from people
other than their traditional structure (Environmental Studies Course Catalog, 2017; Mammology,
2018). Similar classes can also be found in CU Boulder’s education abroad, such as EBIO 4340,
a conservation biology course which requires students to spend 3 weeks at a research facility in
Brazil, learning from a CU Boulder professor as well as guest lectures and participating in
fieldwork (Conservation Biology, 2017). These classes are still graded on the traditional A-F, 4.0
grading scale based on the assignments completed by the student.

Students may also complete an internship to complete their Application Requirement.
The internship deviates from both the traditional mode of instruction and evaluation of most
ENVS classes. Students must complete 150 hours of work with an environmentally focused host
institution in order to complete this requirement (Internships). The internship requirement has no
formal class component, and although there are supplemental writing pieces which must be
completed before and after the experience, it is completely lead by the internship host at the
institution where a student interns (Internships). The student’s grade is heavily influenced by the
host supervisor’s evaluation of the students and, based on this and the supplementary work the
student completes, the student’s faculty sponsor decides the final grade (Internships). While
these field courses and internships draw on experiential learning similar to that of NOLS, they do
not allow for the long-term environmental exposure and immersion which takes place on a
NOLS course.
Drawing on my own petrosal experiences, I also examined the mode of instruction and examination at NOLS. Instructors at the National Outdoor Leadership School differ from CU Boulder instructors as they are not academics and outdoor education or recreation is not necessarily their life-long career. On NOLS expeditions, students learn through, practicing and performing tasks taught by instructors, formal classes and discussions taught on various topics and through assignments such as task completion and writing assignments. In addition to instruction by the instructors, NOLS courses also bring along texts to assist in lessons and assignments. Students are assessed holistically, based on their performance during lessons and on assignments, but also in their overall performance on the expedition. Students are rated as excellent, good, satisfactory or needs improvement in a variety of specific aspects of the categories of Leadership (comprised of the subcategories Communication, Self-Awareness, Judgment and Decision Making, Vision and Action and Tolerance for Adversity and Uncertainty), Expedition Behavior, Risk Assessment and Management, Outdoor Living Skills and Environmental Studies. Students are then assigned a grade in each of these categories (A-F) which are totaled to create their overall grade for the course. Students are also given extensive written feedback about areas where they excelled and areas for possible improvement. It is this assessment from instructors, along with any required supplementary assignments, which comprises a student’s academic grade for the course and the whether or not they will receive college credit for it (if they attend a university that accepts this credit).

Logistics

The final step of my comparison examined the logistics of each curriculum, to see if they were similar operationally. I began by assessing the time students spend to earn one credit within
each program. The University of Colorado, Boulder recommends students spend 45 hours of work outside of the classroom each week for a 15-credit hour semester (Tips for Success, 2017). This means that students spend roughly 4 hours of work per week, both in and outside of the classroom, per credit in the University of Colorado, Boulder Environmental Studies Program, which equates to roughly 56 hours of work per credit hour. For both the Environmental Studies class credit (ENVST 3011) and the Leadership class credit (PRT 3041), the classes are organized so students spend roughly 45 hours per credit of specific classes, demonstrations, activities, instructor role-modeled behaviors and student practice support the learning objectives mentioned above (Rochelle, 2017). This means that students spend roughly 11.25 hours of work per week per credit. However, as previously discussed, this time cannot be directly compared because of the difference in the academic level of study and instruction.

The next logistical aspects of the curriculum I examined were the size of each class, the amount of face to face time students have with their instructors, and the student to faculty ratio. Overall, the University of Colorado, Boulder has a student to faculty ratio of 18:1 (America’s Top Colleges, 2017). In the Environmental Studies Department, there are 35 faculty members (Faculty, 2017) and 731 currently enrolled students, so the faculty to student ratio is roughly 21:1. It must be acknowledged, however, that environmental studies students take many classes outside of the ENVS department and therefore have the opportunity to interact with and learn from many more faculty members than just those in their department. In 2016, NOLS had 5,254 students in their field courses (State of the School Report, 2016) and employed roughly 800 instructors (Toder, 2015). This equates to an overall student to faculty ratio of 7:2. This is only slightly larger than their ratio of students to instructors on any given expedition, which they maintain, at most, at 6:1 (Policies, 2016).
The final logistical aspect I examined in my curriculum comparison was the cost of these two programs. For an in-state student attending CU Boulder in the College of Arts and Sciences, basic tuition and fees for an academic year (30 credits over the course of 2 semesters) costs $12,086 (*Undergraduate Colorado Resident*, 2017). This equates to roughly $403 per credit for in-state students. For an out-of-state student attending CU Boulder in the College of Arts and Sciences basic tuition and fees for an academic year costs $36,220 (*Undergraduate Nonresident*, 2017) This equates to roughly, $1,207 per credit. It is important to note that these calculations do not take into account living expenses, class material, etc., which can be very costly.

I also examined the cost of some study abroad options for University of Colorado, Boulder Environmental Studies Students. I examined some pre-approved environmental studies study abroad programs which were of a similar length to the NOLS courses I examined and featured some form of outdoor education. The Conservation Biology Course in Brazil is a 3-week course in May which takes students to a research station in Brazil’s Atlantic Forest. This study abroad opportunity is led by a CU Boulder Professor, and features fieldwork as well as traditional classroom learning. This May course earns ENVS students 4 upper divisions credit hours which can be applied to their Specialization or Application graduation requirements. (*Global Seminar*, 2018). For an out of state student, just the instructional costs of this course are $6,420, which equates to $1,605 per credit hour. For in-state students, just the instructional costs of this course are $5,320, which equates to $1,330 per credit hour. It is important to note that these costs do not include house fees, airfare, personal expenses, etc. which is estimated at a total cost of $8,827 for an out of state student and $7,727 for an in-state student. (*Program Costs*, 2018)
Because of the variation in the length, intensity, and sophistication of NOLS courses, there is not one set price for these expeditions. To find the typical cost of a college credit earned through NOLS, I averaged the most and least expensive classes (of the roughly 30-day expeditions which are the focus of my paper), the Patagonia Mountaineering expedition ($7,350) and the Absaroka Backpacking expedition ($4,300) and found an average cost of $5,825 (Absaroka Backpacking, 2017; Patagonia Mountaineering, 2017). Each of these courses (as well as all of the other courses examined for this study) earn a student two Environmental Studies credits and two Leadership credits, which equated to roughly $1,456 per credit. It is important to note that these calculations do not take into account travel expenses and extra equipment or food, which can be moderately expensive.

**Interviews**

This section covers the information gathered from each interview I conducted for this portion of my research. The section is broken up by the category which each interviewee falls into, NOLS Administrator, NOLS Instructor, CU Boulder Administrator, CU Boulder Instructor. For confidentiality purposes, the names of the interviewees are not included, and instead, each participant is referred to as “participant” followed by an identification number.

**NOLS Administrators**

**Participant 1**

Participant 1 is the Expedition Curriculum Manager at NOLS who works with the NOLS Education Department to assist in deciding what and how NOLS teaches on their expeditions as well as helps provide curriculum support and faculty training. They explained that the current
NOLS leadership curriculum is based on work done in the early 1990’s which worked to prioritize what NOLS as a school wanted to teach to their students, leading to the creation of the Leadership Educator Notebook, similar to the Environmental Educator Notebook. These books give instructors information about effective ways to teach lessons which NOLS believes it is important for its students to learn. Both of these documents are meant to help instructors achieve the learning goals and objectives laid out by NOLS. However, Participant 1 explained that the environmental studies is a little more challenging in terms of continuity because of the difference in location of NOLS expedients. They explained that NOLS is constantly reviewing and improving the ENVS curriculum.

In addition to the learning goals and objectives, Participant 1 believes that, broadly, the goal of the NOLS leadership curriculum is to give students the courage to step into leadership roles and understand how they can perform as leaders in various ways. The goal of the ENVS curriculum is to help students connect with the natural world in a way that helps them recognize that they are a part of it and should care about it, and in a way that they feel inspired to continue to explore it and make it a part of their life in some way. He explained that NOLS extends the ENVS experience from the classroom into the actual environment and has created an amazing model to do this in. In addition to providing students with inspiring, real-world outdoor experiences, he explained that NOLS has no more than a 6 to 1 student to instructor ratio, providing students with increased face time with instructors and giving instructors the opportunity to adapt the course to the needs and interests of the students. They explained that these small group, completely immersed natural experiences, teach students things it is hard to learn in large lectures with only one instructor.
Because of these advantages, Participant 1 believes that outdoor education such as NOLS should be more integrated with a traditional ENVS education. While they acknowledged that NOLS is not designed to teach ecology at the college level, it can provide students with inspiring, real-world experiences and significantly influence their behavior in and about the outdoors. Furthermore, he explained that students with prior environmental education often get the most out of a NOLS course because they connect the themes and ideas they learned in the classroom to the physical environment they are experiencing.

Participant 2

Participant 2 is the research director at NOLS who works with researchers who wish to work with NOLS and approves all research projects, as well as heads an Environmental Studies Training Seminar for NOLS instructors. From the research she has interacted with regarding NOLS programs, she noted that she believes that the most important findings are those that show that NOLS increases students confidence and problem-solving skills, which are directly applicable to their life outside of NOLS.

She explained that the current ENVS learning goals and objectives are a result of work they did 10 years ago regarding the most important things for NOLS students to learn such as natural science, environmental ethics and land management policy. While instructors have the freedom of what and how to teach, what students learn is grounded by the curriculum, and is further shaped by the Environmental Seminars which she runs. She believes the experiential aspect of NOLS courses provides students learning opportunities not available in a classroom. She explained that NOLS is based on experience and example and less on theory, which helps students learn very differently than in the classroom.
From her own academic experiences, she believes a class such as physics can be abstract and boring in a classroom, but can become incredible when the theories and equations from the classroom can be seen out in the real-world. She explains that this type of learning shows the application and importance of the science and theory in the real-world and, as a result, is retained better students learn it as a lived experience. In NOLS, science is not only taught, but embedded in practical lessons for the expedition about whether or crossing a river. However, she believes this type of outdoor education is most successful when combined with a traditional environmental education, to cover the scientific depth not possible in the field.

She also discussed how NOLS courses are also an incredibly effective place to teach leadership. Because of the many challenges and unpredictability of a course, skills like problem-solving, teamwork, creative thinking and thinking through problems without clear answers are not just taught, but lived. Students must learn these skills for the successful completion of the expedition and therefore they become an experience in addition to a lesson, which is much more understood and retained. For this reason, she believes actively learning leadership skills in the field is much more effective than learning them in a classroom.

**NOLS Instructors**

**Participant 3**

Participant 3 is a field instructor for NOLS who also has a business degree and has worked with outdoor companies such as Patagonia. She explained that leadership is at the core of the overall NOLS curriculum, but environmental studies is also very important. However, while the leadership curriculum is more structured (with standard leadership classes taught on almost every course), the ENVS curriculum is broader because of the wide range of areas where NOLS expeditions take place and broadness of the field of environmental studies. Furthermore, while
seminars like Participant 1’s ENVS Seminar are available, they are optional. As an instructor, she hopes that her students leave courses with a deeper connection with the outdoors and appreciation for the outside world. She explains that it is less important for students to be able to recite the names of plants, but important for them to be familiar with them in an outdoor setting so that they can begin to understand the ecological process of the natural world and its deep interconnectedness. She believes the connection is a result of the awe and wonder created by the outdoors which can help inspire people to fill the gap between people who care about the outdoors and people who actually want to do something about it. She also believes that the lessons taught on NOLS trips about America’s public lands are very important for students because the understanding that every citizen is a stakeholder in public lands is another great motivator for students to act.

She explained that the leadership curriculum, combined with this inspiration, can give students the knowledge and empowerment to create real positive change. She believes this type of connection with nature is only possible from outdoor experiences, and that there is no better place to teach leadership than during these outdoor experiences because NOLS courses are built around constantly figuring out how to overcome obstacles as a leader and as part of a group. She also believes that NOLS lets students explore other aspects as environmentalists and give them ideas for careers which involve long-term exposure to the outdoors. She explained that NOLS is powerful in terms of giving people space to figure out why they care, why is this important to me, and giving them the opportunity to come into their own effectiveness as leaders and actors in the world.
Participant 4

Participant 4 is a field instructor for NOLS who began teaching with NOLS because he wanted to inspire others to have the same passion for the outdoors that he did. He explained that he believes that the goals of NOLS expeditions are to expose students to the deep complexity and simplicity of the natural world and help them to explore the macro and microenvironment. To accomplish these goals, there is a blueprint which NOLS lays out in their curriculum and learning goals and objectives, so that all students learn similar environmental studies and leadership lessons, which works extremely well. However, instructors have the freedom to choose their own lessons and teaching styles. He believes that, as an instructor, it is very important to adapt the courses and lessons to the interests and needs of the students and that the lack of a rigorous curriculum lets instructors do just that, which makes for a better student learning experience.

He also explained that the simple act of being outside for an extended period of time makes for a great student learning experience. He explained that, in the outdoors, questions cannot be immediately answered and so students and instructors work through problems together and engage in very active learning. Furthermore, he believes there is no substitute for physically interacting with the environment, he used the analogy: “it is one thing to read about bears, but you’ll never truly understand them until you’ve tracked them by their scat and paw prints in the outdoors.”

Participant 5

Participant 5 is a field instructor for NOLS. She is a relatively new instructor and explained that new instructors are trained on their 30-day instructor course through literature
such as the Environmental Educator Notebook, and through seminars such as those put on by Participant 2. She explained that instructors learn effective teaching practices from working with more experienced instructors but have the freedom to teach in their own style and respond to the needs of their students. They also have the freedom to choose what to teach, as long as it fits within the leadership, environmental studies and risk management framework goals and objectives laid out by NOLS.

She believes that outdoor education opportunities, such as NOLS, are the perfect places to learn about the environment because when you physically interact with the environment, it becomes part of your life and not just something you memorized or saw in pictures or film. She believes that part of an effective environmental education is learning about the environment while in the environment. However, that a background of classroom learning is also essential to properly understand the scientific basis of the environment when interacting with it. Unfortunately, she does not believe that the current connection between outdoor education and traditional environmental education is very strong.

She also believes NOLS courses are the perfect place to learn leadership skills because leadership becomes part of everyday life, and successful leadership skills such as communication and learning from mistakes are essential for a successful and safe expedition. Similar to environmental studies, she explained that one cannot truly learn leadership skills until they are interacting with them and using them in a real-world experience. The outcomes of successful leadership training in the outdoors is students feeling incredibly empowered and being able to use these skills in their everyday lives.
Participant 6

Participant 6 is the Associate Director of the undergraduate Environmental Studies Program, head of the ENVS undergraduate curriculum committee, the internship faculty sponsor and a professor in the environmental studies department. He believes that the goal of ENVS department is to give students an interdisciplinary college education studying both problems and solutions related to the environment. He hopes that students leave the program with the ability to identify and solve environmental problems. However, while the program does a great job of teaching critical thinking, ethics, etc., it does not teach many hard skills that are directly applicable to a career. However, there are many aspects of the curriculum which aid this problem, such as the application credit requirement.

He explained that the application credit gives students a chance to get real-world experience and learn in other ways besides just traditional lectures, papers, and tests. While the application credit gives students lots of opportunities to engage in fieldwork and internships, he noted that more outdoor education would be a positive thing for the major. He strongly believes that outdoor education reinforces the values of the program and helps students keep in touch with nature, which can seem abstract in the classroom. Furthermore, environmental studies was built by and is taught by people who genuinely love spending time in the outdoors. Not all students have this opportunity and thus outdoor education could provide them with this.

In addition to outdoor education, he expressed that leadership is also a key component to a successful environmental education. Part of the mission of the ENVS program is to create environmental leaders. Students need the skills to be leaders, and even if they are not the boss in their job, leadership skills are still critically important. He explained that many people believe
that outdoor education and leadership are so inherent in our program that they do not explicitly need to be taught, however, this is not the case. He compared outdoor education to internships; as a program, the school sees the value in real-world internships. However, the school does not have the ability to offer these on campus, so students fulfill this requirement with off campus internships. He believes the same should be done with outdoor education and leadership training.

Participant 7

Participant 7 is the Dean of the Colleges of Arts and Sciences, as well as a professor in the Environmental Studies Department. He and the current Associate Director of ENVD started the Program at the University of Colorado, Boulder. He explained that when the ENVS program was created at, it was trying to fill a niche between the physical sciences and the social sciences, so that students studying environmental issues would have a good understanding of both sides of environmental problems. He explained that as a result, environmental studies is inherently interdisciplinary, and it is most effectively taught when it is taught this way; weaving the physical and social sciences together instead of teaching them separately. He believes that one of the most important aspects from the beginning of the ENVS program was the internship requirements, which evolved into the application credit, which allows students the opportunity to get real-world experience as part of their degree.

He explained that building this program wasn’t always easy, as some people in the academic world are not comfortable with the interdisciplinary aspect. This is also one of the reasons that he believes outdoor education is difficult to integrate with a traditional ENVS program. Not all people view outdoor education as having an academic component or appropriate assessment aspect to be considered worthy of college credit, however, he noted that
this is a rather narrow view of academia. He believes that real-world experience, particularly in the outdoors, is very important for ENVS students, because these types of outdoor experiences are what cause people to create the field environmental studies. He explained that outdoor educational experiences are extremely impactful in an ENVS student’s later years in school because they view the world in the context of what they have learned in the classroom and therefore the outdoor experience enforces the classroom work. He also noted that the leadership component, inherent in many outdoor education programs, is incredibly important because ENVS is trying to train people to be environmental leaders. He concluded by saying it is unfortunate how few people, even those studying the environment, spend significant time outdoors and said that if it was solely up to him, environmental studies programs would have more opportunities for outdoor education.

**Participant 8**

Participant 8 is an academic advisor for Environmental Studies Students, specifically working with upper division students where he focuses on professional development. He explained that when students come to him for professional development advice they are generally interested in working in the private sector, in environmental consulting or in the renewable energy field, in the public sector, working for the forest service or national parks (anything that gets them outside), for non-profits working for environmental advocacy groups or interested in furthering their academic career with a masters or PhD.

He explained that the environmental studies program teaches kids great critical thinking and communication skills, as well as a deep understanding of environmental ethics. However, some students seem to lack hard, tangible skills and experience. He explained that the
Application Credit is used to get some hands-on experience in the world of environmental studies and begin to hone skills learned in school in a real-world setting as well as teach students the skills they still need to develop. He went on to say that the right kind of Application experience can directly feed back into the program and enhance a student’s education experience. Application credits can help students choose a specific area within the very broad field of environmental studies that they hope to work in and give them a better idea of the specific skills they will need. He explained that the best type of application experience are those that train students to do specific things which will be helpful in the professional world. He explained that outdoor education is often not counted for college credit because people do not view it as meeting the standards of academia (interacting with academic texts, having academics be the instructors, etc.). However, he noted that if there was a strong connection between outdoor education and helping students find jobs and succeed in their post-graduate employment, that it should be something the university grants credit for.

**CU Boulder ENVS Instructors**

**Participant 9**

Participant 9 is a professor in the Environmental Studies department who teaches both undergraduate and graduate classes related to ecology, in addition to his work in a CU Boulder lab. He explained that he teaches classes based on the needs of the environmental studies program and what he believes will benefit Environmental Studies students. When teaching his undergraduate courses, he believes that it is very important to create an atmosphere where students think on their own and one which can shift based on the needs and interests of the students, which is much easier in a smaller class setting.
As someone who has experience teaching in both a traditional classroom and teaching outdoor education, he acknowledged that in a large lecture teaching setting it is very hard to have one on one connections with students and hard to follow the specific interests of the group. In an outdoor education setting students can be more engaged, interested and inspired because they are interacting with the material in real time. However, outdoor education offers the potential for students to focus more on the adventure, and less on the education. Because of this potential, he noted that it is important to be picky about which outdoor education opportunities people pursue. However, when outdoor education is done properly, it can be life changing for students, as outdoor education can give students a better understanding of the complexity of nature and give students a humbleness about how unpredictable the world is.

From his experience at the University of Colorado Boulder ENVS program, he notes that our program focuses a lot on the policy and social science, and less on the hard sciences and fieldwork. As a result, students have an excellent understanding of the human dimensions of environmental studies as well as have great communication skills, but have not a lot of experience seriously interacting with the outside world. Outdoor education could ameliorate this problem.

**Participant 10**

Participant 10 is a professor in the Environmental Studies Department, a former academic advisor for ENVS and former member of the Undergraduate Curriculum Comity. She explained that she teaches classes based on what is needed by the department (some she is asked to teach and some she requests to). She most enjoys teaching the environmental writing classes because these classes help students explore careers in ENVS, because many students are not aware of all
of the possibilities of this degree. When teaching these classes, she has a great deal of freedom into how to teach them. While there is a general goal of the course, she has the freedom to decide how it should be taught and adapt the class to the students in it, especially in upper division level classes. She explained that, even when teaching a class designed by another instructor, she has never received a list of narrow objectives that must be focused on in a class.

In these classes, she believes an effective learning environment is created when students feel comfortable interacting with the professor, asking questions and giving and receiving feedback. She stressed that learning by doing is extremely important, but because the classes she teaches are mostly writing and literature based, this is completely possible in a traditional classroom setting. She hopes that her classes teach students hard skills, things that they can identify as skills they possess when searching for post-graduate employment.

Participant 11

Participant 11 is an instructor at CU Boulder who has taught in the ENVS program for 20 years as both a graduate and undergraduate instructor, as well as a member of the Undergraduate Curriculum Committee. In addition to teaching an introductory course to ENVS, her undergraduate classes focusing on field biology and conservation. She explained that the interdisciplinary aspect of environmental studies is incredibly important as it helps show students the complexity of environmental problems and the many different kinds of solutions, which is one of the goals of the CU Boulder ENVS program. She explained that in all of her courses, she does her best to use case studies and various media techniques to bring real-world examples into the classroom. She emphasizes the importance of teaching student’s skills (such as problem-solving and how to gather good information), because of the fact that content is so easily
accessible in this day and age, but it is these skills which will serve students the best after graduation. She also expressed that things like leadership skills emotional intelligence are becoming more and more important for students entering the professional world as knowledge becomes increasingly accessible with technology.

In order for students to most effectively learn these skills, she believes that students must be actively engaged in the learning process. She notes that this is difficult in a traditional classroom setting because students miss the experiential part, and while she does her best to integrate authentic experiences into the classroom, these fall short of the real thing. As she explained, when someone is in the field, they are 100% engaged in the learning they are doing, because they are actively doing what they are learning about. The information is much more impactful when a student is feeling and smelling the environment they are learning about. She used an analogy relating to learning about bees to explain this idea: “it is one thing to read about a bee and its role as a pollinator, but seeing it actually go from flower to flower changes everything, it deepens your understanding.” However, she notes that these opportunities for students to spend time in the field are limited by funding and time constraints.

**Surveys**

This section outlines the information gathered from the surveys sent to current Environmental Studies students at the University of Colorado, Boulder as well as graduates of this program. The section is divided into results gathered from each group. For each group, an explanation of the student’s responses is included as well as a summarization table of the information.
Current Students

Of the 731 current Environmental Studies Students surveyed, 160 total students responded to the survey. However, not every person who responded to the survey answered every question. This is a total response rate of 21.89%, which is well over my expected response rate of 10%. Of the 160 students who responded, 25 of the respondents (15.63%) reported as first-year students, 39 of the respondents (24.38%) reported as being second-year students, 42 of the respondents (26.25%) reported as being third-year students, 37 of the respondents (23.13%) reported as being fourth-year students and 17 (10.63%) reported as being a student in their fifth year or above.

Over half of the respondents reported that they had engaged in some form of outdoor education before starting their ENVS major at CU Boulder, with 83 (51.88%) reporting they had and 77 (48.13%) reporting they had not. Of the 83 students who said that they had participated in some form of outdoor education prior to starting their ENVS major at CU Boulder, 3 students (3.61%) reported that they had participated in Outward Bound, 1 student (1.20%) reported that they had participated in the National Outdoor Leadership School, 4 students (4.82%) reported that they had participated in Wilderness Adventure, 43 students (51.81%) had participated in outdoor education as part of a high school class and 32 students (38.55%) reported that they had participated in outdoor education in some other form, most likely as an extension of an extracurricular activity such as the Boy Scouts.

Of the 83 students who said that they had participated in some form of outdoor education prior to starting their ENVS major at CU 62 students (74.70%) said this outdoor education had been beneficial to their ENVS career at CU Boulder and 21 students (25.30%) said it had not been.
The remainder of the questions were only answered by students who reported that they were on their second-year of their ENVS degree at CU Boulder or higher. Of the 135 students who were second-year or above who were surveyed, 130 students chose to answer the following question. Of these respondents 106 students (81.54%) reported that they did not feel as though they had received enough outdoor education as part of their ENVS degree and 24 students (18.46%) reported that they feel as though they had.

Of the 106 students who reported that they did not feel as though they had received enough outdoor education as part of their ENVS degree, 67 students (63.21%) reported that they felt as though they had received some outdoor education as part of their ENVS degree and 39 students (36.79%) reported that they did not feel as though they had received any outdoor education as part of their ENVS degree.

Of the 128 students who answered this question, 116 (90.63%) reported that they felt that more outdoor education would improve their success in ENVS and 12 (9.38%) reported that they felt that more outdoor education would not improve their success in ENVS.

When asked if they had received some sort of leadership training prior to starting their ENVS degree, of the 128 students who responded, 57 (44.88%) said that they had received some sort of leadership training prior to starting their ENVS degree at CU Boulder while 70 (55.12%) said that they had not. Of the 57 students who responded that they had received leadership training prior to starting at CU Boulder, 48 (84.21%) said that it was beneficial to their ENVS career while 9 (15.79%) said that it was not.

Of the 127 students who responded to this question, 52 (40.94%) said that they believed there had been a leadership component to their environmental studies degree and 75 (59.06%) said they did not believe there was a leadership component to their degree. Of the 127 students
who answered the above question, 110 (86.61%) believed that they would benefit from a stronger leadership component and only 17 (13.39%) did not think it would be beneficial.

Of the 151 students who chose to answer the question, 145 (96.03%) reported that they would participate in outdoor education to earn college credit if given the opportunity while 6 (3.97%) said that they would not. Of the 152 students who chose to answer the question 122 (80.26%) reported that they would participate in leadership training to earn college credit if given the opportunity while 30 (19.74%) said that they would not.

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
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<tbody>
<tr>
<td>What year of school are you currently in?</td>
<td>15.63%: first year, 24.38%: second year, 26.25%: third year, 23.13%: fourth year, and 10.63%: fifth year or above</td>
</tr>
<tr>
<td>Before beginning your Environmental Studies major at CU Boulder, did you receive any outdoor education?</td>
<td>Yes: 51.88% No: 48.13%</td>
</tr>
<tr>
<td>What type of outdoor education did you receive?</td>
<td>3.61%: Outward Bounder, 1.20%: NOLS, 4.82%: Wilderness Adventure, 51.81%: Part of High School, 38.55%: Other</td>
</tr>
<tr>
<td>Do you feel as though you have received enough outdoor education as a part of your Environmental Studies degree?</td>
<td>No: 81.54% Yes: 18.46%</td>
</tr>
<tr>
<td>Do you feel as though more outdoor education would improve your success in Environmental Studies?</td>
<td>Yes: 90.63% No: 9.37%</td>
</tr>
<tr>
<td>Before starting your Environmental Studies degree at CU Boulder, did you receive any leadership training?</td>
<td>Yes: 44.88% No: 55.12%</td>
</tr>
<tr>
<td>Has this leadership training been beneficial to your Environmental Studies career at CU Boulder?</td>
<td>Yes: 84.21% No: 15.79%</td>
</tr>
<tr>
<td>Question</td>
<td>Yes</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Do you believe there has been a leadership component to your Environmental Studies degree?</td>
<td>40.94%</td>
</tr>
<tr>
<td>Do you believe you would benefit from a stronger leadership component within your Environmental Studies degree?</td>
<td>86.61%</td>
</tr>
<tr>
<td>Would you take advantage of the opportunity to earn college credit through participating in outdoor education?</td>
<td>96.03%</td>
</tr>
<tr>
<td>Would you take advantage of the opportunity to earn college credit through participating in leadership training?</td>
<td>80.26%</td>
</tr>
</tbody>
</table>

**University of Colorado, Boulder Environmental Studies Program Graduates**

Of the 2545 graduates of the University of Colorado, Boulder Environmental Studies program who were surveyed, 676 responded. However, not every person who responded to the survey answered every question. This is a response rate of 26.60%, which is well over my expected response rate of 10%.

Of the 649 who answered the question, 273 (42.06%) former students reported that they had received some form of outdoor education prior or during their time at CU Boulder and 376 (57.94%) said that they had not. Of the 273 students who had received this outdoor education, 229 (84.81%) said that this outdoor education was beneficial to their success as an ENVS major and 41 (15.19%) said that it was not.
When asked if they had received any outdoor education as part of their ENVS degree, of the 645 people who answered this question, 371 (57.52%) said that they had and 274 (42.48%) said that they had not.

When asked to assess from 1 to 5 (1 being significant benefit and 5 being no benefit) how much benefit to them or their career they would have received from more outdoor education as part of their environmental studies degree, 227 (35.47%) answered 1 (significant benefit), 146 (22.8%) answered 2, 135 (21.09%) answered 3, 83 (12.97%) answered 4 and 49 (7.66%) answered 5.

Of the 643 people who answered the question, 416 (64.70%) said that they would have taken advantage of the opportunity to participate in outdoor recreation for college credit, 33 (5.13%) said that they might have, and 194 (30.17%) said that they would not have.

When asked if Leadership Training was part of their environmental studies degree, of the 644 former students who answered the question, 520 (80.75%) said that they had not and 124 (19.25%) said that they had. Of 124 former students who said that leadership training was a component of their ENVS degree, 115 (93.50%) said that it was beneficial to their career and 8 (6.50%) said that it was not. Furthermore, of the 520 ENVS graduate who did not believe that leadership training was a component of their degree, 450 (86.54%) said that they would have benefited from a leadership component and 70 (13.46%) said that they would not have.

When asked if there were formal or informal leadership positions in their current career or job, of the 644 ENVS graduates who answered the question, 596 (92.55%) of former students said that there were and 48 (7.45%) said that there were not.
Of the 643 who answered the question, 565 (87.87%) said that they would have taken advantage of the opportunity to participate in leadership training to earn college credit and 78 (12.13%) said that they would not have.

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
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<tbody>
<tr>
<td>Did you receive any Outdoor Education prior to or during your time at CU Boulder that was NOT part of your ENVS major?</td>
<td>Yes: 42.06%</td>
</tr>
<tr>
<td></td>
<td>No: 57.94%</td>
</tr>
<tr>
<td>Was this Outdoor Education beneficial to your success as an ENVS major?</td>
<td>Yes: 84.81%</td>
</tr>
<tr>
<td></td>
<td>No: 15.19%</td>
</tr>
<tr>
<td>Did you receive any Outdoor Education as part of your ENVS major?</td>
<td>Yes: 57.52%</td>
</tr>
<tr>
<td></td>
<td>No: 42.48%</td>
</tr>
<tr>
<td>How much benefit to you personally or to your career would you have received from more Outdoor Education as part of the ENVS major (from 1 to 5).</td>
<td>1: 35.47%, 2: 22.8%, 3: 21.09%, 4: 12.97%, 5: 7.66%</td>
</tr>
<tr>
<td>Would you have taken advantage of the opportunity to earn college credit toward your ENVS major by participating in Outdoor Education through organizations outside of CU Boulder?</td>
<td>Yes: 64.70%</td>
</tr>
<tr>
<td></td>
<td>Maybe: 5.13%</td>
</tr>
<tr>
<td></td>
<td>No: 30.17%</td>
</tr>
<tr>
<td>Do you feel as though Leadership Training was a component of your ENVS major?</td>
<td>Yes: 19.25</td>
</tr>
<tr>
<td></td>
<td>No: 80.75%</td>
</tr>
<tr>
<td>Do you believe that this Leadership Training component of the ENVS major of the ENVS major has been benefit to you in your career?</td>
<td>Yes: 93.50%</td>
</tr>
<tr>
<td></td>
<td>No: 6.50%</td>
</tr>
<tr>
<td>Do you believe you would have benefited from a Leadership Training component in your ENVS major?</td>
<td>Yes: 86.54%</td>
</tr>
<tr>
<td></td>
<td>No: 13.46%</td>
</tr>
<tr>
<td>Are there formal or informal leadership responsibilities in your current career or job?</td>
<td>Yes: 92.55%</td>
</tr>
<tr>
<td></td>
<td>No: 7.45%</td>
</tr>
<tr>
<td>Would you have taken advantage of the opportunity to earn college credit toward your ENVS major by participating in Leadership Training?</td>
<td>Yes: 92.55%</td>
</tr>
<tr>
<td></td>
<td>No: 7.45%</td>
</tr>
</tbody>
</table>
Discussion and Analysis

Over a century of research and over 2000 recorded studies regarding experiential learning have shown the benefits of this type of education for students. Through the research of Dewey, Kolb and many others, the data clearly shows that learning by doing increases students ability to learn, retain information and apply what they learned in the future. Not only does the literature show that the concept of experiential education is incredibly successful, but it also shows that outdoor education programs, which implement experiential learning, are successful as well. The aforementioned literature by prominent outdoor education researchers such as Gookin and Sibthorp, shows that outdoor education has positive effects on children, young adults and adults. As the research shows, these programs have been shown to increase students’ independence, confidence, leadership abilities, self-authorship, environmental awareness and interest, basic scientific skills, communication skills, teamwork, interest in and knowledge about the environment and help to create “sustainably literate citizens”. While the research is not conclusive, it is surprising that all fields of higher education do not make more of an effort to incorporate experiential learning into their education, especially in a field as applicable as environmental studies.

The importance and success of outdoor education for undergraduate ENVS students was made clear, not just by the aforementioned research, but by the current CU Boulder ENVS and NOLS instructors and administrators. Unsurprisingly, administrators and instructors from NOLS were very enthusiastic about outdoor education and all believed that these experiences are an incredibly effective way to teach environmental studies, leadership and inspire a deeper connection between students and the environment. However, CU Boulder administrator and instructors were very enthusiastic about outdoor education as well. While many of them noted
that not all outdoor education programs are the same (some significantly more oriented towards education than other), they all agreed that effective outdoor education and leadership training would be beneficial to environmental studies students and many explicitly stated, such as participants 6, 7 and 9, that they believed that ENVS students should engage in more outdoor education (as long as it is of a proper quality).

Many of the CU Boulder instructors and administrators, such as participants 6, 7, 9 and 11, discussed the limitations of teaching in a classroom setting, such as not being able to show students real-world examples, as well as the opportunity which outdoor education provides instructors to do this and thus ground the theoretical aspects of ENVS in real, lived experiences. All of the CU Boulder instructors believed that it would be a good thing for ENVS students to receive more outdoor education, and while participants 7, 8 and 9 acknowledged the importance of making sure this education benefited the students and was not just recreational, all instructors were supportive of the concept.

Similarly, many of the NOLS instructors and administrators, such as participants 2, 4 and 5 discussed the incredible opportunity NOLS provides for students to physically engage in the environment and gain knowledge through active learning, which provides students a very different learning experience than a traditional classroom. In fact, participant 11 (a CU Boulder ENVS instructor) and participant 4 (a NOLS instructor) used almost the same analogy when discussing the importance of outdoor education. They both explained that it is one thing to learn about an animal in the classroom, but to truly understand it you must engage with it in the outdoors.

Both CU Boulder and NOLS instructors and administrators also acknowledged the importance of both outdoor education and classroom learning. Both CU Boulder participants 6, 7
9 and 11 and NOLS participants 1, 2, and 5 acknowledged the importance of a background in traditional environmental education which is supported and grounded in outdoor education. In fact, NOLS respondents 2 and 5 said that students sometimes get the most out of an expedition when they have prior environmental education.

Participants 6, 7 and 11 from CU Boulder were also supportive of the idea of students receiving more leadership training. They explained that one of the goals of the environmental studies program is to train people to be environmental leaders, which involves more than just teaching factual content. In addition, participant 8 noted the importance of gaining legitimate skills for the real-world, of which leadership is one. NOLS participants 1, 2, 3, and 5 explained that leadership is at the center of the NOLS curriculum, because of its importance both on expeditions and in the real-world. They believed that the active and engaged leadership training on NOLS courses makes it an incredibly effective way to teach these important skills, giving students the ability to take leadership roles in their personal and professional lives.

From my interviews, I also gained insight into the reasons why outdoor education does not play a larger role in traditional environmental studies educations. Many of the administrators and instructors from CU Boulder, such as Participants 7 and 8, discussed the idea among some educators that outdoor education programs such as NOLS lack an academic component. These academic components involve things such as interacting with academic literature and being instructed by someone with an academic background and tertiary degree. Furthermore, participants 9, who has experience teaching in both outdoor educational settings as well as a professor at CU discussed the potential issue of outdoor education being more focused on adventure then actual education. While these concerns are valid, as I learned from my interview with Participant 6, the internship faculty sponsor for ENVS, these types of academic components
are not necessarily essential for exercises which can complete the Application Credit at CU Boulder.

As Participant 6 explained, the ENVS application credit can be fulfilled by the completion of an internship, which are not always run by academics nor involve interacting with academic literature, but where students still learn a great deal. However, these exercises are still incredibly important and influential for students, as they give them real-world experience and a chance to learn real-world skills. Participant 6 explained that the criteria for these types of internships to count for the application credit are the need for an environmental component, the need for the intern to complete actual tasks related to ENVS, complete a project or gain skills which can be displayed on a resume, and the opportunity for students to use knowledge gained from ENVS classes at CU Boulder. In addition, there are academic exercises which must be completed to earn this credit through an internship. Participants must complete a series of assignments, which include a meeting to discusses what the student hopes to gain from the internship to further their ENVS career, a two page research paper on the organization the student wishes to intern with, the completion of a written job description, a four page paper regarding what they learned through the experience, an evaluation of the internship (in addition to the evaluation completed by the internship host of the student), and a presentation to other students who completed an internship for credit about the experience. These exercises help to demonstrate the academic merit of these experiences which seem to lack what some people believe to be academic components, but are actually very impactful and educational for students.

The survey information gathered from current and former ENVS majors at CU Boulder further demonstrated a clear benefit of outdoor education as well as leadership training, in addition to a sincere interest in it from ENVS students. The information gathered from the 160
survey responses clearly show that current Environmental Studies students have an interest in both outdoor education and leadership training and believe that these activities would be beneficial to their career in environmental studies. 96.03% of respondents said that they would take advantage of the opportunity to earn college credit through participating in outdoor education and 80.26% of respondents said that they would take advantage of the opportunity to earn college credit through participating in leadership training. Not only does the data demonstrate that students would like to participate in these activities, but it shows that students believe that they would improve their success in Environmental studies, as 90.63% of respondents reported that they felt that more outdoor education would improve their success in ENVS and 86.61% of respondents reported that they felt that more leadership training would improve their success in ENVS.

This belief that more outdoor education and leadership training would improve their success in ENVS was corroborated by the students who reported that they had participated in outdoor education and/or leadership training prior to starting their ENVS degree at CU Boulder. 74.70% of the students who reported that they had engaged in outdoor education reported that it had been beneficial to their ENVS career. Furthermore, 84.21% of students who reported that they had received leadership training said that it was beneficial to their ENVS major. This enthusiasm for outdoor education and leadership training was seen in graduates of CU Boulder’s ENVS program as well.

The information gathered from the 676 survey responses of graduates of the CU Boulder ENVS department clearly show that former students have an interest in both outdoor education and leadership training and believe that these activities would have been beneficial to both their success in environmental studies and in their post-graduate career or job. 64.70% of the ENVS
graduates surveyed said that they would have taken advantage of the opportunity to participate in outdoor education to earn college credit and 87.87% of the ENVS graduates surveyed said that they would have taken advantage of the opportunity to participate in leadership training to earn college credit. Not only does the data demonstrate that students would have liked to participate in these activities as part of their ENVS degree, but it shows that students believe that they would improve their success in Environmental studies and in their career. 35.47% of student respondents said that more outdoor education would have been of significant benefit to them or their career, 22.80% of former student respondents said it would have been of the second most possible benefit and only 7.66% of former student respondents said that it would have been of no benefit. Furthermore, 86.54% of former student who answered this question said that they would have benefited from a leadership component to their degree.

The belief that more outdoor education and leadership training would have benefited these students in their major and in their post-graduate job or career was corroborated by the former students who reported that they had participated in leadership training or outdoor education. 84.81% of students who reported that they had participated in outdoor education outside of the ENVS program reported that this was beneficial to their success in the ENVS major. Furthermore, 93.50% of the students who believed they had received leadership training as part of their ENVS degree believed it was beneficial to their career. This information clearly demonstrates a sincere interest in and benefit to outdoor education and leadership training for both current and former ENVS students at CU Boulder.

These interviews show a clear support for increased outdoor education and leadership training from both current and former ENVS students, which could be integrated into the CU Boulder ENVS program, based on the information gathered from my curriculum comparison.
While the goals of CU Boulder ENVS program are to provide students with a broad but demanding education regarding the causes and solutions of environmental problems so that they understand the many factors of environmental issues and have the ability and knowledge to help solve them, NOLS focuses more on students developing a personal connection with the environment and developing hard outdoor and environmental skills, while still covering specific place based ecology and environmental policy. While both of these programs want to train their students to have a positive relationship with the environment and train them to have the skills to help positively influence environmental problems, their stated goals do differ slightly. However, the goals of the leadership and environmental studies program at NOLS fit well within the goals of the specialization and application requirements of CU Boulder’s ENVS curriculum, which focus on examining particular parts of environmental problems and gaining hands-on experience. The NOLS model also fits within the Application requirement in terms of mode of instruction. While most CU Boulder courses are taught in a traditional setting with teachers with an academic background who base students grades on traditional assignments and examinations, many classes which fulfill Application requirements rely on other forms of instruction where students are graded on things other than traditional assignments. This is particularly true with the internship option. The current model for how internships fulfill Application credits, where a student works with an organization related to the environment and is assessed both by their internship host based on the completion of tasks for the internship as well as on supplementary academic work for their faculty sponsor, is a perfect example of how NOLS could be integrated into the CU Boulder ENVS program. Furthermore, NOLS instructors grade students on a traditional A-F grading scale, making it easy for these grades to transfer to a traditional academic setting.
The logistics of a NOLS course when compared to CU Boulder ENVS courses also show compatibility. Although the mode of instruction is largely different between CU Boulder and NOLS, it is still worth examining the student to faculty ratio and class size. CU Boulder’s ENVS program has a student to faculty ratio of 21:1 whereas NOLS has a student to faculty ratio of 7:2. Furthermore, NOLS expeditions never have a student to faculty ratio which exceeds 6:1, whereas CU Boulder ENVS classes can have upwards of 100 students and only one professor, meaning that NOLS students have more personal interactions with their instructors than CU Boulder ENVS students. When examining the cost of these two programs, an out of state student taking classes on the CU Boulder, they pay roughly $1,207 per credit, which is only $249 less than the $1,456 per credit a student earns on NOLS. Furthermore, an out of state student participating in an ENVS Application course more similar to NOLS, such as Conservation Biology Course in Brazi’s Atlantic Forest (EBIO 4340), pays $1,605 per credit hour, which is $149 dollars more than a NOLS student pays per credit. These logistical comparisons clearly show a compatibility between these programs and shows that a system could be designed to incorporate NOLS college credit into CU Boulder’s ENVS program.

**Limitations, Questions for Further Research and Recommendations**

There are 3 areas in which I believe my research could have been improved and many projects I believe could be conducted to further the research I completed for my study. First, I think my research would have been improved by a more in-depth examination of the reasons why outdoor education and leadership training are not a part of many ENVS programs, such as funding issues, barriers to entry, liability issues, or others. Secondly, I believe by taking a closer look at successful courses which integrate outdoor education with a traditional undergraduate
environmental studies curriculum, I could have bettered my understanding of how these programs could be integrated into our program. Third, I believe interviews with employers, to examine whether or not the completion of outdoor education and leadership training programs influence their hiring decision would have improved my analysis of the benefit of these programs.

To further examine the merit of outdoor education and leadership training for undergraduate ENVS students, I believe a long-term controlled study of participants of these programs is necessary. Such a study would follow ENVS students who participated in outdoor education and leadership training and those who did not through their college education and graduate education or employment, examining factors such as attitudes towards the environment, academic success, employment, and perhaps other factors, to learn whether students who participated in these programs saw any long-term benefits. Despite these limitations and questions for further research, based on the research I conducted, I have three recommendations.

First, I suggest that the University of Colorado Boulder Environmental Studies program accept college credit earned through the National Outdoor Leadership School under the Application Credit graduation requirement. I recommend that 3 credits of Application coursework be rewarded to students who complete a roughly 30-day NOLS expedition which rewards students with both Environmental Studies and Leadership credit. My research clearly demonstrates that the goals, mode of instruction and evaluation and logistics of NOLS courses fit well within the bounds of an extracurricular activity which should count for the ENVS Application credit. The previously conducted research into experiential education and outdoor education programs clearly demonstrates the effectiveness of these educational techniques for students. Finally, the overwhelming support for outdoor education and leadership training from
current and former ENVS students as well as CU Boulder administrators shows a tremendous overall interest and support for these programs as well as a belief that they benefit students both in their major and in their post-graduate career. However, I believe that students who wish to receive college credit through NOLS should engage in the same academic exercises a student completes to earn Application credit through an internship, such as completing supplemental writing pieces for their faculty sponsor and presenting on what they learned during their experience. I do not believe that NOLS Leadership or Environmental Studies credit should count toward CU Boulder ENVS Specialization credit, because this credit is meant for the student to use several classes to focus on a specific aspect of interest to them within ENVS, and there are no other group of ENVS specialization courses similar enough to a NOLS course where NOLS credit could be logically included.

Secondly, I recommend that the University of Colorado, Boulder should further develop its own outdoor education and leadership training classes, specifically designed for CU Boulder ENVS majors. While NOLS is a fantastic model for outdoor education and leadership training, its barriers to entry, such as cost and time commitment, cause some students not to be able to participate, and I believe my research demonstrates that all ENVS majors would benefit from increased outdoor education and leadership training. Furthermore, as previously discussed, NOLS is not designed nor intended to replace traditional ENVS courses, such as ecology or environmental ethics, but considering the clear benefit of experiential and outdoor education, it would be of great benefit for CU Boulder ENVS students to be able to learn these topics, from a CU Boulder professor, in an outdoor educational setting. A clear model for how these such courses could work already exists in classes such as in EBIO 4340 and ENVS 4795, where students blend outdoor and traditional classroom learning. However, unlike these classes, I
recommend that CU Boulder’s ENVS program pursue outdoor educational opportunities that allow long-term outdoor exposure and immersion.

My final recommendation is that all college-level ENVS majors increase the opportunity for students to earn credit through the participation in outdoor education and leadership training. The opportunity for students to learn about the environment while physically interacting with it provides ENVS students with a new and useful perspective and helps them gain a better understanding of the natural environment they hope to have a career engaging or protecting. Leadership training is also clearly important for ENVS students, both in the success of their ENVS major and their post-graduate employment. Furthermore, the opportunity for ENVS students to gain hard skills is becoming increasingly important as the knowledge provided to ENVS majors becomes ever more accessible through technology. If the goal of an environmental studies program is to give students the best possible education in order for them to understand current environmental problems and give them the ability to find solutions, and be successful in their postgraduate employment, I believe that outdoor education and leadership training should be integrated into ENVS in order to further this mission and give students a better ability to positively impact the interaction between humans and the environment.
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Appendices

This Appendices section includes relevant information referenced in my paper. It is broken up into two sections, Appendix A includes questions used for my survey of current and former CU Boulder ENVS students and Appendix B includes questions used for my interviews of instructors and administrators from the University of Colorado, Boulder Environmental Studies program and from the National Outdoor Leadership School.

Appendix A

Appendix B includes the actual questions included in my surveys sent to all current and former CU Boulder ENVS students. This section is broken up by the type of student asked the listed questions, current ENVS student and former ENVS students. As previously explained, not all of the questions listed below were included or answered by every student, nor was every question used in my project.

Current ENVS Student Survey

1. What year of school are you currently in?

2. Before beginning your Environmental Studies major at CU Boulder, did you receive any outdoor education?

3. What type of outdoor education did you receive?

4. Has this outdoor education been beneficial to your Environmental Studies career at CU Boulder?

5. How has this outdoor education impacted your academic career?

6. Do you feel as though you have received enough outdoor education as a part of your Environmental Studies degree?

7. Do you feel as though you have received any outdoor education as part of your Environmental Studies degree?
8. Do you feel as though more outdoor education would improve your success in Environmental Studies?

9. Would you take advantage of the opportunity to earn college credit through participating in outdoor education?

10. Before starting your Environmental Studies degree at CU Boulder, did you receive any leadership training?

11. Has this leadership training been beneficial to your Environmental Studies career at CU Boulder?

12. Do you believe there has been a leadership component to your Environmental Studies degree?

13. Do you believe you would benefit from a stronger leadership component within your Environmental Studies degree?

14. Would you take advantage of the opportunity to earn college credit through participating in leadership training?

**ENVS Graduates Survey**

1. In which year did you receive your undergraduate ENVS degree from CU Boulder?

2. What is currently your PRINCIPAL activity? Please choose one of the following:

3. In which sector are you currently or most recently employed?

4. Which of the following best describes your current employment?

5. At any point in your career have you been a founder of an organization (including before or during college)?

6. What type of organization (s) did you found? (Please mark all that apply:)

7. Have you pursued addition education in graduate, law, medical, technical, or other school?

8. Please indicate all degrees you have completed (including your degree in Environmental Studies).

9. Please list the area(s) of your degree(s) completed other than your bachelor’s degree in Environmental Studies.
10. Have any of your occupations since graduation related to your Environmental Studies degree?

11. Please list or describe the occupation(s), specifying job titles where possible:

12. What is your current job title?

13. What is your current occupation?

14. Thinking about your time at CU Boulder, which academic and other activities have been helpful to you in your career thus far? Please check all that apply:

15. Please list or describe specific courses or coursework that were a part of your ENVS major that have been helpful in your career thus far:

16. In retrospect, with regard to your ENVS major, are there additional areas of study or courses that you believe would have helped prepare you for your career? Please describe:

17. In your career, what specific skills have you used? Please check all that apply:

18. What specific computer skills do you use? Please check all that apply:

19. For the purpose of this survey, Outdoor Education is defined as any education in a natural space outside of a tradition classroom regarding the problems, causes and solutions related to environmental issues, or the interaction between humans and the environment/ Did you receive any Outdoor Education prior to or during your time at CU Boulder that was NOT part of your ENVS major?

20. What type of outdoor education did you receive? Please check all that apply.

21. Was this Outdoor Education beneficial to your success as an ENVS major?

22. How did this Outdoor Education influence your studies as an ENVS major?

23. Did you receive any Outdoor Education as part of your ENV major?

24. How much benefit to you personally or to your career would you have received from more Outdoor Education as part of the ENVS major?

25. Would you have taken advantage of the opportunity to earn college credit toward your ENVS major by participating in Outdoor Education through organizations outside of CU Boulder?

26. For the purpose of this survey, Leadership Training is defined as training that contributes to one’s ability to create a vision of the future, motivate or inspire people to engage with
a vision, or manage the delivery of a vision. Do you feel as though Leadership Training was a component of your ENVS major?

27. Do you believe you would have benefited from a Leadership Training component in your ENVS major?

28. Do you believe that this Leadership Training component of the ENVS major of the ENVS major has been benefit to you in your career?

29. Are there formal or informal leadership responsibilities in your current career or job?

30. Would you have taken advantage of the opportunity to earn college credit toward your ENVS major by participating in Leadership Training?

31. The ENVS Program offers an interdisciplinary degree in which we have integrated and interrelated courses and curriculum in the natural and social sciences, policy, and values. Please indicate below your response to the following statement:

“I believe my interdisciplinary education in Environmental Studies trained me to view and understand problems and potential solutions in a way distinct from my contemporaries who pursued other areas of study.”

32. For each of the four areas of study listed below, please respond to the following statement:

“This aspect of the interdisciplinary Environmental Studies education has played a valuable or important role in my career.”

33. When you left CU Boulder with your Environmental Studies degree, did you feel confident and prepared as you entered graduate school or the workforce?

34. Is there something the program could have offered that would have made you feel more confident or prepared? Please check all that apply:

35. Please provide any additional comments or suggestions about the CU Boulder Environmental Studies program or curriculum, using as much space as needed:

Appendix B

Appendix B includes a summary of the basic questions I used during my summary of instructors and administrators from the CU Boulder ENVS program and from NOLS. However,
not all questions asked are included, as some questions arose naturally from the direction of the conversation, and not all listed questions were asked to every participant.

**ENVS Administrator Interview Questions**

What is the goal of CU Boulder’s Environmental Studies program?

How are ENVS classes created? What are the criteria for a class to count for undergraduate credit?

Do you believe it would benefit CU Boulder ENVS students to have more outdoor education opportunities, or is that something students should pursue outside of the university?

Is leadership an important aspect to the Environmental Studies curriculum? Do you believe a stronger leadership component to the ENVS degree would benefit students?

**ENVS Instructor Interview Questions**

What is the process of how you decide which classes to teach?

How much freedom do you have in terms of choosing what to teach and how?

What is the process of you being trained to teach these classes?

What do you believe makes for an effective learning environment?

What are the pro’s and con’s of teaching ENVS in a traditional classroom?

**NOLS Administrator Interview Questions**

Could you explain a little about what you do at NOLS

How is the NOLS leadership and ENVS and Leadership curriculum decided, what are the criteria?

What are the goals of the NOLS Environmental Studies and leadership curriculums?

What do you believe makes for an effective teaching/learning environment?
What is the process of you being trained to teach the Environmental Studies and Leadership curriculums in the field?

What do you think the relationship between NOLS and a traditional undergraduate Environmental Studies education is/should be?

**NOLS Instructor Interview Questions**

What is the process of you being trained to teach the Environmental Studies and Leadership curriculums in the field?

What aspects of the Environmental Studies and Leadership curriculums are mandatory that you teach? Which do you have the freedom to choose what to teach?

What skills and knowledge do you hope your students leave your course with?

What are the advantages/disadvantages of teaching Environmental Studies/Leadership in the outdoors?

What do you believe the relationship is/should be between outdoor education and a traditional undergraduate Environmental Studies education?