THE ALA ARCHA ECOLOGICAL LEADERSHIP PROJECT: EVALUATING THE EFFECTIVENESS OF ENVIRONMENTAL ADVENTURE EDUCATION IN GROWING RESPONSIBLE ENVIRONMENTAL LEADERS IN THE KYRGYZ REPUBLIC

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ABSTRACT

Many experiential education programs maintain that their respective curriculums cause an increase in environmental ethics and action from graduates. However, a number of researchers suggest that programs do not produce genuine Responsible Environmental Behavior (REB) in students. Other researchers and educators have suggested that combining key elements from the two major models of experiential education – outdoor adventure education and environmental education – may produce the desired increase in REB. Based on research by Marcinkowski (2001), an increase in students' internal locus of control coupled with an holistic approach to teaching ecological behavior are most likely to achieve this increase. However, there is currently little evidence that outdoor educators have implemented this hybrid curriculum or that researchers have studied the suggested curriculum in an actual field environment.

Given my interest in conducting both applied projects and research, I partnered with the American University of Central Asia in Bishkek, Kyrgyzstan to conduct a hybrid experiential education program in August 2016. Called the Ecological Leadership Program (ELP), this action research initiative featured an intensive project management component to plan, resource, and implement the program, as well as an effort to study the effects of the hybrid *environmental adventure education* (EAE) curriculum on students' Responsible Environmental Behavior. The following thesis includes a narrative of the ELP project implementation process and research analysis of the EAE curriculum's effectiveness. Ultimately, research findings indicate that a Western-style experiential education model can transfer to non-Western countries. Although the full effectiveness of the EAE model in producing significant and long-term REB was inconclusive, the study was able to identify four main curriculum areas that current and future experiential education programs may apply to programming to potentially achieve an increase in students' Responsible Environmental Behavior.

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DEDICATION

This project and paper is dedicated to Captain Tobey Hockridge, 10th Special Forces Group (Airborne), who died of wounds on 31 October 2015. Thanks for the big dreams that we turned into reality together – I needed that confidence for this project, brother. Catch up on your sleep.

"Dreams of mountains, as in their sleep they brood on things eternal."

- C.A. Higgens, *Titan of the Chasms*

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As I embarked on this project, the most frequent comment I received on its design and objectives was “ambitious,” and not always stated in a positive tone. That the Ecological Leadership Project went from idea to reality, for the tangible benefit of seven amazing students from the American University of Central Asia, is testament to the people who saw the ELP as ambitious, but nevertheless believed that it was worth their time and energy. First and foremost, my deepest thanks to Professor Zheenbek Kulenbekov, Department Chair of Environmental Management and Sustainable Development at AUCA, for being the first believer and staunch supporter. I truly hope we can continue to work together on future ELP rotations. To the faculty and staff at the American University of Central Asia who pulled together behind Zheenbek to help us complete the ELP, thank you for your time, resources, and support. Back in the United States in the months prior to the ELP, there was an entire crew of individuals playing crucial supporting roles in the resourcing side of the ELP – Jason Elrod and Cinex Studios donated time to help me make the information video; Black Diamond Equipment, Kahtoola, Nalgene, Diva Cup, Darn Tough, and the Outdoor Gear Exchange all generously donated equipment resources to ensure our students’ safety in the outdoors; and numerous donators provided cash resources via the ELP GoFundMe campaign that made it possible to buy food and other crucial supplies for the program. Misha Golfmann and Kroka Expeditions, perhaps in a nod to another fledgling and innovative experiential education program, provided crucial time, information, and equipment to get us off the ground. The world-class faculty and staff at the University of Vermont’s Rubenstein School of the Environment and Natural Resources were invaluable in providing advice, support, and direction, most notably Carolyn Goodwin-Kueffner, who was always “in my corner.” My thanks also to the faculty and staff in another excellent UVM department –

Community Development and Applied Economics – who played no small role in inspiring me to do a project with immediate positive results. To my outstanding advisors and committee – Josh Farley, Dan Baker, and Robert Manning – thank you for your patience, guidance, and belief in this unorthodox approach to a graduate degree. The ELP instructor team – Sonya Buglion Gluck and Patrick Barrow – were incredible people to work with and learn from, and I can only hope that they learned something from this process in return. And finally, a sincere thanks to my family – Kimberly, Annaliesa, Isabel, and Eric – who gave me the support I needed to lock myself in a room with a computer, to fly off to Kyrgyzstan twice, and to spend hours tramping around in the woods in thought. You guys deserve the degree more than I do! Thanks to everyone here for an amazing team effort – best success to you all in your endeavors!

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INTRODUCTION

Despite an increase in humanity's scientific understanding of the negative effects our behavior has on the environment, these advances in knowledge have not translated over to the general public in the form of effective action. To the contrary, Western-led development efforts to bring other countries to the same material standard of living as "developed" nations seem to completely ignore the growing scientific message that our biosphere is under stresses not previously experienced during the history of humankind. Despite the publication of countless academic resources produced through experiments, monitoring, and studies of various kinds, the ability for researchers to communicate their message and translate that message into action seems to fall short (Farley, Erickson, & Daly, 2005). Notably, my background in the military exposed me to a sort of microcosm of the same nature – the inability of intelligence-generating bodies to effectively convey their overall message to operations planners and thereby convince decisionmakers to steer operations along the most effective route. Thus, when I made the transition back into the academic realm, it was with the conviction that the body of knowledge regarding the health of our environment that lay dormant on library shelves and electronic databases must find its way into the minds, and ultimately the actions, of the citizens of the world.

In the process of questioning how to achieve this lofty goal, I eventually began to think back to my own deep-seated convictions of the importance of the natural world. From whence did these feelings arise? What inspired them to first come to life and what experiences have nurtured them to their current state? The answer was immediately clear – I could clearly trace the origin back to a childhood growing up in rural Louisiana and then forward through a series of intimate interactions with nature during activities such as backpacking with the Boy Scouts,

college climbing trips, and months spent during military training laying in the dirt and watching ants to pass the time. The question for me, then, was this – if positive exposure to the natural environment worked to inspire me to care for ecology on an individual level, had others explored how a formal program could do the same for groups of students? Certainly, subjective examples of positive identification with nature abound in ecology literature. Aldo Leopold's publication *A Sand County Almanac* contains a myriad of sketches that detail the author's positive exposure to "impressions of wildlife … [and] the sharpness of form, color, and atmosphere" (Leopold, 1970) that they inspired in him throughout his life. In addition to these subjective experiences, objective studies regarding the importance of merging environment with education to produce positive environmental behavior are also abundant. As outlined in the literature review below, proponents of environmental causes frequently use a variety of experiential or immersive education techniques to advance understanding of and appreciation for the earth's ecological systems. However, despite the generally favorable outlook regarding experiential environmental education's ability to attain broad-based levels of general environmental knowledge, my initial literature reviews revealed a number of researchers who are skeptical of the ability of experiential education programs to produce the ultimate desired effects in learners – that of behavior change and action (Archie, 1998; Chawla, 1998; Horsely, 1977; Hungerford & Volk, 1990; Maloney & Ward, 1973; Ramsey & Hungerford, 1989; Simmons, 1991; Zelezny, 1999). If simple exposure to an element of an ecosystem could not achieve the effect of behavior change, then what could? The paired concepts of systems thinking and ecological economics seemed to hold the answer.

In traditional environmental education, the process of teaching about an ecosystem is often decoupled from or weakly coupled with the human role in positively or negatively

affecting that ecosystem. We see how forests grow, how animals live and thrive in forests, and how logging may be a subjectively "bad" activity for the forest. This may, in turn, produce a certain degree of cognitive dissonance between two things a learner knows to be good – a forest and forest products such as paper – and what they hear is supposedly bad – the cutting down of forest trees. The reaction to cognitive dissonance is, then, to simply turn the lesson off. Faced with feeling guilty for using forest products due to my understanding of the simple, linear nature between the products and harm to the forest, I may choose to suppress the lessons learned about forest ecology (J. Erickson, personal communication, Fall 2015). Put simply, many of the current approaches to environmental education and behavior change fall short due to an improper presentation of the complex relationship between human and environment.

The following thesis explores one idea for how to use experiential education and the rich concepts of ecological economics, social-ecological systems, and ecosystem services to achieve higher levels of responsible environmental behavior in a given student group. This idea – a hybrid outdoor adventure education and environmental education program called the Ecological Leadership Program (ELP) – was initially inspired as a means by which to give the gift of experiential education to a country with amazing natural beauty in return for a summer of mountaineering in the Tian Shan mountain range. However, given Kyrgyzstan's current position as a country working to find a reconciliation between its economic and ecological health, the Ecological Leader Program eventually evolved into an action research project that attempted to not only teach Kyrgyz students lessons in leadership and ecology, but also to explore larger strategic questions regarding how to inspire true responsible environmental behavior with members of a non-science based community. The following thesis will first provide a context for the ELP's work in the Kyrgyz Republic's Ala Archa National Park and a literature review to help

define the nuances of experiential education. Ensuing sections will cover the Ecological Leadership Program specifically – its methods, implementation, and outcome – followed by a conclusion that makes recommendations for both future research and improved applications to experiential education.

CHAPTER 1: PROJECT CONTEXT – ECOLOGY, TOURISM, AND THE CHALLENGES OF SUSTAINABLE DEVELOPMENT IN THE KYRGYZ REPUBLIC

In 1976, over 100 years after the United States established its first national park, the government of the Kyrgyz Soviet Socialist Republic recognized the Ala Archa river gorge as its first "State National Nature Park." Although Ala Archa National Park was only one of a series of parks classified on a scale similar to IUCN categories (International Union for the Conservation of Protected Areas, 2015), from reserves with relatively low management to preserves that allowed for only scientific access, a cursory profile of the park reveals a rich diversity of opportunity that distinguishes it as a little-known highlight among national and international parks – a critical glacial and snowpack watershed, forests uncommonly rich with biodiversity, towering alpine mountains, and ease of accessibility from the major population center in Bishkek.[1] In the intervening years between the dissolution of the Soviet Union and the current Kyrgyz Republic, the park maintained its existence, albeit with little management and policy enforcement, and is now rapidly emerging as a potential focus point for the country's burgeoning tourism industry (Mukanbetov, 2013).

Given that Ala Archa and the majority of the Kyrgyz landscape has escaped from much of the environmental degradation seen in other popular mountain environments (Thompson & Foster, 2003), the park's ability to attract international adventure tourists and generate revenue is promising. However, it is also well documented that successful tourism, even when branded as "eco-tourism," tends to increase pressure on mountain ecosystems to the point of destroying the very aspects of the environment that first served as attractions (Sharma, 2000; Gossling, 1999; Grotzbach, 2003; Yu, 1997). To further complicate matters, protected areas with pristine natural environments are often situated in countries that maintain limited funding to parks, thereby

[1] Ala Archa National Park currently falls into IUCN category II (National Park).

limiting the amount of financially-intensive management practices available. Given this trend, it is critical that particularly sensitive, biodiverse areas with high concentrations of ecosystem services identify and implement sound yet cost effective management principles to preempt environmental degradation. Ala Archa National Park, due to its unique concentration of Central Asian flora and fauna, high ecosystem services water value, an already-existing suite of potential management issues, and proximity to a major population center is an ideal area for the development and application of low-cost, high-effect information and education programs that concentrate on ecosystem services and social-ecological systems.

Ala Archa National Park, although not a particularly large park, defines itself with its array of biodiversity and ecosystem services. Situated in the Ala Archa River gorge 30 kilometers south of the Kyrgyz capital Bishkek, the park encompasses the highest peaks of the Kyrgyz Range of the larger Tian Shan Mountains in its southern section, a cirque of towering peaks surrounding the upper reaches of the Ak-Sai glacier. With a land size of only 194 square kilometers, the park nevertheless contains a microclimate of nearly every ecosystem that exists at large in Kyrgyzstan – mixed conifer and deciduous forest, dwarf juniper forests, scrubland, alpine grassland, steppe, sagebrush semi-desert, river valley, glaciers, and high alpine environments (Fet, 2007; Farrington, 2005; Matyas, 2010). Due largely to these varied microclimates, Ala Archa harbors a richness of species that rivals most parks in similar climates and latitudes. Researchers have documented 563 vertebrate, 10000 invertebrate species (Farrington, 2005), and 4500 species of higher plants (Fet, 2007) in Ala Archa National Park alone, coinciding with the relatively high levels of biodiversity found throughout Kyrgyzstan (Bekberdieva, 2011; Palmer, 2005) and the Global 200 ecoregion of which it is a part (World Wildlife Fund, 2015). Despite, or perhaps because of, its variance and beauty, the Soviet park

system did not classify Ala Archa as an untouchable scientific *zapovednik*, or preserve, and leave it undeveloped (Farrington, 2005; Ter-Ghazaryan & Heinen, 2006). Rather, Ala Archa's management strategy divided it into a prohibited zone, recreation zone, and production zone, each with different management strategies to both protect ecosystems and provide the general public with recreation opportunities (Farrington, 2005).

Currently, a single road accesses the park from Bishkek, running south from the city and terminating in the Ala Archa alpine camp, a small cluster of maintenance buildings, cabins and a hotel several kilometers up the gorge (see Figure 1, see also Appendix A for detail of Ala Archa National Park). From the camp, two trails continue south, one each into the two glacial valleys that form the southern end of the park. The easternmost trail, the shorter of the two, eventually ends at the Ratzek mountaineer's hut at the snout of the Ak-Sai glacier. The western trail continues eight miles from the alpine camp before ending at an abandoned Soviet-era ski lift.

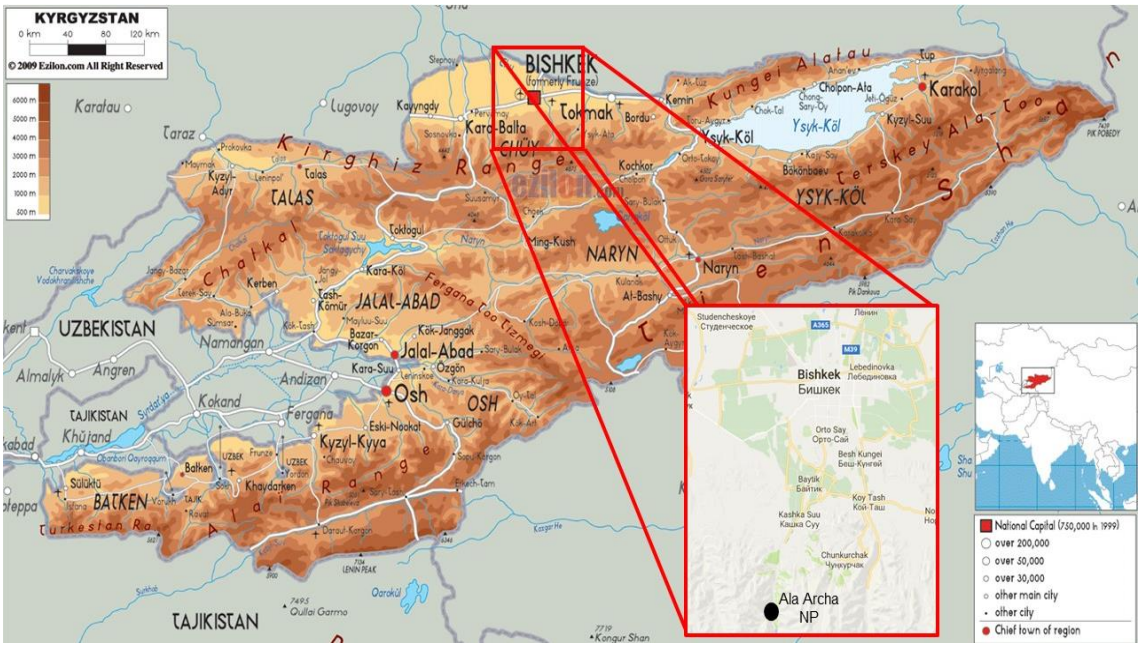

Figure 1: The Kyrgyz Republic and detail of Bishkek region

Notably, these trails terminate in a place where much of the park's human recreation activity occurs – the snowfields and glaciers. However, it is critical to understand that these flowing rivers of ice ultimately provide not only the simple pleasures of skiing and climbing, but a whole array of environmentally-based services that make Ala Archa National Park a vital area for safeguarding and preserving natural resources and associated ecosystem services. The glaciers of Ala Archa's Kyrgyz range, and the Tian Shan as a whole, have long been a critical aspect of Central Asian agriculture and life support. In Ala Archa National Park alone, glaciers comprise 31 square kilometers (36% of the park) and sustain the Ala Archa river in its flow from the mountains through the city of Bishek, into the canals and agricultural land to the north of the city, and ultimately into the Chuy River and the steppes of Kyrgyzstan (Hagg, Braun, Weber & Becht, 2005). In total, Kyrgyz mountain rivers flow into neighboring Kazakhstan, Uzbekistan, and Tajikistan and provide approximately 40 cubic kilometers of water to fuel vast agricultural endeavors and water thirsty cities, transforming the simple process of melting glacier and snowpack into an international asset (Bekberdieva, 2011).

Yet in addition to these obviously critical aspects of the park, there are a host of additional "services" that researchers are only now beginning to understand as vital to the existence of population centers and life in Central Asia. Defined as "the goods and processes through which natural ecosystems … sustain and fulfill human life" (Dailey, p.3, 1997), these "ecosystem services" generally range from the very tangible – provision of water or erosion control - to less obvious processes such as carbon sequestration, or the absorption of carbon from the atmosphere. In Ala Archa National Park in particular, it is the aspect of erosion control that further distinguishes the area's criticality to local communities (Attokurov, 2011; Orozumbekov, 2011). As global climate change seems to have accelerated glacial melting, with scientists

documenting up to a 27% loss in Kyrgyz glacial mass between 1935 and 1985 (Farrington, 2005; see also Fet, 2007; Hagg et al., 2005), Ala Archa's juniper forests play an increasingly major role in mitigating potential increases in flooding in an already susceptible area (Stucker, Kazbekov, Yakubov & Wegerich, 2012). Juniper forests act as a "geomorphic glue" (Byers, 2009) for hillslope soil, mitigating the effects of flooding, erosion, and eventual landslides. Yet juniper forests are also considered relative fragile ecosystems due to the difficulty of regeneration (Ciesla, 2001). With Ala Archa's woodlands still recovering from overgrazing issues prior to its establishment (Shukhurov & Domashov, 2009), Bishkek can little afford further degradation of these particular ecosystem services. With the suburbs of Bishkek lying in the mouth of the Ala Archa gorge, further deterioration of the juniper groves, when coupled with potentially higher risk of flood due to glacial melt or the bursting of a moraine lake, could have devastating effects on the foothill communities.

In contrast to the potentially dismal scenario that Ala Archa's ecosystem degradation could create in the downstream communities, these same communities also stand to substantially benefit from the park's success. Ecotourism, long lauded as a developmental boon for isolated mountain communities with relatively scarce economic resources, is becoming increasingly central to Kyrgyzstan's plan to establish itself as a strong, healthy, and sustainable Central Asian nation (National Council for Sustainable Development, 2013). Proponents of ecotourism cite that, if planned and implemented properly, ecotourism can be beneficial to both the environment and its target communities (Buckley, 1994; Bury, 2008; Byers, 2009; Ceballos-Lascurain, 1988; Gossling, 1999; Grotzbach, 2003; Johnston & Edwards, 1994; Kiss, 2004; Mukanbetov, 2013; Nepal, 2002; Sharma, 2000; Thompson et al., 2003; Orams, 1995). Although definitions of ecotourism are varied, the core of the definition is also the key to its philosophy of "do no harm"

– ecotourism should at once be environmentally constructive (as opposed to simply neutral or destructive), actively involve the local community in planning and revenue sharing, and offer visitors both a high quality experience and leave them more educated about the environment and peoples with whom they interact (Buckley, 1994; Nepal; 2002). Notably, the education principle is also the component that drives ecotourism advocates to claim that, historically, tourism is a driving force behind the establishment and management of protected areas (Lindberg, 1996; for historical examples see also Nash, 2014). And yet, the very success of even the most ecologically sound tourism options may leave ecosystems degraded and communities disenfranchised. As Gossling (1999) notes in a particularly prescient analysis of ecotourism effects on biodiversity, "despite evidence that carrying capacity in some areas has reached a max, tourism is expected to grow, with fragile areas as popular destinations" (p. 315). Other researches have noted similar phenomena in areas such as the Amazon rainforest (Yu et al., 1997; Lindberg, 1996) and Huascaran National Park, Peru (Grotzbach, 2003; Marion et al., 2000), recognizing that a successful ecotourism venture begets more visitors, which further increases pressure on the environment. Additionally, Gossling (1999) observes that not only is it difficult for ecotourism to live up to its self-imposed ecological standards, but also that the majority of revenue from ecotourism rarely remains in the target community. An outstanding example of the shortcomings of this more appropriately named nature-based tourism (as distinguished from true ecologically sound tourism) is in the mountain communities of Nepal. Due to an explosion in the popularity of mountain activities centered on the Sagarmatha region (i.e. the Chomolungma, or Mt. Everest, area), previously tiny villages such as Namche Bazaar expanded lodging and infrastructure to absorb additional tourists and tourism revenue. However, while some lodge owners benefit considerably from providing accommodations, a majority of the tens of thousands of dollars it

costs for a single mountaineer to climb Mt. Everest goes to government permits, airline tickets, food purchases in Kathmandu, and equipment purchases. Additionally, Byers (2009) notes that most of the operations that utilized the fragile alpine zone have not matched their use with concurrent levels of "high altitude land stewardship" (p. 54). The result of these activities are perhaps best summarized in Hardin's (1968) treatise on the "Tragedy of the Commons" and underscored in Nash's (2014) seminal *Wilderness and the American Mind* with the idea that the values of untouched wilderness and breathtaking landscapes that visitors seek in their beloved parks are steadily eroded by the very activities that seek to embrace them.

Ala Archa National Park is, as of yet, relatively untouched by the masses that swell into popular mountain areas such as Huascaran National Park (Peru) and Sagarmartha National Park (Nepal). Difficult to access and fallen into relative obscurity after the dissolution of the Soviet Union, the management problems in Ala Archa, although concerning, have not yet reached a point of no return. Like many other parks throughout the world, Ala Archa receives relatively little in the way of government funding and does not generate enough revenue from visitor pass sales ($0.75 USD per person or $1.75 USD per car) to finance its operations (Ter-Ghazaryan et al., 2006, Farrington, 2005). Farrington (2005) recorded Ala Archa as having one Russian jeep and six horses for its rangers, all of whom earned a salary of $18 USD monthly for their labors. Park administrators, at $25 USD a month, were not significantly better off. In contrast to the distinguished and relatively well-paid park ranger career during the Soviet era, current salaries place park staff at well below the 2010 Kyrgyz per capita income of $890.80/year (United Nations Statistics Division, 2015). Given that peak visitation from May – October can result in hundreds of visitors per day to the alpine camp (N. Fry, personal observation, August 2015 and August 2016; Farrington, 2005), it is unlikely that rangers find time to extensively monitor

ecological indicators outside of their duty of visitor management (Maxwell, p. 169, 2010) and necessity of working to find additional financial support for their livelihood (Ter-Ghazaryan et al., 2006). Notably, during my cumulative month in Ala Archa National Park, there were no encounters with park officials other than payment to gate guards for park entry and two interviews with park management staff in the administrative offices (N. Fry, personal observation, August 2015 and August 2016). With the majority of tourist pressure confined to the frontcountry and trail areas within several hours' walk from the alpine camp, current issues in Ala Archa appear isolated and largely attributable to a lack of education and carelessness.

Figure 2: Social trails in an alpine meadow in Ala Archa National Park

According to a 2014 article in a Bishkek newspaper, the majority of problems in the park center around firewood harvesting, littering, and improper disposal of human feces (Begalieva, 2014). My visits to the park confirm that the report's accuracy – although the frontcountry areas are remarkable for their general cleanliness (perhaps attributable to the fact that families use the frontcountry areas heavily for picnics and weddings), backcountry areas in the park demonstrated consistent problems with fire, trash, and human waste (N. Fry, personal observation, August 2015 and

August 2016). Even more concerning, however, was the state of trails along the well-used tracks in the park. Major switchback cuts and wandering in alpine meadows displayed major issues with trail overuse, social trails and erosion, pollution of glacial headwaters, and vegetation trampling around unsanctioned but traditional campsites (N. Fry, personal observation, August 2015 and August 2016; Sharma, 2000; Manning, 2011). Although there is currently no formal data regarding the exact numbers of visitors to the more remote backcountry regions of the park, my observations of tourist use indicate a relatively low level of use that results in a disproportionately high level of impact.

On a strategic level, there seems to be initial movement towards attempting to reconcile visitor pressure and visitor impact. Recognizing both the potential for Kyrgyzstan's unique place in the tourism market and the need to preserve the country's precious landscape from harm, the Kyrgyz government has issued a series of tourism and development plans in an attempt to achieve both aims. The most recent, published in 2013 and entitled the "Kyrgyz Sustainable Development Strategy, 2013-2017," is a sweeping call to bring vitality to the country by concentrating effort into several key areas. Four of the strategy's goals, in particular, are notable – educational initiatives among state officials, stemming the exodus of talented students and young people out of the country, training business circles with "green" project skills, and incorporating quantitative estimates of natural capital into GDP production (i.e. ecosystem services) (National Council for Sustainable Development, 2013). From the tone of the strategy, one comes away confident that the government, at the very least, understands the need to strike a balance between rapid economic development and conservation, in keeping with Sharma's (2000) observation that government intervention in tourism and development should be limited to "policy formulation, monitoring, and regulation" (p. 13). Yet if a government is to follow this

path successfully, its efforts comprise only a small portion of the work to be done towards responsible development and ecosystem preservation. The remainder of the work lies in the strategic planning and implementation (Thompson et al., p. 182, 2003; Bonilla, 1997) that must occur in conjunction with key community stakeholders. Herein lies the current disconnect, as noted in Mountain Tourism and Sustainability in Kyrgyzstan and Tajikistan: A Research Review (Shokirov et al., 2014), a paper that serves as an appropriate follow up publication to the Sustainable Development Strategy. Although the paper points out an extensive list of issues that block effective implementation of the Sustainable Development Strategy, one aspect of message is clear – although protected areas are significant components of sustainable development, a lack of vision and organization in tourism and other resource-based activities threatens to both destroy natural landscapes and suppress effective, and therefore profitable, resource-based ventures, resulting in a decidedly negative outcome for all parties involved.

Yet where there is a direct correlation between resource degradation and negative outcomes, a directly positive relationship between resource preservation and positive outcomes also likely exists. With the right vision in the right location with the right application, both progress and preservation may be possible (Gossling, 1999). In the case of Ala Archa National Park, the elements exist for such a success. As outlined above, Ala Archa's high levels of biodiversity and critical ecosystem services, unique spatial placement at the intersection of urban (Bishkek) and wilderness (Tian Shan interior), relatively low-level management issues, and attraction as a tourist or ecotourist area of concentration make it a unique place for testing the effectiveness of education programs that explore the concepts of social-ecological systems and associated ecosystem services. A properly-designed educational program in the park could capitalize on the "intersection" of unregulated human-nature interactions in the park, the park's immediate

importance to the city of Bishkek, and the park's significance as both a natural preserve and a potential economic boon to discuss the complexities of social-ecological systems and ecological economics. Furthermore, given the Kyrgyz Sustainable Development Strategy's emphasis on "medium term programmes that feed into long-term development targets [and] ... goals" (National Council for Sustainable Development of the Kyrgyz Republic, 2013, p. 8), the nation seems open and interested in supporting effective sustainable development initiatives. An educational program in Ala Archa that focuses not only on tactical goals such as ecosystem management in the park, but also on strategic goals such as equipping students to make ecologically responsible decisions as future leaders in their respective fields, directly supports many of the goals outlined in the strategy. Assuming that Ala Archa is indeed the "right" place for such a program, the larger question centers on what the "right" program looks like – what format and curriculum can make headway towards reconciling the tension between natural sustainability and economic health in the Kyrgyz Republic? This broad question inspires the central focus of the ensuing sections of the thesis, exploring in-depth the feasibility and effectiveness of creating the Ecological Leadership Program – an environmental and outdoor adventure education program in the Kyrgyz Republic.

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

To the outside observer, experiential outdoor education programs may appear as a relatively uniform category of education with largely the same philosophy, methods, and goals. However, although the majority of outdoor education programs in the United States can trace their roots back to a common modern concept of outdoor education beginning in the 1950s, current models also reflect a split in approach and goals that occurred in the 1980s between a group of programs that are now labeled as "environmental education" and another camp that identifies as "outdoor adventure education" (Priest 1986). Amongst these groups, there are a plethora of additional subdivisions of independent non-profit organizations such as the National Outdoor Leadership School, nature center-based education programs, K-12 programs associated with specific schools, and university "outing" or "outdoor" clubs that trace their philosophy and roots back to a common outdoor education core (Archie, 1998; Engelson & Yockers, 1994; Marcinkowski, 1997; North American Association for Environmental Education [NAAEE], 1999). In the context of this paper, it is critical to note that the split in program philosophies led to a varied emphasis on how programs approach the idea of emphasizing responsible behavior towards the environment. Some programs concentrate on the idea of developing general environmental literacy (Stern, Powell & Hill, 2014) *in* an outdoor setting, while others emphasize education "in, about, and *for* [emphasis added] the outdoors" (as cited in Priest, 1986, p. 13; see also Hanna, 1995, p. 22) with a concentration on environmentally sound behavior. The program's specific philosophy, in turn, dictates the organization's definition of Responsible Environmental Behavior, although the majority of outdoor-oriented programs at least claim to produce a degree of environmentally sound behavior in program graduates (International

Wilderness Leadership School [IWLS], 2012; L. Akin, personal communication, October 2015; M. Golfmann, personal communication, October 2015; National Center for Outdoor and Adventure Education [NCOAE], 2015; National Outdoor Leadership School [NOLS], 2015; Outward Bound [OB], 2015; University of Vermont Outing Club [UVM OC], 2015). Yet despite the popular perception that experiential education and exposure to the outdoors increases environmentally responsible behavior in graduates, a number of sources question the ability of experiential education programs in their current form to produce the genuine progress towards a growth in Responsible Environmental Behavior (Archie, 1998; Chawla, 1998; Horsely, 1977; Hungerford & Volk, 1990; Maloney & Ward, 1973; Ramsey & Hungerford, 1989; Simmons, 1991; Zelezny, 1999). In the following literature review, I will explore the various means by which the two major divisions of outdoor education – environmental education and outdoor adventure education – approach the environment and ecology, with special attention oriented towards assessing the recorded strengths and weaknesses of the two educational approaches in regards to inspiring genuine Responsible Environmental Behavior (REB). The literature review concludes with an exploration of a hybrid approach to both models – environmental adventure education – that the Ecological Leadership Program used to attempt to maximize the positive outputs in regards to both REB and personal leadership traits.

2.2. Key Definitions

Before exploring the host of literature and research that exists regarding environmental and outdoor adventure education, it is necessary to establish a working definition for several key concepts. These definitions are a product of multiple sources, as researchers continue to refine definition of these concepts in regards to changing goals and evaluation criteria. As such, the definitions below seek to capture the core concepts as listed in several texts.

Outdoor adventure education (OAE) is best defined as a program involving outdoor pursuits that concentrates on creating positive intrapersonal and interpersonal behavior change in individuals through the use of risky (actual or perceived) or uncertain situations that require the individual to overcome personal challenge (Hanna, 1995; Priest, 1986). Notably, outdoor adventure education is typically focused personal or social growth as the main goal, with REB as only a secondary effect.

In contrast, environmental education (EE) is defined as a program involving ecologically-centric pursuits that concentrates on creating Responsible Environmental Behavior through the use of scientific inquiry and exposure to specific environmental landscapes that require the individual to understand the human dependence on nature. The focus with environmental education is less on general personal growth and more on producing a citizenry that is knowledgeable concerning the environment and its associated issues and motivated to solve the issues (Hungerford & Volk, 1990; Stapp, 1969; Stapp & Wals, 1994).

It is also important to differentiate between different mindsets regarding environmental behavior and the methods for teaching or measuring them. Both OAE and EE researchers reference the concept of environmental sensitivity and environmental ethics. In the context of this study, we define environmental sensitivity as an aspect of awareness that results in an individual viewing the environment from an "empathetic perspective" (as cited in Chawla, 1998, p.12). Notably, environmental sensitivity does not require positive action in regards to the environment on the part of the student. Environmental ethics, on the other hand, goes one step beyond sensitivity to foster an intense regard for the natural environment and a willingness to take action to live harmoniously with nature (Chawla, 1998). In contrast to environmental

sensitivity, true environmental ethics requires motivation to act, at the very least on the level of personal behavior change.

The concepts of Leave No Trace and Responsible Environmental Behavior are critical sub-components of environmental ethics within the context of this project. The Leave No Trace (LNT) philosophy "teaches people of all ages how to enjoy the outdoors responsibly … making good decisions to protect the world … [through the concepts of] plan ahead and prepare, travel and camp on durable surfaces, dispose of waste properly, leave what you find, minimize campfire impacts, respect wildlife, [and] be considerate of other visitors (Leave No Trace Center for Outdoor Ethics, 2012). Note that the official definition is in compliance with the connotations of environmental ethics, as it requires action on the part of the individual to refrain from certain damaging behaviors. However, the language of LNT implies that environmental ethics only applies to backcountry areas or activities such as camping, building fires and hiking. This, in turn, suggests a certain degree of limitation on the ethical extent of LNT, making it a partial ethic that may not transfer effectively from its intended backcountry setting to broader social contexts.

Responsible Environmental Behavior (REB) takes the concept of LNT into this broader social context, applying environmental ethics to one's life as a whole, regardless of setting. Defined as behavior that works towards achieving and maintaining a dynamic equilibrium between quality of life and quality of environment, REB emphasizes the ability to recognize and act on environmental problems (Marcinkowski, 1998). For the purposes of this study, REB's emphasis on action in all settings sets the standard for a true attainment of environmental ethics.

2.3. Environmental Education: Objectives, Methods, Strengths, and Criticisms

Environmental education's objective hallmarks are to *achieve effective environmental action towards identifying and solving ecological issues* via the avenues of *increasing*

awareness, knowledge, attitudes, skills, and participation (Archie, 1998; L. Akin, personal communication, October 2015; Marcinkowski, 2001; M. Golfmann, personal communication, October 2015; Stapp, 1969; Stapp & Wals, 1994). An effective program will work to increase individual commitments to these aspects via an emphasis on systems thinking, a recognition of human dependence on the environment, an interdisciplinary approach, local knowledge, practical, real-world roots, and a lifetime of learning (L. Akin, personal communication, October 2015; M. Golfmann, personal communication, October 2015; NAAEE, 1999). Traditionally, environmental educators leverage the progressive relationship from increased knowledge to changing attitudes to altered behaviors to achieve these effects. Called the "KAB" relationship (for "knowledge → attitude → behavior) (Marcinkowski, 2001), the process assumes a direct linear relationship between the process of planting a seed of knowledge in the form of some sort of ecological lesson (for example, forest ecosystems and their associated importance), a favorable change in attitude towards a positive entity (again, the forest) or a negative change in attitude towards a harmful entity (poor forest management practices), and a resultant ecologically-responsible behavior (conservation of paper products). Inherent in the process of KAB is the idea of a parallel set of variables that propel the process along – *entry level variables* such as existing environmental sensitivity make the learner open to the new knowledge and, as lessons accrue, the learner's attitude shift activates a set of *ownership variables* (for example, the learner recognizes that the destruction of a local forest directly affects and is a negative contributor to the community). This altered attitude subsequently inspires the learner to seek out and be open to action strategies or other *empowerment variables* that, in a final climactic transition, transition the learner into active environmental behavior and motivates active problem solving (Holsman, 2001; Stapp & Wals, 1994).

Due to the commonly agreed-upon principles of EE established by educators and researchers such as Stapp, Hungerford, and Volk, there is a relatively similar approach to ecological education throughout the environmental education community (Simmons, 1991). The resulting proliferation of multiple curriculum guides has resulted in a positive transparency that allows researchers to freely investigate, critique, and improve upon existing curricula. Furthermore, due to a foundational reliance on psychological and educational concepts such as cognitive development theory, constructivist learning theory, moral development theory, and behavioral theory (Engleson & Yonkers, 1994**)**, EE is well-grounded in current knowledge on learning and receptive to future changes. These foundational strengths, when coupled with the specific focus on principles of ecosystem science and an action-based approach, make the environmental education curriculum an effective means by which to reach a broad range of audiences.

However, despite the pervasiveness of these approaches within the EE community, a number of researchers are skeptical of the ability of the Knowledge-Attitude-Behavior model to produce true or long-lasting behavior change and action (Archie, 1998; Chawla, 1998; Horsely, 1977; Hungerford & Volk, 1990; Maloney & Ward, 1973; Ramsey & Hungerford, 1989; Simmons, 1991; Zelezny, 1999). In summary, researchers have been unable to link increases in awareness or knowledge to definite behavior changes. Explanations for this failure to translate knowledge into action generally center around the thought that knowledge is only one of many prerequisites to action, others being the skill to apply knowledge, a desire to act, personal factors such as self-confidence that inspire and allow action, and situational or social factors that empower an individual to act (Hungerford & Volk, 1990). Furthermore Hungerford and Volk (1990) observe that the emphasis on biological hard skills – the entry-level knowledge

component – in many EE programs obscures the need to move on to the ownership and empowerment variables that eventually lead to action. As a result of this failing, EE programs manage to disseminate knowledge and perhaps effect short-term attitude changes, but, as Fishbein (1967) noted, largely fail to produce the behavior changes desired in an effective EE program.

2.4. Outdoor Adventure Education: Objectives, Methods, Strengths, and Criticisms

Outdoor adventure education (OAE) shares with environmental education some core commonalities – small group education, an environmental setting, and an emphasis on behavior change within the curriculum – but also developed objectives and methods of its own distinct from EE. As Hattie, Marsh, Neill, and Richards (1997) note, OAE relies on wilderness or backcountry settings, mental and physical challenges, group problem-solving and decision-making skills, and a longer duration (2-4 weeks) to achieve its desired effects on behavior change. Furthermore, the behavior change emphasis in the case of OAE focuses mainly on self-growth, leadership skills, planning and risk management, and social ethics (IWLS, 2012; NCOAE, 2015; NOLS, 2015; OB, 2015). The environmental component of OAE, explored via the avenue of Leave No Trace (LNT) principles and instructor-driven classes on topics such as land management, local flora/fauna, and environmental appreciation (C. Brown, personal communication, October 2015; Paisley, Furman, Sibthorp, & Gookin, 2008; Sibthorp, Paisley, & Gookin, 2007; S. Rochelle, personal communication, October 2015), is typically peripheral to the core concentration areas of personal growth. Programs employ methods such as rotating a "leader of the day," placing students in charge of expedition planning, and empowering students to conduct "solo" days without direct instructor supervision to encourage full involvement and sharing in the benefits or consequences of decision making, setting and attaining goals, student-

instructor feedback to help with behavior modification, and coping experiences to propel both the group and individuals forward (Hattie et al., 1997). As Hanna (1995) notes, one of the consistently recorded outcomes of OAE programs is an increase in internal locus of control, or the belief that one can influence one's circumstances through personal attitudes and actions, with the lingering effects of programs recorded as long as 17 years after program completion (Gass, Garvey, & Sugarman, 2003).

The strengths of OAE programs are largely a result of their expeditionary and long-term structure. With most programs lasting 2-4 weeks, and some occurring over an entire semester, OAE programs are capable of producing the immersive, long-duration experience that helps strengthen the long-term behavior changes that OAE programs seek to affect (Dresner, 1994; Horsley, 1977; Hattie et al., 1997). These behaviors, ranging from personal perception and self-regulation to communication skills to the aforementioned locus of control, are well-documented as positive outcomes of OAE programming (Paisley et al., 2008; Sibthorpe et al., 2007).

Despite a general consensus that OAE programming is effective in behavior change, there are also rumblings of discontent. Hattie et al. (1997) note that, for all the praise of OAE programs, there is also an apparent trend within programs and research to highlight positive findings and ignore negative findings. This may be in part related to an observed reluctance of OAE programs to share curriculum information with the same transparency as EE programs, leading to what Sibthorpe et al. (2007) and Paisley et al. (2008) call the "black box" of programming. Whether this reluctance springs from the competitive, sometimes "tribal" nature between OAE juggernauts such as the National Outdoor Leadership School (NOLS) and Outward Bound (OB) has yet to be explored. Related to this critique, and more relevant to this review, is the lack of convincing evidence that OAE programs actually achieve the goals they set

in regards to environmental behavior. Unlike EE, which regularly debates such principles as the implications of environmental "sensitivity" versus "ethics" (Chawla, 1998), there is scant research on the whether OAE programs turn a constructively critical eye towards how they articulate and achieve their environmental goals (C. Brown, personal communication, October 2015; S. Rochelle, personal communication, October 2015). One instance - Haluza-DeLay's (1999) study of a 12-day wilderness adventure trip – returned the verdict that the program generated good will towards nature, but no actual increase in environmentally responsible behavior. This corroborates insubstantial replies from students in qualitative post-course interviews, in response to questions about lessons learned about wilderness ethics, that "wilderness seems to teach its own lessons" and a confusion regarding Leave No Trace principles as *how* students learned rather than *what* they learned (Paisley et al., 2008). Yet it is Maloney & Ward's (1973) and Hanna's (1995) work noting a high degree of verbal commitment and environmental concern without the ability to carry out substantial environmental action that indicates that OAE is making the same mistake as many EE programs by assuming that knowledge eventually translates over to action. In Hanna's (1995) case, a case study of an OAE group with a particularly charismatic and environmentally passionate instructor is a particularly telling indicator – the group finishes the program with much enthusiasm regarding environmental issues, but fails to carry out their verbal commitments after a return home (Hanna, 1995, pg. 30).

2.5. Best Practices and Potential for a Hybrid Approach

Despite the successes in both Environmental Education and Outdoor Adventure Education, there also exists room for improvement in both approaches. For the purposes of this literature review, suggestions for improvement will focus specifically on how to achieve a higher efficacy in promoting long-term Responsible Environmental Behavior. Proposals for such a shift, though

rare, are not without precedent. From a research standpoint, Dresner (1994), Priest (1986), and Hanna (1995) make a case for the improvement of EE and OAE through a combination of best practices, with all noting that using OAE-style challenges could be a way to implement environmental action strategies. Additionally, a review of current course offerings at notable outdoor education colleges reveals that some programs are already taking such steps. Prescott College, in addition to maintaining the distinction between its Environmental Education and Outdoor Experiential Education programs, also offers an "Adventure-based Environmental Education" track featuring courses that combine outdoor adventure skills such as backcountry skiing with complementary environmental science skills such as winter ecology (Prescott, 2015). Kroka Expeditions, a small experiential education company based in New Hampshire, espouses a philosophy that integrates consciousness regarding one's place in and effect on the natural world with adventure activities such as mountaineering or canoeing (M. Golfmann, personal communication, October 2015). Finally, organizations such as the Sierra Club, although traditionally located more in the environmental education camp, offer programming that combines elements of adventure with ecology principles (Sierra Club, 2015).

The move towards unification, based on the common history and compatible elements of the EE and OAE approaches, is a completely realistic prospect. Both approaches share a common appreciation for learners as active participants in the educational process, recognize learning as a process of building knowledge and skills, value independent thinking and responsible action, and emphasize the importance of good communication skills (Hungerford & Volk, 1990). Yet it is not the commonalities, but the differences in the two approaches that makes a unification of best practices so appealing. Marcinkowski (2001) notes that the strongest predictors of Responsible Environmental Behavior are: 1) individual and group locus of control, 2) skill in using action

strategies, 3) environmental sensitivity, and 4) personal responsibility. The first two predictors, Marcinkowski (2001) observes, are generally not well-addressed at adequate levels in most EE programs. In contrast to this observation, Hanna (1995), Hattie et al. (1997), Sibthorp et al. (2007), and Paisley et al. (2008) note that locus of control, planning, and decision making ability are the factors that OAE tends to consistently produce in its graduates.

To complement this increase in "action strategy" factors, all of which fall into the "ownership" and "empowerment" variables that Hungerford and Volk (1990) recognized as completing the REB process, effective behavior change programs likewise require a solid foundation for Marcinkowski's (2001) third and fourth predictors – environmental sensitivity and personal responsibility. The presentation of entry-level variables of which environmental sensitivity is a part, along with knowledge of ecology and an informed attitude towards economics, technology, and pollution, must be tailored in such a way as to extend beyond concepts such as Leave No Trace (LNT), which is limited in formal scope to the backcountry. Although OAE programs indicate that students internalize and take personal responsibility for LNT practices, the flaw within this approach is that it limits scope of action to wilderness areas. By adopting the refrain of environmental education programs – that the student must be an informed citizen of the environment no matter what his or her home or locale – environmental sensitivity and personal responsibility transcend the confines of the backcountry and extend into personal life. Finally, students on a hybrid EE/OAE course, having experienced the foundations of REB through entry-level and ownership variables, should end programs with a reflection on the skills that they gain specifically in reference to environmental action strategies and with a concrete plan for an intention to act (Hanna, 1995). The intention need not be strategic in scope, but may simply provide the student with realistic methods for reducing his or her use of

disposable packaging, considering alternative transportation options to driving, and becoming involved with local environmental initiatives. The fulfillment of even one of these plans of action would thereby reduce the student's cognitive dissonance in regards to violating principles of environmental behavior they know to be right (Horsely, 1977), thereby encouraging future successes in the practice of REB in personal life.

With this design in mind, I crafted the Ecological Leadership Program's curriculum to emphasize both OAE's locus of control and action strategies and EE's environmental sensitivity and personal responsibility. This model, which I referred to as *environmental adventure education* (EAE), formed the central answer to the question regarding the "right" program for advancing Kyrgyz sustainable development goals through the context of Ala Archa National Park. Yet, as outlined below, the lack of evidence regarding the effectiveness of the project format and its applicability to the Kyrgyz cultural mindset created a set of research questions that became the basis for this thesis's core inquiry.

CHAPTER 3: PROGRAM DESIGN AND METHODS

3.1. Program Purpose and Research Questions

The purpose of the Ecological Leadership Program was twofold – to execute an applied ecology project to meet key aims of Kyrgyz National Sustainable Development Strategy goals and to simultaneously study the project's effectiveness as an *environmental adventure education* program. In regards to the applied project, the ELP's objectives were divided into individual, collective, and strategic outcomes, as outlined below:

Individual Outcomes

- Students will be capable of living in outdoor settings for periods of up to two weeks
- Students will understand their own individual leadership style and how to confidently organize and lead small groups under a variety of conditions
- Students will identify positively with the natural environment and the ecological communities of Ala Archa National Park
- Students will understand how to implement Responsible Environmental Behavior in their personal lives
- Students will implement ecologically-responsible practices in their chosen career fields

Collective Outcomes

- The student group will be capable of serving as student leaders of the AUCA ELP in future years
- The student group will be able to function as a core team of student leaders at AUCA that identify with ecologically responsible leadership

Strategic Outcomes

- In the long term, the ELP will produce individuals with the vision and skill to plan and execute policies and projects that support the Kyrgyz National Sustainable Development Strategy and an environmentally positive future for Kyrgyzstan

The ELP's research component regarding the implementation of environmental adventure education (EAE) to achieve responsible environmental behavior was more complex than its demanding but rather straightforward applied components. As can be inferred from the literature review, the premise of the Ecological Leadership Program rested first upon the assumption that a hybridized version of western-style experiential education would be effective in the Kyrgyz Republic. Prior to the inaugural year of the Ecological Leadership Program, there existed no experiential education program in Kyrgyzstan that involved Kyrgyz university students. Interviews with one of the few active outdoor educators in Kyrgyzstan, an Australian expatriate named Patrick Barrow, revealed that his work centered exclusively on creating experiential education programs for international high schools and foreign clients (P. Barrow, personal interview, August 2015). Traditionally, Kyrgyz exposure to the outdoors was largely achieved through cultural avenues – in the place of trekking, the Kyrgyz herders usher domesticated herds from lower pastures to *jailoos* (high pastures) during summer months; in place of nylon tents, the Kyrgyz employ the useful *yurt*; in place of dehydrated meals is fresh mutton, vegetables, and bread. With urbanization and migration to cities, however, the Kyrgyz have not readily replaced their cultural connection to nature with a more "modern" approach (R. Rahimov, personal communication, 2016). During my initial data-gathering trips to Bishkek, it was evident that the patrons who frequent expensive outdoor gear shops are generally foreign, while the Kyrgyz observed hiking in the further reaches of Ala Archa National Park often wore cotton jeans and t-shirts while carrying simple schoolbags and bottled water. As such, the first question the ELP

sought to answer was: *Can a western-style outdoor education curriculum transfer over to a culture where an outdoor education model currently does not exist?*

The second research question that the ELP sought to answer was predicated on the success of the first question and specifically involved creating a working education system with the suggestions put forth in the literature review. Specifically, *can a program develop and use a hybrid environmental adventure education curriculum that deliberately ties expanding a student's locus of control with relevant lessons in social-ecological systems and ecological economics to increase responsible environmental behavior in participants?* To this end, the ELP's curriculum focused on two key subject areas – an immersive leadership environment that maximizes student empowerment and an ecology curriculum that ties ecology lessons in the backcountry with students' everyday life in the Kyrgyz Republic.

3.2. Responsibility with Consequences: Exposing Students to Real World Leadership

My interest in exploring how immersive experiential education could potentially change one's self-perception and even a larger worldview began in what is arguably one of the most intensive "experiential education" programs in the world – US Army Ranger School. Ranger School, known throughout the military as a producer of high-achieving leaders, is a 60 day military school run by the Army's Ranger Training Brigade, headquartered out of Fort Benning, Georgia. Over the course of Ranger School's three phases, students are immersed in a wartime scenario that takes them from the piney highlands of central Georgia to the Appalachian Mountains of north Georgia to the swamps for Eglin Air Force Base, Florida. The School is known for its grueling demands on the body and mind – during my rotation, nightly sleep averaged no more than four hours and daily caloric intake was far insufficient for physical demands of walking miles with military rucksacks through unforgiving terrain. Although a

graduate of Ranger School must demonstrate a superior grasp of military small unit tactics, the ultimate goal of the school (and the reason for the stresses induced by lack of sleep and food) is to build the capability to lead teams in complex, ambiguous, and stressful situations. Although a survey of previous research on Ranger School and an increase of internal locus of control in its graduates surprisingly revealed no substantial research documentation, my experience in the school and research on locus of control in experiential education settings reveals distinct parallels.

First, the central idea of internal locus of control is that one begins to believe that, through controlling one's own actions and decisions, it is possible to navigate along an envisioned path in a chaotic and complex world. In Ranger School, instructors challenge students to "go internal" on a daily basis – students create and brief plans to achieve a set of mission goals, only to have instructors insert variables into the tactical scenario as the plan plays out, forcing students to constantly alter the plan to achieve these desired goals.

Second, research in OAE indicates that long-term exposure to situations assists with fostering an internal locus of control. As students continually face challenges such as weather or discomfort, the process of maintaining an internal locus of control becomes second nature. Ranger School's 60-day duration reflects and validates the importance of exposure – from start to finish, students are exhorted to "adapt and overcome" in some of the most ferocious environmental conditions one can imagine. There is no mission cancellation for rain, snow, lightning, or lost equipment, and students' graduation is predicated on achieving the mission regardless of outside factors.

In my experience with Ranger School and constructing locus of control, one of the central factors is the necessity of living with the consequences of one's actions and decisions,

with no outside intervention to assist the student to resolve self-made or instructor-contrived difficult situations. In contrast to internal locus of control's feeling in self-empowerment, the external locus of control leads one to believe that outside events control one's life and actions. In a training environment such as Ranger School or an OAE course, instructor intervention to change the *outcome* of a student-driven situation (i.e. to artificially resolve the situation for the student or, in the words of Ranger instructors, "make the bad man go away") is likely to lead to fostering an external locus, as the student begins to perceive that poor decisions will be magically mitigated from a higher power (i.e. the instructor). If the aim of the program is to increase internal locus of control, then instructor intervention to resolve problems is undesirable in all but the most unsafe situations.

To this end, the ELP's curriculum design chose to achieve leadership-based objectives and REB-based objectives through the implementation of a student-controlled daily plan, a rotating student leadership, and multiple "leadership scenarios" that challenged students to perform in stressful but controlled environments. Instructor input to problem resolution was deliberately designed to be minimum, although instructors did create contrived conditions during leadership scenarios to deliberately challenge student thinking and planning. In the case of daily operations, the student "leader of the day" was allowed generally free-reign to accomplish daily tasks in the manner by which he or she saw fit. Each leader of the day (LOD) was appointed the night before their leadership day, received a debrief from the current LOD on the current situation, and received the next day's task and guidelines from the instructors. From that point on, the LOD managed the timeline and daily tasks independently, with occasional guidance from instructors and consultation with the other students as the LOD saw fit. In some cases, this meant leaving camp later, choosing a less than ideal trail, or arriving to a new camp in challenging

weather conditions. However, in an effort to provide the latitude and learning experiences for students to grow their own leadership style and an internal locus of control, instructor restraint in assisting with problem resolution was a key factor.

A second method of providing students with challenging leadership opportunities came in the form of leadership scenarios. These scenarios hearkened back to my experience in Ranger School, where instructors present students with a situation that calls for rapid planning and execution. In the case of the ELP, situationally-relevant scenarios such as medical rescues involving first aid skills served two purposes – to provide students with a leadership training opportunity and to allow the instructors to rehearse the entire group for a potential emergency situation. One scenario, for example, centered on one instructor's unexplained failure to return to camp on time from a solo hike. The instructors nominated a student as team leader, provided the student with a general scenario and tools such as a map and compass, and then instructed the student to organize a rescue in a certain amount of time. Environmental factors such as a real-world incoming thunderstorm and travel across a boulder field further complicated the scenario. The student leader then guided the group through the rescue and subsequent first aid treatment, making decisions along the way that in turn brought consequences that the student had to confront. Ultimately, this process of empowering students to create a plan and confront real-world consequences, when coupled with constructive mentorship through post-leadership debriefs and after action reviews with instructors, formed the central approach to achieve the ELP's objective of stimulating the growth of empowerment variables through increased internal locus of control.

3.3. Ecological Economics: Linking Backcountry with Backyard

In concert with the growth of empowerment variables through the leadership curriculum, the ELP curriculum emphasized the relevance of ecological action and responsible environmental behavior through the social-ecological system of Central Asian watersheds. The choice to emphasize the social-ecological system (SES) approach and its associated concepts of ecosystem services and ecological economics was deliberate, as each of these concepts embed human society within a larger, holistic concept of the ecosystem. This is, notably, in contrast with the core assumption of Leave No Trace, which speaks specifically to backcountry living, and to OAE programs that do not connect student actions in the wilderness to behavior in "normal" life outside the program. However, integrating the concept of the human need for resources into nature's provision of resources is, as multiple sources attest (Engel, Pagiola, & Wunder, 2008; Farley, 2008; Farley, 2012; Norgaard, 2009; Vatn, 2009), by no means an easy process. The approach even risks oversimplifying the concept of ecosystem services into one that justifies environmental degradation through our current market economy. Consider, for example, two basic uses of trees and forestry products – harvesting trees provide goods in the forms of paper products and lumber but preserving trees provides the service of carbon sequestration. The decision to cut a forest, to include the type and age of tree cut and the basal area retained in the forest, goes well beyond a simple cost-benefit equation and seemed an ambitious topic to translate between Russian and English languages and a Kyrgyz worldview. However, the alternative to not attempting to connect one's perception of oneself as being *embedded in* an ecosystem rather than *outside and superior to* the ecosystem is surely continued environmental degradation. As previously mentioned, the situation of Ala Archa National Park at the intersection of the Bishkek-Tian Shan Mountain SES seemed to be an ideal setting through which to convey this intricate topic, specifically through the process of tracing the journey of

water from Bishkek, up through the canal and river system, and finally to its origin in the Ak Sai glacier of Ala Archa National Park. Not only does this model allow for a discussion about water's ecological structure and immediate resource value to the residents of the Bishkek area, it also opens the students to complex geopolitical discussions on the value and ownership of water in their Central Asian homeland. Considering the central nature of watersheds to the ELP, a brief overview on the context of water, valuation, and society in Central Asia is necessary.

In a review of literature on ecosystem services, it is notable that water often arises as a particularly contentious issue in regards to valuation and marketability. In considering ecosystem services as rival/non-rival or excludable/non-excludable, it is the rival (may be owned by only one entity) and excludable (an owner may prevent access to the good by non-payers) goods that typically present themselves as being most amendable to valuation and commodification (Kosoy & Corbera, 2010). Lumber production, fish harvesting, and the value of land parcels are all relatively easy to measure in units, may be endowed with ownership rights, and therefore lend themselves to trading in the current market economy. Furthermore, the existing economic system may take ecological principles into account when establishing governance rules such as harvest caps or land use policy and thereby ensure some semblance of ecological integrity (J. Erickson, class notes, Fall 2015). In contrast, natural resources that are excludable but non-rival (public enterprise goods that may be owned as property but used by an unlimited number of groups), non-excludable but rival (open access goods such as water that diminish with use), or non-excludable and non-rival goods (pure public goods such as air quality) present a more complex set of challenges in the process of understanding their particular ecosystem services (J. Erickson, class notes, Fall 2015). For the purposes of the ELP, the area of study concentrated only on the

non-excludable but rival characteristics that surround water and water rights in Central Asia and, in particular, the Kyrgyz Republic.

The Central Asian region that contains the Kyrgyz Republic is marked by dry, arid steppe that is not particularly well-suited for agricultural cultivation outside of distinct river valley areas where water abounds (Karaev, 2005). Despite this natural disposition away from agriculture and towards a nomadic lifestyle, the advent of Soviet rule in Central Asia marked a dramatic shift towards efforts to engineer the landscape for crop production. In countries such as Uzbekistan and Kazakhstan, characterized by dry steppes and river valleys, the Soviet centrally planned economy encouraged the widespread production of cotton in an effort to counter production in the rival United States. To facilitate such unnatural growth in the arid landscape, the USSR established a complex system of water rights to ensure that the majority of the water from Kyrgyzstan and Tajikistan, mountainous countries that contain the origin of the great Amu Darya and Syr Darya Rivers, flowed down into intricate canal systems in the lowlands. Although Kyrgyzstan and Tajikistan were limited in their consumption of water, they received generous compensation in the form of subsidized coal, oil, and natural gas from their cotton-producing neighbors (Karaev, 2005; Mirovlaev, 2016; Sehring, 2009). In terms of ecosystem services, the Soviet Union used a strong centrally planned economy to establish a system of tradable commodities, all excludable and rival, with water as the foundation. To this day, the legacy of Soviet-water rights exists, with laws mandating that 50.5% of the Syr Darya flow be allocated to Uzbekistan, 42% to Kazakhstan, 5% to Kyrgyzstan, and 7% to Tajikistan (Sehring, 2007).

However, although the laws persist, the centrally-planned relationship between the water-producing and water-consuming countries does not. With the breakup of the Soviet Union and subsequent independence of the Central Asian republics in 1991, the intricate system of

commodified natural resources began to dissolve. Suddenly, the water rights that had been for decades considered excludable services, with percentage shares owned by particular countries, no longer had a strong overseer to enforce ownership. Kyrgyzstan and Tajikistan, faced with the end of subsidized energy from neighbor states, scrambled to maintain and expand the system of hydroelectric assets situated at the river headwaters (Douaud, 2014; Sehring, 2009). Furthermore, with an increasing need for food security due to economic turmoil, producer nations increasingly diverted water to feed the need of their own farmers to produce foodstuffs for the country. Water consuming nations reacted strongly, with Uzbekistan even declaring the possibility of border incursions, seizure of Kyrgyz hydroelectric plants, and war in response to dwindling water supplies (Douaud, 2014). Often overlooked in the ecosystem services discussion regarding critical natural capital (CNC), the continued and growing issue of water allocation and rights in Central Asia increasingly takes on the form of low stock and high marginal value, with an inelastic demand (Farley, 2008) so extreme as to impel two sovereign nations to war. Further compounding the issue of valuing water as a Central Asian ecosystem service is that of the effects on the natural system, for as countries spar over what percentage of a truly non-excludable resource will water their fields, the ecological costs of water mismanagement continue to compound. Often cited in literature regarding ecological disasters, the destruction of the Aral Sea as a result of upstream overconsumption of water has destroyed the integrity of an entire watershed basin. At 10% of its original volume, the Aral Sea's salinity now prevents it from supporting most of the wildlife (4/5 of original fish species are dead) and plant life that originally thrived on its shores (Allouche, 2007, Tynbekov, 2008) – a stark illustration of the effect of crossing an ecological threshold and the resulting collapse of an entire ecosystem (Farley, 2008; Norgaard, 2009).[2] In addition, Kyrgyzstan now plays host to the Kumtor gold

[2] Ecological costs not withstanding, the human cost alone is devastating – an estimated 60,000 fishing jobs

mine, a Canadian-owned extraction operation that may infamously claim to be the only open-pit gold mine in the world that operates on an active glacier (Varshalomidze, 2014). Although there has yet to be a major environmental catastrophe resulting from the gold mine, surrounding communities continue to observe negative changes to their landscape and water sources as a result of mining operations. The ecological and public health costs of the mine are thus far not assessed.

Efforts to resolve the issues with water valuation, ownership, and use are notably ineffective. In response to the water crisis, international organizations stepped in to assist governments in implementing new management regimes for their water resources. Among the most prevalent in Kyrgyzstan was the implementation of Water User Associations in the 1990s, the Irrigation Service Fee (ISF) law in 1999, and a 2005 Water Code. In a stark illustration of the concept of a value conflict (Vatn, 2009) the ISF initiative is regarded a failure due to its inability to convince farmers and other water users to pay for their water or even for the maintenance of irrigation systems – those stakeholders with traditional Kyrgyz beliefs consider water a divine gift that does not require payment, while those who adhere to the Soviet model consider water allocation a public right (Sehring, 2007). These cultural conflicts are further compounded by the incompatible needs of a Kyrgyz state increasingly motivated to expand agriculture to reduce poverty and hunger, to divert waterways to hydroelectric production and move away from climate change-inducing fossil fuels, to maintain mountain glaciers and snowpack for water sources and tourism, and to woo would-be industrial investors and their heavy industries to Kyrgyzstan. Thus, the questions of ownership and value in the production of water-based ecosystem services is increasingly confusing for stakeholders, policymakers, and citizens.

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disappeared from the region with the collapse of the ecosystem and the health issues associated with airborne salt and toxins are prevalent (Postel, 2003).

Given the introductory level of the ELP's students to SES and ecological economics concepts, an attempt to conduct an in-depth economic analysis of Kyrgyz water as an ecosystem service would be overwhelming. However, using the complexity discussed above to explore the social subjectivity of the value of Kyrgyz water systems became the central teaching tool of the ELP. This idea to use a central problem statement and a series of associated exercises to propel the curriculum forward was modeled on the Problem-Solving Process outlined in *Ecological Economics: A Workbook for Problem-Based Learning* (Farley et al., 2005). On the first day of the ELP, instructors held the first ecology class beside the Alamedin River canal running through the center of Bishkek and posed to the students a question that the curriculum would revisit throughout the course:

"*How can Kyrgyzstan integrate its social needs for clean, abundant water with those of its neighbor states and, ultimately, the needs of the natural environment in which it exists? What social tradeoffs are we willing to accept to achieve a healthy natural environment and what natural risks are we willing to accept to achieve our social goals?"*

From this starting point, the ELP curriculum followed the watershed from its social context as a canal in Bishkek to its natural glacial origin in the park and included the integral experience of actually walking in and descending into the Ak-Sai glacier. Place-based experiences such as the glacier walk, when coupled with lectures and

Figure 3: The Ak Sai Glacier snout (right), glacial moraine (center), and Peak Ratzek (left) in Ala Archa National Park

group exercises that explored both the ecological functions of watersheds and the complexity of resource value, were designed to impel students to consider natural value, social value, and the respective relevance of both areas to their own lives. Through designing the structure of information flows to run quite literally along the watershed from Bishkek to the heart of Ala Archa National Park, I intended to exercise the concept of a leverage point (Meadows, 1997) to achieve this consideration of relevance. Meadows theorized that the very act of delivering information to a new place can change behavior and create a "new loop" of thinking founded on a different set of norms and perspectives. It was through this process that I theorized the ELP curriculum could overcome the challenges faced by OAE's Leave No Trace approach and, when coupled with empowerment variables, lead to an increase in responsible environmental behavior. However, in order to enact the curriculum, the ELP had to first overcome the practical hurdle of funding, resourcing, and organization.

3.4. Resourcing Methods: Funding, Grants, and Donations

Even before the program reconnaissance in August 2015, it was clear that one of the major hurdles in executing the full program was gathering the requisite physical and monetary resources. With limited time available for fundraising prior to the reconnaissance, this initial information-gathering trip was almost completely self-funded. The self-funded nature of the reconnaissance trip, although not financially ideal, came with one major advantage – I had complete freedom to focus on project preparation, partner building, and reconnaissance of the program area on my own itinerary. By the conclusion of the reconnaissance in August 2015, one year prior to program implementation, I was able to produce an initial cost estimate and equipment list that would function as the baseline document for the program's resource needs (see Appendix D.1). The initial project cost estimate for 14 students and four instructors in a two

week program ranged from $29,713.40 to $18,717.40. Given this cost and my inability to self-fund a program of this expense level, the primary funding goal became to raise the necessary resources through a combination of equipment donations, private monetary donations, and grant funding.

The reconnaissance trip not only served to provide planning information, but also to collect video and camera footage for the centerpiece of the funding campaign – an informational Ecological Leadership Program short film. Using hours of footage and interviews shot during the ELP reconnaissance trip, I partnered with a professional video editing company that agreed to donate time towards creating the ELP informational film. Over two short months in September and October 2015, I sorted through B-roll footage, created a draft script, and then worked with Cinex Studios to create the final 15-minute short film showcasing the program's origins and plans. Upon completion of the film in late October 2015, I then organized a funding plan centered upon the film.

The resourcing efforts focused in three main areas. Equipment donations comprised the first area of resource emphasis. After realizing early in the funding process that buying new equipment would be cost-prohibitive, I moved to appeal to private audiences to provide the bulk of the necessary equipment and secondarily to private corporations to augment with donations of bulk low-value equipment such as water bottles and water purification tablets. Assisted by instructor-intern Sonya Buglion Gluck, we as the US-based ELP planners contacted outdoor equipment manufacturers by email, phone, and trade show booth to directly request equipment

Kahtoola, Inc: hiking crampons
Kroka Expeditions: backpacks, tents, assorted clothing
DivaCup: outdoor feminine hygiene products
Outdoor Gear Exchange: water purification
Darn Tough Socks: hiking socks
Black Diamond Equipment Company: headlamps and gloves
Nalgene: water bottles and food containers

donations. Meanwhile, Kyrgyzstan-based instructor and professional outdoor educator Patrick Barrow contacted Kyrgyz organizations to determine options for resource support. The main fundraising techniques employed were verbal appeals and informational letters/emails with a short project summary and the film link embedded in the summary. By July 2016, nine months into the resourcing effort, seven companies had joined in the effort to assist with resourcing the Ecological Leadership Program (see Table 1).

Table 1: Resource Donors

In addition to private companies, individuals played a major role in providing critical resource requirements. Through a series of lectures, slideshows, and university clothing drives, the Ecological Leadership Program staff gathered a sufficient number of clothing items to sufficiently insulate and weatherproof up to 15 students (see Appendix G). Ultimately, it seemed that cold-calling a wide array of outdoor companies and university clothing drives were most effective in yielding a high return on time invested in resourcing efforts.

The second area of resource emphasis focused on using a popular crowdsourcing platform to request private donations, as there were substantial program costs outside of equipment. Private monetary donations would be instrumental in purchasing program food, renting any equipment to meet resource shortfalls, and purchasing expendable program items such as lip balm and batteries. The crowdsourcing campaign launched in October 2015 and continued until July 2016, eventually raising a total of approximately $3000. Although I promoted the crowdsourcing campaign in the video and aired the film in several different venues such as the University of Vermont's Reel Rock showing, only one donation resulting from public venues. All other donations came from personal contacts and networks, indicating the value in wide social networks that are sympathetic to philanthropic or educational efforts. In the final

review, the private donations were instrumental in providing enough funding to cover all ELP program costs, with no funding remaining after the program completion.

Finally, the third area of resource emphasis focused on requesting grants from an array of institutions and organizations. In an effort to compartmentalize funding, the ELP planners focused grant efforts on funding personal expenses such as flights, lodging, and in-country transportation. Overall, efforts to fund instructor expenses through grants were successful, with the ELP planners receiving grants for personal expenses from various University of Vermont grant opportunities and the American Alpine Club. Ultimately, these grants played an integral role in funding instructor expenses and freeing the private donations to be applied to actual program costs. By the time the self-imposed funding deadline arrived, cuts in numbers of student-participants, success in resourcing donations, and an emphasis on clearing extraneous costs from the program plan reduced the program's estimated actual cost to a fraction of its original estimate. At the conclusion of the program, the instructors found that they had implemented the ELP for approximately $2800.

3.5. In-country Project Management

Having secured sufficient equipment and money, the next major task in the program resourcing effort involved actually transporting the equipment to Kyrgyzstan. It was at this point that the program ran into its first major issue – how to transport all equipment in a cost-effective and expedient manner. After reviewing costs of shipping all equipment via a freight company, it became clear that this method was cost prohibitive. A call to the airline revealed that taking extra carry-on bags, although not comfortable or efficient in terms of travel, was significantly more affordable than shipment. In the weeks prior to departing for Kyrgyzstan, the ELP planners inventoried all donated equipment, made purchases of equipment that would not be available in

Kyrgyzstan, and began a meticulous packing process with an eye towards maximizing available space and minimizing cost. The inventory and packing process concluded one week prior to program departure with equipment sufficient for nine students tightly packed in duffle bags. The equipment packing process represented the first unanticipated resourcing issue for, although the ELP planners had resourced equipment sufficient for 15 students and had 12 students on the participation roster, travel restrictions and shipping costs clearly limited capacity. Accepting risk with their limited packing capacity, the ELP planners decided to re-assess resource needs in Kyrgyzstan and, if necessary, use portions of the monetary funds to rent or purchase any equipment shortfalls.

Arriving in Bishkek one week prior to the program start date, the ELP planners still had an extensive amount of work that was required to frame the program for success. Despite a 5:30 AM arrival time, the ELP planning team wasted no time in beginning final preparation tasks. Key to the preparation efforts was the project management methods that the instructor team had set in place in the months prior to program execution. Tapping into a breadth of program management experience from my military service, I utilized a nested checklist methodology to break the program down into phased milestones (see Appendix C.1). Due to the number of tasks required upon arrival in Bishkek, the pre-execution phase of the program was further detailed with an extensive checklist of critical tasks to ensure that we, as the project team, forgot no key element during preparation (see Appendix C.2). Tasks for the first 72 hours of work in Bishkek included meeting with AUCA leadership to provide final plan details and explain the risk management plan, an extensive food purchase, organizing all purchased food into duffel bags for quick and efficient resupply, a reconnaissance trip to Ala Archa National Park to familiarize the project intern with the area and to make final coordination with Ala Archa Park staff, and renting

or buying any equipment that we could not bring in sufficient quantities to Kyrgyzstan. Although the logistics preparation was not entirely free of complication, the requirements were clear from the start and helped the program planners to budget adequate time to accomplishing these critical tasks. By the eve of the project initiation date on 31 July, we had successfully accomplished all preparatory tasks and staged the equipment at AUCA, ready and waiting for the students' arrival.

3.6. Research Design

Simultaneous with the intensive project management efforts and curriculum creation, I focused time towards creating a research structure that would assist with answering the questions regarding the transferability of experiential education and the efficacy of a hybridized experiential education program. From the outset, it was clear that the pilot year of the ELP could only serve as a means by which to gather baseline data and identify areas of focus for future studies. This limited scope was largely a result of a limited dataset (a maximum of ten students could be involved in the ELP) and my need to focus intensely on the project management and a safe and professional execution of the ELP. The resulting research plan, therefore, focused on two main areas: conducting participant observation for the two weeks that I spent with the students to gather information on the students' daily reaction to the programming, and then coupling observations with information gathered in semi-structured interviews with the students to focus on their personal articulation of their experiences.

3.7. Semi-structured Interview

Semi-structured interviews focused mainly on answering the first research question – *can a western-style outdoor education curriculum transfer over to a culture where an outdoor education model currently does not exist?* I chose the semi-structured interview data collection

method for several key reasons. First, the initial interview focused on gaining insight into the students' backgrounds and how those backgrounds shaped the students' outlook towards a set of fixed topics – namely, outdoor education and responsible environmental behavior. The semi-structured interview allowed me to standardize questions, but also to use the open-ended format and probes to go deeper into individual students' areas of interest or concern. In the second round of interviews, the interview questions remained relatively unchanged, but the emphasis shifted towards understanding how the students perceived themselves changing (or not changing) during the duration of the Eco-Leader Program. Again, the format of the semi-structured interview allowed for an interaction between student and researcher that looked similar and felt familiar to the original format, but enabled the researcher to shift the attention from the way the student felt prior to the program to the way the student felt after completion.

Questions for the interviews were generally descriptive in nature and focused on eliciting the students' personal views on his or her experiences prior to and during the program (see Appendix H). Specifically, I sought to determine whether students felt that they connected to the Western-style course curriculum and, in particular, which concepts resonated with the students and which concepts did not. The interviews occurred in opportunity settings, with the initial interviews taking place during the first three days of the course in field-based environments and one-on-one settings. The concluding interviews all occurred on the final day of the course as students were cleaning equipment and preparing for their closing ceremony and were all held in an outdoor setting near the hostel where the program was based for the final day. Due to the dual-language nature of the program (I speak Russian and the students spoke varying levels of English), I conducted interviews primarily in English but included translations of key concepts in

Russian. If the event that a student was unclear on a particular topic in English, I reverted to Russian and the use of a dictionary, if necessary, to fully explain the concepts.

3.8. Participant Observation

Participant observation methods were used to focus in on the second research question – *can a program develop and use a curriculum that deliberately ties expanding a student's locus of control with relevant lessons in ecological economics to increase responsible environmental behavior in participants?* In this case, I chose to use this method in an attempt to gain more accuracy in gauging a change in responsible environmental behavior by observing student behaviors. In the semi-structured interview format, I anticipated, students would be more likely to give answers that skewed towards positive responsible environmental behavior, regardless of their true personal feelings on the subject. In contrast, observing students' daily actions would provide significantly more insight into their objective behaviors when they assumed no one was watching. Given the nature of the program and the constant interaction of students and instructors, I hypothesized that eventually students would become used to instructor presence and revert to natural behaviors rather than posturing or posing in a way they perceived would be favorable to instructors.

The participant observation occurred amongst the team of three instructors, with each maintaining a daily log of observations and behaviors. Nightly debriefs included a discussion amongst the instructors regarding noted behaviors and the associated significance. In addition to field notebooks, staff handbooks included a daily "after action review" section that allowed for note taking regarding both program adjustments and student behaviors. A final debrief within the instructor team focused specifically on reviewing our collective observations of responsible

environmental behavior and any particular changes we noted in individual students or the group from the program's start to its finish.

3.9. Study Limitations

As previously noted, the research component of the ELP was limited in several areas. First, the student population of the program was limited both by design and by the amount of equipment available to resource the program. With a maximum participation level of 12-15 students, the ELP ultimately occurred with seven student participants. This amount, based on instructor experience during the course, was an appropriate number of participants given the students' overall lack of experience and the experimental nature of the program. On one hand, this student body size enabled the instructors to conduct thorough interviews and focused participant observation. However, it also clearly limited the sample size for research data.

The language barrier between instructors and students was the second major study limitation that the ELP research program faced. Overall, the language barrier was not exceedingly inhibitive of program execution. All student participants spoke English at varying levels of proficiency, with four speaking at levels of near fluency, two at high conversational levels, and one at elementary level. Additionally, each English-speaking instructor spoke some form of Russian or Kyrgyz, with I and instructor Patrick Barrow at high fluency in Russian and instructor Sonya Buglion Gluck at a basic level of Kyrgyz. This level of language interoperability allowed students and instructors to try various ways of explaining ideas and thoughts during interviews and program exercises. However, it would also be inaccurate to claim that all ideas flowed freely between instructors and participants. Invariably, responses to questions about technical subjects such as ecology had to be paraphrased and lost key elements of responses during the translation process. I assess that each group's language abilities allowed

responses to research questions to at least capture the general attitude towards the subject (i.e. positive or negative, approval or disapproval, basic suggestions for improvement), but may have missed the deeper nuances of answers to more technical questions.

CHAPTER 4: PROJECT IMPLEMENTATION

Over a year of planning and effort transformed into reality on the morning of 01 August 2016 when seven students arrived in the Ecological Leadership Program classroom at the American University of Central Asia.[3] The students were from a remarkably diverse background, representing two academic institutions, six academic disciplines, and both urban and rural hometowns distributed throughout Kyrgyzstan. Although none had ever participated in a leadership program like the ELP, two had attended leadership camps in frontcountry, parklike settings. Notably, none save for one older, more experienced student had ever received immersive leadership training or spent considerable time in a backcountry setting. From this standpoint, the majority of the ELP participants essentially began the program as a "blank slate" in regards to understanding experiential education programs.

Table 2: ELP Class Profile

AUCA Students	6	Env Mgmt Major	2
Non-AUCA Student	1	Business Major	1
Male	3	Politics Major	1
Female	4	Computer Sci Major	1
2016-17 Sophomore	2	Anthropology Major	1
2016-17 Junior	4	Geology Major	1
2016-17 Senior	1	Glacier Travel Experience	1
Extended backcountry experience	1	Experiential Leadership Program Participant	3
Urban	6	Rural	1

The first day of the ELP focused on preparation and laying the foundation for success in the coming days with a series of instructional classes. Students received an inbrief from me (in the project director capacity) and were introduced to each other and their instructors, followed by a several hour process of inventorying personal equipment, issuing crew equipment such as tents and stoves, and then teaching students how to pack the equipment for safe and efficient travel.

[3] The narrative below focuses on a general summary of the major milestones and events that occurred from 01-12 August 2016. For detail on the day-by-day curriculum, please reference Appendix F.

From the standpoint of achieving the program objectives of increasing responsible environmental behavior, the central activity of the day involved a walking trip to the Alamedin River Canal for an initial class on ecological economics, water valuation, and watershed science (as noted in the curriculum design section). The program instructors conducted this program in the "5-minute lecture" format, focusing on a short informative introduction followed by a semi-structured exploratory questioning session. The 5-minute lecture format relied heavily on a place-based setting to frame the discussion and student observation and reflection to drive the conversation forward and proved to be a highly effective tool over the course of the program. In contrast to longer lectures that, even in natural environments seemed to lose student interest, the 5-minute lecture held student attention, as demonstrated by students' frequent recall of the Alamedin River course content throughout the program. By the conclusion of the day, the students and instructors alike were clearly exhausted from the pace of activity and amount of information processed over a 12-hour period. However, other than holding a class on first aid trauma, the program achieved all of its necessary learning objectives during the first day of the course and was poised for success on the second day.

Tuesday 02 August marked the first field day for the Ecological Leadership Program. After an hour-long bus ride from the AUCA dormitories to the Ala Archa National Park, the program found itself stalled out at the park gates due to a sudden and unanticipated

Figure 4: An ELP student marks out the day's route on her map

park closure.[4] After a short but tense delay, the instructors were granted access to the park, albeit with a significantly modified route into the park. Due to a landslide blocking the only road into the park, the ELP participants found that they had an extra 5 kilometers to walk with both their packs and resupply duffel bags that were originally intended to be dropped off at a hostel near the starting trailhead. Although unexpected, this alteration in the plan became the central teaching point of the Day 2 discussion on effective leadership. The ELP students, in a show of courage and flexibility that continued throughout the program, adapted to the change in plan and embarked on what became known as the "death march" along a bypass through a cattle pasture, over a mountain pass, and ultimately up to an expansive alpine meadow. The instructors selected a small grove of fir trees for the first night's camp and then assisted the students in their very first camp setup and backcountry culinary experience. After a short class on the ELP leadership model, students spent the remainder of the afternoon recovering from their walk and refining their campcraft skills.

The ensuing three days of the Ecological Leadership Program focused on increasing the students' baseline ability to operate independently in a backcountry setting, tracing the journey of the Ala Archa River watershed further into the mountains, and providing immersive leadership opportunities for students on a daily basis. The ELP model operated with a "Leader of the Day" (LOD) concept, with a student leader driving the program and making decision about how to meet program milestones. The Leader of the Day was selected the night prior to his or her leadership role and received an inbrief from the instructors on the next day's milestones and key times. The student LOD was then free to independently make a plan or consult with the student group to add plan details, depending on their preferred leadership style. The LOD concept,

[4] The details of this closure and how the program successfully navigated the impasse are outlined in the Partner Analysis section.

although initially new to the students, was soon readily adopted and saw the students performing excellently in leadership roles by the third day. With the LODs guiding the daily details, the ELP progressed from the alpine meadow to a campsite by the Adygene River, and then to a higher camp near the glacial headwaters of the Ala Archa River. Watersheds, introduced on the first day of the program in accordance with the curriculum plan, became a recurring theme on both a practical and academic level. Water, the students learned, was one of the main drivers of their daily activities. Students purified water in the morning for eating and drinking, boiled water for tea over lunches, and gathered water again at night for dinner and bathing. Additionally, classes on ecological economics and environmental behavior regularly referenced the constantly present but ever changing forms of water along the ELP's journey from canal to river to glacial headwaters.

During this time, instructors attempted several forms of academic instruction to explore the most effective way to transfer ecology lessons to students. In addition to the consistently well-received 5-minute lecture, instructors also employed a traditional classroom-style lecture in a place-based setting and a self-driven homework session to create a resource web, as outlined in Farley's *Ecological Economics Workbook.* The traditional lecture style was completely ineffective, both from the standpoint of student body language, tested retention, and student feedback forms later in the course. Despite an attempt to conduct the lecture, focused on watersheds, next to a river, the lecture content simply did not transfer over to the students. Additionally, the attempt to inspire the students to conduct a "homework" assignment on drawing their concept of a resource web was also ineffective. During free time, students gravitated towards creative activities such as improving the camp or conducting informal exploratory hikes or relaxing activities such as sunbathing or chatting with friends. After the first

three days, it was clear that the most effective educational activities included elements of being hands-on, with technical instruction limited to short presentations followed by exploratory questioning and discussion.

The fourth day of the Ecological Leadership Program marked a transition from introductory activities to more intensive adventure and academic lessons. Departing from the relatively low altitudes of the river headwaters, the program participants spent two days ascending a steep trail across talus slopes and glacial moraine to the high camp at 10,000 feet. This camp, located adjacent to the Ratzek Hut mountaineering camp, became the base for the remainder of the program's activities for the ensuing week. By this point, the instructors were pleased at the students' leadership performance – not even halfway into the course, the participants could efficiently set up camp and conduct camp activities with little supervision. This independence allowed instructors to focus on the more moderate risk activities in which the program would engage during the coming days. Some activities, such as rock climbing, focused on the leadership aspect of the curriculum, seeking to increase internal locus of control and empowerment variables through immersing students in new and challenging situations. However, key activities such as place-based lectures, fieldwork, and role-playing exercises focused on relating the students' backcountry trip to the wider themes of ecosystem services, ecological economics, and responsible environmental behavior.

Academic methods during this time focused on the proven 5-minute lecture, with additional successes resulting from a brainstorming session regarding ecosystem valuation. Recognizing that students were not adequately grasping the concept of interlinked ecosystem services through the resource web exercise, the ELP instructors discussed new methods by which to inspire students to think about resource scarcity and allocation, valuation and pricing, and

tradeoffs in utilization and ecology. After reviewing Exercise 3.1 in the Ecosystem Services workbook and discussing the concept of viewing the value of ecosystem services from different perspectives, one instructor suggested the idea of altering the classic "survival scenario" game to gain a perspective on differences in valuation. In the classic survival scenario, a group stranded in an isolated area must choose a few selections of key items from an already limited amount pool of resources. Using the same premise of resource scarcity, the instructors envisioned an isolated land area with defined boundaries such as a national park or forest that contained a limited number of resources within its confines (see Appendix J). The ten resources or resource environments, ranging from a picturesque ridgeline to a rare and coveted species of mountain goat to a high-volume glacial river, were designed to have multiple uses, depending on one's outlook. Each person's outlook and valuation of resources was driven by character cards that divided the students up into four character types – the environmentalist, the businessperson, the recreationist, and the culturalist. Students, keeping their identities anonymous, were then assigned to be on the board of directors of the imaginary land parcel and, referencing the list of resources that the land contained, had to create a 10-year plan for the area. The resulting game was quite possibly the most animated, informative, and powerful lesson that the ELP employed during its two-week duration. With little to no instructor involvement, students spent an hour immersing themselves in their roles and debating the various advantages and disadvantages of using their resources in various ways. For example, the "businessperson" argued for developing the ridgeline for wind energy, the recreationist for creating a ski slope, the environmentalist for leaving it untouched, and the culturalist for retaining its traditional role as high *jailoo* pasture land. After the students concluded the debate and briefed their land management plan, the ELP

instructors were in an ideal place to add closing thoughts on valuation of resources and tradeoffs before concluding the game with individual reflection.

An additional and equally effective instruction method also occurred during the time spent at the high camp. On the 6th day of the program, local entomologist and Canadian expatriate Amadeus DeKastle hiked up to the high camp to deliver a class on ecosystem health and services. Again employing simple, hands-on instruction, Amadeus engaged the students in a biodiversity indicator research project that measured water health in a small alpine stream that runs adjacent to the mountaineering camp. The students took water samples at the stream's headwaters, halfway through the mountaineering camp, and at the location where the stream exited the area surrounding the mountaineering camp. These experiments revealed to the students that even the minor human-stream interactions along its 300 meter route through the camp caused a significant drop in macroinvertebrate biodiversity indicators. Unlike the Resource Tradeoff exercise, which focused on higher level, strategic concepts of resource valuation, this experiment had immediate noticeable effects on students' concept of the responsible environmental behavior – students stopped washing dishes in the stream and intervened several times with other trekkers to ask them to limit their activities around the watercourse. This behavior change was notable, as previous admonitions from instructors to practice responsible behaviors around watersheds went largely ignored. After both the valuation exercise and the bioindicator exercise, the shift in behavior not only occurred, but it remained the predominant behavior pattern for the duration of the program, indicating at least a short-term alteration in personal responsible environmental behavior.

The final days of the program featured three additional experiences that were designed to work as "capstone" experiences in the process of inspiring responsible environmental behavior.

The first experience, ascending to the Ak Sai glacier, served as the final stop in a series of experiences that began with the first lecture on the banks of the Alamedin River Canal, traveled up the Ala Archa and Ak Sai rivers, and ended with the river's glacial origin. The Ak Sai glacier towers over the Ratzek High Camp and, since their first day in camp, the students had all marveled at the size of the glacier and the massive chunks of ice that went booming and careening down its snout into the river below. During the hike to snowfield just above the glacier's snout, the ELP group took a route that brought them as close as possible to the melting glacier and illustrated to the students the level of glacial melt that was occurring. Walking beside tumbling cascades of glacial meltwater and watching ice break off from the snout, the students received short 5-minute lectures on the effects of climate change on the world's glaciers. After ascending to the top of the Ak-Sai, the ELP instructors guided the students through crevassed terrain to a moraine island in the middle of the glacier's icy expanse. As the students had lunch, instructors used a belayed rope system to allow the students to descend one-by-one into a large crevasse and experience the feeling of being inside the massive river of ice. Interestingly, the students were clearly more affected by the process of seeing, touching, and entering the glacier than they were by the short lectures. One student remarked during lunch that the glacier made her understand the

Figure 5: ELP students on the glacier walk study a glacial crevasse.

finite nature of water and the need to guard it as a valuable resource. Several students echoed this sentiment in debriefs and the closing circle, suggesting that the experiential process of tracing the river from canal to glacier was a pivotal learning experience for ELP students.

After several days of recovery and various outdoor adventure activities, the Ecological Leadership Program geared up for the trek to its physical and figurative high point of the trip – an ascent of the 14,895 foot Peak Uchitel. Although technically undemanding, Uchitel was nevertheless new ground for the Kyrgyz students in the program, only one of whom had ever been to the summit. The planning for the day was completely student-led, with ELP instructors simply on-hand to help coach the student leaders regarding the timeline and packing list and to monitor the situation for safety. On the summit morning, the student group rose before the sun and was walking under headlamp before dawn broke. Ascending from high camp, the students passed through fields of boulders and large lichens, snowfields, and slopes covered in glacial till before finally ascending the last steps to the summit ahead of their scheduled turn-around time. After catching their breath, the students gathered for lunch on the tiny summit, at which time the instructors chose to give them their final lesson of the trip. "Look around you," the instructors motioned to the unending rows of snowcapped peaks and deep valleys. "This land belongs to you, and it is your choice how to use it. It is your water source. The water gives you your food. It also gives you electricity, and it provides jobs for many people. Remember what you have seen during this program," the instructors exhorted, "and make a deliberate choice about how you will value it." After a few minutes of discussion and reflection, the ELP group packed up and began the long descent back to base camp. The formal lessons of the ELP ended on Uchitel, but ideally the learning was only beginning.

In finishing the discussion on the formal implementation of the Ecological Leadership Program, it is important to note one aspect of the program that occurred between the glacier day and the trek up Peak Uchitel – the solo day. Designed as a day of rest and reflection before the Uchitel ascent, the solo day was almost completely unstructured other than a formal start and end time. Led by one of the instructors who had completed a multi-day solo trip during an outdoor education program, the ELP solo was limited to a length of six hours and the students were allowed to bring one item of personal significance such as a sketchbook or notebook with them. On the morning of the solo day, instructors led the students one-by-one to a sheltered spot where students could not see one another. Each student received a boundary area where they could travel during the day, but were instructed to not attempt to contact other students during their solo experience. The intent of the solo day, the instructors explained, was to allow the students to independently reflect on their experiences, record thoughts or sketches, and to think of how they could each put everything that they had learned into action.

Although the ELP instructors initially wondered about the level of receptivity the students would have regarding the solo, it quickly became clear that the solo day was one of the major high points of the program. Considering that the three most effective lessons in terms of noticeable changes in student behavior occurred in the days immediately preceding the solo day, the placement of the solo as a bookend to the formal lessons and served to allow students to reflect on their lessons from previous lessons before the Uchitel trek day. Students returned from the solo day noticeably more calm and focused, thereby allowing for more active participation in the final Uchitel trek and the lesson at the summit.

Following the summit day on Uchitel, the program began its process of winding down, both figuratively and literally. The day after Uchitel consisted of conducting a service project in the area of the Ratzek hut. The students, after seeing the amount of trash in the area, decided on a trash pickup effort as part of their service project. Additionally, they created signs to be placed at the Ratzek camp that cautioned trekkers to avoid dirtying the water. On 11 August, the final full day of the course, the ELP took down camp for the final time and descended, with trash bags in tow, from the Ratzek camp back down to the Ala Archa visitor center, stopping en route to set up trail markers in an attempt to direct hikers away from secondary trails and onto the main route. By the afternoon of 11 August, the ELP was out of the backcountry and lodged in a hostel for the program's final night. The day of 12 August consisted of equipment cleanup and turn-in, final interviews, and rehearsing for the final presentation to AUCA faculty and parents on the evening of the 12th. Following a dinner and the presentation, the Ecological Leadership Program students said their goodbyes and parted from each other for the first time in twelve days of intensive backcountry learning.

Figure 6: ELP students ascending the lower talus slopes of Peak Uchitel at dawn. The At-Sai glacier is in the background.

Figure 7: The Ala Archa Leadership Program students and instructors and AUCA faculty pose for a final group picture before graduation.

CHAPTER 5: PROJECT RESULTS

5.1. Objective Project Achievements

As outlined in the introduction, the Ecological Leadership Project sought to achieve three main outcomes – individual, collective, and strategic – with corresponding supporting objectives. These outcomes existed in parallel to similar research objectives that are outlined in more depth in the next section, and were mainly designed to determine the objective success of the project – namely, did students graduate from the program, participate in the curriculum and learning opportunities, and demonstrate a level of success in regards to the three main outcomes? Of these outcomes, the individual student outcomes were by far the most measurable and capable of assessment at the end of the course. A commentary on each of the individual objectives is outlined below.

First, the course expected that students, regardless of their personal feelings towards nature and ecology, could at least finish the two week-long program with the capability to live in outdoor settings for a period of up to two weeks. This meant gaining the ability to conduct basic sustainment tasks necessary for living in the backcountry – setting up a tent, maintaining proper personal hygiene, cooking for oneself or the group, treating minor injuries, choosing clothing and dressing to match the weather, and simply not quitting due to experiencing hardship or inconvenience. As we will explore further below, instructors found that achieving at least a level of environmental sensitivity required first that course participants could not only survive, but thrive in backcountry settings. Therefore, in addition to being an objective mark of course success, the process of creating a foundation in backcountry living further fed into the potential ability to perform responsible environmental behavior.

In regards to the course completion metric, the Ecological Leadership Program achieved a 100% success rate, with every student who started the program on Day 1 finishing the program in high spirits on Day 12. Most student comments in the course debriefs and anonymous exit interviews included observations of feeling empowered to live in an environment that once intimidated them (see Appendix H.2 and H.3). Observations from course instructors corroborate the student outlooks, as it was clear by the end of the course that students were fully capable of establishing a camp and running daily operations with little to no supervision from instructors.

The ELP's second objective sought to assist students to understand their own leadership style and how to use it to organize a group under a variety of conditions. The program sought to achieve this outcome by providing each student a minimum of one real-world leadership task that involved leading the ELP student group to achieve the task over the course of the day. This task ranged from being assigned as the "Leader of the Day" and organizing the group to break camp, navigate to the next location, and re-establish the next camp to leading the group in a high-altitude hike up the region's tallest non-technical peak. Although the metrics here are more difficult to measure than the first objective, again the student exit interviews play a vital role in helping the program instructors understand the extent to which the ELP met this objective. Each student in exit interviews commented that the course challenged their understanding of themselves as leaders and helped them to practice operating in real-world, high stakes scenarios with actual consequences for positive or negative performance. Some students described the course and its leadership training as "priceless" (see Appendix I). Again, instructor feedback from student observations throughout the program indicate that students made observable progress in their ability to harness the group to achieve difficult goals, with the team working together remarkably well by the end of the program.

The remaining individual objectives generally surround the internalization of ecological behavior within each individual student. The course sought to have students identify positively with the natural environment in Ala Archa National Park, to understand how to implement Responsible Environmental Behavior in their personal lives, and how to apply this understanding of Responsible Environmental Behavior in their future career fields. Clearly, the ability to accurately measure these particular outcomes would involve a long-term study. Students clearly left the course with short-term positive identification with Ala Archa National Park, as evidenced by statements that the environment helped them to truly understand heat and cold, that the tent became their home, and that others who had not experienced the program would not be able to identify with what the ELP graduates now knew about nature (see Appendix I). Additionally, they expressed intentions, to varying degrees, to apply Responsible Environmental Behavior in their personal lives and professional preparations for the remainder of their time in university (see Appendix H.2). However, short of a long-term study, there is no way to truly gauge whether students' outlooks truly shifted during the course in a way that will produce long-term responsible environmental behavior. As Misha Golfmann, the founder of Kroka, noted, it is extremely difficult to know whether a program is transformative (that is, it completely changes someone's approach to the world), or whether it simply unlocks and helps expand a trait that already existed. A long-term study that follows several cohorts of ELP students from program completion into a professional life after completing the university would be potentially useful in determining the extent of true REB implementation.

The collective outcomes of the Ecological Leadership Project centered on creating a cohort of students at the partner institution, the American University of Central Asia, who would not only be capable of serving as ELP instructors in future years, but also serve as a core group

of students at AUCA who can spread tenants of ecologically-responsible leadership. In the case of the first objective, the initial results over only the last few months are promising. Upon return to the university at the start of the Fall 2016 semester, a core group of the ELP graduates immediately began to lobby for the creation of a university Outdoor Club. At the time of this paper's publication, the successfully created AUCA Outdoor Club has hosted a series of hikes, ski trips, and camping trips with several ELP alumni at the helm of the organization. Currently, I am in contact with two of the main Outdoor Club organizers to discuss the possibility of running a second ELP during Summer 2017. Given this response, the ELP's success in creating a group who will spread the lessons of the ELP and serve as conduits for continuity in future years is initially promising.

However, similarly to the difficulty in measuring the more long-term individual outcomes, the long-term collective outcome and the ambitious strategic outcome of the program will take years to gauge. Although the ELP heavily emphasized the valuable skills of leadership vision, planning and goal setting, valuation of resources, and tradeoffs, the students must take responsibility for applying these refined skills in their academic and future professional lives. Given the diversity of ELP participants' backgrounds – software design, business, politics, anthropology, and environmental management – there exists the breadth of experience to achieve the stated goal of producing wide-ranging support for the Kyrgyz National Sustainable Development strategy. A single program iteration, however, is unlikely to produce a noticeable depth in support. Transforming a program such as the ELP into a self-sustaining and far-reaching institution such as the National Outdoor Leadership School or Outward Bound is a clear prerequisite to achieving any semblance of long-term strategic success.

5.2. Pre-trip Student Responses

The Ecological Leadership Program, in addition to maintaining objective-based performance points, also included research work as part of its execution. As outlined in previous sections, researchers used a combination of semi-structured interview and participant observation to attempt to understand how individual students reacted in regards to project hypotheses. During the first three days of the trip, the researchers conducted one-on-one semi-structured interviews to determine the baseline for the project data. Student responses through semi-structured interviews showed consistency in responses regarding feelings towards the program and the leadership/adventure component but inconsistency regarding ecology and environmental behavior. All students except one reported a prior level of contact with nature that seems to characterize the urban Kyrgyz student – exposure to the Kyrgyz concept of nature as a child in a rural hometown or staying with rural relatives, visiting *jailoo* high pastures in summer, gardening, and picnicking, coupled with an enjoyment of Bishkek's many city parks as an urban university student. The one outlier was a student who regularly engaged in treks and solo hikes in the high mountains and routinely immersed himself in challenging outdoor situations (Participant 4). This pattern translated over to the students' outlooks regarding participation in the Ecological Leadership Program – the six students (Participants 1-3, 5-7) exhibiting similar characteristics described their expectations for the program in terms of recognizing the challenge and meeting it with varying degrees of confidence, although expressing some concern regarding their untested physical or mental abilities. They used words such as "beautiful" (Participants 1, 2, & 5) to describe their concepts of nature, "strong" (Participants 1, 4, & 5) to describe how nature made them feel, and characterized themselves as small in relation to nature. Ideas such as being removed from modern distractions and being real with themselves and others characterized their

outlook toward being immersed in a backcountry environment, although several commented that the immersion made them feel nervous. One student characterized the common tension between the social self and a new nature-based identity by remarking that "I am feeling like both an ancient man and a civilized man … if I see a wolf, I would have both fear and awe" (Participant 5). Interestingly, Participant 4, the consistent outlier, expressed no indications of this tension, but did correlate with the others in describing nature as an avenue for himself to become stronger, as well.

Concepts of ecosystems, ecosystem services, and valuation were significantly more varied, but intriguing in their depth. The concept of connection and place in ecosystems was prevalent – students were able to identify that ecosystems involved connection, interdependent entities, and a requirement that entities coexist (Participants 1, 2, 4, 5, & 6). They also spoke specifically to certain areas, such as tundra or mountains. Some students took a very critical stance towards humans, noting that humans seemed to disrupt ecosystems and, in the case of one student, that humans should not even been considered part of ecosystems. Even more interesting was students' concept of ecosystem services. All students were capable of describing the basic goods that nature provides to humans, such as water, wood, and clear air, but also revealed a fascinating depth of understanding regarding service valuation. Students noted that one's valuation of nature and associated services is influenced by political climate, personal background, and cultural values. They voiced concerns about monetary valuation of nature due to the ability for the rich to simply buy off the services they desire and leave the dregs to the less fortunate. One student even noted the difference between ecology in developed countries such as Switzerland and developing countries such as Nicaragua, expressing the sentiment that "money can buy a healthy nature" (Participant 6). Overall, the consistency in student concepts towards

ecosystems and associated services occurred less in identical outlooks and more in regards to a rich depth and breadth of opinion regarding complex concepts of valuation and perspective.

Finally, a review of student attitudes towards leadership and corresponding internal locus of control revealed a strong consistency among six out of seven students that, at the beginning of the program, they did not consider themselves effective leaders capable of guiding a team outside of a specific set of comfortable conditions, indicating a low internal locus of control. Although several students with stronger responses related past experiences in nominal leadership roles, they also described a degree of uncertainty in those roles due to a lack of experience or strong example to follow. One student even expressed the opinion that he lacked any leadership qualities. This outlook manifested itself in many students' hesitation to initially volunteer for leadership roles. This behavior was in contrast to Participant 4, the consistent outlier in the group, who had experienced several leadership training courses already.

5.3. In-program Instructor Observations

Based on the initial student responses, the ELP instructors focused participant observation on three main areas corresponding with the three general sections of interview questions – general comfort in an outdoor setting, evidence of responsible environmental behavior in daily routine, and evident increase or decrease in leadership engagement from students. Students demonstrated noticeable increases in the ability to function in the outdoors over the course of the program. By the third day, students were capable of setting up the camp by themselves and, by the fourth day, several students were experimenting with making new camp gadgets such as chairs and washbasins from plastic bottles. They also showed a remarkable dedication to making meals a communal event, refusing to eat unless everyone was present and ensuring that everyone had a sufficient amount of food. By the middle of the program, the

students had, in the eyes of the ELP instructors, become extremely comfortable with the processes of outdoor living and travel. In illustration of this point, one student remarked in the program's closing circle that "when [she] lost her tent" in a windstorm mid-way through the course, "[she] lost [her] home" (Appendix I), indicating the level of integration that the students achieved with becoming immersed in the backcountry environment.

Evidence of an increase in responsible environmental behavior was generally subtle, but emerged clearly in certain moments. Early in the course, instructors struggled to have students act responsibly by not washing pots near streams, cutting vegetation, or picking wildflowers. However, as the program progressed and student experiences became more intertwined with the natural world, certain elements of behavior shifted. For example, after students conducted a bioindicator measurement exercise in the stream that ran nearby their camp, they found that the level of stream health decreased after it ran through camp. This, they surmised, was likely due to practices such as washing pots or bathing oneself in the stream. Glimmers of behavior change and basic elements of Responsible Environmental Behavior then emerged. Students began to wash pots away from the stream and exhort fellow trekkers to use the stream responsibly. More passionate students even scolded trekkers for washing or spitting in the stream. Additionally, students reflected after exploring the Ak-Sai glacier that they now understood water as a finite resource, capable of being dirtied or used up the further downstream it progressed. This likewise led to a higher level of responsible behavior near water sources that the students now understood to flow downstream to Bishkek.

However, perhaps the most interesting observation occurred when the students, late in the course, abandoned REB practices. During a hurried walk back to the camp to escape a rainstorm,

we witnessed students stepping onto lichen, alpine flowers, and eroding slopes in an effort to return to camp before a rainstorm arrived. I later reflected on this observation, noting that:

> Ethics and respect takes experience and competence. One cannot appreciate or guard moss or alpine flowers if terrified of a thunderstorm. Respecting ecology in outdoor education means that [one] must be comfortable with living in an austere environment, not distracted by [one's] own fear or discomfort … The observed progression in students in relation to nature seems to be fear → discomfort → aesthetic appreciation → recognition of services → guarding of services → guarding of nature for nature's sake. Environmental sensitivity corresponds with the appreciation or recognition stage, while REB corresponds with the guarding phases.

This reflection adds observed, real-world detail to the academic theory of progression from environmental sensitivity to environmental ethics to responsible environmental behavior. Early in the program, instructor observations, corroborated by student interviews, indicated that student decisions were mainly ruled by fear and discomfort. In such a situation, students perceive that the environment is a threat and were therefore narrowly focused on their own survival needs, not on the survival needs of the environment. However, after discussing the idea of discomfort and its relationship to REB, instructors were able to note that an increase in environmental comfort led to a corresponding increase in REB – as students learned how to efficiently set up their camp, cook, stay warm, and stay clean, many of their fears and discomforts were dissipated. Students noticed more about the environment and spent more time taking pictures or scouting around camp. This phase of aesthetic appreciation transitioned into recognition of nature's value and finite characteristics through exercises such as the previously mentioned bioindicator exercise and role playing valuation exercises that compelled students to consider the value of

natural resources. Feelings of empowerment in their new environments, when coupled with instruction in ecology, initiated the beginnings of Responsible Environmental Behavior. In contrast, instructors noted that a decrease in empowerment and sense of control, such as when the weather was poor and practicing REB took more effort, generally caused students to default back to non-responsible behaviors – washing pots in the stream or urinating closer to the alpine area rather than walking all the way to the latrine.

Finally, observations about leadership and self-empowerment were perhaps the most noticeable and dramatic. As noted in student interviews, most students came into the program unsure of their capabilities as a leader. As early as the second day of the program, however, instructors began assigning Leaders of the Day and providing leadership opportunities for ELP participants. Leader debriefs at the end of the day focused on reviewing student performance and providing input on areas where students could improve during their next leadership opportunity. In the case of the one student who expressed the opinion that he was "not a leader" and needed to leave his comfort zone, the ELP instructors provided him with two leadership opportunities – one LOD day and one leadership scenario – to ensure that he received adequate opportunities to excel. The student's final opportunity in the course was extremely challenging, but his mood in the debrief was upbeat and proud as the instructor explained how effectively the student had functioned. In addition to an instructor emphasis on mentorship, the student group was exceptionally supportive of each other and worked to ensure the success of each LOD with little to no infighting. The instructors observed student-leaders becoming more confident as they worked through difficult conditions, supported from below by their team. Student reflections during the closing circle corroborated instructor observations, with students remarking that "leadership experiences were priceless" and "we all had special things to offer to the group and

we all had to learn our place." Overall, instructor observations on student leadership growth were some of the most rewarding of the entire course.

5.4. Post-trip Student Responses

Student responses during the post-trip exit interviews exhibited consistency in student feelings of growth, but the exact areas of growth emphasis differed from one student to another. Not surprisingly the two students who were majors in Environmental Management and Sustainable Development (EMSD) both remarked that their baseline understanding of ecosystems had not changed significantly during the course (Participants 6&7). However, these students both noted that seeing ecology in context (i.e. in a place-based setting outside of a classroom) helped them to understand the relevance of their chosen field. Furthermore, they noted that the leadership education process had assisted them in becoming more effective in day-to-day leadership activities such as communication, taking responsibility, and managing time. This indicates that, for students who already have a grounding in ecology, the process of linking ecological lessons to relevant aspects of their lives (for example, clean water and water consumption) can result in increased feelings of empowerment to apply ecological lessons in professional or personal lives.

The non-EMSD student group contrasted to the ecology students in the richness of their answers to questions about ecology and ecosystems. This student group, comprised of business, political science, anthropology, geology, and software engineering majors, remarked that they now appreciated the complex nature of ecosystems, understood the concept of ecosystem services, and recognized the connections to their own areas of study. For example, an international politics major observed, in political science terms, that the "territory of the state" (Participant 3) made ecology a political issue, an anthropology student noted that the immediate

economic issues in peoples' lives affected how much they can care about ecology (Participant 1), and a business student commented that business should properly value resources for long-term rather than simply short-term gains (Participant 5). Answers from this student group suggest that a curriculum that focuses on a broad resource topic such as water valuation in a region (in this case, Central Asia) helps students connect their various academic interests to ecology. Similar to ecology-based students, this student group found significant relevance in the leadership education track, making them feel more capable of assessing their own leadership strengths and weaknesses and understanding how to use their lessons in their own future professions.

5.5. Program Strengths and Weaknesses

Following the program conclusion, instructors convened to review student end-of-course reviews and conduct an instructor after-action review (AAR). Instructors focused specifically on extracting from their own notes and from student feedback those methods that worked and did not work for the program. Instructors concentrated on three broad areas – the program, the curriculum, and the content delivery method. The programming review included the major structure of the program such as program length, activities, and day-to-day operations. The curriculum discussion centered on the ELP's academic content – the leadership scenarios, outdoor skills, and ecology instruction. Content delivery critique focused on *how* the ELP instructors communicated course content to students, with topics centering on the effectiveness (or lack thereof) of lectures, scenarios, and other exercises. Tables 3-5 below outline the major sustainment and improvement notes, with a discussion on the practical changes to the curriculum detailed in Chapter 6.1.

Table 3: Programming Strengths and Weaknesses

Sustain	Improve
Program length	Quality of equipment – need warmer sleeping bags
Adventure activities such as rock climbing	Recovery plan – descend to Alpine Camp one day prior to end of program to clean gear and prepare for closing ceremony
Place-based journey format from city canal to glacial headwaters	Packing layout and preparation must be more systematic – use "checklist and layout" format
Food resupply organization and allowing students a "grocery store" from which to choose their own resupply needs. Buy extra to allow for choice.	Instructor training – working several days ahead of program to ensure all instructors have a common understanding of curriculum and program methods
Emphasis on pack fitting on Day 1, followed by a pack "refit" on the 2nd or 3rd day	Add the trip to the climbers' cemetery – helped Kyrgyz students understand the gravity of the mountains
Closing circle (students and instructors only) and final ceremony (parents invited, students conducted skit) was a critical event in helping students gain closure and reflect on their accomplishments	Less emphasis on a timeline, more concentration on hitting major time-based milestones with students guiding activities between. Recognize opportunities for learning.
	Conduct service project in the middle of the course. By the end, students were mentally exhausted.

Table 4: Curriculum Strengths and Weaknesses

Sustain	Improve
Ecology-leadership-outdoor skills organization	First day was too overwhelming with information – space out
First aid was extremely well-received. Focus on easy and practical exercises such as bandaging, hypo-wraps, and initial patient assessment	Curriculum was too ambitious – allow time for student reflection. Balance a few topics every day – one from each category – with structured and unstructured free time.
Watersheds and the place-based approach seemed to speak well to the students. Continue to focus on watersheds as the central aspect of the ecology curriculum.	Homework doesn't work – students don't want to spend their free time making charts (ex. resource web from *Ecological Economics Handbook*). Using a five-minute lecture format and guiding them through the exercise would likely be more effective.
Solo day provided a much-needed break and reflection time. Consider doing the solo day as the final day prior to walking in. It allows for rest, unstructured time, and reflection before the course completion.	
The problem-based and place-based approach to the curriculum provided context through which students learned about their own region. Making an ecological problem personal and relatable is a key aspect of inspiring REB.	
Leadership instruction was an extremely popular topic. Students seemed to pay more attention to lectures in leadership dynamics than they did in ecology. Perhaps more interesting to them?	

Table 5: Delivery Method Strengths and Weaknesses

Sustain	Improve
Experiential learning opportunities such as bioindicator measurement showed significant results in student understanding	First day classes are necessary, but should be no longer than 30 minutes and then allow for a break
Land valuation scenario was an extremely effective vector to discuss valuation	Small-group breakouts are effective as long as leaders are solid facilitators. Include leader training in next rotation.
"Say goodbye to yourself" exercise with the mirror, held at Alpine Camp prior to hiking to the high camp, was extremely effective in bringing students into the "transformative" nature of the ELP	No conventional lectures – the "5-minute lecture" format followed by questions is a more effective route. Students were bored or overwhelmed by conventional lectures, even in the place-based format.
Choosing an LOD, nightly briefings, and LOD debriefs all worked well for giving students real-world experiences.	Leadership scenarios were effective for students to practice quick decision-making – include more leadership scenarios in future ELP rotations; consider them as rehearsals for critical events such as first aid, etc.
Teaching students to set up the camp and then having them do it by themselves after that worked well. Even though they struggled, they quickly learned how to do it themselves and were fully functional by the third day.	

5.6. Research Outcomes: Transfer of the Experiential Education Model

Although the main research question focused on whether a hybrid environmental adventure education (EAE) model could lead to a positive change in Responsible Environmental Behavior, it was first necessary to determine whether the basic Western experiential education model could translate over to a different culture where experiential education is essentially non-existent. In determining the answer to this research question, the instructors compared responses and outcomes of ELP students with responses given from their Western counterparts after completing an experiential education program. ELP student responses at the conclusion of the program were remarkably similar to those noted in D'Amato and Krazny (2012). Both Western

and Kyrgyz students agreed that an experiential education program served as a sort of crucible, placing weak humans in a setting where they are subjected to a stronger natural world. Experiential education served to remove them from distractions, to provide opportunities for thought and solitude, to build self-confidence, and to immerse students in a team setting. In addition to student responses, the objective achievement that all students completed the course, with not a single attempt to quit or cut the course short, is a testament to the overall success of the model's ability to transfer to a new and different culture.

However, instructors also observed that they had to change several minor aspects of the program during the course in order to accommodate a different cultural worldview. As noted above, the most experienced instructor noted that there was a significant emphasis on bathing and cleanliness, in contrast to his experience with Western students. This is not to say that Western students are unclean, but rather that there is a different cultural standard for hygiene and the level where one becomes "dirty." The ELP had to alter the schedule to allow for additional bathing opportunities every few days, an aspect of the schedule that had not been previously anticipated. Additionally, instructors also noticed an increased emphasis on the communal nature of meals, even informal meals such as snacks or lunch that Western students would often take on their own. Again, this simply called for an alteration in schedule rather than a change to the entire program structure. It does, however, call to light the need to adjust the presentation of an experiential education program when transferring it to a different culture. At least from the standpoint of the ELP and the Kyrgyz Republic, the experiential education model is an excellent fit and merely requires adjustments to the nuances of the program to create a safe and familiar learning environment for students.

5.7. Research Outcomes: Changes in Responsible Environmental Behavior

Given the effectiveness of the model framework, the question remains regarding whether the hybridized environmental adventure education (EAE) model can increase an internal locus of control in its students and, in doing so, attain a higher level of Responsible Environmental Behavior (REB). Based off of student responses and, more importantly, instructor observation during the ELP, data indicates that the increased focus on ecology in the EAE model can indeed serve to inspire Responsible Environmental Behavior in students. However, the success of a program's curriculum in inspiring REB seems to rest on four key factors in EAE programming.

First, an ecology program in an EAE curriculum must be preceded by students attaining a feeling of empowerment and comfort with living in a backcountry environment. Comfort in this case is not defined in the modern sense of being without inconveniences, but in terms of no longer feeling that the environment is a threat to one's survival through the process of teaching low-impact backcountry living skills and increasing individual internal locus of control through leadership development exercises. As noted in Nash's (2014) book *Wilderness and the American Mind* and further corroborated by research during the ELP, humans do not typically concentrate on environmental sustainability when their own livelihood seems to be at stake. Only after the initial 3-4 days, once students ceased to describe their environment as intimidating, did they begin to visually and behaviorally respond to ecology lessons. Therefore, a program that seeks to achieve a certain level of Responsible Environmental Behavior in its students must first help them to "master the basics" of backcountry living.

Second, a curriculum that helps students to connect to their environment on a personal level is more likely to achieve elements of Responsible Environmental Behavior. Students frequently remarked that it was the process of tracing the watershed from their own city to its

origin on the glacier that led them to understand the importance of this finite resource. Thus, moving beyond the idea of general place-based education to a specific place that ties lessons to a student's home and everyday societal life may assist students in seeing an intrinsic motivation for REB. One possibility for increasing specificity is for students from a particular area (in this case, the Bishkek region of Kyrgyzstan) to study an ecological network or issue as it relates to them and to their home, similar to the problem-based learning approach in the *Ecological Economics Workbook* (Farley et al., 2005) Unlike LNT, which defines REB as a backcountry ethic, specific place-based curricula connect actions and lessons in the backcountry to students' daily lives, thereby increasing the likelihood that REB will continue after program completion.

In addition to establishing the place-based connection, an effective EAE curriculum will work to achieve a broad relevance to students' professional interests. Rarely will a program work with a student group with academic interests solely in ecology. Thus, helping students understand the relevance to ecology in their future aspirations is a key component to providing a motivation to practice REB. In the ELP's case, this relevance seemed to emerge strongly through discussions on ecosystem services and hands-on exercises in resource valuation. Students from several disciplines made their final observations on ecosystem services through the lens of their particular academic aspiration, indicating that a curriculum that can add cultural, monetary, political, social, and natural relevance to REB is more likely to inspire REB in its students.

Finally, a crucial component of an effective EAE curriculum is that it adds life to nature. Students began the program with remarking on the most noticeable features of nature – rocks, water, forests, animals, etc. These observations of the components of nature largely featured generalized, impersonal groups (i.e. "animals" or "trees" broadly) or inanimate objects (i.e. "rocks" or "water"). However, exercises such as the stream bioindicator exercise clearly made

an impression on students, showing them the level of life that exists beyond their observable eye. This exercise seemed to attune them to an increased level of observation in their natural world, with students moving from generalized descriptions of nature to noting things such as pikas consuming grass or mountain goats blended into the hillside.

The research conducted during the Ecological Leadership Program cannot, unfortunately, reliably predict whether students' exhibited Responsible Environmental Behavior will be long- or short-term. Although students' final reflections at the closing ceremony observed that their outlooks towards the environment and society had changed and suggested a much deeper appreciation for responsible environmental behavior, the small sample size and current lack of long-term follow-up with students prevents an assessment of behavior duration. As students themselves noted, whereas an environmentally responsible decision during the ELP typically came only at the cost of time or convenience, environmentally responsible decisions in daily life may also be associated with an additional monetary cost that students cannot afford. Yet, although a definitive answer would require additional study and research, there also exists the possibility that the same Kyrgyz ingenuity and inward reflection that the ELP instructors saw exhibited so many times during the course will carry REB into students' daily lives. As demonstrated with the students' ability to improvise tools from trash at no cost to themselves, students could also carry their inspiration into their professional and personal lives in ways that ELP researchers and instructors could not foresee.

CHAPTER 6: PRACTICAL APPLICATION OF PROJECT RESULTS

6.1. Curriculum Adjustments

The initial attempt at creating an Environmental Adventure Education curriculum was, based on instructor experience and student course feedback, a successful first attempt. However, there were several key "on-the-fly" adjustments that instructors made to the curriculum during the course of the program that enabled this success. These adjustments are recorded here in an effort to capture lessons learned from the program for future ELP curriculum adjustments and for the edification of other programs that seek to replicate the Environmental Adventure Education model.

Table 6: Curriculum Analysis

Curriculum Adjustment	Justification	Expected Outcome
Course Length adjusted from 13 to 12 days	A day dedicated purely to equipment recovery is unnecessary and will likely lose student attention	More efficient use of program time, with a response to student comments that the program was slightly too long
Add resource valuation scenario, strategically placed in middle of course after students have had at least four days to adjust to backcountry living	The resource valuation scenario (or "National Park" game) was one of the highlights of the course from a student comment perspective and a learning outcome perspective, despite being created "on-the-fly" to respond to a lack of student connection to ecosystem service valuation	Continued educational returns in regards to resource valuation
Plan for additional exercises similar to the bioindicator exercise to increase student awareness of natural health	The bioindicator exercise, similar to the resource valuation scenario, was an unexpected, last-minute addition to the program that results in a high rate of return in student understanding.	Continued educational returns in regards to understanding the health and makeup of natural environments

Plan for additional leadership scenarios	The few leadership scenarios that the ELP conducted were well-received by students. Students expressed an interest in each having an opportunity to work as LOD and also run a leadership scenario. Leadership scenarios also offer opportunities to practice critical emergency rehearsals with students.	Increased opportunities for leadership practice, resulting in a greater return on time investment regarding student leadership skills
Add instructor train-up to the program schedule	All ELP instructors were experienced in their own way, but took several days to synchronize their approaches. This resulted in less emphasis on curriculum components such as topic clusters and small-group breakout.	Adding an instructor train-up allows time to explain the concept of topic clusters, systems thinking, and the small group breakout approach. This will increase overall curriculum effectiveness, adding in components that went neglected in 2016.
Instruction methods should focus on five-minute lecture, small group breakout with topic clusters, and practical exercises. Delete the formal lecture from the approved curriculum methods.	During the course of the program, instructors noted the methods that did and did not work. The formal lecture was almost wholly ineffective, whereas other methods were significantly more effective.	Increased knowledge retention and an increase in available instruction time.
Adjust curriculum to include the service project in the last quarter of the program, the solo day on Day 10, a walkout and closing ceremony on Day 11, and a equipment recovery and return to AUCA on Day 12.	Based on curriculum adjustments from ELP 2016, the model outlined here would presumably have more success, as the instructors gravitated towards this model in the final scheduling.	Increased engagement in the service project, increased participation in closing ceremony, more efficient use of time in overall program closing.
Decrease emphasis on scheduling and build in semi-structured time for reflection and exploration.	The initial ELP curriculum maintained a heavy focus on scheduling. This aspect of the curriculum seemed at odds with a less schedule-centric Kyrgyz philosophy.	Increased time for exploration and self-guided learning, potentially increasing learning opportunities and knowledge retention.

6.2. Partner Analysis

In addition to adjusting the curriculum to make the next ELP more successful, a review of project partners reveals areas for potential gains through the integration of like-minded organizations. From the initial stages of the Ecological Leadership Program, it was clear that the program would require an interested and committed partner in the Kyrgyz Republic to fully succeed. First, as a program developed specifically for Kyrgyz students, the ELP would need a partner institution with a compatible educational philosophy from which to draw its program participants. Second, due to the logistic complications associated with planning a project remotely from its execution site and participants, solid partners had to be willing to use their own time and resources to assist with preparatory work on the ELP. Third, the cultural differences between the ELP planners and the ELP participants required a partner who could provide sound advice and feedback in regards to curriculum, lessons, and the overall approach to the educational process. Within the first months of conceiving of the ELP, I invested significant work into identifying program partners by researching the academic institutions in the vicinity of Ala Archa National Park and sending out introductory emails to various faculty and department heads at the institutions. Ultimately, the avid response from Professor Zheenbek Kulenbekov at the University of Central Asia and his initial interest in the project became one of the key components to the program's success.

Enlisting the support and assistance of Professor Kulenbekov as a project advisor and sponsor, however, was only the first step in partnership. During the initial reconnaissance trip to Bishkek, Ala Archa, and AUCA, two additional strategic partnerships required attention. The first involved presenting the Ecological Leadership Program to the AUCA president, Andrew

Wachtel, to secure permission and support from AUCA as a whole. The second key partnership involved alerting the Ala Archa National Park staff of the plan and receiving authorization to proceed. The first partnership request went smoothly; the second proved unexpectedly difficult but critical and far-sighted.

In its educational philosophy, the American University of Central Asia models the American liberal arts system. Its president is American and its staff are a talented group of professionals and academics from throughout the world, most with extensive backgrounds in international education. With Professor Kulenbekov's support, I created a briefing paper several months in advance of the reconnaissance trip and sent it to AUCA for President Wachtel's review. Professor Kulenbekov took the additional step of arranging a meeting for me with the AUCA president to take place during the reconnaissance trip. Due to the diligent pre-work by both project coordinators, President Wachtel's reception of the Ecological Leadership Program was enthusiastic and, after asking a few specific questions, the president committed AUCA to supporting the ELP during its pilot year. The partnership with AUCA proved to be consistently supportive throughout the ensuing year of planning. Although AUCA had no programming funds for the fledgling program, the university added critical logistics assistance by providing low cost dining and dormitory options on the first day of the ELP, set aside a classroom for the orientation day, and allocated the AUCA bus and driver for transport to and from Ala Archa National Park. Additionally, instructional support from Professor Kulenbekov regarding watersheds and Professor Rahimov regarding Kyrgyz nature and culture proved valuable contributions to the ELP curriculum. In the partnership analysis chart below, the various points regarding the ELP's partnership with AUCA are delineated in terms of compatibilities, incompatibilities, opportunities, and challenges.

Table 7: ELP Partner Analysis

COMPATIBILITIES	INCOMPATIBILITIES
1. American University of Central Asia is founded on the American liberal arts model and therefore philosophically compatible with an experiential education program 2. The Environmental Management and Sustainable Development faculty is interested in program expansion. 3. The AUCA Outing Club has experienced a high initial interest from the student body, indicating that students want to explore outdoor opportunities 4. Departments such as anthropology are already field-based and provide a parallel development model for EMSD.	1. The pilot program of the ELP revealed several areas that require reform or rethinking prior to a second year of programming. 2. ELP program goals in regards to teaching a Western-centric worldview of ecology need continued refinement and merging with the societal outlook and needs of the Kyrgyz Republic 3. Working with land management agencies in the Kyrgyz Republic is initially proving challenging, as they are not familiar with the experiential education model (see Challenge #5)
OPPORTUNITIES	**CHALLENGES**
1. Continued political and economic stability in the Kyrgyz Republic indicates an environment receptive to new ideas 2. The AUCA Outing Club provides a ready pool of interested and trained individuals for future ELP rotations 3. Several ELP alumni continue committed to seeing the program grow at both AUCA and into other universities in Kyrgyzstan 4. Departments such as EMSD, anthropology, and computer science all have practical application opportunities in the ELP curriculum 5. Private organizations such as ITMC and the Trekking Union of Kyrgyzstan are eager to grow partner networks and membership base, especially with organizations that include younger, Kyrgyz demographics	1. There are currently few trained outdoor education instructors available to assist with future program rotations 2. Due to professional demands, Nathan's time to commit to the ELP will become limited in future years 3. Funding the program in the long-term to replace equipment may be a challenge unless AUCA institutes a course fee 4. Changes in AUCA administration could lead to a lack of support for a fledgling program 5. Kyrgyz organizations that may be required for partnership in expanding experiential education programs (ex. state land management programs, tourism bureaus) may be reticent to partner or assist with what seems an unorthodox, out-of-the-ordinary program (see incompatibility #3)

Partnering with Ala Archa National Park, on the other hand, proved a sensitive and time-consuming process to navigate, although the end result of the work likely saved the program in its conceived form. Ala Archa National Park, unlike other units in the Kyrgyz park system, falls directly under the administration of the Office of the President. As a result, authority to conduct programming in Ala Archa seems to formally reside at a level of ministry significantly higher than the park director. During the reconnaissance trip in August 2015, Professor Kulenbekov recommended establishing a meeting with the Ala Archa National Park director to discuss the program's plans and receive authorization to conduct the program within the national park. This first meeting was inconclusive, ending with the park director saying that he would consider the program as long as I presented a detailed "business plan" for how the ELP could benefit the park. During the second meeting several days later, I presented an outline for how the Ecological Leadership Program and a closer relationship between AUCA and Ala Archa National Park could be used to leverage development and tourism. The meeting, again, seemed inconclusive, until the park director seemed to change his mind at the last minute. He then proceeded to direct his secretary to issue a letter of assurance that allowed AUCA to conduct the ELP in Ala Archa during Summer 2016. Professor Kulenbekov stored this letter of assurance in his files in the event it was needed during the following year. Notably, the letter became a veritable "golden ticket" into the park over a year later.

In late July 2016, only several days before the ELP planned to enter Ala Archa, a minor rockslide dropped several large boulders onto the road heading into the park. Deemed a safety hazard by the Office of the President, a government official ordered the park closed for one week while crews cleared the debris and tested the hillside for other danger. With only one road into and out of Ala Archa, the park became a closed system – those personnel in the park could not

leave and those who wanted to enter were turned away at the gate. With no park website to check for information, the ELP instructors did not learn of the park closure until they arrived at the gate on 02 August with a busload of students. The park security, under strict orders to allow no entrance, insisted that the group must turn back, despite the instructors arguing for the program's critical importance. For a matter of 30 minutes, the Ecological Leadership Program seemed that it would be delayed for at least two days until the road opened again. However, just as the instructors began to load up the van, they encountered the park director driving out of the park gate. Professor Kulenbekov, flagging the director down, produced the carefully guarded letter of assurance from the previous year and presented it to the director. After a few moments of conversation, all of which was in Kyrgyz instead of Russian and therefore completely unintelligible to me, the park director instructed the guards to allow the ELP vehicle passage. Although the instructors and students could only drive up to the landslide, we were authorized to walk the remainder of the way into the park.

This interaction and resolution is illustrative of the overall summary regarding ELP partnerships – AUCA, a forward-thinking institution with a willingness to experiment and support new ideas, played a critical role in assisting the project planners to navigate the potential snags of a different culture and government administrative system. As outlined in the chart above, there are several key compatibilities and opportunities that exist with AUCA as a future partner in the Ecological Leadership Program. Namely, AUCA's educational philosophy and outlook is well-aligned to support growing student enthusiasm for an experiential education program such as the ELP. The major challenges and incompatibilities are, in my opinion, not a major threat to the growth of experiential education, provided that a committed program leader continues to interface with a supportive AUCA staff on the program's future. AUCA has already

proven that it can effectively navigate the Kyrgyz land management system, the first major friction point that stands out. The second major incompatibility – a curriculum and program that is not fully aligned with Kyrgyz culture and outlook – is already in the process of reform. As reflected in the previous section, the student feedback from the course drove several curriculum changes that would be instituted in a second round of the ELP. Ultimately, the goal of the program is to "work oneself out of a job" and make it entirely Kyrgyz-run, thereby placing full ownership for the curriculum in the hands of those it was meant for. Given these surmountable challenges, it is my belief that a continued partnership with AUCA in support of the ELP is a prime avenue for continued program success and refinement.

It is also worth noting the presence of other potential partners in the community, in particular the Trekking Union of Kyrgyzstan and the ITMC Adventure Travel organization. The Trekking Union of Kyrgyzstan (TUK) is a non-profit organization based in Bishkek that rents affordable equipment and holds low-cost excursions for its members and visitors. TUK stands out from the typical trekking organization in Bishkek due to its emphasis on creating opportunities for local Kyrgyz citizens to experience outdoor opportunities, both through its trekking program and its equipment rental. In the case of the ELP, TUK was instrumental in agreeing to provide sleeping bag rentals at a member cost to the program, thereby filling a major gap in the ELP resources. In working with TUK, it was clear that the organization could benefit greatly from a capital investment to allow them to purchase additional and higher quality equipment and from formal partnerships with organizations that could potentially grow the TUK membership and support base. Future ELP rotations should consider partnering with TUK in some capacity to continue to build a relationship between the fledgling ELP and the promising non-profit.

ITMC Adventure Travel is at first glance a typical tourist-centric tour operator that caters largely to foreign clientele. Its offerings, in contrast to TUK's humble hikes, include heli-skiing and long, technical expeditions in the Tian Shan. However, during the course of the two summers spent in Bishkek with the ELP, I was introduced to the owner of ITMC and worked with the company in the inaugural year of the program, and in the process came to understand the foundations of ITMC with greater clarity. ITMC, founded by the Russian mountaineer Vladimir Kommissarov, is one of the longest standing tour operators in Kyrgyzstan and has spent significant amounts of time and energy in guide training, forming a mountaineering club for locals, and in building a mountaineering infrastructure in Ala Archa National Park. ITMC is the driving force behind many of the mountain cleanup days in Ala Archa and sponsors the Kyrgyz Mountain Rescue service that responds to rescue situations in the Park. And, although its tour offerings offer many typical tourist attractions, ITMC also sponsors tours that focus on history, nomad ethnography, and other non-standard cultural subjects. In my interactions with Vladimir Kommissarov, the ITMC founder's commitment to expanding mountaineering programming and leader education in the form of guides training was evident. Future rotations of the ELP should explore additional ways to partner with ITMC, perhaps by offering an apprentice instructor slot to a junior ITMC guide, in an effort to build a mutually beneficial relationship between the tour operator and outdoor education program.

CHAPTER 7: DISCUSSION AND A 'WAY AHEAD' FOR THE ELP

7.1. Full Circle: The ELP and the Kyrgyz Republic's Sustainable Development Plan

Over two years ago, the ELP began as an idea for "giving back" and, after countless days of work and over a hundred pages of research and reflection comes the inevitable question – what was it all for? As noted at the beginning of this thesis, the nature of the ELP is grounded in the idea of action research and adding both new knowledge and a tangible positive output to a select community. In the case of the ELP, the select community was specifically the American University of Central Asia, but also the broader Kyrgyz community that the Kyrgyz National Sustainable Development Plan seeks to serve. In designing the pilot year of the Ecological Leadership Program, I worked to create a series of "nested" relationships between the program's ground-level objectives and the overarching strategic goals as outlined by the Sustainable Development plan. Specifically, the ELP addressed the Sustainable Development Plan's requirement for sustainable educational initiatives and incorporating quantitative estimates of natural capital into GDP production by crafting a curriculum focused on ecosystem services. The curriculum's focus on youth and leadership addressed the goals of training "green" business innovation and attempting to slow the "brain drain" of talented Kyrgyz youth by giving them unique opportunities in the Kyrgyz Republic. The program's placement in Ala Archa and combination of tourist-centric adventure sports such as rock climbing, added to the discussions of ecology, directly addressed the tension between tourism and environmental health. At the end of the program, seven Kyrgyz students left the ELP with a unique interpretation of what it means to be Kyrgyz and to own, as a member of the Kyrgyz Republic, resources in places such as Ala Archa National Park. They left with a new vision for themselves as leaders in their own profession. They left with the distinction of having experienced an educational program that was

previously only available to foreign students. These seven unique visions stand independently as a worthwhile product of the ELP, regardless of the level of Responsible Environmental Behavior the students actually exhibit in their daily lives.

However, for the ELP to fully achieve the goals of the Sustainable Development Plan, the program will ideally build upon the successes of the first year with ensuing program rotations. In the section below, I outlines the key aspects of a 'way ahead' for the Ecological Leadership Program and the environmental adventure education model.

7.2. Ingredients for Future Success in the ELP

As with its origin, the Ecological Leadership Program will undoubtedly require strong partnerships to continue into the future. As of the publication of this paper, future ELP rotations are highly likely, based on continued interest on the part of the American University of Central Asia. Additionally, shortly after the students' return from the ELP, a core group of the ELP participants founded the first AUCA Outdoors Club, a key prerequisite to maintaining interest in the concept of the Ecological Leadership Program. Given these key stakeholder groups, the *will* to execute a second round of the ELP exists. The next crucial step will be building the *skill* to execute the program again.

A review of international development projects reveals that a key aspect of project survival is the creation of a cadre of capable stakeholders who can take control and ownership of the project. In the case of the ELP, capable stakeholders are specifically defined as a program manager and student instructors to organize and lead the program. Although the potential for such stakeholders exists at AUCA, there is currently not a cadre of instructors that is capable of functioning on its own. As such, the ELP will likely require 1-2 more summers of instructor "apprenticeship" before the current sophomore instructor candidates reach their senior year and

are capable of managing the program independently. Ideally, a partnership with a US-based educational institution with a strong experiential education program can serve as the bridge between the initial year of the ELP and a time in the near future when the US-based instructors have "worked themselves out of a job" and Kyrgyz instructors are capable of operating independently.

As Kyrgyz instructors become increasingly capable, growing the ELP's partnership network within Kyrgyzstan is an additional key step towards program longevity. As noted in the partner analysis, working with organizations such as the Trekking Union of Kyrgyzstan or ITMC offer additional possibilities for fulfilling the aims of the Sustainable Development Plan. The ELP, with its focus on ecology, innovation, and leadership, is well poised to partner with tourism-based organizations to create training programs centered on sustainable tourism or green business initiatives or to organize initiatives to responsibly use and protect Kyrgyz natural resources for long-term economic gain rather than short-term profits. In regards to immediate action, coming ELP rotations can begin to grow these relationships by including TUK or ITMC staff as students or guest instructors, or by including their staff in instructor training sessions.

7.3. Recommendations for Expansion of the EAE Model

The ELP is, of course, only a single program in an array of potential environmental adventure education options that exist worldwide. Considering the success of experiential education in the Western world and the initially positive reception in the Central Asian culture of the Kyrgyz Republic, the EAE model has potential to expand into other countries and cultures that find themselves with the need to create educational initiatives to solve ecological issues. The majority of Western experiential education models with international programs focus on taking Western students and educating them in foreign countries – the education is *for Western students*

in someone else's country. Although this approach reaps benefits for the Western students in regards to broadening their cultural perspectives, the benefits for the students of the host country are almost non-existent. If experiential education is as powerful as its proponents attest, and as effective as this project's data indicates, then the denizens of non-Western countries can benefit greatly from their own experiential education model in their own land.

In contrast to the conventional program, the specificity of the EAE's *home-based education* model looks to provide an experiential education opportunity *for an array of students in their own lands*. As outlined above, inherent in the EAE's curriculum approach is the idea that a student will be more likely to retain ecological knowledge, and therefore to act in a more environmentally responsible manner, if the student can make a direct connection between his or her own well-being and the health of the environment that immediately surrounds them. Considering the worldwide effects of ecological degradation and climate change, emphasizing the international proliferation of programs that spread the components of responsible environmental behavior and leadership is therefore a key component of worldwide ecosystem integrity. It is not enough, nor is it environmentally just, to assume that we can grow ecologically-minded leaders in Western-based experiential education programs and then send them abroad to "fix" the problems of the world. Rather, one must consider how to inspire leaders from within a country to apply their own methods and practices to addressing pressing environmental issues.

From a practical standpoint, the proliferation of the environmental adventure education model from the AUCA's ELP to other programs is most likely to occur as part of a larger international development effort focused on experiential education. Considering that the areas that are most fertile for an EAE program are also unlikely to have the capital to support a for-

profit EAE organization, the future of EAE resides in the non-profit, international development, or academic realm, or in some combination of the three. It is my opinion, having planned and executed the Ecological Leadership Program on a budget that was 10% the size of his "dream budget" requested in grants, that an EAE program is a realistic approach to achieving high-return investment in ecological education at a relatively low cost. Future EAE initiatives should focus on finding partners in academic institutions or non-profit organizations with the requisite experiential education skill, matching them with partner universities abroad, and then working together to create environmental adventure education programs to achieve the ecological goal of the students and citizens of the partner country.

7.4. Future Research Pursuits

Coincident with the continuation of the ELP and potential expansion of the EAE model, there exists an opportunity to continue to deepen the initial research on experiential education and its effect on Responsible Environmental Behavior. Currently, the data that exists in regards to the hybrid environmental adventure education approach is only at a baseline understanding – it is clear that the model is capable of having an effect on a student's REB, but the question of *to what extent* and *for how long* remain to be answered. The first step will be to replicate the ELP for several more cycles to grow the body of baseline data from student groups. Using similar qualitative techniques of semi-structured interviews and participant observation, albeit with refined questions and observation plans, and potentially adding quantitative techniques through Likert scaled questionnaires will serve to deepen the overall understanding of how students react to the EAE model.

A second critical component of future research will involve follow-up interviews with former ELP students. In the original ELP cohort, six of the seven students had at least two years

left in the university before graduation. A re-interview with these six students in Spring 2018, prior to their graduation, would be a potentially effective way to gather baseline data in regards to knowledge retention and behavior change three years after their ELP experience. In the event the ELP is successful with future rotations, the research data here will provide the opportunity for researchers from AUCA or a partner university to conduct a series of studies of the effectiveness of the environmental adventure education model for growing ecologically-minded leaders for the Kyrgyz Republic.

CONCLUSION: CROSSING BORDERS FOR THE FUTURE OF RESPONSIBLE ENVIRONMENTAL BEHAVIOR

The public health expert and statistician Hans Rosling frequently spoke about Western misconceptions regarding the global world, to include the fallacy of distinguishing between developing and developed nations (Rosling, 2014). Rosling noted that there are a remarkable number of countries, often considered by the West as developing nations and implicitly lagging behind their developed counterparts in regards to their ability to think critically about and solve pressing issues. However, statistics told a different story, with Rosling using innovative approaches to statistical representation to show that the differences between supposedly different nations are, in fact, much less than expected. Although the ELP stayed far from the jungle of statistical analysis, it is my hope that one can take a similar lesson from the experience and research contained in this thesis. At the beginning of the project, after listening to me explain the plan for the ELP, someone remarked that the project seemed a bit arrogant and presumptuous. "What makes you think," the person asked, "that you can force your ways of seeing the world and educating students onto another country?" The answer, I believe, exists within Rosling's argument against considering another nation as "developing" – we are not nearly as different as we are sometimes led to believe.

In the case of the ELP, the main structure of experiential education transferred to the AUCA students remarkably well. As one would expect, students in their late teens or early twenties responded enthusiastically to a program that allows them to test their limits, that empowers them to make decisions, that challenges their views on the world, and that encourages their individual vision for themselves. Even more fascinating were the students' responses to challenging and complex subjects such as ecosystem service valuation – they were eager to

embrace topics such as personal perspective, political power, and cultural norms and how it affected the choice to use or preserve resources. Why, then, has experiential education not previously flourished in a place such as the Kyrgyz Republic? The answer came in the closing circle, as students reflected on their experiences over the two weeks of their ELP experience. "This is special," one student commented, "because no one gives us these experiences. There is never an opportunity like this for Kyrgyz students, so we often become frustrated and maybe a little lazy" (N. Fry, personal observation, August 2016). As US-based experiential education programs flourish around the world, taking place in beautiful countries such as Peru or India, it is also necessary to understand that they often occur in places where an entire demographic of students has never had the opportunity to take part in such a course. Whether from an assumption that Western-style experiential education, as my questioner stated, is oppressive or from the opinion that a "developing" nation simply is not ready for experiential education, the failure to bring the power of experiential education to the students and future leaders of our international community must be corrected. The Ecological Leadership Program represents a first step towards dispelling doubts that exist about the ability of experiential education to cross borders, fall on fertile ground, and produce organic results in communities around the world. I truly hope it will not be the last.

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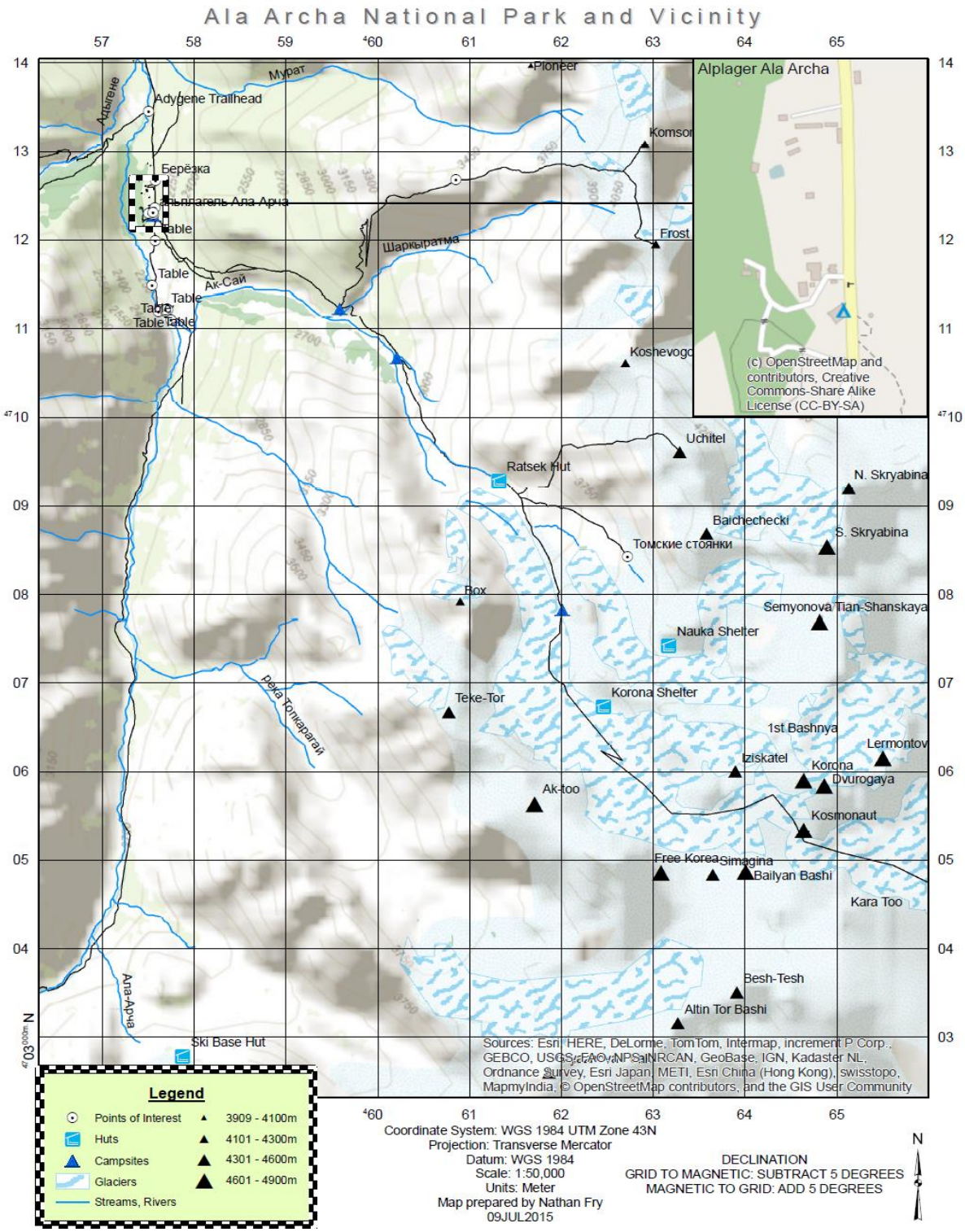
APPENDICES

Appendix A: ELP Project Map



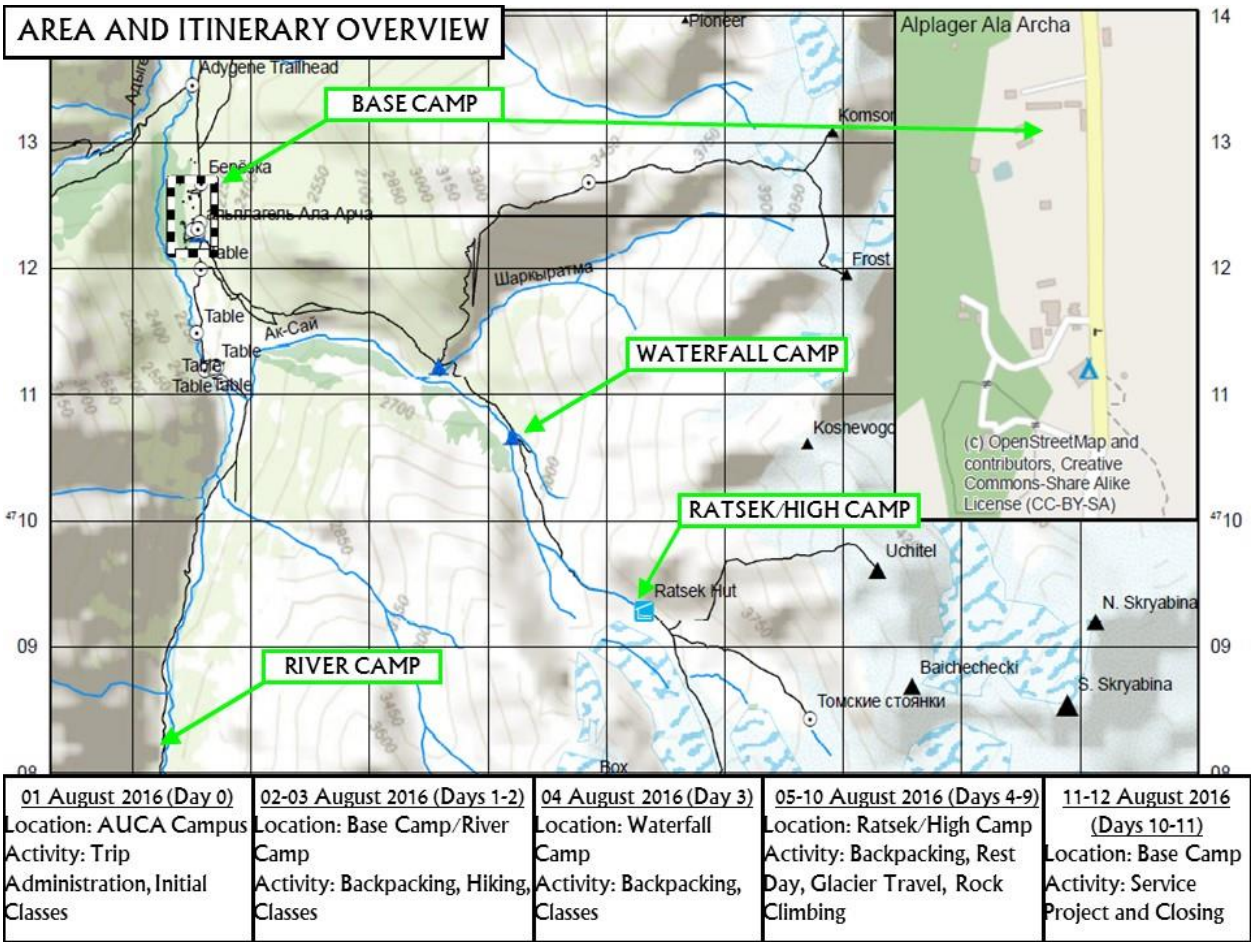
Appendix B: ELP Welcome Letter and Consent Forms

Dear AUCA student-

Congratulations on your selection to attend the first year of the **AUCA Ecological Leadership Program (ELP)**! The ELP is the first program of its kind to take AUCA students from the classroom to the mountains and forests of Ala Archa National Park to learn how to live in a sustainable world. During your experience, your instructors from AUCA and the University of Vermont (United States) will teach a variety of topics – from packing a backpack to setting up a campsite, to water ecology and tree identification, to group leadership techniques. At the end of the program, you will be prepared to graduate from AUCA in your specific academic discipline and work as a leader in your field, while also applying lessons in ecological sustainability to your daily life.

The ELP dates are from 01 August – 12 August 2016 and will start and end at the AUCA campus. The program will provide all transportation to and from Ala Archa National Park. You can review the map below for a summary of dates, events, and activities. A detailed list of topics includes:
Trekking
Campsite setup
Backcountry cooking

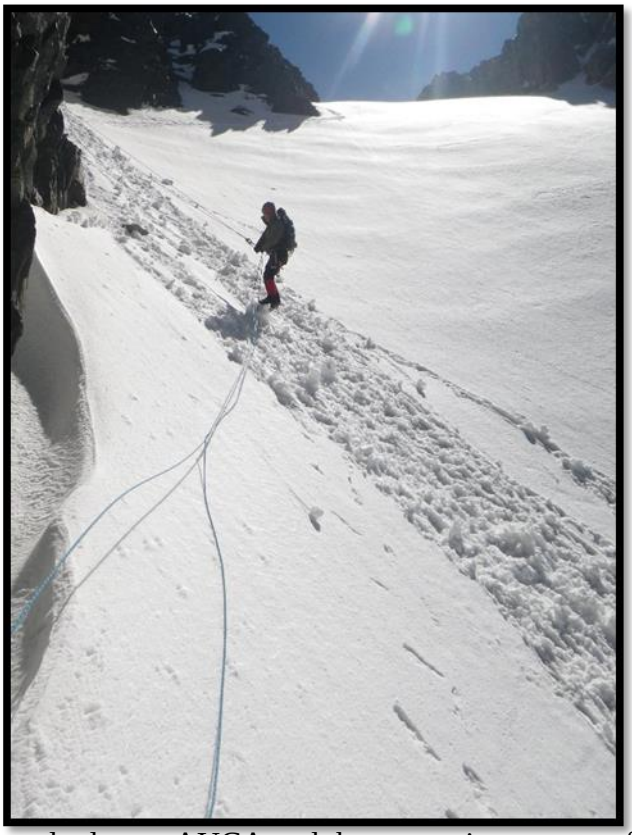
Conservation
Ecosystems of the Tian Shan
Water, Glaciers, and Hydrology
Human Impacts on the Wild
Organizational Leadership
Decisionmaking
Risk Management



The ELP is offered the first year at a low cost to all participants. There is a list of required equipment and all participants will need to gather the clothing that they will use during the trek in Ala Archa. This will be your financial commitment to the program. The ELP will provide all other equipment and food required for the program. Please review the equipment list below to determine what you will need to purchase and bring to the program. If you have any difficulty procuring the required equipment, please let us know as soon as possible so that we can work to find a substitute.

In addition to a commitment to provide yourself with basic equipment, the ELP will also require a time commitment. **Trekking requires physical fitness, and a successful ELP participant will need to be able to run at least 3 kilometers at a steady pace without stopping and to carry a 20 kilogram pack for at least 10 kilometers**. The ELP will host several orientation

hikes in Spring 2016, but you will need to commit to training during some of your free time so that you are healthy enough to enjoy the program this summer!



There is no homework prior to this course! However, because the ELP is part of a graduate student's project at the University of Vermont, you may be asked to fill out various surveys before, during, and after the course. All we ask of participants is that they fill out all surveys honestly and with details, as your answers will help provide accuracy to the graduate research.

If you are still excited about participating in the ELP, then great! The next step is to fill out the attached enrollment forms and submit them during the first ELP information meeting. You should fill out:

1) Student Contract and Agreement to Participate

2) Student data and medical sheet – this tells us a little bit more about you

3) Research information sheet – this tells you about the research we are doing and has you agree to be interviewed during the ELP

4) Liability Waiver sheet – this discusses any dangers inherent in the program and releases AUCA and the course instructors of any liability if you are injured

After you receive the information packet, an instructor from the Ecological Leadership Program will meet with you to answer any questions you may have. Please ask us anything that is on your mind. We are excited for you to be a part of the first ever Ecological Leadership Program at AUCA and look forward to trekking with you!

Regards,
The Ecological Leadership Project instructor team
Nathan Fry (lead instructor and University of Vermont graduate student)

ELP PARTICIPATION CONTRACT

I, _____ (print student name), agree to participate in the Ecological Leadership Program (ELP) from **01 August – 12 August 2016**. I understand that participation in the program is offered to me as a student at the American University of Central Asia but that I AM NOT OBLIGATED to attend this program as part of my grade or as a graduation requirement. By signing this document, I acknowledge that I am participating in the ELP out of a desire to learn more about myself, my environment, and my behavior in the environment. I agree to gather the necessary items on the packing list and to prepare myself physically for the trip by engaging in physical activity for preparation. If I have any questions, I can contact the program leader, Nathan Fry, by email at Nathan.fry13@gmail.com.

I am excited to be a part of this new program and will do my best to make this program a success for myself and future students!

Student Signature: _____

Date: _____

STUDENT DATA AND MEDICAL SHEET

NAME:
DEPARTMENT/MAJOR:
YEAR (FRESHMAN, SOPHOMORE, JUNIOR, SENIOR):
HOME (EX. BISHKEK, KARAKOL):

LIST ANY OUTDOOR EXPERIENCE (EX. TREKKING):

LIST ANY ATHLETIC EXPERIENCE (EX. WEIGHTLIFTING, FOOTBALL):

LIST ANY EXPERIENCE WITH ECOLOGY OR CONSERVATION:

NAME & CONTACT DETAILS OF FAMILY DOCTOR:

MEDICAL INSURANCE: ____ YES ____ NO _____POLICY DETAILS

EMERGENCY CONTACT NAME AND NUMBER: _____
_____
ALTERNATE EMERGENCY CONTACT NAME AND NUMBER:
_____
_____
PLEASE NOTE BELOW WHETHER YOU HAVE ANY OF THE FOLLOWING MEDICAL CONDITIONS AND LIST DETAILS.

YES/ NO	CONDITION	DETAILS (HISTORY, SEVERITY, TRIGGERS, PREVENTION, TREATMENT)
	Food allergies (nuts, shellfish)	
	Bees or other bites/stings	
	Iodine or Latex allergies	
	Diabetes	
	Asthma	
	Special Dietary Requirements (medical, religious, or cultural)	
	Dizzy Spells or Fainting	
	Epileptic Seizures	
	Hay Fever	
	Heart Condition, Blood Pressure, or Chest Infections	
	Migraines	

	Sleepwalking	
	Travel/Motion Sickness	
	Previous orthopedic injuries (breaks, sprains)	
	Concussion or head injury	
	Physical Difficulty	
	Are there any other relevant conditions of which we should be aware?	

Does you take medication? _____ Yes _____ No
Please list details of the medication, why taken, dosage, and consequences of not taking medication. Please provide any necessary dosages for the duration of the ELP.
_____
_____
_____
Have you received immunizations? ____ Yes ____ No
Please list any immunizations you have received _____
_____
_____

I certify that all the information listed herein is accurate, detailed, and truthful to the best of my knowledge.
Student Name _____
Student Signature (if over 18) _____
Parent / Guardian Name (if student under 18) _____
Parent / Guardian Signature _____

MEDICAL CONSENT FORM

Student Full Name:_____
Birthdate: _____ Age: _____ Gender: _____
Parent/Guardian Full Name:
_____
Home Phone: _____ Work Phone: _____
Mobile Phone: _____

Student Consent (if age 18 or older) or Parent / Guardian Consent (if under age 18):
By signing below I agree to my (or my child's) participation in the Ecological Leadership Program (ELP) in partnership with the American University of Central Asia from 01-12 August 2016. I understand that outdoor activities involve an element of risk and at times I (or my child) may be some distance from fully qualified medical aid other than personnel certified in First Aid. I am aware that I (or my child) may be transported by bus, 4WD, van, or sedan.

In the event of an accident, I understand that no student/participant will receive any medical treatment outside of Wilderness First Aid without further consent of parents/guardians. I understand that the ELP staff will make continuous efforts to contact parents/guardians in the event of an emergency. However, in the absence of communication, I authorize the ELP staff to obtain, on my behalf, any medical assistance that I (or my child) may require. I understand that all medical, surgical, and anesthetic procedures involve risks. I accept the responsibility for payment of any expenses thus incurred, including emergency transportation.
I acknowledge that all primary instructors with the ELP maintain a minimum of Wilderness First Aid qualification, have the requisite experience for leading all events that will take place during the ELP, and will make every effort to reduce risk and maintain the safety and well-being of my child.
Student Signature:
_____
Name of Parent / Guardian:
_____
Parent / Guardian Signature:
_____ Date: _____

Research Information Sheet

Title of Study:
The Ala Archa Environmental Leadership Project:
Evaluating the Efficacy of Outdoor Education in Implementing Social-Ecological System Behavior in the Kyrgyz Republic

Principal Investigator (PI): Nathan Fry

Faculty Sponsor: Josh Farley

Funder: None

Introduction
You are being invited to take part in this research study because of your affiliation with the American University of Central Asia, the Kyrgyz Mountain Guides Association, and/or the Ala Archa National Park. This study is being conducted by Nathan Fry at the University of Vermont.

Purpose
The purpose of this study is to gather information regarding previous exposure to concepts of social-ecological systems (SES), experiential education, leadership models, and minimal impact backcountry living. This study will take place at the American University of Central Asia and in Ala Archa National Park. The study will focus specifically on the study areas below:
1) Establishing best practices in relating concepts of Social-Ecological Systems (SES) to personal daily life
2) Using experiential education to teach leadership models in conjunction with ecology and conservation behavior
3) Using adventure education to increase personal commitments to concepts such as sustainability, ethical leadership, and physical fitness
4) Inspiring action towards conservation through experiential education

Study Procedures
This study will occur as part of an immersive conservation leadership training program – the Ecological Leadership Program. This program will take place in partnership with the American University of Central Asia (AUCA) and will involve AUCA students only. If you take part in the study, you are agreeing to participate in a 12 day-long trek in Ala Archa National Park, during which time you will receive instruction on the concepts of ecosystem services, social ecological systems, organizational leadership, community development and partnership, and conservation. You also agree to participate in research interviews and surveys before, during, and after the ELP. By agreeing to conduct an interview, you also agree for your statements to appear in subsequent research and media publications to promote the project.

Your interview may be video or audio recorded for inclusion in media presentations and your name/position included in the media publication. If you do not wish for your interview to be recorded, please let you interviewer know and you will not be interviewed.

If at any point you feel uncomfortable with any questions, you may decline to answer.

All research will be complete by August 31, 2016. During the research process, you will conduct an initial interview and may be contacted for follow-up interviews.

Benefits
As a participant in this research study, there may be direct benefit for you with the creation of an environmental leadership education program at the American University of Central Asia. Furthermore, information from this study may benefit other people now or in the future.

Risks
The assessed risk of this study is low. Interviews will take place in both classroom and field environments in the context of a thoroughly planned, resourced, and supported experiential education program. Researchers will not collect information that is sensitive or confidential in nature. If you do not feel comfortable answering a question due to a perception that disclosure of the information will put you at risk, you may elect to not answer the question.

Costs
There will be no costs to you for participation in this research study beyond expenses required to purchase essential clothing for the program.

Compensation
You will not be paid for taking part in this study.

Confidentiality
This study will not collect any confidential information about you. Any statements that you make will be documented in accordance with APA interview format and published in a final project summary and video. Your name and official title may be published in media presentations unless you decline to have such information included.

Voluntary Participation/Withdrawal
Taking part in this study is voluntary. You are free to not answer any questions or withdraw at any time. You may choose not to take part in this study, or if you decide to take part, you can change your mind later and withdraw from the study.

Questions
If you have any questions about this study now or in the future, you may contact me, Nathan Fry, at the phone number 1-802-310-6072. If you have questions or concerns about your rights as a research participant, then you may contact the Director of the Research Protections Office at (802) 656-5040.

Participation
Your participation is voluntary, and you may refuse to participate without penalty or discrimination at any time.

☐ I agree to participate in this study.

☐ I agree to have my interview audio or videotaped.

☐ I agree to publishing my interview, name, and title/position in any subsequent media publications.

_____
Signature of Interviewee

_____
Name (printed)

_____
Date

REQUIRED EQUIPMENT LIST

Students are required to provide all equipment listed below. The ELP will provide all additional equipment necessary for trekking.
Students should avoid any clothing that contains cotton. Cotton is not warm when it becomes wet. Choose wool or synthetic materials.
Cell phones, Ipods, and other electronic devices ARE NOT allowed after we depart AUCA. DO NOT bring any electronics to Ala Archa. They are a distraction from the course content. Please be considerate!
Students do not need to bring any food. The ELP will provide all food for the duration of the trip.

____ Short sleeve T-shirts (4)
____ Long sleeve T-shirts (1)
____ Socks **NOT COTTON** (5)
____ Underwear (4)
____ Pants/trousers **NOT JEANS** (2 pair)
____ Shorts (2 pair)
____ Sweatshirt (1)
____ Rain jacket (1)
____ Winter jacket **should be light weight – goose down is excellent** (1)
____ Warm long underwear bottoms or tights (2 pair)
____ Gloves or mittens (1 pair)
____ Hiking boots (1 pair)
____ Health kit (toothbrush, toothpaste, soap, sunscreen, lip balm, and any additional necessary health items)
____ Small aid kit (bandaids, bandage, fingernail clippers)
____ Small towel **Can be cotton** (1)
____ Sunglasses (1)
____ Warm hat (1)
____ Pocket knife (1)
____ Flashlight or Head lamp (1)
____ Sandals/flip flops **For wear around camp** (1 pair)
____ Notebook (1)
____ Pen/pencil (2)
____ Plastic bags **For waterproofing clothing, notebook, etc** (10)
____ Bowl **PLASTIC** (1)
____ Spoon (1)

Appendix C: Project Planning Checklist

C.1. Initial Task List

AUCA Ecological Leadership Project Checklist			
Main Task/Key Tasks/Supporting Tasks	Lead Planner	Latest Completion	Notes
Curriculum Development			
Send key readings/texts to Zheenbek	Nathan	6-Sep-15	COMPLETE
Create schedule of events overview in task sync format (curriculum, daily logistics, prep tasks, etc)	Nathan	1-Oct-15	COMPLETE
Create leadership curriculum	Nathan	1-Dec-15	COMPLETE
Create ecology curriculum	Zheenbek	1-Dec-15	COMPLETE
Create outdoor hard skills curriculum	Nathan	1-Dec-15	COMPLETE
Create standard daily milestone by hour, to include leadership injects	Nathan	1-Dec-15	COMPLETE
Identify and resource conservation project	Zheenbek	1-Mar-15	COMPLETE
Submit IRB	Nathan	1-Mar-15	COMPLETE
Create research data collection plan	Nathan	1-Mar-15	COMPLETE
Personnel Management			
Complete student attendance roster, to include clothing sizes	Zheenbek	1-Oct-15	COMPLETE
Identify assistant instructor (Patrick Barrow)	Nathan	1-Oct-15	COMPLETE
Create health and hazard waivers	Nathan	1-Oct-15	COMPLETE
Recruit female assistant instructor from UVM	Nathan	1-Dec-15	COMPLETE
Determine credit possibilities and insurance support for UVM instructor	Nathan	1-Dec-15	COMPLETE
Distribute waivers to participants	Zheenbek	1-Dec-15	COMPLETE
Determine level of KMGA support for technical skill days	Nathan	1-Dec-15	Unneeded
If no KMGA support, alternative guide support?	Nathan	1-Mar-15	Internal - I will support
Identify visiting ecology instructors, based on ecology curriculum	Zheenbek	1-Mar-15	Amadeus, need to determine culture instructor
Logistics and Support			
Arrange for transportation to/from AUCA	Zheenbek	1-Mar-15	COMPLETE - Contract w/ Patrick @ 12000 som
Create meal plan for before and after trip	Nathan	1-Mar-15	COMPLETE
Plan for transporation from US to Kyrgyzstan	Nathan	1-Mar-15	COMPLETE
Create lodging plan for before and after trip (students and instructors)	Nathan	1-Mar-15	COMPLETE
Create medical plan, to include injury evacuation vehicle availability (Mountain Rescue Service?)	Nathan	1-Apr-15	COMPLETE
Create communication plan	Nathan	1-Apr-15	COMPLETE
Create comprehensive risk management plan	Nathan	1-Apr-15	COMPLETE
****Present program briefing to AUCA leadership, to include risk management plan****	**Zheenbek**	**1-May-15**	COMPLETE
Funding			First priority for Fall 2015
Make gear list	Nathan	1-Oct-15	COMPLETE
Target company list	Nathan	1-Oct-15	COMPLETE
Create budget and funding target	Nathan	1-Oct-15	COMPLETE
Solicit equipment donations	Nathan	1-Oct-15	COMPLETE
Determine tax law and legality for donations	Nathan	1-Oct-15	COMPLETE
Set up funding stream/site	Nathan	1-Oct-15	COMPLETE
Marketing			
Complete promotional film	Nathan	1-Oct-15	COMPLETE
Distribute promotional film	Nathan	1-Nov-15	COMPLETE
Plan for 2016 film with trip photographer	Nathan	1-Apr-15	INTERNAL STAFFING

C.2. Final Execution Task List

AUCA Ecological Leadership Project Checklist		
Action	Who	Notes
Tasks Complete Prior to 13 May		
Apply for BGI Grant	Nathan	Submitted on time, pending answer
Secure dorms for night of 01 August	Zheenbek	Discuss later in summer - available
Confirm dining room open for lunch 01 August (use program cash for	Zheenbek	Available, can also do carry out order
Confirm use of classroom and gym for 01 August	Zheenbek	Available - Zheenbek will reserve
Students turn in waivers and health forms prior to semester end	Patrick	
Conduct student overnight trip	Patrick	
Complete survey/researsal instrument	Nathan	
Submit IRB to UVM	Nathan	Complete - unneeded
Request and reserve KMGA support for climbing day	Patrick	
Identify conservation project	Patrick	in consultation w students
Identify supporting Kyrgyz culture instructor	Zheenbek	Complete - need to confirm once budget complete
Flight purchase	Nathan/Sonya	Complete - 22 JUL - 17 AUG
13 May - 05 June Tasks		
Complete meal and recipe planning	Sonya	
Complete food list and send to Patrick	Sonya	
Identify food plan for night of 01 August	Patrick	Local, easy food?
Complete curriculum outline and send to instructors	Nathan	
Coordinate with Ala Archa for conservation project approval	Zheenbek	Present to Ala Archa director
06 June - 03 July Tasks		
Reserve Ratzek space and alpine camp space	Patrick	
Make and print program t-shirts	Nathan	
Complete leadership scenario injects	Nathan	
Reserve space at Southside Guesthouse for before and after trip	Nathan	
Coordinate with Mtn Rescue for potential support	Patrick	Simply make them aware of our plans
04 - 27 July Tasks		
Purchase equipment and ship to K-stan	Nathan	Can we ship to Southside?
Purchase non-perishable food	Patrick	Paid for out of project funds, store at Southside?
Layout and inventory equipment	Patrick	
Complete and print student handbooks	Nathan	
Complete and print instructor handbooks	Nathan	
Complete curriculum	Instructors	
Compile student info sheets for instructors	Nathan	
Purchase conservation project material	Patrick	Where to store it?
Reserve porter support	Patrick	For resupply day
28 July Tasks		
Instructor meeting, verbal rehearsal of first 24 hours of program support	Instructors	
29 July Tasks		
Perishable food purchase	Sonya	
Brief to AUCA leadership on program overview	Nathan	
30 July Tasks		
Layout and inventory equipment for issue	Instructors	
Bag and prepare meals and resupply	Instructors	
29 July Tasks		
Rehearse emergency and communication plan	Instructors	
Complete resupply prep and meal prep	Instructors	

Appendix D: Project Budget

D.1. Initial Project Budget

Total ELP Budget for Pilot Year (High Estimate)			
Personnel Support Costs	$	14,264.00	Reference Personnel Support Needs for details
Equipment Costs (High)	$	19,113.40	Reference Equipment Needs for details
Total High Cost	$	33,377.40	Personnel, Support, Equipment
Cost per Beneficiary	$	2,384.10	Assuming 14 beneficiaries
Personal Contribution	$	8,342.64	Leave taken from work, fundraising, current grants
Funding (High)	$	29,713.40	Equipment Costs
Percent Matching		28.08%	% contribution to total high cost
Total ELP Budget for Pilot Year (Low Estimate)			
Personnel Support Costs	$	14,264.00	Reference Personnel Support Needs for details
Equipment Costs (Low)	$	8,117.40	Reference Equipment Needs for details
Total High Cost	$	22,381.40	Personnel, Support, Equipment
Cost per Beneficiary	$	1,598.67	Assuming 14 beneficiaries
Personal Contribution	$	8,342.64	Leave taken from work, fundraising, current grants
Funding (Low)	$	18,717.40	Equipment Costs
Percent Matching		44.57%	% contribution to total low cost
Recurring Cost Estimator, Years 2-5			
Personnel Support Costs	$	6,200.00	Lead Instructor Salary+Ecology Instructor+Food+Transportation
Equipment Costs (High)	$	500.00	Small stipend for augmenting equipment pool
Total High Cost	$	6,700.00	Personnel, Support, Equipment
Cost per Beneficiary	$	478.57	Assuming 14 beneficiaries (max capacity)

D.2. Actual Project Execution Budget

ELP 2016 BUDGET DASHBOARD

MERCHANT / INDIVIDUAL	PURCHASE DESCRIPTION	RECEIPT	PURCHASE AMOUNT	CURRENCY	ACCOUNT	Amount (USD)	Admin acct	Notes
Patrick Salary			1,300.00	1	2	$ 1,300.00	$ 1,300.00	*Paypal*
Zheenbek Stipend			500.00	1	2	$ 500.00	$ 500.00	*Half up front*
Visiting Instructor (Ruslan)			50.00	1	2	$ 50.00	$ 50.00	
Visiting Instructor (Amadeus)			50.00	1	2	$ 50.00	$ 50.00	
Dormitory cost at Ala Archa	Dorms for final night		2,000.00	2	2	$ 30.00	$ 30.00	
Sleeping Bags			7,560.00	2	2	$ 113.40	$ 113.40	
Sleeping Mat Purchase (3)			1,800.00	2	2	$ 27.00	$ 27.00	
Trans to Ala Archa			0.00	1	2	$ -	$ -	
Trans from Ala Archa			0.00	1	2	$ -	$ -	
Monday night pizza / Monday lunch			2,500.00	2	2	$ 37.50	$ 37.50	
Dormitory			6,118.00	2	2	$ 91.77	$ 91.77	*creditcard*
Program Food			250.20	1	2	$ 250.20	$ 250.20	
Ceremony Food (catered)			6,000.00	2	2	$ 90.00	$ 90.00	*For 25 people, including staff and parents*
Project Materials			1,240.00	2	2	$ 18.60	$ 18.60	
Equipment from Patrick (rental)			50.00	1	2	$ 50.00	$ 50.00	*Paypal*
Fuel (80 som to fill)			4,050.00	2	2	$ 60.75	$ 60.75	
White board			520.00	2	2	$ 7.80	$ 7.80	
Poo medicine			457.00	2	2	$ 6.86	$ 6.86	
Gergert Sport	Zheenbek mat		6,100.00	2	2	$ 91.50	$ 91.50	*Sleeping mat (Zheenbek)*
Storage fee	Extra stuff kept at Ala Archa		1,600.00	2	2	$ 24.00	$ 24.00	
Extra gas			150.00	2	2	$ 2.25	$ 2.25	
Initial Gas Fill			70.00	2	2	$ 1.05	$ 1.05	
Car transport of packs	Ala Archa detour day		500.00	2	2	$ 7.50	$ 7.50	
Taxi to Ala Archa	for recon		633.00	2	2	$ 9.50	$ 2.03	
Park Entrance Fee	for recon		440.00	2	2	$ 6.60	$ 1.41	
Marshrutka from Ala Archa	recon		500.00	2	2	$ 7.50	$ 1.61	
						$ -	$ -	
						$ -	$ -	
						$ -	$ -	
						$ -	$ -	
						$ -	$ -	
						$ -	$ -	
						$ -	$ -	

OVERALL BUDGET	
TOTAL EXPENSES	2,833.77
TOTAL REVENUES	3,015.85
REMAINING BALANCE	**182.08**
% EXPENDED	**94.0%**

Appendix E: Risk Management Plan

Overview: The Ecological Leadership Program will occur from 01-12 August 2016 at Ala Archa National Park. A detailed itinerary is attached to this Risk Management Plan that outlines each days' activities and a summary is listed below.

- 01 August: Receive students at AUCA. Hazard includes walking to the canal classroom area for first lesson. Overall risk is LOW.
- 02 August: Travel to Ala Archa and hike to River Camp. Hazards include vehicle accident, athletic injuries while walking, and injuries in camp due to inexperience with equipment. Overall risk is LOW.
- 03 August: River Camp activities. Hazards include injuries in camp due to inexperience with equipment. Overall risk is LOW.
- 04 August: Hike to Waterfall Camp, receiving resupply at Alplager en route. Hazards include athletic injuries while walking. Overall risk is LOW.
- 05 August: Hike to Ratzek High Camp. Hazards include overexertion and altitude sickness during ascent. Overall risk is MEDIUM, mitigated down to LOW.
- 06 August: Rest day at Ratzek High Camp. Hazards include injuries in camp due to inexperience with equipment. Overall risk is LOW.
- 07 August: Glacier day. Hazards include athletic injuries during walking and slips on glacier. Overall risk is LOW.
- 08 August: Rock climbing day. Hazards include injuries from climbing. Overall risk is MEDIUM, mitigated down to LOW.
- 09 August: Rest/solo day. Hazards include minor injuries sustained while alone. Overall risk is MEDIUM, mitigated down to LOW.
- 10 August: Uchitel ascent day. Hazards include overexertion and altitude sickness during ascent. Overall risk is MEDIUM, mitigated down to LOW.
- 11 August: Descent to Alplager. Hazards include athletic injuries sustained while walking. Overall risk is LOW.
- 12 August: Conservation project day. Hazards include construction-related injuries. Overall risk is LOW.
- 13 August: Return to AUCA. Hazards include vehicle accident. Overall risk is LOW.

Risk Assessment:

**Hazard: objective danger
**Risk Exposure: objective danger + program participants
**Risk Level: Likelihood of occurrence + consequence of occurrence
**Mitigation: steps taken to reduce likelihood or consequence (or both)
**Supervisor: who will monitor for implementation and effectiveness
**Residual Risk: Risk Level after mitigation

Program Risk Assessment					
Hazard	Risk Exposure	Risk Level	Mitigation	Supervisor	Residual Risk
Vehicle accident	Driving to and from AUCA/Ala Archa	Low	Students will travel in hired vans with appropriate safety equipment	ELP Instructors	Low
Orthopedic injuries	Hiking, trekking, camp activities	Medium	Students will wear appropriate footwear, travel at a pace reasonable for the entire group, and hike on established trail areas when possible. Daily medical checks identify problem areas and treat immediately to prevent aggravation.	ELP Instructors, WFRs (Nathan, Sonya)	Low
Burns	Stove use	Medium	Students will learn proper stove lighting and use techniques on Day 1. Instructors will closely monitor stove use until all students are confident in use. Students will cook in designated cook areas away from camp traffic.	ELP Instructors	Low
Cuts/scrapes	Backcountry hazards make minor skin injuries inevitable. Major concern is infection in a small cut site.	Low	Daily medical checks will identify skin injuries. Medical personnel will treat as necessary.	WFRs (Nathan, Sonya)	Low
Blisters	Hiking, camp walking	Medium	Orientation on Day 1 will teach students about blister identification. Daily medical checks will identify hotspots. Medical personnel will treat hotspots prior to further aggravation.	WFRs (Nathan, Sonya)	Low
CO poisoning	Stoves in tents	High	Students will not	ELP	Low

			operate stoves in tents. ELP will erect a cook tarp/shelter for all cooking activities	Instructors	
Food contamination	Improper food storage, improper dish washing	Low	Students will learn proper camp hygiene and dishwashing techniques during the first day in camp. Students will consume all food after cooking (no leftovers to spoil).	ELP Instructors	Low
Water contamination	Improper water treatment	Medium	Students will learn proper water decontamination techniques during the first day in camp. Instructors will assist with water procurement until all personnel are trained.	ELP Instructors	Low
Food allergies	Exposure to food allergies in menus	Low	Instructors will identify food allergies prior to program start and either avoid purchasing the food or, in the event of an allergy to a common food, establish a plan with the student to avoid cross-contamination.	ELP Instructors	Low
Overexertion/back injuries	Lifting packs, hiking	Low	Students will learn proper methods for packing and carrying packs. Instructors will assist with load planning to ensure that student packs are not overloaded. ELP planners will use porters to assist with carrying extra supplies to high camp.	ELP Instructors	Low
Water injuries or drowning	Water activities	Medium	Due to absence of trained lifeguard	ELP Instructors	Low

			personnel, students will not swim at any point during the course. If appropriate, students may wade in still or slowly-moving water.		
Lost participant	Solo activities or free time personal hikes	Medium	Students will travel in groups of three at all times during personal time. Instructors will implement proper accountability measures (headcount/roll call) before and after moving from one point to another.	ELP Instructors	Low
Slips on glacier	Glacier walk day	Low	Students will wear proper foot traction (i.e. microspikes) during glacier travel day. Route will not take students near dangerous crevasses.	ELP Instructors	Low
Falls while rock climbing	Rock climbing day	Medium	Students will only climb on safe top rope setups. KMGA guides and ELP instructors on hand to monitor activities. Students will learn proper belay technique and use the belayer/backup belayer technique.	ELP Instructors	Low
Rock fall	Rock climbing day	Medium	Students will wear helmets at all times during rock climbing events.	ELP Instructors	Low
Pendulum fall on rock	Rock climbing day	Low	Instructors will establish top ropes to minimize danger of pendulum falls. Instructors will coach students to stay in-line with climbing routes.	ELP Instructors	Low

Altitude sickness	Climb to High Camp and Peak Uchitel	Medium	Instructors and students will understand signs of altitude sickness. Medical personnel will treat causes of altitude sickness. Any student exhibiting signs of HAPE or HACE will return to the Alplager immediately.	WFRs (Nathan and Sonya)	Low
Pre-existing medical conditions	Throughout program	Low	Instructors will identify any pre-existing medical conditions prior to course start	ELP Instructors	Low
Motivational issues	Throughout program	Low	Students may encounter low points during the trip and react to challenges negatively. Instructors will rehearse motivation techniques and be prepared to mentor students supportively through challenging situations. The course curriculum will attempt to minimize overwhelming situations through careful planning and group debriefs.	ELP Instructors	Low
Intra-group conflict	Throughout program	Low	Program stresses may lead to interpersonal conflicts within the group. Instructors will rehearse conflict resolution and will actively incorporate conflict resolution into the program curriculum.	ELP Instructors	Low
Splinters, hammer strikes, other	During conservation	Low	Wear proper protective equipment (gloves,	ELP Instructors	Low

construction injuries	project		long pants) and receive training on any specialty tools (hammers, etc).		

Medical and Evacuation Plan:

1. Location: AUCA
    a. First level of treatment: AUCA medical personnel → local hospital
    b. Method of evacuation: personal vehicle or taxi
    c. Method of notification to AUCA staff: physical notification

2. Location: Between AUCA and Ala Archa
    a. Levels of treatment: Emergency services personnel → Local hospital
    b. Method of evacuation: personal vehicle → emergency medical services ambulance
    c. Method of notification to AUCA staff: cell phone call
    d. Location: within Ala Archa National Park
    e. Levels of treatment: ELP Wilderness First Responders → Emergency services personnel → Local hospital
    f. Method of evacuation: ELP evacuation → Mountain Rescue service
    g. Method of notification to AUCA staff: cell phone call

Communications Plan:

1. Internal Communications
    a. Group will remain together during major events unless specified by the training schedule (ex. during solo experiences, Uchitel ascent). During student free time, students will travel everywhere in groups of no less than three to facilitate timely notification of accident. During special circumstances, instructors will remain with small student groups and maintain communication with each other via FM radio (primary), cell phone (alternate), or in-person updates (contingency).

2. External Communications (ELP to AUCA, medical personnel, etc)
    a. Primary: cell phone
    b. Alternate: SPOT device
    c. Contingency: runner to Ala Archa Alpine Camp hotel, then land line to appropriate contact
    d. Important Numbers:
        i. Zheenbek Mobile:
        ii. Nathan Mobile:
        iii. Patrick Mobile: +996 778 64 37 86
        iv. Bishkek Emergency Numbers:
            1. Fire: 101
            2. Public Ambulance: 103
            3. Private Ambulance: 151
            4. AUCA Emergency line:

5. AUCA Medical Services: Telephone +996 (312) 66 15 13, X 219
6. After-hours medical service: Nina Paniklova (AUCA Therapist), Mobile: +996 (0)775 97 52 61, Telephone: +996 (312) 57 40 40
7. Mountain Rescue: +996 - (0)700 - 651221 , +996 - (0)701 – 799925
8. Southside Guesthouse: +996 555 109 981
9. American Embassy: +996 312 597 000

3. Special Circumstances
    a. Solo Experience: The ELP solo experience will occur 09 August from morning until early afternoon and will involve a place-based experience in a natural area within Ala Archa National Park. Instructors will bring students to pre-designated areas and drop them off for a period of solitary hours, during which time the students will engage in reflection and natural observation. Instructors will maintain safety by providing each student with a signal device to use in the event of emergency (ex. whistle) and by checking in with students every several hours. Instructors will maintain coordination by using radio contact for updates. There will be a pre-designated end time to ensure that everyone understands when the solo experience is over. Instructors will conduct a roll-call after completion to ensure everyone is present.
    b. Student-led ascent of Peak Uchitel: the Uchitel ascent day is planned for 10 August, with an alternate day on 09 August to account for weather changes. Students will plan and execute the Uchitel hike in collaboration with ELP instructors. During the event, instructors will stay with the small hiking groups at all times and will maintain inter-instructor contact with radio communication. Based on weather, there will be a designated turn-around time for any team that has not reached the summit by that time. Instructors will continue basic risk mitigation for injuries, etc during the Uchitel ascent.

Appendix F: Curriculum Excerpt

The following appendix contains excerpts from a single day of the Ecological Leadership Program. The entire 12 day curriculum is available upon request to the author.

DAY 3: WEDS 03 AUGUST

Daily Summary

ELP maintains base camp at the River Camp following the previous day's hike in. For the first day of student leadership, crew mentors pay special attention to helping students feel comfortable with tasks and the daily task rhythm. Spend time on cooking, hygiene, and other camp tasks. Integrate orienteering class, hike to Alpinist Camp to discuss risk management, and introduction to watersheds.

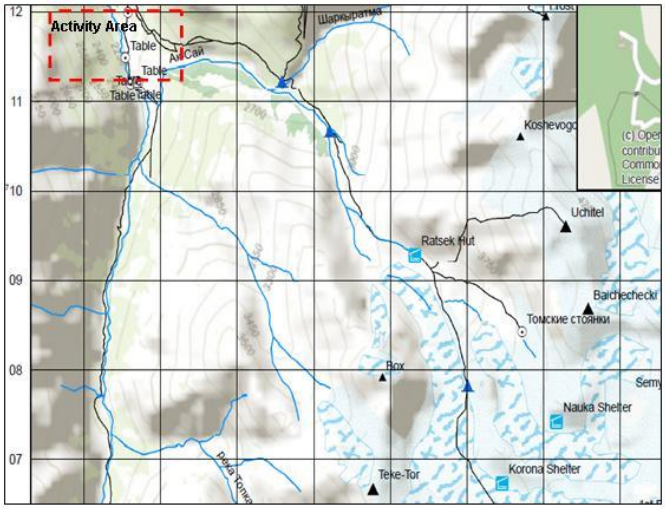
Task Organization

-Student LOD:

-Staff Mentor: Patrick

Field Crew: Golden Eagles

Service Crew: Snow Leopards



Key Tasks and Events	Endstate	Support Activities
•Heavily coach/mentor during initial task organization and leadership day •Conduct classes in watersheds and orienteering •Conduct hike to Alpinist Cemetary to discuss risk management •Staff: verbal rehearsal of medical emergency	Students are capable of operating on Thursday as crews in both camp and during movement, can conduct basic orienteering at crew level, and make a connection between Bishkek water and the Ala Archa River.	- Students may be feeling dirty or unsure about how to conduct hygiene. Take advantage of the proximity to the river to discuss both hygiene and proper conduct around water sources in alpine areas. - Check in with university sponsors regarding group status.

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DAY 3: WEDS 03 AUGUST	Instructor: Zheenbek/Nathan	ECOLOGY

Lesson Plan: The Frontiers of Social and Ecological Systems

1) Learning Outcomes:
- Students understand how they have transitioned from a human-dominated to a nature-dominated system
- Students understand the basic ecology of Ala Archa National Park
- Students continue to discuss the value of water and environment

2) Setting: outdoor classroom setting

1) Resources required: portable white board, student handbooks

1) Summary of lesson content:
- Students receive lecture on Ala Archa biodiversity from park staff
- Point out the transition from human system to a natural system at Alplager
- Share initial resource webs
- Ask students to consider issues such as grazing, erosion, and littering as they walk to the campsite
- After arrival at camp, discuss some obvious issues with human-nature interaction in the Ala Archa watershed and record for potential inclusion in later problem statements
- Complete Exercise 2.1 (Ecological Economics Workbook)

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DAY 3: WEDS 03 AUGUST	Instructor: Sonya/Patrick	TECH SKILLS / ECOLOGY

Lesson Plan: Leave a Positive Trace

1) Learning Outcomes
- Students understand their effects on the environment
- Students understand how to mitigate/reduce or avoid certain negative environmental effects
- Students can apply LPT in the end of course service project

2) Setting: Small Group Breakout session in camp

1) Resources required: portable white board, student handbooks

1) Summary of lesson content:
- Discuss the ELP approach to applied Leave a Positive Trace philosophy
  - Humans always leave a trace, even with a quiet presence we disrupt wildlife patterns
  - Discuss how to minimize trace in the areas of walking, waste management, trash management, wildlife/plantlife interaction, and noise/light
  - Discuss how to leave a positive trace in the areas of conservation/restoration and purchasing/consuming
  - Students discuss whether they believe they can truly “leave no trace”
  - Discuss how service projects and habits can help the ELP to Leave a Positive Trace

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DAY 3: WEDS 03 AUGUST	Instructor: Nathan	TECH SKILLS

Lesson Plan: Map/Compass Use

1)Learning Outcomes

- Students demonstrate understanding by properly reading a basic map and determining cardinal directions with a compass
- Students demonstrate advanced understanding by correctly plotting and following an azimuth during overland travel
- Students understand collaborative leadership through the context of group orienteering

2)Setting: group lecture setting in outdoor environment, small group practical exercise

1)Resources required: 4x maps of local area, 4x compasses, 4x pencils and/or map pens

1)Summary of lesson content:

- Discuss map reading, to include colors, legend, terrain features, contour lines, measuring distance, and orientation
- Discuss how to hold a compass and walk with a compass
- Discuss plotting an azimuth on the map
- Conversion of grid to magnetic
- Dead reckoning versus terrain association
- Walking – using handrails and backstops for rapid movement
- Collaboration and group work – how do you use your whole group to stay on track?

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DAILY NOTES

1. What went well? What did not go well?

1. What was planned but did not happen? Why?

1. What was not planned but occurred? Why?

1. How should the curriculum adjust in the future based on these observations?

1. Is there evidence if student understanding and comprehension of the subjects? What is it?

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Appendix G: Equipment and Resource List

AUCA Outing Club Equipment Inventory					
Name	Item Number	Quantity	Description/Size	Repairs Needed	Notes
Backpacks					
High Sierra Titan	1	1	Blue 65L	None	
Alps Mountaineering Caldera	2	1	Green 55L	None	
High Sierra Hawk	3	1	Green 45L	None	
Alps Mountaineering	4	1	Green 40L	Ripped pockets need repair	
High Sierra Hawk	5	1	Blue 45L	None	Lost chest strap
Alps Mountaineering	6	1	Green 50L	None	
Alps Mountaineering	7	1	Blue 45L	Ripped pockets need repair	
Alps Mountaineering Caldera	8	1	Green 55L	None	
High Sierra Explorer	9	1	Blue 55L	None	
Tent and Tent Accessories					
Eureka Timberline 4	1	1	Green	Overstretched elastic	
Eureka Timberline 4	2	1	Green	Bent corner pole	
Eureka Timberline 4	3	1	Green	Overstretched elastic	
Eureka Timberline 4	4	1	Green	None	
Extra center poles	N/A	2	N/A	N/A	
Tent Repair Kit	N/A	1	N/A	N/A	Seam sealer, adhesive patches
Sleeping Pads					
Sleeping Pads	1,2,3	3	Green foam	None	
Stove and Stove Accessories					
MSR Whisperlite Internationale	N/A	1	Liquid Fuel Stove	None	Includes bottle pump, stove, windscreen
MSR Fuel Bottle	N/A	1	Fuel bottle	N/A	
Cooking Pot	N/A	2	Aluminum pots (nested) and pot grabber	None	
Frying Pan	N/A	1	Frying pan	None	
Crampons					
Kahtoola Microspikes	S1, S2, S3, S4	4	Small	None	
Kahtoola Microspikes	M1, M2, M3, M4, M5	5	Medium	None	
Kahtoola Microspikes	M1, M2, M3	3	Large	None	
Kahtoola Microspikes	XL1, XL2	2	Extra Large	None	
Headlamps					
Black Diamond Headlamp	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 ,14	14	Various colors	None	Batteries removed and stored separately
Whistles					
Emergency Whistle	N/A	9	Various style/model	N/A	
Bottles and Containers					
Nalgene water bottle	N/A	29	1 liter, various colors	N/A	
Nalgene food containers	N/A	18	Clear plastic containers	One melted (not repairable but usable)	
Clothing					
Black Diamond Liner Gloves	N/A	3	Small	None	
Black Diamond Liner Gloves	N/A	5	Medium	One pair has holes	
Black Diamond Liner Gloves	N/A	5	Large	One pair has holes	
Hard Shell Top	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	10	Women's XS (1), S (2), M (3), L (2), XL (2)		North Face Black XS shell, Fjallraven Red L shell, Geographic Black L shell, Peoples Academy Black M shell, REI Teal XL shell, TNF Dark Green XL shell, TNF Light Blue M shell, ISIS Pink M, Columbia Black S, Free Tech Black S
Hard Shell Bottom	1, 2	2	L (1), XL (1)		Dryjoys Black L, Unknown Black XL
Down/Puffy Jacket	1, 2, 3	3	Women's XL (1), Men's Large (2)	None	REI synthetic mini-puff, Green LL Bean down, Blue LL Bean down
Down/Puffy Vest	1, 2, 3	3	S (2), M (1)	None	Polo White M, W32 Black S, North Face Red Small vest
Fleece Jackets	1, 2, ,3, 4, 5, 6	6	S (4), M (2)		Aeropostale White M, Odlo White S, Nike Black S, North Face White S, Mundetta Black S, North Face Black M
Synthetic Tshirts	N/A	5	Various sizes, colors		4 short sleeve, 1 long sleeve
Wool Socks	N/A	13	Various sizes, colors		Assorted wool socks
Long Underwear Sets/bottoms	N/A	4	Various sizes, colors		2 full sets, 2 bottoms
Hats	N/A	7	Various style, color		
Accessories					
Signal Flags	N/A	13	Orange emergency signal flag		
Practice ACE Wraps	N/A	3	ACE bandage		
Practice rope	N/A	4	Assorted sizes		For practice knot tying

Appendix H: Student Interview Responses

H.1. Pre-Trip

Participant 1: General Information

Age: 20
Gender: Female
Hometown: Bishkek Rural / **Urban** (Circle one)
Year in University: 3rd
Major: Anthropology
Study Abroad: none

Interview Questions

Please describe your level of experience with nature and the environment.
- I have hiked a lot since childhood, planting vegetables and fruits. I also do excavation [for anthropology] in camping conditions. I am elementary, not a beginner.

Please explain your understanding of how humans and nature are related.
Humans are a part of nature. Without nature, we are nothing. If we ignore our dependence on nature, we will easily die. Lots of disasters are around the world – too many cars, irresponsibility towards outcomes that humans are causing. Relationships are important. Recently, people in our country are thinking about ecological issues, but not acting because it is too expensive and not easy. When you camp, you understand that you are nothing without what you have from nature. Nature is a system and you have to follow it, not just think about yourself but also children because your actions have consequences. A lot of people pretend to be busy – surrounded with technology so that they can ignore [nature].

How do you define the word "ecosystem?"
- A number of natural resources which are very important for humans and nature. An interdepending [sic] circle of nature, with everything interconnected through the ecosystem – land, air, soil, movement of water and nutrients.

Please list a few things that nature provides to humans and society.
- Everything – air, water, food, products, oil, food, my home. Nature is highly valuable and we cannot live without it. Thanks to natural resources, people can live, make money, etc. On one hand we use it but must treat it well. There must be value by respect and love. Value doesn't change, resources may change.

How do you define leadership?
- A sociologist says that the social behavior of a person is certain. A leader is a person who works with a team, highly encourages individuality, develops, and improves everyone on the team. If he or she does well, it encourages care about the experience of the team. A leader is not a commander but part of the team. He always cares for the team and looks for compromise and good for both.

How do you learn leadership?
Through courses at the university and experience. You try to be a leader [and it is] difficult, but when you let people be themselves, it is good. You provide motivation so everyone can do well. I tried [to be a leader] but I didn't really have an example. For example, I was a moderator, but when time was critical I forgot [to be the moderator]. If I see someone doing well, I give them the opportunity [to lead] but if I see a leader is needed, I can be that person.

What are your professional goals? How do you feel about being a leader in your profession?
- I want to work on projects – the urbanization of the city [Bishkek], renovating the planetarium, and mentorship of teenagers from orphanages. I want to get my masters in my field [anthropology] and maybe in urbanism. I am planning to work for a government organization or create a new one which will work. It's easy to open but hard to get grants. What it means to be professional, everything is about the skills you have. Being a leader means having a lot of knowledge and motivation. I feel important and happy – making the world a better place, not just in words, but in real life. I need to be brave and skillful to change the world for better.

How would you characterize your leadership style?
- I am not a commander. I am informal and sensitive. A leader is always the person in charge and responsible, but that's not me. I like to be the leader when I know it and I can really do it well. I am loyal. I see potential in everyone and give opportunities for growth, It is hard for me to make decisions right away. I panic and need to make a plan.

Please describe how you feel about your personal abilities for outdoor immersion (участие в мероприятиях на открытом воздухе). How prepared do you feel to attend a 12-day trek?
- I am not a beginner, but I can do some of the physical part. I can do elementary, not outstanding but normal. I am not sure about my health. Camps like this are challenging for health so I don't feel prepared with health. Anthropology field work taught me a lot. People can be aggressive, weather can change. I need to try to be responsible.

How do you describe your feelings about being in a remote (отдалёный) environment?
- I love it. It is very beautiful. I love about nature that you see giant mountains and cold water. You have to know that you are nothing and not follow your own rules. You have to always remember the nature. Outdoor things teach more than in the city. You see the real people without a mask. People are not pretending … it is wonderful. It helps you to understand that you are strong, and it becomes easy. It makes you feel respectful to yourself.

Review the following short-answer questions with the interviewee:

How many times have you been on an overnight trek?
1

How many times have you seen a glacier?
Never

How many times have you ever been on a mountain peak above 3000 meters?

Never

How many classes on environment or ecology have you taken?
Sustainable development in university (1 class)

How many classes on leadership have you taken?
3-4 trainings

How many leadership programs have you ever participated in?
1 (once a week at the university, a discussion)

How many times have you cooked for yourself while trekking?
2
How many times have you been to Ala Archa National Park?
3-4

How many plants or animals can you confidently identify?
5-6

Participant 2 General Information

Age: 20
Gender: Female
Hometown: Talas Rural / **Urban** (Circle one)
Year in University: 3rd
Major: Software engineering
Study Abroad: USA, 2013-2014

Interview Questions

Please describe your level of experience with nature and the environment.
- I like walking; I go often to parks with trees and plants. I like the river because the sound is relaxing. It is a wonderful peace to stop using the internet. Our generation is so addicted that we can't identify ourselves without it. I am intermediate – I like being in nature but I do not have so much time to do so. In Bishkek, we usually don't think about hanging out in nature. My friends agree to go out [to nature] but then disappear and I don't want to go alone.

Please explain your understanding of how humans and nature are related.
It is coexisting in this world. Many people try to grow trees in urban areas and treat animals well. Some people are rude to animals and I don't like it. The government shoots homeless dogs. Little kids see this shooting. In my opinion, we should coexist. We should be not only takers but receivers [givers?].

How do you define the word "ecosystem?"
- Kind of how everything works without humans. Nature did it own their own. For example, a river. I wonder, who were the first planters? I cannot say because the nature did it first. Trees

grow without people watering them. Wild animals survive on their own. Ecosystems are also the health of nature and how it's existing right now. Here [in Kyrgyzstan], the ecosystem is doing its job and is beautiful. In areas, we have build roads and other things, so the ecosystem in big cities is not very healthy.

Please list a few things that nature provides to humans and society.
- Water, wood, fossil fuels, food, aesthetics, and fresh air. These values can change a lot. Our appreciation is now low because we have plenty, especially water. Animals … there are few left because of killing. Because they are given by nature we just take it as if it were meant to be given to human beings. The government should support appreciation for nature like Scandinavia. Here all we see is commercials about lipstick and [??].

How do you define leadership?
- Being a person who can motivate the team, who always cares about the goal of the team. Someone who cares about suggesting, negotiating. Not who says what to do, but who can listen and make an average decision. A connector of the team.

How do you learn leadership?
Through experience. I've been in teams a lot. I had a class in high school. Being a person who can listen to two sides and compromise. This is helpful because leadership skills can provide you with a more colorful life – you meet more people and see more. The best feeling is when sometimes life got better because of you – you can do good in the world as a leader.

What are your professional goals? How do you feel about being a leader in your profession?
- I want to learn machine languages. When I see these programmers who know so much I feel silly. I want to learn to open my own IT company. I would like to volunteer to make a program for electricity in Bishkek. Since meeting Nathan [ELP director] I would like to make programs or games about the environment and ecology. I am not yet a leader. I am still learning and there are teachers higher than me. In one team, there are many leaders, but when they negotiate everything will be okay. I am not yet, but I hope to be, a leader one day. I will be not only helping people through my IT company but also teaching classes for programming. Teaching makes you feel satisfied.

How would you characterize your leadership style?
- I am a sociable person. I like talking. It helps me to be a leader because talking and negotiating can make them listen to my ideas. I don't have to be a commander. Being a leader means being successful. I had many goals and I reached them so I can be proud.

Please describe how you feel about your personal abilities for outdoor immersion (участие в мероприятиях на открытом воздухе). How prepared do you feel to attend a 12-day trek?
- I like sports, I feel physically that it helps me. I am not scared of dirt. I am not too connected to home – some people are always with their parents, but from childhood I have been taking care of myself because my parents are in business so they go on trips and care for my brother's health. In fifth grade, I loved alone in a big house for three months. Fortunately, my parents support me. I am prepared and I need to be prepared emotionally. A person has no limits. Say you have no limits and you will not.

How do you describe your feelings about being in a remote (отдалёный) environment?
- It is useful for me [to be here]. I can finally be with my own thoughts. I can stop caring about small things like makeup and clothes. When you live in the city, you have to be false, to wear stuff to be appreciated. But here you can wear whatever you want and have free time to think. This is my first time not wearing makeup. There are no mirrors and I am not caring. At home, I check the internet in my free time, too.

Review the following short-answer questions with the interviewee:

How many times have you been on an overnight trek?
Never

How many times have you seen a glacier?
Never

How many times have you ever been on a mountain peak above 3000 meters?
Never

How many classes on environment or ecology have you taken?
Sustainable development in university (1 class)

How many classes on leadership have you taken?
Never

How many leadership programs have you ever participated in?
Many little and big ones

How many times have you cooked for yourself while trekking?
Never
How many times have you been to Ala Archa National Park?
Many times
How many plants or animals can you confidently identify?
Plants barely. With animals I can figure out approximately what they are. Only a few plants along the trek I know.

Participant 3 General Information

Age: 20
Gender: Female
Hometown: Bishkek Rural / **Urban** (Circle one)
Year in University: 3rd
Major: International and Comparative Politics
Study Abroad: none

Interview Questions

Please describe your level of experience with nature and the environment.
- Living in Kyrgyzstan, I know pretty well about the nature. I know we should respectfully relate. My family goes camping and picnicking often. My family lives in a house, so we have a garden. I know how to plant flowers and also pots. I know we shouldn't harm the animals but because of eating we need to kill them. Animals all have impact and humans have huge impact, but all are part of nature.

Please explain your understanding of how humans and nature are related.
Humans cannot survive without nature because nature gives us sources for living. If we destroy it we will destroy ourselves. Now we have many ecological problems because of humans' activity. Ecology disasters are something that will destroy all of us and it doesn't matter where you live – Australia, US, developed, and others. This is one point on the UN agenda, the worldwide health.

How do you define the word "ecosystem?"
- Some area with similar plants and animals, maybe? Not sure. Like our park, or Bishkek is another ecosystem.

Please list a few things that nature provides to humans and society.
- Water, minerals, wood, sun energy, wind electricity, oxygen, food, and living space. Not all of these things can have a value. Oxygen cannot be bought and sold. Living space value changes – property prices rise, and it is a luxury to have a wooden house because it takes wood material takes a long time to grow. Price depends on supply and demand, for example, there are lots of apples [so they are cheap]. The low price of water determines electricity price, but sometimes the power is off 4 hours per day because of water supply. This also depends on politics.

How do you define leadership?
- The skill of a person to lead a group. You must be someone who can support team members. He is someone who is responsible for decision making and important in a group. In politics, it is often the president. There are different types of leaders.

How do you learn leadership?
- Responsibility is a big part of leadership. I am the oldest sibling, so I was always responsible for all of my younger siblings and in school I was the староста (elder) for my class. I have also taken classes on politics and leadership is an important part of politics.

What are your professional goals? How do you feel about being a leader in your profession?
- I want to become a diplomat and solve international problems. Many people don't believe in politicians, but I know people who are part of a new generation of politicians and they are doing good and serving. It is hard in Kyrgyzstan due to corruption and nepotism, but I want to work here. Or maybe in the UN.
If I can be a good leader, I can make people believe in me and they can trust me. Everything in politics is based on trust and reputations. Maybe I can do that in a profession because my family and friends trust me. But with competition and being soft, it might be hard, especially in Kyrgyzstan.

How would you characterize your leadership style?
- I am not strict. I don't have this skill. I make good relations between teams and kindly ask them to do something.

Please describe how you feel about your personal abilities for outdoor immersion (участие в мероприятиях на открытом воздухе). How prepared do you feel to attend a 12-day trek?
- It is challenging for me. I am not so strong. I cannot refuse just because I am weak, though. Maybe I am not so strong, but I will learn to be better. I will be proud if I can do it.

How do you describe your feelings about being in a remote (отдалёный) environment?
- I feel okay and comfortable. Maybe it will be cold and I will want to call my parents, but everything else is good. I see falling stars, rocks … I like nature.

Review the following short-answer questions with the interviewee:

How many times have you been on an overnight trek?
1

How many times have you seen a glacier?
1

How many times have you ever been on a mountain peak above 3000 meters?
Many … Maybe 100

How many classes on environment or ecology have you taken?
Once in high school (ecology and geography together)

How many classes on leadership have you taken?
2 classes at the university

How many leadership programs have you ever participated in?
None

How many times have you cooked for yourself while trekking?
Never before the ELP

How many times have you been to Ala Archa National Park?
Maybe 10

How many plants or animals can you confidently identify?
15-20

Participant 4 General Information

Age: 22

Gender: Male
Hometown: Bishkek Rural / Urban (Circle one) – Considers himself both, "simply a man"
Year in University: 5th
Major: geology
Study Abroad: none

Participant 4 Interview Questions

Please describe your level of experience with nature and the environment.
My interest in nature is very strong. I have always been interested in going higher. Once I was along after a trek coming down from Baichecheki. I became lost and had no food or water. I also lost my flashlight and I eventually became so tired that I had to stop under a bush to go to sleep. This made me stronger. I loved the experience and it made me motivated to be more often in nature.

Please explain your understanding of how humans and nature are related.
There is a connection. And humans are destroying nature. People do not guard it.
I do not believe that we can pay for nature's services. Ecosystem services are public, not a right for one person to pay for and then deplete. If we believe we can buy them, then people with money begin to buy more. It corrupts nature because now the rich alone can buy it.

How do you define the word "ecosystem?"
- NO ANSWER FOR THIS QUESTION – DIFFICULTY WITH TRANSLATION

Please list a few things that nature provides to humans and society.
- How do you place a value on these things? How can the value change over time? I am a geologist and I do research. Geologists advise people what to do and what not to do. We must advise people on how to use nature wisely.

How do you define leadership?
NO ANSWER

How do you learn leadership?
You learn through different experiences, so we should not be afraid of our experiences. The one who does not learn from mistakes is a bad leader. I must always be thinking, 'how can I be better?"

What are your professional goals? How do you feel about being a leader in your profession?
- My goal is to go to Russia and receive my Ph.D in geology.

How would you characterize your leadership style?

Please describe how you feel about your personal abilities for outdoor immersion (участие в мероприятиях на открытом воздухе). How prepared do you feel to attend a 12-day trek?

How do you describe your feelings about being in a remote (отдалёный) environment?

Review the following short-answer questions with the interviewee:

How many times have you been on an overnight trek? 8

How many times have you seen a glacier? 4 – Ak-sai, Uchitel, Baichecheki, Karakol

How many times have you ever been on a mountain peak above 3000 meters? Many times through passes, also many times on trails.

How many classes on environment or ecology have you taken?
Two years studying mining in the mountain studies track

How many classes on leadership have you taken?
I was a leader in a children's camp and youth camp. I also received leadership training in a cadet camp. I consider it easier to be a leader as a cadet because everyone understands the leadership concept.

How many leadership programs have you ever participated in?
One, the Josh Bulak youth camp. This was the first time it was held in Central Asia and was very successful.

How many times have you cooked for yourself while trekking?
Many times when with a group, using a gas stove.

How many times have you been to Ala Archa National Park?
Many times

How many plants or animals can you confidently identify?
10-15 plants and 10-15 animals

Participant 5 General Information

Age: 19
Gender: Male
Hometown: Bishkek Rural / **Urban** (Circle one)
Year in University: 2nd
Major: Business
Study Abroad: none

Interview Questions

Please describe your level of experience with nature and the environment.
- My experience level is medium. I am still learning to live outside and recognize its complexity.

Please explain your understanding of how humans and nature are related.
Humans are a part of nature. People should control their actions. Kyrgyzstan should realize the value of its resources and assign the right value to resources. Business and ecology can connect. Ala Archa is a business for the Kygyz government, but it is also good for nature. People pay to enter the park. When the park receives pay we use it for protecting resources. This is like how hunters want to preserve animals for more hunting.

How do you define the word "ecosystem?"
- An ecosystem is like a place of many trees, or a steppe, or a prairie. It is a place with an individual climate. Like Ala Archa with its арчовник (juniper), it has an individual character. Kyrgyzstan has some сарти (tundra) that is unique.

Please list a few things that nature provides to humans and society.
- Water, wood, agriculture, and livestock are some. There are useful minerals. There are cultural value, too, like мазар (a sacred tree in Kyrgyz culture). I think there are also mental values and physical values. The value changes over time. Water value may increase with scarcity. Value can also change with education or media and your values can change as ideas change.
It is also interesting that trekking became popular due to Western influence. Mountains were a way to survive for the Kyrgyz. Early Kyrgyz people saw Issyk Kul [lake] as merely water, but now they see it as unique. Men want food, water, drink, and a house first. Then they begin to pay attention to something beautiful. Ancient peoples did not see mountains as friendly or beautiful, but now we can enjoy them because we have our physical desires met. The value has changed for us.

How do you define leadership?
Responsibility. Most people don't like to be a leader because they are afraid to take responsibility for others. You must believe in yourself and a power inside of you. Don't be afraid of mistakes.

How do you learn leadership?
I don't know. In difficult situations, ask what should you do to help others. Help other team members. Help again and again and you start to believe in yourself. This must be in everyday situations. Helping friends begins the process. But leaders can't just tell others what to do. They prove it. Then you call yourself a leader and then others also acknowledge you.

What are your professional goals? How do you feel about being a leader in your profession?
- After graduation I will have a theoretical basis. I will try to get business experience and then develop leadership skills. I need theory and practical skills to be successful.

How would you characterize your leadership style?
- In some situations, I am a really good leader. In other situations, I might not participate. My main mistake is that I don't want to take responsibility for another. How can I lead others when I myself can't lead?

Please describe how you feel about your personal abilities for outdoor immersion (участие в мероприятиях на открытом воздухе). How prepared do you feel to attend a 12-day trek?

- On the first day I felt unprepared. What am I doing? What should I do? My first idea about this is that it is exotic or an easy way to spend the summer. Later, I felt like it is very serious. The program will help with my professional development and personal development. Nature shows you that you are not perfect. I realize how small I am. The rock is so strong. My question is, what can I do to be as strong as the rock?

How do you describe your feelings about being in a remote (отдалёный) environment?
- I have mixed emotions. I am concerned about learning how to operate in a new place, but also interested in reflecting about how "I can die, my children can die, but the mountains remain the same." I am feeling like both an ancient man and a civilized man. If I see a wolf, I feel like I would have both fear and awe.

Review the following short-answer questions with the interviewee:

How many times have you been on an overnight trek? 0

How many times have you seen a glacier? 0

How many times have you ever been on a mountain peak above 3000 meters? 1

How many classes on environment or ecology have you taken?
Introduction to Ecology, high school geology. I also have a personal interest in ecology, nature identification, and books/TV about nature.

How many classes on leadership have you taken? 0

How many leadership programs have you ever participated in? 0

How many times have you cooked for yourself while trekking?

- We sometimes have barbecues at home or on picnics, but I have never cooked on a gas stove while trekking.

How many times have you been to Ala Archa National Park? Once a month for picnics. In 5th grade we once went up to Ala Archa, but only to the waterfall.

How many plants or animals can you confidently identify?
A few plants, many mammals and birds, and certain families of trees. I know the firs – Tian Shan and Schrenk

Participant 6 General Information

Age: 19
Gender: Male
Hometown: Batken **Rural** / Urban (Circle one)
Year in University: 2nd
Major: Environmental Management and Sustainable Development
Study Abroad: none

Interview Questions

Please describe your level of experience with nature and the environment.
- Mostly in the classroom. I took a trip to Kumtor gold mine with the EMSD class, trips to check water quality and quantity, and to compare water quality between the mountains and Bishkek. We learned how to use ecological equipment and to conduct lab work for soil and water quality. I also go up to the *jailoos* (high pastures) for rest with my family. Batken is a small area and we know it very well. It is part of my life in my home. Mountains and pastures are for feeding animals. After 10th grade, I also went up to Au Kol at 3000 meters. After that I became interested in trekking and climbing.

Please explain your understanding of how humans and nature are related.
Kyrgyz people live in the mountains. It is not necessary to go somewhere else to be in nature. We are not interested in mountains. But this idea is changing because people are no longer nomads and live in cities. People now want to spend time in the mountains.

How do you define the word "ecosystem?"
- An ecosystem is a connection between animals, people, and nature. It is like a circle because animals need plants, people need animals. The ecosystem is living together on one planet. Trees, plans, and animals that live together in one place is the ecosystem, but it is not people.

Please list a few things that nature provides to humans and society.
- There are farmers … and the ecosystem gives us water, air, and food. It also gives us oil. Everything comes from nature. Without it there is nothing. I think you can put a price in these things. In Costa Rica and Nicaragua, the people are poor and cannot restore their nature. But it is not so in Switzerland. Money can buy a healthy nature in some ways.

How do you define leadership?
- A leader is not commanding. The man who helps someone to do something is a leader.

How do you learn leadership?
- I do not have any qualities of a leader, so I am not sure. You must first disturb the zone of comfort [to be a leader]. It is difficult for me to leave the zone of comfort.

What are your professional goals? How do you feel about being a leader in your profession?
NO ANSWER

How would you characterize your leadership style?
- I was once the president of my class and it was a terrible experience. I was out of my zone of comfort, but I need to maybe go out again and meet new people.

Please describe how you feel about your personal abilities for outdoor immersion (участие в мероприятиях на открытом воздухе). How prepared do you feel to attend a 12-day trek?
- NO ANSWER

How do you describe your feelings about being in a remote (отдалёный) environment?
- I am nervous. I wondered at first whether I can do it. The first day I was very scared and it was difficult and I did not have much energy, but now I am excited and full of energy.

Review the following short-answer questions with the interviewee:

How many times have you been on an overnight trek? 0, but I go to the *jailoo* with relatives every year, stay in a yurt, and travel on foot.

How many times have you seen a glacier? 1 at the Kumtor mine

How many times have you ever been on a mountain peak above 3000 meters? Once, in June 2016 I trekked to 3500 meters

How many classes on environment or ecology have you taken?
Two, Environmental Chemistry and Introduction to Environmental Management and Sustainable Development

How many classes on leadership have you taken? 0

How many leadership programs have you ever participated in? One, in 10th grade I participated in conflict resolution and leadership class

How many times have you cooked for yourself while trekking? Twice

How many times have you been to Ala Archa National Park? Once

How many plants or animals can you confidently identify?
If I see it, I might be able to identify it

Participant 7 General Information

Age: 20
Gender: Female
Hometown: Karakol Rural / **Urban** (Circle one)
Year in University: 3rd
Major: Environmental Management and Sustainable Development
Study Abroad: none

Interview Questions

Please describe your level of experience with nature and the environment.
- I started as a child in my grandmother's home village and observed and helped with cattle. I also have practical classes with water and soil quality. I attended an ecological forum in 11th grade. I am not an expert, but I know the process. I went to places where poaching was prevalent and visited a wildlife rescue place.

Please explain your understanding of how humans and nature are related.
Human beings exploit nature.

How do you define the word "ecosystem?"
- It is the interaction of living and non-living organisms.

Please list a few things that nature provides to humans and society.
- Food, resources for shelter, recreation, everything for our basic needs. In Kyrgyzstan, nature is undervalued in economic terms and in people's attitudes. People should use as much as they need. Nature is priceless – it is hard to say what value is. Yes, prices changes also because the population is growing, so a lack of resources increases prices.

How do you define leadership?
- For me, a leader is a person who makes decisions and shares duties.

How do you learn leadership?
From books and experience – talking to people and asking for psychological tips or hints

What are your professional goals? How do you feel about being a leader in your profession?
- I want to study my masters. This summer, I understand that I need three kinds of goals in terms of my profession. Personal development, career, and family/personal life; be enthusiastic and reach for the stars. I worked for an energy efficiency organization but learned mostly office stuff. I translated the website and did printing. This is not my character. I like talking to people rather than just studying.I would like to connect journalism, photography, and ecology to enlighten people and make a call for more environmental responsibility. I understand the qualities that a leader in my profession should have. Right now I don't have all the qualities. Knowledge of leadership is difficult because you have to know a lot and observe – these are critical qualities. I have set a goal to become the best ecologist in Kyrgyzstan and have my photography recognized. I an confident about being a leader with a clear plan.

How would you characterize your leadership style?
- I can do negotiation. At home, I am more commanding. At camp, I am able to negotiate and Eric was in command. I can negotiate and make everyone understand their responsibilities. I share the work and use psychological tips to make them feel responsible for themselves and for you.

Please describe how you feel about your personal abilities for outdoor immersion (участие в мероприятиях на открытом воздухе). How prepared do you feel to attend a 12-day trek?
- Physically I feel quite strong and confident but a little worried about breathing because I am sensitive to spices. Mentally, I am confident because I know myself and my limits. I care about my health – I change clothes and know what I am going into.

How do you describe your feelings about being in a remote (отдалёный) environment?
- I am waiting for a free day because I have many ideas and want to make notes. Getting from my comfort zone every day makes me value home. I feel sheltered because they are a professional and confident team. Before the program started, my expectations were lower and not as confident. On the first trek, we had bad equipment so I value knowledge and equipment now. The only hard part is cold at night because my body is sensitive.

Review the following short-answer questions with the interviewee:

How many times have you been on an overnight trek?
Once, I went out two nights before the ELP

How many times have you seen a glacier?
2 times up close, many times far away

How many times have you ever been on a mountain peak above 3000 meters?
2

How many classes on environment or ecology have you taken?
6

How many classes on leadership have you taken?
2

How many leadership programs have you ever participated in?
1

How many times have you cooked for yourself while trekking?
Not a lot, three times

How many times have you been to Ala Archa National Park?
2

How many plants or animals can you confidently identify?
20

H.2. Post-Trip

Participant 1

Interview Questions

Please explain your new understanding of how humans and nature affect each other.
Before the program, I understood humans as part of nature and interconnected. After the program, I see that the impact of humans is very influential. Only humans can make it better or worse. The course helped me understand better that this is *our* land [emphasis included in interview]. It is interesting that foreigners [instructors] must come and tell us that we should protect it.

How do you now define the word "ecosystem?"
It is more complex than the first definition that I had. It is not only items in the system, but also the human attitude towards ecology. Any field may influence the system – business, politics. It is more involved than I first thought.

How has your understanding of yourself as a leader changed?
I improved myself and my thinking as a leader. It was never clear in other instances [i.e. in other programs] when I was a leader. This [program] helped me understand myself. I had my thoughts together, but I need to learn to communicate. They [the team] will know and have in their mind my plan [so that they can properly follow the plan].

What is your understanding of connections between social and ecological systems?
Here is an example … if a person wants to make something, the person must consider the effects on other people and with nature. He or she has to see the opposite side. There are the things that you need for the business (water, beauty for a hotel), but you forget about the things which are not needed. Think about the negative effects of your actions. Try to prevent the negative effects.

How do you feel about being a leader in your profession?
Humans always must communicate with other people. All people must be leaders. If there is no leader, people will just spread and not have a vision. In critical situations, I will know how to manage a team or group. I should develop team member skills in anything that I do. I am included in 2 different projects. If I have a chance to lead, I will be more self-confident in my actions and plans. I will know my strengths now.

How has your perception/understanding of being a woman in an outdoor environment changed?
I felt equal. Boys are more physically developed, but we had mostly the same bags [packs]. I didn't feel that I am a woman and I am weak, but sometimes I did. There is a difference between boys and girls, but I can do more than I thought I could. I just kept going. It taught me to not give up. It doesn't matter what gender you are. It matters what is in your head. All people have different strengths.

How can you apply your lessons from the ELP?

I was thinking a lot about water and how people don't respect it. Foreign people see our disrespect and they do whatever they want. It should be more than "don't do that." Some people might smash your face or say 'go to hell.' There should be a more interactive way (like a flash mob) to educate people on water. I will now be more aware of the ecological part of everything that I do. Maybe I will learn Korean to better communicate. Citizens of Bishkek are more educated and may understand, but with the others it may be more difficult because of traditional thought. We think about the future, but the other people think about today because they are solving immediate problems and cannot care about nature. People who are visitors are not in this situation and can be educated.

Participant 2

Interview Questions

Please explain your new understanding of how humans and nature affect each other.
It was changed. I wrote about it. I've never though about these connections that happen every day. We don't pay attention to water resources and nature. We don't appreciate it. Now I can see it. I will be more attentive to nature.

How do you now define the word "ecosystem?"
I didn't know at first [laughing]. I understand that the ecosystem … it is all things connected. We are part of a system. All life on earth is part of a living system.

How has your understanding of yourself as a leader changed?
I cannot be a command leader because it is not my personality. Sometimes you must be like this. I should work on it. I am afraid to offend other people by being strict or rude. I was the same here. If something stressing had happened, maybe I would need to change my skills style.

What is your understanding of connections between social and ecological systems?
Plants … I will be more attentive. If we do not take care of them they will be extinct. This may cause other animals to be extinct. During the solo I saw a pika eating grass. There are stones everywhere and if the grass disappears the pika might also disappear.
Water … do not spend it on useless things. At home, we think that all water will be there. But now I see the glacier and how it is not as big as before.
Influence … maybe I will help to influence my parents and friends to take care of nature.

How do you feel about being a leader in your profession?
The program helps me towards being a leader. Politics is connected policies and leadership. You cannot just take care of one thing at the expense of another. The territory of the state is important in politics. If I do not have a healthy ecosystem, my policy will not work. Leadership is something that I need to be a diplomat or a politician. Often, people say that your personality should not be so soft because your profession needs something stronger. But I believe I can be softer and make good relations, and then try to influence them. I can be a good supporter and help other people and they will help me back.

How has your perception/understanding of being a woman in an outdoor environment changed?

Before … we live in a society where all people think women are weak. We don't have to take these backpacks or go on the peak. It takes energy and we are the weak ones. This program proved to me that we can do it anways [sic]. This program did not divide us. We distributed everything equally. Someone cannot tell me that I cannot do something.

How can you apply your lessons from the ELP?
I can influence people. We live in a house. Sometimes we take dirty water and throw it into the grass or canal. Maybe we will try not to do this. Also, if we go out and have picnics, we don't leave trash but we may wash dishes in the river. I think I can influence them to not do this anymore. If we do not do this, then no one will do it [referring to influencing others].

Participant 3

Interview Questions

Please explain your new understanding of how humans and nature affect each other.
I began to appreciate it even more. I understand that even one small bit of bad effect can cause a bigger problem. The bio-indicator exercise showed a transition from 18 to 8 over a distance of ten meters. What about the distance from Ala Archa to Bishkek? We should not feed wild animals because they need to feed themselves. Nature also helps us collect all of our thoughts, especially in a city like Bishkek. One ecosystem service is atmosphere for thoughts.

How do you now define the word "ecosystem?"
"How everything is connected." How it all woks. Humans are part of it. We influence and may cause bad or good. We should appreciate everything that we have for the next generation.

How has your understanding of yourself as a leader changed?
In our team there are several leaders. They should negotiate and communicate about making decisions. Maybe all people in a team are leaders. To reach the common goal they must not fight and negotiate to meet a common goal.

What is your understanding of connections between social and ecological systems?
I didn't know that the food we take is an ecosystem service. The ground is an ecosystem service. I didn't know, but now I know that sport activities [i.e. mountain recreation] is an ecosystem service. Photosynthesis, simple beauty, a variety of plants and animals are ecosystem services. I didn't know that bats eat mosquitoes, insects eat plants, and plants prevent erosion.

How do you feel about being a leader in your profession?
Being a leader is being enthusiastic. I will find people with the same ideals and goals as I have. I want to find a team who will work for both money and society. A team that will create apps about tourism and ecology.

How has your perception/understanding of being a woman in an outdoor environment changed?
Everyone is equal in the outdoors. We carried our own weight and we walked the same distances. The boys are more physically prepared. It is heavy sometimes, but the heavy is

gender-equal. We must recognize differences and negotiate roles based on strengths. We also must support each other and help as we can.

How can you apply your lessons from the ELP?
A lot … the main thing is to stop putting limits and barriers for yourself. Hiking and rock climbing taught me that you can reach your goal no matter how difficult and challenging. Looking back at my past performances, I can believe that I can do it. When I look down in hiking or in climbing and see how far I have gone, it inspires me.

Participant 4

Interview Questions (Translated from Russian to English during the interview)

Please explain your new understanding of how humans and nature affect each other.
I didn't know that the common thing like washing in a river changes biology and made [the water] dirty. I understand collective action, or how many small actions affect a larger system. It is possible to live in harmony, but it many not be comfortable. Projects must take nature into account.

How do you now define the word "ecosystem?"
All we see. If you destroy the ecosystem, it stops giving to people. The lands gives us all. If something is taken from the Red Book [of endangered species], it affects the whole system. More bad things occur than good things when something disappears from the ecosystem.

How has your understanding of yourself as a leader changed?
I believe in myself more. On the 2nd day I made mistakes. I allowed everyone to do their own thing and assumed it would work. On the way to the Waterfall Camp, I changed my thinking and adjusted to check others. Patrick helped correct it and I really thought about that.

What is your understanding of connections between social and ecological systems?
Why do we take things from nature, but never give anything back? Why do we fill foods with chemicals? Why can't we do things that are good for the environment and for people? Services should be dual – good for people and good for the environment. There should be minimal disruption to the environment. Mankind pulls many good things from nature. With 6 billion in population, everyone needs to eat. Without cheap, natural products we cannot sustain this life.

How do you feel about being a leader in your profession?
I want to spread the idea of outdoor education to other universities. TUK [Trekking Union of Kyrgyzstan] does this for profit. This is like "DNT" in Norway – all young people are involved because it is government supported. I want to do the same opportunity in Kyrgyzstan. We have everything in Kyrgyzstan – mountains and forest – but why don't we go to them? Why aren't people involved? It can change people – my experiences changed me and made me a new person. It would be cool to make a club that is interesting to all students, where all students see it is truly cool to be outside. We can propogate equal ideas. Foreigners see us doing the right thing and must do it, too. It will be better for my children.

How can you apply your lessons from the ELP?
I will create student club. I will teach students to respect nature, pass on lessons to others, teach the things that aren't necessarily logical (for example, washing in the river makes it dirty). I will be a leader to advise people to not go down the wrong road. We can go down the road of many or the right choice. Many companies start on the right path but then make a wrong choice for the future, for financial reasons.

Participant 5

Interview Questions

Please explain your new understanding of how humans and nature affect each other.
The lesson with Amadeus about ecosystem services helped us understand how to use natural resources and not harm nature. The national park game was also a good example. It's hard for humans to work with nature. Humans desire require harm to nature but we can decrease bad things. It's hard for humans and nature to co-exist, but we can.

How do you now define the word "ecosystem?"
I knew the concept of ecosystems in theory, but now I see it in practice. Now I see it in action. I knew many new things and see many new things with my own eyes. Ala Archa is more complex – near the waterfall is more complex. Is it a real forest or group of trees? I can contrast this with the Ratzek alpine zone and the forest and the hotel. I see how quickly natural ecosystems can change and contrast. Peak Uchitel has no tundra – only stones and rocks. There was absolutely no water on Uchitel. It made me understand the value of water.

How has your understanding of yourself as a leader changed?
Hard to say. I was last [as the LOD] and it was easier because I was near the last. Leaders should understand all participants on his team. The leader should act in different ways in different situations. Sometimes he is like a commander, sometimes like a kind mentor and attentive. When we cam down from Uchitel, I walked very slow. Then I tried to speed up and try to find a faster and more useful way coming down. I needed to be more attentive to the people in my group.

What is your understanding of connections between social and ecological systems?
All products that humanity needs come from nature. Amadeus' lesson showed that we should think not only in short run in business, but also in the long perspective. If not, we will lose our natural resources for the future. How do we find a compromise and safe it for the future? Businessmen think about money in the present, but not how to continue business in the future by conserving now. Different businesses with different goals can collaborate to find solutions.

How do you feel about being a leader in your profession?
I have new skills from the program that will be useful in future careers. I can use what I learned on Peak Uchitel in business situations. Sometimes we should be slow and conservative in business, but sometimes we should take a risk. It may be dangerous, but it could give a better result. We should see the connection between climbing and business. Sometimes you are afraid, but you should be brave and take a risk. Get a result. Taking a risk can result in a positive twist in your career. You should understand the moment when you need to take a risk. Climbing

helped me understand this moment. Recognize the people you have supporting you. Trust them and take the risk. Realize the value of your team.

How can you apply your lessons from the ELP?
It is like trekking – the first steps are very hard. I am asking, "Why the hell am I doing this?" But then the beautiful sites give me more power to move. Trekking teaches that you must fight to the end. The first step is very hard, but you should just go to the next step.

Participant 6

Interview Questions

Please explain your new understanding of how humans and nature affect each other.
When I lived in the village, I don't know well that people depend on nature. When you live in nature, you learn that nature gives everything … it feeds us. It is also very cruel. You must fight it every day. It makes us strong. Nature is stronger than humans.

How do you now define the word "ecosystem?"
It's the same [as the pre-trip interview]. I don't really understand the word. People are not part of the ecosystem. For me, it's the temp … when people join to the ecosystem, people break the tempo. People are not part of the system, they are just an extra object.

How has your understanding of yourself as a leader changed?
Actually, before, everything I did was in a small group of people and I talk to them and ask them what to do. During the program, I wanted to do, to take responsibility for everything. I knew I could do it. When one person does it, it takes less time.

What is your understanding of connections between social and ecological systems?
Well, like ecosystem services. Photosynthesis.

How do you feel about being a leader in your profession?
Before the program, I didn't understand the EMSD program [Environmental Management and Sustainable Development program at the university]. Now I understand it is to use resources rationally. I know that I will do after the program. I didn't know Kyrgyzstan very well. Now I know what I will do. I have never been in beautiful places like this. Ecology seemed boring. Now I know that it is not.

How can you apply your lessons from the ELP?
It will be helpful for me in the next semester. I will take a GIS course. Also ecology courses. Maybe I will talk to my friends and make them interested in hiking and trekking. Maybe I will be part of the ELP next year and it will help me.

Participant 7

Interview Questions

Please explain your new understanding of how humans and nature affect each other.
It hasn't changed much. I have a more deep understanding that people depend on ecosystems. People consume natural resources and destroy the natural circle. I see it more deeply now.

How do you now define the word "ecosystem?"
The same.

How has your understanding of yourself as a leader changed?
I clearly know that there are several types of leadership. The different types work in different situations. We had extreme situations and we had to change and react severely.

What is your understanding of connections between social and ecological systems?
In terms of water, my view about the water supply changed. I saw the glaciers and the melting. If they are all the same [i.e. melting at the same rate], we will be in trouble. I had seen water in the rivers, but thought about it as something that will always be there. I saw that river water will be clean if humanity has no impact upstairs [i.e. further up river].

How do you feel about being a leader in your profession?
If I would be a leader, I should be an expert in my field. I should know how to work with people, to distribute tasks and inspire them to do something. I should have a policy, a right direction. Responsibility … I have a certain responsibility for the decisions I make and the people under me.

How has your perception/understanding of being a woman in an outdoor environment changed?
Women can also do this. It's not about physical strength, but how you use your physiology and techniques for climbing. It gives me a mental strength. I liked gender equality. Sometimes girls cooked more but it was okay because the boys took initiative to do other hard jobs. It was actual for me.

How can you apply your lessons from the ELP?
I will write articles about outdoor trekking to propogate it in Kyrgyzstan and make people know about it. I will take short-term trips with friends and peers as a group member and teach them techniques for climbing, cooking, and setting up tents. I have increased self-awareness and will be more effective in everyday life (ex. planning and time management, logistics planning and how to communicate with people).

Extra conversation:
I learned to live like my ancestors lived, washing pots with rocks, being hot and cold, living in tents. It was an amazing experience to do this. I will contrast 400 people in the mountains with 7 people in the mountains [contrasting a previous youth retreat with the ELP]. I am thinking about eco-friendly versus burning trash and staging in one spot.

H.3. Course Feedback

Eco-Leader Program End of Course Review 1

The purpose of this survey is to determine how we can better plan the ELP for future programs. You do not need to put your name on this survey – please be honest about how you feel and what we can do to improve the program.

Please answer the questions below to the best of your knowledge.

Having completed the course, I feel: very exhausted. However, I can feel that I have grown physically and mentally. I am very thankfull [sic] to have opportunity to participate in the program [sic]. I am sure that I can achieve my goals. Skills such as being very purpusfull [sic] to reach any goal can help me in my future life.

My favorite part of the program was: Rock climbing! Yay! Very very intresting [sic] and exciting part of the program [sic]. I wish we could spent [sic] more time to climb rocks. Also I loved the Amadeus's lecture because I could see the inner interest in his eyes. Using interactive methods of teaching is a big big plus. I am in love with the mountains and nature.

My least favorite part of the program was: waking up in the mornings. LOL. Boring lectures. Very cold sleeping bags. It all participants could have sleeping bags as Nathan's it would be awesome!!! Too much hiking time and less time to proseed [sic] the information that we got. Also I think 12 days are too much. Week would be perfect.

I would like to receive more instruction on: Rock climbing, first aid,

Please list any other things you think about the program: I think that program [sic] is pretty wonderful! Although, there are many things that could make program [sic] better. Emphasizing on team works [sic], making friendly atmosphere. After each day with instructors. There was a big gap between participants and instructors.

Please answer the questions below regarding our program next year.

Are you interested in working in the ELP next year as a student instructor?

Hmm. Let me think … If the program would last maximum of 7 days I would like to help.

Are you interested in organizing an Outdoor Club at AUCA to continue to conduct hikes and outings during the semester?

Yes I am!

How many friends can you think of who will be interested in the ELP in the future?

Those who likes [sic] to put challenges for themselves. Four, five friends might be interested in the program [sic].

Would you be willing or capable of paying a small enrollment fee for a program like the ELP?

Well is would be fair for organizers and participants. Like a guarantee of a future participation.

Eco-Leader Program End of Course Review 2

The purpose of this survey is to determine how we can better plan the ELP for future programs. You do not need to put your name on this survey – please be honest about how you feel and what we can do to improve the program.

Please answer the questions below to the best of your knowledge.

Having completed the course, I feel: It was short, but it was awesome. I met new friends, I learnt the skills of leading, I learn hiking and ecology. The best thing which I learnt that, now I can do more than I think.

My favorite part of the program was: My favorite part of the program was climbing to peak Uchitel, because during this event I understood that if your [sic] like what you're doing, even if is [sic] dangerous, its [sic] worth to do that. I saw there lots of old hikers, they were tired but they did not stop. It proves that if you're excited to do something nothing can disturb you.

My least favorite part of the program was: There was no [sic] a part which I did not like, because in every part of the program I learn [sic] a new thing.

I would like to receive more instruction on: [rock climbing]. I [sic] was first time I've never tried [rock climbing]. And now I know now it is pleasure, because when you're doing it you forget your problems. And every time when [I] look down and see the way you past [sic] you enjoy and you want to go up and up.

Please list any other things you think about the program: This program really made me [unreadable] because every new day was a challenge. And every day we should to do something in order to be not hurted. One more think which I understood was when you stay alone only with yourself you begin to think about your life, what did you do for yourself and for others and what did you get, did yu do the job which you really like? I could not answer to these question [sic] because I wasted my time playing videogames, sitting on social networks and watching movies. And ending of this program makes me afraid, because if I go back to my previous life I will do the thing which I listed up.

Please answer the questions below regarding our program next year.

Are you interested in working in the ELP next year as a student instructor?

Yes, I am interested and I am ready to be an instructor.

Are you interested in organizing an Outdoor Club at AUCA to continue to conduct hikes and outings during the semester?

Yes, Now I am sure that I found what I will do if I have free time.

How many friends can you think of who will be interested in the ELP in the future?

It makes me sad that I don't have enough friend who [sic] is interested in hiking or ecology. But I think being in this program I can interest them to do it.

Would you be willing or capable of paying a small enrollment fee for a program like the ELP?

Yes I would.

Eco-Leader Program End of Course Review 3

The purpose of this survey is to determine how we can better plan the ELP for future programs. You do not need to put your name on this survey – please be honest about how you feel and what we can do to improve the program.

Please answer the questions below to the best of your knowledge.

Having completed the course, I feel: myself developed not only physically, but also mentally. Now, I know for sure that a human being has no limit. This small period of my life became an adventure that will last a lifetime. I learnt first aid technique.

My favorite part of the program was: getting close to each member of our team. Those 10 days seemed as a whole life and I feel like I know them forever. Besides, hiking to [Peak] Uchitel was the most challenging part of the program.
+ Amadeus

My least favorite part of the program was: walking to toilet. Just kidding. Lack of bathing bothered a lot.
More solo times
Being cold during the nights
Boring lectures

I would like to receive more instruction on: how to affect our society to be more respectful towards nature and natural resources

Please list any other things you think about the program:
Learn about myself a lot
Experimental night outside before camp

I started appreciated [sic] our nature even more
Team-working

Please answer the questions below regarding our program next year.

Are you interested in working in the ELP next year as a student instructor?

Yes, I would love to

Are you interested in organizing an Outdoor Club at AUCA to continue to conduct hikes and outings during the semester?

Yes, I am.

How many friends can you think of who will be interested in the ELP in the future?

I assume Kyrgyz youth would love to be active, therefore, a lot

Would you be willing or capable of paying a small enrollment fee for a program like the ELP?

Obviously, I would.

Eco-Leader Program End of Course Review 4

The purpose of this survey is to determine how we can better plan the ELP for future programs. You do not need to put your name on this survey – please be honest about how you feel and what we can do to improve the program.

Please answer the questions below to the best of your knowledge.

Having completed the course, I feel: exasted [sic], stronger morally and physically, intertained [sic], wild, challenged, healthy, confident in some way

My favorite part of the program was: rock climbing, people, the organization, aclimitisation [sic]. Amadeus' and Nathan's interactive workshops were amazing. Snacks, nature.

My least favorite part of the program was: antisanitary, poor sleeping bags, seminars by Zheenbek were awful, senseless, not informative.

I would like to receive more instruction on: rock climbing, ecology, USA's relevant practices

Please list any other things you think about the program: Thank you for the highly [unreadable] work you've down. We appreciate it. Gender equality was there. Treated water was great.

Please answer the questions below regarding our program next year.

Are you interested in working in the ELP next year as a student instructor?

No, only smm [sic].

Are you interested in organizing an Outdoor Club at AUCA to continue to conduct hikes and outings during the semester?

No, I don't have proper skills.

How many friends can you think of who will be interested in the ELP in the future?

3

Would you be willing or capable of paying a small enrollment fee for a program like the ELP?

Yes.

Eco-Leader Program End of Course Review 5

The purpose of this survey is to determine how we can better plan the ELP for future programs. You do not need to put your name on this survey – please be honest about how you feel and what we can do to improve the program.

Please answer the questions below to the best of your knowledge.

Having completed the course, I feel: Like I have learned lots of things that I can use in life. I have learned to be respectful to environment and think about things which happen every day, but we don't pay much attention for it.

My favorite part of the program was: rock climbing / glacier / bio-analysis of water

My least favorite part of the program was: sleeping bags were not so warm

I would like to receive more instruction on: first aid

Please list any other things you think about the program: Maybe ELP needs local instructors. Maybe ELP participants have to try experimental hikes for night to know what to expect.

Please answer the questions below regarding our program next year.

Are you interested in working in the ELP next year as a student instructor?

Yes.

Are you interested in organizing an Outdoor Club at AUCA to continue to conduct hikes and outings during the semester?

Hard to say, because it requires much time and it would be hard to combine work/study and club.

How many friends can you think of who will be interested in the ELP in the future?

Maybe 5-6

Would you be willing or capable of paying a small enrollment fee for a program like the ELP?

Yes

Eco-Leader Program End of Course Review 6

The purpose of this survey is to determine how we can better plan the ELP for future programs. You do not need to put your name on this survey – please be honest about how you feel and what we can do to improve the program.

Please answer the questions below to the best of your knowledge.

Having completed the course, I feel: I known [sic] a lot of new knowledge, like climbing, living in the camp and others. Also I spend my last month of summer very useful and interesting. Thank you.

My favorite part of the program was:

Solo day – to realize new experience, emotions, and knowledge
The lecture about ecosystems – because I [sic] interested in this topic
Game "National Park" – to see the connection between nature and humanity

My least favorite part of the program was: washing the bowls and packing the backpacks every day (cause I'm very lazy)

I would like to receive more instruction on: climbing, learning about ecosystems and water resources

Please list any other things you think about the program: very useful and interesting. You become more stronger, you get a lot of new knowledge. It was a very new experience for me. Also it was my dream to have camping.

Please answer the questions below regarding our program next year.

Are you interested in working in the ELP next year as a student instructor?

Yes

Are you interested in organizing an Outdoor Club at AUCA to continue to conduct hikes and outings during the semester?

Yes

How many friends can you think of who will be interested in the ELP in the future?

I know a lot of friends who will be interested in this program [sic]

Would you be willing or capable of paying a small enrollment fee for a program like the ELP?

Yes, why not

Eco-Leader Program End of Course Review 7

The purpose of this survey is to determine how we can better plan the ELP for future programs. You do not need to put your name on this survey – please be honest about how you feel and what we can do to improve the program.

Please answer the questions below to the best of your knowledge.

Having completed the course, I feel: [translated from Russian]

My favorite part of the program was: solo day

My least favorite part of the program was:

I would like to receive more instruction on:

Please list any other things you think about the program: More food! Meat!

Please answer the questions below regarding our program next year.

Are you interested in working in the ELP next year as a student instructor?

Yes, but this format is very cool

Are you interested in organizing an Outdoor Club at AUCA to continue to conduct hikes and outings during the semester?

Yes, and in other universities

How many friends can you think of who will be interested in the ELP in the future?

A lot, but it’s [sic] format becoming popular

Would you be willing or capable of paying a small enrollment fee for a program like the ELP?

Yes

Appendix I: Instructor Notes

01-03 August 2016

Classroom/orientation day → Park entrance and initial camp → Movement to Adygene camp
- 03 August, students indicate receptivity towards ecological concepts.
- As of 02 August, students seem more concerned with giving the "right" answer than the personally true answer
- 01-03 August, morale is generally high. Students are receptive to new ideas, voice opinions during classes. My concerns center around risk management and morale rather than receptivity to ideas. However, the main questions is whether they actually "get" it, or whether this is just a process of repeating what they think is right.
- One question/conflict arising is a concept of gender/equity/cultural acceptance. S_____ is dedicated to the concept of minimizing gender roles and expressed a feeling of offense when P_____ set up the tarp. ***If the model of outdoor ed teaches gender equity and load sharing, does that principle need to change to fit an eastern model?*** Or is load sharing really the principle of outdoor ed and gender equity is simply a priority in certain programs?
- B_____ was the student leader today. She is doing very well and the group listens to her, but her first reaction when I asked her to be the LOD was "Maybe one of the boys?" However, she accepted and takes charge of the group with a very collaborative style. The guys seem to listen to her and direction with no issue.
- Timelines – are these a western priority? Definitely less emphasized here. But they also go to an "American" university and it could be expected that timelines have a certain requirement in their daily lives.

04 August

Rest day at Adygene

Zheenbek Ecology Class
- difficult for students to understand technical terms in English – need to consider teaching in Russian for ecology classes
- 28 km, 233 square kilometers for Ala Archa River basin, 20 mountain lakes and 50 snow/glaciated peaks in Ala Archa
- Flow rates help commodify water and determine costs
- There are issues with water agreement between Central Asian countries
- Flood issues between Kyrgyz gov't (who needs more electricity) and Kazakhstan (who experiences flooding from water discharge)

- students respond readily to hands-on classes with practical application and involvement. They enjoy being challenged and challenging each other.
- Practical ecology – berries, firemaking → these things connect students with their environment. Must show dependence on the environment.
- AMS (lecture) vs. hypo-wrap (hands-on). Very engaged with hands-on activities, hard for them to follow a lecture. Science activities must be hands-on and simple.

- Students are picking up on camp setup quickly. Today was their first day establishing on their own, and they were generally efficient and needed very little assistance.

05-06 August

Movement to Waterfall Camp, Movement to Ratzek Camp
- Students react *very* well to hands-on experiences and teaching. Frame the problem and then step away. For example, the valuation game had all sorts of input and interaction. All lessons should be to the point, tied to an activity or a visual learning point, and then revisited several times rather than drawn out over a single long lecture.
- Students will argue and debate actively when given a framework scenario and assigned a discussion topic. "Homework" and lectures don't work well.
- Going to a museum and seeing the stuffed animal species came up. Maybe good next year to go up and see the park museum. Not lecture-style, but simply like the cemetery – go to show, have some key learning points, and then let them explore.
- Used the hands-on biology and ecosystem services flash card game with citizen science. Was a positive reception. Demostrated learning after the bioindicator exercise by directing each other (and others) to wash outside of the stream.
- They are setting camp up on their own with no issues. All know how to set up tents, then they get their clothes and living space in order. Hygiene is a much higher priority than Western students and they take great care to ensure they are clean before they eat. Prioritizing tasks remains a challenge, as we sometimes must direct them to start on dinner before it gets too dark.

08-09 August

Students continue to struggle with issues of obedience. This is not only frustrating from the standpoint if achieving learning objectives, but also from the standpoint of safety.
See notebook for full debrief
- Solid campcraft at this point. Nurali is even experimenting with camp improvement. Students are task organizing well to accomplish tasks. Notably, they do tend towards "gender-specific" tasks – the boys do the more strenuous tasks and the girls cook. That said, the girls often direct to boys in regards to what they are supposed to be doing.
- The glacier walk made sense to them. Several remarks on the finite nature of the glacier – they saw it melting and noted that they now see that it can "go away."

Nurali First Aid Scenario
+ good navigation
- don't rush into the scene; take time to plan and communicate
+ good expediency
- take time to organize the search
- ABCDE first → treat life threats, then move into other injuries
+ urgency of treatment
+ splinting with other leg
+ patient comms
- harness team information and make a decision
- moving hypothermic patient

- planning ahead
+ finally made a decision to move
+ asking patient whether he can move
- plan – make a decision and GO
+ listening to the team

10-11 August

Ethics and respect takes experience and competence. One cannot appreciate or guard moss or alpine flowers if terrified of a thunderstorm. Respecting ecology in outdoor education means that I must be comfortable with living in an austere environment, not distracted by my own fear or discomfort. Perhaps this is tied to the concept of wilderness, civilization, and respect.

Ethical behavior towards nature is difficult to achieve during a 2-week program even if intensely integrated into the curriculum. Students must come to be comfortable in the environment before respecting it. The progression seems to be fear → discomfort → aesthetic appreciation → recognition of services and nature as an entity → ethics and respect.

Students in Kyrgyzstan voice concerns that the reason for a lack of motivation to complete and excel is due to a perceived lack of opportunity in the country. One student voiced the opinion that programs like the ELP are generally not open to or targeting for Kyrgyz students and therefore students are afraid of the programs. The lack of opportunity may explain the overall sense of apathy and lack of motivation in the students as a collective group.

After 2 weeks of instruction, Kyrgyz students show the same level of concern for nature that one would expect from a US-based outdoor program. There is a verbal commitment to ecological behavior and ecological action occurs when the behavior is convenient. However, if ecological behavior is inconvenient – carrying water to wash pots in an area away from the stream, taking a longer but more indirect route to the bathroom, avoiding stepping in grass/moss if the trail becomes strenuous – then students will not follow through with REB.

Notes from the closing circle

- Thoughts on nature and ecology
    - descriptor words included “intimidating,” “challenging,” “special,” “scary at first,” “people will not understand what I know now”

- Thoughts on program challenges
    - “When I lost my tent, I lost my home”
    - “I never knew heat and cold until I came to this program”
    - “I appreciated the encouragement when climbing Uchitel; I didn’t think I could make it”

- On leadership and team dynamics
    - “leadership experiences were priceless”
    - “learning to live with other people very closely and still working as a team was challenging but very important”

- “we all had special things to offer to the group and we all had to learn our place”

Appendix J: Natural Resources Game

Valuation, Perspective, and Choices

Scenario: You are a member of a board of directors appointed to manage a large parcel of land that was granted to your government by a very wealthy investor. The exact land size is unimportant, but assume it is large enough to hold several different ecosystems and could easily be a large national park, if the board chooses to go that route. There are ten key features in the park that you should know about:

The White River runs the length of the land and is popular with kayakers and fishermen. The White River is strong enough to turn a hydroelectric turbine and also runs down into an agricultural area outside the park where parts of it are channeled into canals to water fields.

The White River Glacier is situated in the far north-eastern corner of the land parcel. The glacier is one of the largest in the area and is the source of the White River. It has occasionally been explored in the past for scientific research, but is relatively remote and has not seen much activity. No one is aware of whether it has diminished, stayed at the same size, or increased over the past 50 years.

A species of mountain goat lives in the upper fields and mountain peaks in the land parcel. The goat is not yet endangered, but the population has shrunk in the past few decades. The goat is also very popular with hunters and a single permit for the mountain goat can sell for many thousands of dollars.

There are several bare ridgelines in the area that are exposed to high winds. Skiers love them because they are open in the winter to deep snow with no trees. However, they are also home to a series of sacred sites that are marked with stacked rocks and springs. Additionally, a wind energy company has recently expressed interest in constructing wind turbines on the ridges.

There is an old copper mine deep in the back of the land. It was thought to be empty, but recent prospecting and new technology indicates that there is more copper to extract from the mine. Accessing the mine would require a new road built into the land that would require extensive modification to some of the landscape (blasting with dynamite, bridges, etc)

There are old cave sites in the area of the copper mine where early settlers in the area supposedly lived. Some people want to study them as archaeological sites, but others say that they should be left alone due to burial mounds in the area. The copper mine would probably cause some of the caves to collapse during mining operations, but not all of them.

There is a species of oak tree that grows in the lower levels of the land near the riverbank where a rare species of hawk nests. The hawk is endangered and this is one of the largest colonies of the hawk in the entire region. The hawk is sacred to some of the local peoples and is also not tolerant of humans, so any human activity in the area could endanger the colony.

A cliff face on the east side of the area is very popular with alpinists. The cliff is remote and some alpinists have proposed building a road off of the proposed mining road towards the cliff. They also want to see a small camp, with a hostel and store, built near the cliff so that it is easier to make the trip and stay in the area longer. The proposed road would go near the oak grove where the hawks nest, but not through it.

There is a beautiful vista about two miles into the parcel from the nearest road. The vista is a flat alpine meadow where herders of the past used to spend their summers at pasture. In the summer, the meadow is filled with alpine flowers and other fragile plants. An engineering company has proposed a type of visitor's center in the meadow, in the event that the land is converted into a park. The visitor's center would be sited in a beautiful spot and would only require a two-mile road to connect it to the main road below.

There are several native plants that grow naturally in the land parcel that are both rare (but not yet endangered) and highly valuable from a medicinal perspective. The plants are prized by native peoples but have also become popular in recent years in "alternative medicine" movements and sell for a high price in the pharmaceutical market. They are not abundant enough in wild form to be sustainably harvested, but there is a possibility that intensive cultivation could yield sustainable harvests.

This is your land. Your job, as the board of directors, is to decide what you will do with the land and with its characteristics. Will the land be preserved as a park and untouched? Will it be conserved and protected, but some uses of the resources allowed? Will you use it all for commercial means?

Discuss this scenario with your group, using your role cards to determine how you argue. Try not to base your argument on personal opinion, but on your role in the scenario! Create a plan for using the land and a plan for how you will use each resource. You do not need to achieve 100% agreement, but since you are on a board and are all equal voting members, you will need to reach a majority decision on each item. Present your plan at the end to the "public" (your instructors!). Have fun!

The Recreationist

Value Perspective: You believe that nature is beautiful and must be preserved, but it is also here for humans to use it. Your experience leads you to believe that humans and nature can co-exist as long as humans are careful to not over-use it. However, everyone has a right to use the land for recreation.

Strategy: You want to balance human use with natural health, but will usually choose human use over natural health. You want to convince the others to allow minimal development and maximum access for people.

The Businessperson

Value Perspective: You believe that nature has a value only when humans use it to provide something to society. Your experience leads you to believe that goods must be traded in the economic market, which means there must be an owner for everything. Nature can be bought and sold with a monetary value.

Strategy: You want to place a monetary value and owner on everything and convince others that the best thing for nature is to use it for humans.

The Culturalist

Value Perspective: You believe that nature and humans are linked together, but that nature is more important and powerful than humans. Your experience makes you want to listen to nature for answers and to keep nature as intact as possible so that it can still speak to you. Places are sacred and some should not be disturbed, except by people who are interested in sitting quietly and learning from the land.

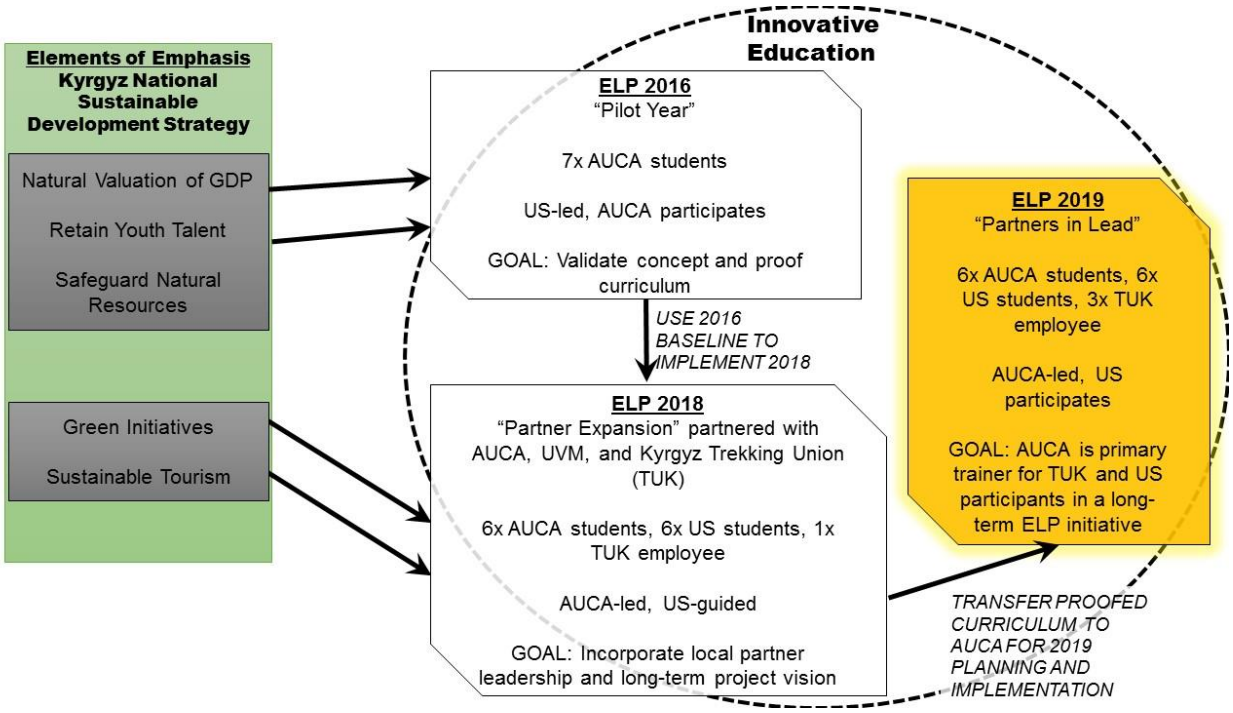
Strategy: You want to maximize natural preservation but allow for some appropriate human uses of the land. The appropriate uses are sometimes limited to only reflection and cultural

The Ecologist

Value Perspective: You believe that nature has its own value and has a right to exist, even if it is not apparently useful to humans. You prefer for nature to be left alone because your experience leads you to believe that it has the most value when it functions without human interference.

Strategy: You want to minimize human influence and convince others that the highest natural value comes when we leave nature alone to provide services.

Appendix K: Conceptual Framework for ELP Implementation



Appendix L: Journal Article Submission

The Ala Archa Ecological Leadership Program:

Evaluating the Effectiveness of Experiential Education in Producing

Responsible Environmental Behavior

Abstract

Many experiential education programs maintain that their respective curriculums cause an increase in environmental ethics and action from graduating students. However, a number of researchers (Archie, 1998; Chawla, 1998; Horsely, 1977; Hungerford & Volk, 1990; Maloney & Ward, 1973; Ramsey & Hungerford, 1989; Simmons, 1991; Zelezny, 1999) suggest that programs do not produce genuine Responsible Environmental Behavior (REB) in students. Other researchers and educators (Dresner, 1994; Priest, 1986; Hanna; 1995; S. Rochelle, personal communication, October 2015) have suggested that combining elements from the two major models of experiential education – outdoor adventure education and environmental education – may produce the desired increase in REB. The following paper studies the Ecological Leadership Program, a recent experiential education experiment in Kyrgyzstan that combined the key elements of each model. The study identifies four main curriculum areas that current and future experiential education programs may apply to programming to potentially achieve an increase in students' Responsible Environmental Behavior.

Keywords: experiential education, environmental education, outdoor adventure education, responsible environmental behavior, leave no trace, Kyrgyzstan

Introduction

To the outside observer, experiential outdoor education programs may appear as a relatively uniform category of education with largely the same philosophy, methods, and goals. However, the current models reflect a split in approach and goals that occurred in the 1980s between a group of programs that are now labeled as "environmental education" (EE) and another camp that identifies as "outdoor adventure education" (OAE) (Archie, 1998; Engelson & Yockers, 1994; Marcinkowski, 1997; North American Association for Environmental Education [NAAEE], 2010). This split has, in turn, led to a varied emphasis on how programs approach the idea of emphasizing responsible behavior towards the environment, with some programs concentrating on the idea of developing general environmental literacy (Stern et al., 2013) and others emphasizing education "in, about, and *for* [emphasis added] the outdoors" (as cited in Priest, 1986, p. 13). The exact methods by which each organization approaches teaching its version of Responsible Environmental Behavior also differ considerably, although the majority of outdoor-oriented programs claim to produce a degree of environmentally sound behavior in program graduates (International Wilderness Leadership School [IWLS], 2012; L. Akin, personal communication, October 2015; M. Golfmann, personal communication, October 2015; National Center for Outdoor and Adventure Education [NCOAE], 2015; National Outdoor Leadership School [NOLS], 2015; Outward Bound [OB], 2015; University of Vermont Outing Club [UVM OC], 2015). Yet despite the popular perception that experiential education and exposure to the outdoors increases environmentally responsible behavior in graduates, our research indicates a number of sources that question the ability of experiential education programs in their current form to produce the genuine progress towards a growth in Responsible Environmental Behavior (Archie, 1998; Chawla, 1998; Horsely, 1977; Hungerford & Volk,

1990; Maloney & Ward, 1973; Ramsey & Hungerford, 1989; Simmons, 1991; Zelezny, 1999). Given this skepticism, the following study focuses on identifying key characteristics from both outdoor adventure education and environmental education programs that, when combined, may lead to an increase in participants' Responsible Environmental Behavior (REB). The study operates through the context of an experimental *environmental adventure education* (EAE) program – the Ecological Leadership Program – held at the American University of Central Asia in Bishkek, Kyrgyzstan in August 2016.

Literature Review

Considering the variety of OAE and EE approaches, this study defines the two philosophies in the following manner. Outdoor adventure education (OAE) is a program involving outdoor pursuits that typically focuses on personal growth as the main goal, through the use of risky (actual or perceived) or uncertain situations that require the individual to overcome personal challenge, with REB as only a secondary effect (Hanna, 1995; Priest, 1986). In contrast, environmental education (EE) is defined as a program involving ecologically-centric pursuits that concentrates on creating REB through the use of scientific inquiry and exposure to specific environmental landscapes that require the individual to understand the dependence of humans on nature. The focus with environmental education is less on general personal growth and more on producing a citizenry that is knowledgeable concerning the environment and motivated to solve environmental issues (Hungerford & Volk, 1990; Stapp, 1969; Stapp & Wals, 1994, Stern et al., 2013).

It is also important to differentiate between different mindsets regarding environmental behavior and the methods for teaching or measuring them. Both OAE and EE researchers reference the concept of environmental sensitivity and environmental ethics. In the context of

this study, we define environmental sensitivity as an aspect of awareness that results in an individual viewing the environment from an "empathetic perspective" (as cited in Chawla, 1998, p.12). Notably, environmental sensitivity does not require positive action in regards to the environment on the part of the student. Environmental ethics, on the other hand, goes one step beyond sensitivity to foster an intense regard for the natural environment and a willingness to take action to live harmoniously with nature (Chawla, 1998). In contrast to environmental sensitivity, true environmental ethics requires motivation to act, at the very least on the level of personal behavior change.

The concepts of Leave No Trace and Responsible Environmental Behavior are critical sub-components of environmental ethics within the context of this study. The Leave No Trace (LNT) philosophy "teaches people of all ages how to enjoy the outdoors responsibly … making good decisions to protect the world … [through the concepts of] plan ahead and prepare, travel and camp on durable surfaces, dispose of waste properly, leave what you find, minimize campfire impacts, respect wildlife, [and] be considerate of other visitors (Leave No Trace Center for Outdoor Ethics, 2012). Note that the official definition is in compliance with the connotations of environmental ethics, as it requires action on the part of the individual to refrain from certain damaging behaviors. However, the language of LNT implies that environmental ethics only applies to backcountry areas or activities such as camping, building fires and hiking. This, in turn, suggests a certain degree of limitation on the ethical extent of LNT, making it a partial ethic that may not transfer effectively from its intended backcountry setting to broader social contexts.

Responsible Environmental Behavior (REB) takes the concept of LNT into this broader social context, applying environmental ethics to one's life as a whole, regardless of setting. Defined as behavior that works towards achieving and maintaining a dynamic equilibrium

between quality of life and quality of environment, REB emphasizes the ability to recognize and act on environmental problems (Marcinkowski, 1998). For the purposes of this study, REB's emphasis on action in all settings sets the standard for a true attainment of environmental ethics.

Environmental Education: Objectives, Methods, Strengths, and Criticisms

Environmental education's objective hallmarks are to *achieve effective environmental action towards identifying and solving ecological issues* via the avenues of *increasing awareness, knowledge, attitudes, skills, and participation* (Archie, 1998; Hollweg, 2011; Marcinkowski, 1998; Stapp, 1969; Stapp & Wals, 1994). An effective program will work to increase individual commitments to these aspects via an emphasis on systems thinking, a recognition of dependence on the environment, an interdisciplinary approach, local knowledge, practical, real-world roots, and a lifetime of learning (NAAEE, 2010). Traditionally, environmental educators leverage the progressive relationship from increased knowledge to changing attitudes to altered behaviors to achieve these effects. Called the "KAB" relationship (for "knowledge → attitude → behavior) (Marcinkowski, 1998), the process assumes a direct linear relationship between the process of planting a seed of knowledge in the form of some sort of ecological lesson (for example, forest ecosystems and their associated importance), a favorable change in attitude towards a positive entity (again, the forest) or a negative change in attitude towards a harmful entity (poor forest management practices), and a resultant ecologically responsible behavior (conservation of paper products). Inherent in the process of KAB is the idea of a parallel set of variables that propel the process along – *entry level variables* such as existing environmental sensitivity make the learner open to the new knowledge and, as lessons accrue, the learner's attitude shift activates a set of *ownership variables* that personalize the good from or harm to the environment. This altered attitude subsequently inspires the learner to seek out

and be open to action strategies or other *empowerment variables* that, in a final climatic transition, move the learner into active environmental behavior and motivate active environmental problem solving (Holsman, 2001; Stapp & Wals, 1994).

However, a number of established researchers are skeptical of the ability of the Knowledge-Attitude-Behavior model to produce true or long-lasting behavior change and action (Archie, 1998; Chawla, 1998; Horsely, 1977; Hungerford & Volk, 1990; Maloney & Ward, 1973; Ramsey & Hungerford, 1989; Simmons, 1991; Zelezny, 1999). In summary, researchers have been unable to link increases in awareness or knowledge to definite behavior changes. Explanations for this failure to translate knowledge into action generally center around the thought that knowledge is only one of many prerequisites to action, others being the skill to apply knowledge, a desire to act, personal factors such as self-confidence that inspire and allow action, and situational or social factors that empower an individual to act (Hungerford & Volk, 1990). Furthermore Hungerford and Volk (1990) observe that the emphasis on biological hard skills – the entry-level knowledge component – in many EE programs obscures the need to move on to the ownership and empowerment variables that eventually lead to action. As a result of this failing, EE programs manage to disseminate knowledge and perhaps effect short-term attitude changes, but, as Fishbein (1967) noted, largely fail to produce the behavior changes desired in an effective EE program.

Outdoor Adventure Education: Objectives, Methods, Strengths, and Criticisms

As Hanna (1995) notes, one of the consistently recorded outcomes of OAE programs is an increase in internal locus of control, or the belief that one can influence one's circumstances through personal attitudes and actions, with the lingering effects of programs recorded as long as 17 years after program completion (Gass, Garvey, & Sugarman, 2003). The strengths of OAE

programs are largely a result of their expeditionary and long-term structure. With most programs lasting 2-4 weeks, and some occurring over an entire semester, OAE programs are capable of producing the immersive, long-duration experience that helps strengthen the long-term behavior changes that OAE programs seek to affect (Dresner, 1994; Horsley, 1977; Hattie et al., 1997). These behaviors, ranging from personal perception and self-regulation to communication skills to the aforementioned locus of control, are documented as positive outcomes of OAE programming (Paisley et al., 2008; Sibthorp et al., 2007).

Despite a general consensus that OAE programming is effective in behavior change, there is scant research on the whether OAE programs turn a constructively critical eye towards how they articulate and achieve their environmental goals. One instance - Haluza-DeLay's (1999) study of a 12-day wilderness adventure trip – returned the verdict that the program generated good will towards nature, but no actual increase in environmentally responsible behavior. This corroborates insubstantial replies from students in qualitative post-course interviews, in response to questions about lessons learned about wilderness ethics, that "wilderness seems to teach its own lessons" and a confusion regarding Leave No Trace principles as *how* students learned rather than *what* they learned (Paisley et al., 2008). Yet it is Maloney & Ward's (1973) and Hanna's (1995) work noting a high degree of verbal commitment and environmental concern without the ability to carry out substantial environmental action that indicates that OAE is making the same mistake as many EE programs by assuming that knowledge eventually translates over to action. In Hanna's (1995) case, a study of an OAE group with a particularly charismatic and environmentally passionate instructor is a telling indicator – the group finishes the program with much enthusiasm regarding environmental issues, but fails to carry out their verbal commitments after a return home (Hanna, 1995, pg. 30).

Best Practices and Potential for a Hybrid Approach

Despite the successes in both Environmental Education and Outdoor Adventure Education, researchers and experiential educators have considered the improvement of both models through a combination of the two styles (Dresner, 1994; Priest, 1986; Hanna; 1995) with some organizations already taking such steps (M. Golfmann, personal communication, October 2015; Prescott, 2015). Marcinkowski (1998) notes that the strongest predictors of Responsible Environmental Behavior are: 1) individual and group locus of control, 2) skill in using action strategies, 3) environmental sensitivity, and 4) personal responsibility. The first two predictors correspond with the "ownership" and "empowerment" variables that Hungerford and Volk (1990) recognized as being the critical finishing components in the REB process. Although Marcinkowski observes that the locus of control and action strategy components are generally not well-addressed at adequate levels in most EE programs, multiple researchers (Hanna, 1995; Hattie et al., 1997; Sibthorp et al., 2007; Paisley et al., 2008) all note that these are the exact factors that OAE is consistently able to produce in its graduates.

This increase in "action strategy" factors must have proper direction if a program is to achieve the goal of increasing REB. Although OAE programs indicate that students internalize and take personal responsibility for LNT practices, the flaw within this approach is that it limits scope of action to wilderness areas. It is our belief that the Leave No Trace concept, given its concentration on backcountry environmental ethics, directs Marcinkowski's (1998) third and fourth components of REB – environmental sensitivity and personal responsibility – towards a limited scope of personal action. By adopting the refrain of environmental education programs – that the student must be an informed citizen of the environment no matter what his or her home

or locale – environmental sensitivity and personal responsibility transcend the confines of the backcountry and extend into personal life.

With these lessons in mind, the Ecological Leadership Program's curriculum emphasizes both OAE's locus of control and action strategies and EE's environmental ethics and personal responsibility in an experimental *environmental adventure education* (EAE) model. Leadership development in applied, real-world situations provides the instructional vector for locus of control and action strategies, while instruction and hands-on exercises in social-ecological systems and ecology are the medium for ethics and responsibility. In the subsequent sections, this paper will examine in depth the research objectives and methods that the ELP used to attempt to increase Responsible Environmental Behavior in experiential education program participants and the program's overall results.

Objectives

The Ecological Leadership Program was, in its complete form, an action research project conducted in a partnership with the Environmental Management and Sustainable Development (EMSD) department of the American University of Central Asia. This is notable in that readers must understand that this research paper contains only a fraction of the overall knowledge produced by creating, planning, and implementing the first university-based experiential education program in the Kyrgyz Republic (P. Barrow, personal communication, August 2015). Given that we, the authors, had to implement the ELP as a grassroots effort, our action research project contained two major goals – one centered on project management aspects of creating and implementing the Ecological Leadership Program (ELP) and one focused on the research outputs of the program. In regards to the first goal, the ELP sought to develop and implement an environmental adventure education program that advanced individual growth in its students and

met EMSD curriculum goals. For the purposes of this paper, the details of the project-based objectives are not included.

Second, the ELP sought to answer academic research questions in regards to the implementation of a hybrid environmental adventure education (EAE) curriculum to achieve responsible environmental behavior. As outlined in the literature review, the premise of the Ecological Leadership Program rested first upon the assumption that a hybridized version of western-style experiential education would be effective in the Kyrgyz Republic. During initial data-gathering trips to Bishkek, the authors noted a clear distinction between the foreigners who typically visited Ala Arcah to climb mountains or conduct extended treks and the Kyrgyz citizens who limited themselves to lower elevations and day hikes. Other than local porters hired to support expeditions, it is rare for Kyrgyz citizens to even ascend to the Ratzek high camp. These observations correlate with the academic opinion of ethnic Kyrgyz anthropologist Ruslan Rahimov that the Kyrgyz people maintain a more traditional relationship with the natural world than do their Western counterparts (R. Rahimov, personal communication, August 2016). Furthermore, initial research with educators and guides in the Kyrgyz Republic indicated that the ELP was the first experiential education program of its kind to be attempted with Kyrgyz university students (P. Barrow, personal communication, August 2015). As such, the first question the ELP sought to answer was: *Can a western-style outdoor education curriculum transfer over to a culture where an outdoor education model currently does not exist?*

The second research question that the ELP sought to answer was predicated on the success of the first question and specifically involved creating a working education system with the suggestions put forth in the literature review. Specifically, *can a program develop and use a hybrid environmental adventure education curriculum that deliberately ties expanding a*

student's locus of control through leadership development with relevant lessons in social-ecological systems and ecological economics to increase responsible environmental behavior in participants? To this end, the ELP's curriculum focused on two key subject areas – an immersive leadership environment that maximizes student empowerment and an ecology curriculum that ties ecology lessons in the backcountry with students' everyday life in the Kyrgyz Republic.

Curriculum Design

Although calls to adjust OAE and EE models differ in their exact prescription, a common recommendation is to retain the leadership and adventure elements of OAE (Dresner, 1994; Priest, 1986; Hanna; 1995). This recommendation centers on the recognition that these elements are a major factor in producing an internal locus of control and accompanying outlook that, through controlling one's own actions and decisions, it is possible to navigate along an envisioned path in a complex world (Hanna, 1995; Hattie et al., 1997; Sibthorp et al., 2007; Paisley et al., 2008). To this end, the ELP's curriculum design chose to retain many of the techniques featured in a standard OAE program such as the team-based structure, the concept of appointing a rotating "Leader of the Day" (LOD) assignment amongst the students, and orchestrating additional "leadership scenarios" to test students in more fast-paced leadership and team environments.

In concert with a relatively standard OAE leadership and team-building curriculum, the ELP curriculum also emphasized the relevance of ecological action and responsible environmental behavior through studying the social-ecological system of Central Asian watersheds. The choice to emphasize the social-ecological system (SES) approach and its associated concepts of ecosystem services and ecological economics was deliberate, as each of

these concepts embed human society within a larger, holistic concept of the ecosystem. This is, notably, in contrast with the core assumption of Leave No Trace, which speaks specifically to backcountry living, and to OAE programs that do not connect student actions in the wilderness to behavior in "normal" life outside the program. Given the noted difficulty of integrating the concept of the human need for resources into nature's provision of resources (Engel, Pagiola, & Wunder, 2008; Farley, 2012; Norgaard, 2009; Vatn, 2009), the ELP deliberately selected Ala Archa National Park and its associated watersheds as setting for both the program and for the program's place-based approach to ecology. Ala Archa National Park, situated in the northernmost range of the Tian Shan Mountains only an hour's drive south of the Kyrgyz capital city of Bishkek, is also home to a majority of the glaciers that feed the many canals that run through the city. This Bishkek-Tian Shan social-ecological system became the central teaching point for the ELP's ecology curriculum, specifically through the process of tracing the journey of water from Bishkek, up through the canal and river system, and finally to one of water's major origins in the Ak Sai glacier of Ala Archa National Park. Not only does this model allow for a discussion about water's ecological function and immediate resource value to the residents of the Bishkek area, it also opens the students to complex geopolitical deliberations on the value and ownership of water in their Central Asian homeland.

Given the introductory level of the ELP's students to SES and ecological economics concepts, an attempt to place an actual monetary value on Kyrgyz water as an ecosystem service would be overwhelming. However, using this complexity to explore the social subjectivity of the value of Kyrgyz water systems became the central teaching tool of the ELP. This idea to use a central problem statement and a series of associated exercises to propel the curriculum forward was modeled on the Problem-Solving Process outlined in *Ecological Economics: A Workbook*

for Problem-Based Learning (Farley et al., 2005). On the first day of the ELP, instructors held the first ecology class beside the Alamedin River canal running through the center of Bishkek and posed to the students a question that the curriculum would revisit throughout the course:

How can Kyrgyzstan integrate its social needs for clean, abundant water with those of its neighbor states and, ultimately, the needs of the natural environment in which it exists? What social tradeoffs are we willing to accept to achieve a healthy natural environment and what natural risks are we willing to accept to achieve our social goals?

From this starting point, the ELP curriculum followed the watershed from its social context as a canal in Bishkek to its natural glacial origin in the park and included the integral experience of actually walking in and descending into the Ak-Sai glacier. Place-based experiences such as the glacier walk, when coupled with lectures and group exercises that explored both the ecological functions of watersheds and the complexity of resource value, were designed to impel students to consider natural value, social value, and the respective relevance of both areas to their own lives. Through designing the structure of information flows to run quite literally along the watershed from Bishkek to the heart of Ala Archa National Park, we intended to exercise the concept of a leverage point (Meadows, 1997) to achieve this consideration of relevance. Meadows theorized that the very act of delivering information to a new place can change behavior and create a "new loop" of thinking founded on a different set of norms and perspectives. It was through this process that we theorized the ELP curriculum could overcome the challenges faced by OAE's Leave No Trace approach and, when coupled with empowerment variables, lead to an increase in responsible environmental behavior.

Research Design and Methods

The study participants involved in this research project were six students from the American University of Central Asia (AUCA) and one student from the Kyrgyz State Geological University. All seven students volunteered to attend the ELP's inaugural year and agreed to participate in the research study in conjunction with their ELP experience. A more detailed profile of the ELP class is listed in Figure 1 below. The research focused on applying semi-structured interview and participant observation techniques to answer the project's research questions.

Figure 1

ELP Class Profile

AUCA Students	6	Env Mgmt Major	2
Non-AUCA Student	1	Business Major	1
Male	3	Politics Major	1
Female	4	Computer Sci Major	1
2016-17 Sophomore	2	Anthropology Major	1
2016-17 Junior	4	Geology Major	1
2016-17 Senior	1	Glacier Travel Experience	1
Extended backcountry experience	1	Experiential Leadership Program Participant	3
Urban	6	Rural	1

Semi-structured Interview Methods

Semi-structured interviews focused mainly on answering the first research question – *can a western-style outdoor education curriculum transfer over to a culture where an outdoor education model currently does not exist?* The author chose the semi-structure interview data collection method for several key reasons. First, the initial interview focused on gaining insight into the students' backgrounds and how those backgrounds shaped the students' outlook towards a set of fixed topics – namely, outdoor education and responsible environmental behavior. The semi-structured interview allowed the author to standardize questions, but also to use the open-ended format and probes to go deeper into individual students' areas of interest or concern.

Questions for the interviews were generally descriptive in nature and focused on eliciting the students' personal views on his or her experiences with ecology and leadership prior to and during the program. Specifically, we sought to determine whether students felt that they connected to the Western-style course curriculum and, in particular, which concepts resonated with the students and which concepts did not. We conducted interviews in both English and Russian, given the students' ability to speak English and our own ability to speak Russian and/or Kyrgyz. The interviews occurred during the first three days of the course (entrance interviews) and the final day of the course (exit interviews) in field-based environments and one-on-one settings.

Participant Observation Methods

Participant observation methods were used to focus in on the second research question – *can a program develop and use a curriculum that deliberately ties expanding a student's locus of control with relevant lessons in ecological economics to increase responsible environmental behavior in participants*? In this case, I chose to use this method in an attempt to gain more accuracy in gauging a change in responsible environmental behavior by observing student behaviors. Observing students' daily actions would provide significantly more insight into their objective behaviors when they were not immediately aware of being the subject of research. Given the nature of the program and the constant interaction of students and instructors, I hypothesized that eventually students would become used to instructor presence and revert to natural behaviors rather than posturing or posing in a way they perceived would be favorable to instructors.

The participant observation occurred amongst the team of three instructors, with each maintaining a daily log of observations and behaviors. Nightly debriefs included a discussion

amongst the instructors regarding noted behaviors and the associated significance. In addition to field notebooks, staff handbooks included a daily "after action review" section that allowed for note taking regarding both program adjustments and student behaviors. A final debrief within the instructor team focused specifically on the question of responsible environmental behavior and its changes from the program's start to its finish.

Study Limitations

The research component of the ELP was limited in several areas. First, the student population of the program was limited by the amount of equipment available to resource the program. With a maximum participation capacity of 12-15 students, the ELP ultimately occurred with seven student participants. This amount, based on instructor experience during the course, was an appropriate number of participants given the students' overall lack of experience and the experimental nature of the program. On one hand, this student body size enabled the instructors to conduct thorough interviews and focused participant observation. However, it also clearly limited the sample size for research data.

The language barrier between instructors and students was the second major study limitation that the ELP research program faced. Overall, the language barrier was not exceedingly inhibitive of program execution. All student participants spoke English at varying levels of proficiency. Additionally, each English-speaking instructor spoke some form of Russian or Kyrgyz. This level of language interoperability allowed students and instructors to try various ways of explaining ideas and thoughts during interviews and program exercises. However, it would also be inaccurate to claim that all ideas flowed freely between instructors and participants. Invariably, responses to questions about technical subjects such as ecology had to be paraphrased and lost key elements of responses during the translation process. The author

assesses that each group's language abilities allowed responses to research questions to at least capture the general attitude towards the subject (i.e. positive or negative, approval or disapproval, basic suggestions for improvement), but may have missed the deeper nuances of answers to more technical questions.

Results

After over a year of intensive planning and resourcing, the Ecological Leadership Program took place in Ala Archa National Park, Kyrgyzstan from 01-12 August 2016. In regards to the ELP's applied objectives, all seven students finished the program to attain a 100% graduation rate, with the program receiving high marks from student participants, AUCA faculty, and parents alike. The unpublished thesis details assessment of the program's applied objectives.

In regards to research objectives, the program allowed for researchers to conduct all research components as planned. Student responses through semi-structure interviews showed consistency in responses regarding feelings towards the program and the leadership/adventure component but inconsistency regarding ecology and environmental behavior. All students except one reported a prior level of contact with nature that seems to characterize the urban Kyrgyz student – exposure to the Kyrgyz concept of nature as a child in a rural hometown or staying with rural relatives, visiting *jailoo* high pastures in summer, gardening, and picnicking, coupled with an enjoyment of Bishkek's many city parks as an urban university student. The one outlier was a student who regularly engaged in treks and solo hikes in the high mountains and routinely immersed himself in challenging outdoor situations (Participant 4). This pattern translated over to the students' outlooks regarding participation in the Ecological Leadership Program – the six students (Participants 1-3, 5-7) exhibiting similar characteristics described their expectations for the program in terms of recognizing the challenge and meeting it with varying degrees of

confidence, although expressing some concern regarding their untested physical or mental abilities. They used words such as "beautiful" (Participants 1, 2, & 5) to describe their concepts of nature, "strong" (Participants 1, 4, & 5) to describe how nature made them feel, and characterized themselves as small in relation to nature. Ideas such as being removed from modern distractions and being real with themselves and others characterized their outlook toward being immersed in a backcountry environment, although several commented that the immersion made them feel nervous. One student characterized the common tension between the social self and a new nature-based identity by remarking that "I am feeling like both an ancient man and a civilized man … if I see a wolf, I would have both fear and awe" (Participant 5). Interestingly, Participant 4, the consistent outlier, expressed no indications of this tension, but did correlate with the others in describing nature as an avenue for himself to become stronger, as well.

Concepts of ecosystems, ecosystem services, and valuation were significantly more varied, but intriguing in their depth. The concept of connection and place in ecosystems was prevalent – students were able to identify that ecosystems involved connection, interdependent entities, and a requirement that entities coexist (Participants 1, 2, 4, 5, & 6). They also spoke specifically to certain areas, such as tundra or mountains. Some students took a very critical stance towards humans, noting that humans seemed to disrupt ecosystems and, in the case of one student, that humans should not even been considered part of ecosystems. Even more interesting was students' concept of ecosystem services. All students were capable of describing the basic goods that nature provides to humans, such as water, wood, and clear air, but also revealed a fascinating depth of understanding regarding service valuation. Students noted that one's valuation of nature and associated services is influenced by political climate, personal background, and cultural values. They voiced concerns about monetary valuation of nature due

to the ability for the rich to simply buy off the services they desire and leave the dregs to the less fortunate. One student even noted the difference between ecology in developed countries such as Switzerland and developing countries such as Nicaragua, expressing the sentiment that "money can buy a healthy nature" (Participant 6). Overall, the consistency in student concepts towards ecosystems and associated services occurred less in identical outlooks and more in regards to a rich depth and breadth of opinion regarding complex concepts of valuation and perspective.

Finally, a review of student attitudes towards leadership and corresponding internal locus of control revealed a strong consistency among six out of seven students that, at the beginning of the program, they did not consider themselves effective leaders capable of guiding a team outside of a specific set of comfortable conditions, indicating a low internal locus of control. Although several students with stronger responses related past experiences in nominal leadership roles, they also described a degree of uncertainty in those roles due to a lack of experience or strong example to follow. One student even expressed the opinion that he lacked any leadership qualities. This outlook manifested itself in many students' hesitation to initially volunteer for leadership roles. This behavior was in contrast to Participant 4, the consistent outlier in the group, who had experienced several leadership training courses already.

Based on the initial student responses, the ELP instructors focused participant observation on three main areas corresponding with the three general sections of interview questions – general comfort in an outdoor setting, evidence of responsible environmental behavior in daily routine, and evident increase or decrease in leadership engagement from students. Students demonstrated noticeable increases in the ability to function in the outdoors over the course of the program. By the third day, students were capable of setting up the camp by themselves and, by the fourth day, several students were experimenting with making new camp

gadgets such as chairs and washbasins from plastic bottles. They also showed a remarkable dedication to making meals a communal event, refusing to eat unless everyone was present and ensuring that everyone had a sufficient amount of food. By the middle of the program, the students had, in the eyes of the ELP instructors, become extremely comfortable with the processes of outdoor living and travel. In illustration of this point, one student remarked in the program's closing circle that "when [she] lost her tent" in a windstorm mid-way through the course, "[she] lost [her] home" (Participant 3), indicating the level of integration that the students achieved with becoming immersed in the backcountry environment.

Evidence of an increase in responsible environmental behavior was generally subtle, but emerged clearly in certain moments. Early in the course, instructors struggled to have students act responsibly by not washing pots near streams, cutting vegetation, or picking wildflowers. However, as the program progressed and student experiences became more intertwined with the natural world, certain elements of behavior shifted. For example, after students conducted a bioindicator measurement exercise in the stream that ran nearby their camp, they found that the level of stream health decreased after it ran through camp. This, they surmised, was likely due to practices such as washing pots or bathing oneself in the stream. Glimmers of behavior change and basic elements of Responsible Environmental Behavior then emerged. Students began to wash pots away from the stream and exhort fellow trekkers to use the stream responsibly. More passionate students even scolded trekkers for washing or spitting in the stream. Additionally, students reflected after exploring the Ak-Sai glacier that they now understood water as a finite resource, capable of being dirtied or used up the further downstream it progressed. This likewise led to a higher level of responsible behavior near water sources that the students now understood to flow downstream to Bishkek.

However, perhaps the most interesting observation occurred when the students, late in the course, abandoned REB practices. During a hurried walk back to the camp to escape a rainstorm, we witnessed students stepping onto lichen, alpine flowers, and eroding slopes in an effort to return to camp before a rainstorm arrived. One author-instructor later reflected on this observation, noting that:

> Ethics and respect takes experience and competence. One cannot appreciate or guard moss or alpine flowers if terrified of a thunderstorm. Respecting ecology in outdoor education means that [one] must be comfortable with living in an austere environment, not distracted by [one's] own fear or discomfort … The observed progression in students in relation to nature seems to be fear → discomfort → aesthetic appreciation → recognition of services → guarding of services → guarding of nature for nature's sake. Environmental sensitivity corresponds with the appreciation or recognition stage, while REB corresponds with the guarding phases.

This reflection adds observed, real-world detail to the academic theory of progression from environmental sensitivity to environmental ethics to responsible environmental behavior. Early in the program, instructor observations, corroborated by student interviews, indicated that student decisions were mainly ruled by fear and discomfort. In such a situation, students perceive that the environment is a threat and were therefore narrowly focused on their own survival needs, not on the survival needs of the environment. However, after discussing the idea of discomfort and its relationship to REB, instructors were able to note that an increase in environmental comfort led to a corresponding increase in REB – as students learned how to efficiently set up their camp, cook, stay warm, and stay clean, many of their fears and discomforts were dissipated. Students noticed more about the environment and spent more time taking pictures or scouting

around camp. This phase of aesthetic appreciation transitioned into recognition of nature's value and finite characteristics through exercises such as the previously mentioned bioindicator exercise and role playing valuation exercises that compelled students to consider the value of natural resources. Feelings of empowerment in their new environments, when coupled with instruction in ecology, initiated the beginnings of Responsible Environmental Behavior. In contrast, instructors noted that a decrease in empowerment and sense of control, such as when the weather was poor and practicing REB took more effort, generally caused students to default back to non-responsible behaviors – washing pots in the stream or urinating closer to the alpine area rather than walking all the way to the latrine.

Finally, observations about leadership and self-empowerment were perhaps the most noticeable and dramatic. As noted in student interviews, most students came into the program unsure of their capabilities as a leader. As early as the second day of the program, however, instructors began assigning Leaders of the Day and providing leadership opportunities for ELP participants. Leader debriefs at the end of the day focused on reviewing student performance and providing input on areas where students could improve during their next leadership opportunity. In the case of the one student who expressed the opinion that he was "not a leader" and needed to leave his comfort zone, the ELP instructors provided him with two leadership opportunities – one LOD day and one leadership scenario – to ensure that he received adequate opportunities to excel. The student's final opportunity in the course was extremely challenging, but his mood in the debrief was upbeat and proud as the instructor explained how effectively the student had functioned. In addition to an instructor emphasis on mentorship, the student group was exceptionally supportive of each other and worked to ensure the success of each LOD with little to no infighting. The instructors observed student-leaders becoming more confident as they

worked through difficult conditions, supported from below by their team. Student reflections during the closing circle corroborated instructor observations, with students remarking that "leadership experiences were priceless" and "we all had special things to offer to the group and we all had to learn our place." Overall, instructor observations on student leadership growth were some of the most rewarding of the entire course.

Student responses during the post-trip exit interviews exhibited consistency in student feelings of growth, but the exact areas of growth emphasis differed from one student to another. Not surprisingly the two students who were majors in Environmental Management and Sustainable Development (EMSD) both remarked that their baseline understanding of ecosystems had not changed significantly during the course (Participants 6&7). However, these students both noted that seeing ecology in context (i.e. in a place-based setting outside of a classroom) helped them to understand the relevance of their chosen field. Furthermore, they noted that the leadership education process had assisted them in becoming more effective in day-to-day leadership activities such as communication, taking responsibility, and managing time. This indicates that, for students who already have a grounding in ecology, the process of linking ecological lessons to relevant aspects of their lives (for example, clean water and water consumption) can result in increased feelings of empowerment to apply ecological lessons in professional or personal lives.

The non-EMSD student group contrasted to the ecology students in the richness of their answers to questions about ecology and ecosystems. This student group, comprised of business, political science, anthropology, geology, and software engineering majors, remarked that they now appreciated the complex nature of ecosystems, understood the concept of ecosystem services, and recognized the connections to their own areas of study. For example, an

international politics major observed, in political science terms, that the "territory of the state" (Participant 3) made ecology a political issue, an anthropology student noted that the immediate economic issues in peoples' lives affected how much they can care about ecology (Participant 1), and a business student commented that business should properly value resources for long-term rather than simply short-term gains (Participant 5). Answers from this student group suggest that a curriculum that focuses on a broad resource topic such as water valuation in a region (in this case, Central Asia) helps students connect their various academic interests to ecology. Similar to ecology-based students, this student group found significant relevance in the leadership education track, making them feel more capable of assessing their own leadership strengths and weaknesses and understanding how to use their lessons in their own future professions.

Discussion

Although the main research question focused on whether a hybrid environmental adventure education (EAE) model could lead to a positive change in Responsible Environmental Behavior, it was first necessary to determine whether the basic Western experiential education model could translate over to a different culture where experiential education is essentially non-existent. In determining the answer to this research question, the instructors compared responses and outcomes of ELP students with responses given from their Western counterparts after completing an experiential education program. ELP student responses at the conclusion of the program were remarkably similar to those noted in D'Amato and Krazny (2012). Both Western and Kyrgyz students agreed that an experiential education program served as a sort of crucible, placing weak humans in a setting where they are subjected to a stronger natural world. Experiential education served to remove them from distractions, to provide opportunities for thought and solitude, to build self-confidence, and to immerse students in a team setting. In

addition to student responses, the objective achievement that all students completed the course, with not a single attempt to quit or cut the course short, is a testament to the overall success of the model's ability to transfer to a new and different culture.

Given the effectiveness of the model framework, the question remains regarding whether the hybridized environmental adventure education (EAE) model can increase an internal locus of control in its students and, in doing so, attain a higher level of Responsible Environmental Behavior (REB). Based off of student responses and, more importantly, instructor observation during the ELP, data indicates that the increased focus on ecology in the EAE model, when coupled with the empowerment variables resulting from increased internal locus, can indeed serve to inspire Responsible Environmental Behavior in students. More specifically, the success of a program's curriculum in inspiring REB seems to rest on four key programming factors.

First, an ecology program in an EAE curriculum must be preceded by students attaining a feeling of empowerment and comfort with living in a backcountry environment. Comfort in this case is not defined in the modern sense of being without inconveniences, but in terms of no longer feeling that the environment is a threat to one's survival through the process of teaching low-impact backcountry living skills and increasing individual internal locus of control through leadership development exercises. As noted in Nash's (2014) book *Wilderness and the American Mind* and further corroborated by research during the ELP, humans do not typically concentrate on environmental sustainability when their own livelihood seems to be at stake. Only after the initial 3-4 days, once students ceased to describe their environment as intimidating, did they begin to visually and behaviorally respond to ecology lessons. Therefore, a program that seeks to achieve a certain level of Responsible Environmental Behavior in its students must first help them to "master the basics" of backcountry living.

Second, a curriculum that helps students to connect to their environment on a personal level is more likely to achieve elements of Responsible Environmental Behavior. Students frequently remarked that it was the process of tracing the watershed from their own city to its origin on the glacier that led them to understand the importance of this finite resource. Thus, moving beyond the idea of general place-based education to a specific place that ties lessons to a student's home and everyday societal life may assist students in seeing an intrinsic motivation for REB. One possibility for increasing specificity is for students from a particular area (in this case, the Bishkek region of Kyrgyzstan) to study an ecological network or issue as it relates to them and to their home, similar to the problem-based learning approach in the *Ecological Economics Workbook* (Farley et al., 2005) Unlike LNT, which defines REB as a backcountry ethic, specific place-based curricula connect actions and lessons in the backcountry to students' daily lives, thereby increasing the likelihood that REB will continue after program completion.

In addition to establishing the place-based connection, an effective EAE curriculum will work to achieve a broad relevance to students' professional interests. Rarely will a program work with a student group with academic interests solely in ecology. Thus, helping students understand the relevance to ecology in their future aspirations is a key component to providing a motivation to practice REB. In the ELP's case, this relevance seemed to emerge strongly through discussions on ecosystem services and hands-on exercises in resource valuation. Students from several disciplines made their final observations on ecosystem services through the lens of their particular academic aspiration, indicating that a curriculum that can add cultural, monetary, political, social, and natural relevance to REB is more likely to inspire REB in its students.

Finally, a crucial component of an effective EAE curriculum is that it adds life to nature. Students began the program with remarking on the most noticeable features of nature – rocks,

water, forests, animals, etc. These observations of the components of nature largely featured generalized, impersonal groups (i.e. “animals” or “trees” broadly) or inanimate objects (i.e. “rocks” or “water”). However, exercises such as the stream bioindicator exercise clearly made an impression on students, showing them the level of life that exists beyond their observable eye. This exercise seemed to attune them to an increased level of observation in their natural world, with students moving from generalized descriptions of nature to noting things such as pikas consuming grass or mountain goats blended into the hillside.

Conclusion

The research conducted during the Ecological Leadership Program cannot, unfortunately, reliably predict whether students’ exhibited Responsible Environmental Behavior will be long- or short-term. Although students’ final reflections at the closing ceremony observed that their outlooks towards the environment and society had changed and suggested a much deeper appreciation for responsible environmental behavior, the small sample size and current lack of long-term follow-up with students prevents an assessment of behavior duration. As students themselves noted, whereas an environmentally responsible decision during the ELP typically came only at the cost of time or convenience, environmentally responsible decisions in daily life may also be associated with an additional monetary cost that students cannot afford. Yet, although a definitive answer would require additional study and research, there also exists the possibility that the same Kyrgyz ingenuity and inward reflection that the ELP instructors saw exhibited so many times during the course will carry REB into students’ daily lives. As demonstrated with the students’ ability to improvise tools from trash at no cost to themselves, students could also carry their inspiration into their professional and personal lives in ways that ELP researchers and instructors could not foresee.