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Distancing Students From Nature: Science Camp and the Representation of the Human-Nature Relationship

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ABSTRACT OF THE DISSERTATION

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by

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This study investigated the curricular representations of the environment and the human-environment relationship at one residential school sponsored science camp. Data gathered included field notes from observational time at the camp, interviews with staff and classroom teachers, and documents from the site's website, guides, manuals, and curricular guides. These data were analyzed to understand how the camp represented the human-environment relationship and the "proper" human-environment relationship to its participants. Analysis indicated that the camp's official and enacted curriculum was shaped in response to two perceived problems, (1) students were perceived as having a disconnected relationship with the outdoors and lacking in outdoor experiences; and (2) staff members of the camp believed that time for science during the school day had diminished and that students were not receiving adequate science instruction at school. In response, the goal of the camp was to connect students to the outdoors through hands-on, sensory, experience based science and outdoor education experiences. However, key aspects of the camp experience and the formal and enacted curriculum unintentionally positioned students as separate from nature. The camp experience presented a vacation like understanding of the

human-environment relationship as students became tourists of the outdoors. Despite the site's goal of connecting students to the outdoors, the science camp experience worked to distance students from the outdoors by unintentionally representing the outdoors as a place that existed away from home and students' everyday lives. Notably, nature became a place that existed in the past, separate from modernity. Students were tourists in an exotic location - nature. They received tours of the foreign outdoors, had fun, and returned home to their ordinary lives that were separate and distinct from the natural world.

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CHAPTER ONE: INTRODUCTION

The terms "climate change," "global warming," and "greenhouse gases" have entered our society's popular discourse over the past several decades. As these terms have seeped into our common awareness, so also has a nebula of scientific concepts, theories, and meanings surrounding them. When once, not too long ago, global warming was dismissed as science fiction by presidents and pundits alike, now popular discourse seems to accept global warming as sound scientific theory. Discussions about environmental issues seem to be becoming more commonplace. The prevalent "apocalyptic doomsday" environmental narrative is also slowly being joined by other, more individually empowering discourses of "sustainability" and "going-green" (Strife, 2010, p. 181). Just as popular discourse seems to fluidly shift its foci, our personal conceptions of our relationship with the environment are also continuously being defined and redefined by educational experiences, media representations, social interactions, and outdoor encounters.

The focus of my research is environmental education. Specifically, I am interested in the formative time that fifth and sixth graders spend at Science Camp[1]. My questions are:

a) How does the official and enacted curriculum at Science Camp represent the environment/out-of-doors?

b) How does the official and enacted curriculum at Science Camp represent the environment in terms of the relationship participants should have towards the environment?

[1] Students and teachers often orally refer to the Outdoor Explorations four or five day residential program designed for 5th and 6th grade students, as "science camp." Science Camp is the pseudonym I have chosen for the site. All references to names, places, and organizations are pseudonyms.

c) What understandings, attitudes, and behaviors towards the environment does the official and enacted curriculum of Science Camp seek to instill in participants?

Environmental education is a field of inquiry that seeks to promote understanding of the interrelationship of humans and the environment. However, research is suggestive of a troubling trend that adolescents' conceptions of "an environment" often *exclude* humans and human-made environments (Shepardson, 2005). Shepardson concludes that "the students in my study tended not to see humans as part of the environment or human-made environments as environments; however, some viewed the environment as a place containing living things and people…" (p. 57). This is a troubling hint as to how students might be envisioning the human-environment relationship.

Richard Louv, author of Last Child in the Woods, argues that the bond between children and the environment is breaking (2005). For a number of reasons, (e.g. increase in children's time playing with technology, reduced amount of leisure time, parents' safety concerns for their children) children of current generations spend far less time outdoors than their parents' generations. In this country, children under the age of 12 spend less than 45 minutes of their non-school time per week outdoors (Hofferth & Sandberg, 2001) and children of higher socioeconomic status families report a higher percentage of sedentary activities than their counterparts (Harrell, Gansky, Bradley, & McMurray, 1997). If children are rarely outdoors, then their opportunities for independent environmental learning are extraordinarily limited (Louv, 2005; Malone, 2007) as is their chance to create a meaningful and positive relationship with the environment.

This generation, more than any other prior generation, will be faced with unprecedented environmental concerns that will require difficult national, local, and personal decisions and changes. Equipping students of this and future generations not only with the environmental knowledge necessary to make important environmental decisions, but also with experiences in the outdoors and an understanding for the world just outside their windows, is vital to promoting an environmentally responsible future and citizenry. Educational experiences are one way in which this generation's relationship with the environment will be shaped. A key question for research and practice is, when during a student's formal educational career might their relationship with the environment be undergoing purposeful definition and redefinition?

Camp is certainly one answer to that question. Many American elementary students attend a residential camping program with their school, often during either the fifth or sixth grade year. Research indicates that camp and camping are "significant life experiences" which are associated with future pro-environmental behaviors and attitudes (Chawla, 1998, 1999; Mittelstaedt, Sanker, & VanderVeer, 1999; Peterson, 2005). Camp is a time of personal change. Camp is a place where students' relationship with the environment is being formed and directed. Indeed, in a generation when children's time and experiences outdoors are more limited than ever before, the camp experience may play an even greater role in defining and redefining students' relationship with the outside world. Recognizing that camp is one educational experience that might inform (and be informed by) our personal conceptions of our relationship with the environment, it is important to conduct qualitative inquiry into the camp experience in order to develop an understanding about how the curriculum of science

camp represents the environment, the human-environment relationship, and the attitudes and behaviors it seeks to instill in its participants.

Overview of the Research Problem: Our Changing Relationship with the Outdoors, a Historical Look (Colonial – Present)

America's first European citizens' ways of understanding, ordering, and making sense of their world were largely influenced by their colonial ideas and impulses. The idea of land as commodity was perpetuated through the conquest and colonization of new lands throughout the world by the Europeans. Thus, for the colonizers, land had always been something that could be dominated, named, and owned[2](Blum, 2003). Moreover, the natural world was something that needed to be explored, ordered, tamed, and understood through scientific inquiry. The colonial mindset considered the seeking out of Truth and order in the natural world to be the righteous burden of the civilized[3] (Willinsky, 1998). Recognizing the significant impact of the colonial mindset on American ideas of nature as well as the importance of the colonizers' actual experience, Marx posited that "all of the significant ideas of nature are hybrids, conceived in Europe and inflected by New World experience" (2008, p. 10). These early hybrid Euro-American concepts of nature were also generally Christian ideas of nature which encouraged the separation of "man" and nature (Blum, 2003, p. 248). Wilderness, until tamed, civilized, and reordered, was godless[4].

When colonists arrived five centuries ago on the shores of North America, they were awed by the abundance of land, forests, and animals (Harvey, 1996, p. 5). Harvey argues that

[2] A contrasting concept to perhaps the ideas held by the native peoples

[3] More than just traces of this way of thinking about the outside world are present today. We are still literally (think: lunar landing) and proverbially (think: scientific discoveries) staking our flags in new territories and perpetuating the same idea of dominance over the natural world.

[4] As, of course, were all of the people and creatures which inhabited the land prior to white settlement.

this sense of abundance dominated the relationship Americans had with the outdoors until well into the nineteenth century. America was seemingly never-ending and forever fruitful. The national hymn, "America the Beautiful," written in the late nineteenth century, reflects the sense of awe, endlessness, and fertility that characterized our nation's patriotic sentiments towards nature – *"O beautiful for spacious skies, For amber waves of grain, For purple mountain majesties, Above the fruited plain!"*

Industry was heavily dependent on natural resources such as fertile soil (cotton, corn), oil, and lumber. As the frontier continued to expand after the Civil War, citizens were drawn to the promised plenty in the "Great Plains" and the "West" (Harvey, 1996, p. 5). As the economy of America became more and more dependent on products reaped from this country's natural resources as well as the technological innovations that made such mass production possible, Harvey posits that nature itself became commodified (p. 6). "This commodification of nature was critical not only to the economy but also in shaping American's [sic] relationship with nature" (p. 6). Homesteaders moved west and began to settle new territories and "the tasks at hand were to survive and prosper, which in their minds required bringing the natural world around them under control" (Montrie, 2005, p. 246). Americans' relationship with the outdoor world was changing as technology advanced and new lands became settled.

In 1864, George Perkins Marsh, a future U.S. Congressman, authored a book titled Man and Nature and subtitled Physical Geography as Modified by Human Action, that frustrated the notion of abundance that had hitherto dominated Americans' relationship with the outdoors. The goal of the book is quite simply stated in its preface:

> The object of the present volume is: to indicate the character and, approximately, the extent of the changes produced by human action in the physical conditions of the globe we inhabit; to point out the dangers of imprudence and the necessity of caution in all operations which, on a large scale, interfere with the spontaneous arrangements of the organic or the inorganic world; to suggest the possibility and the importance of the restoration of disturbed harmonies and the material improvement of waste and exhausted regions; and, incidentally, to illustrate the doctrine, that man is, in both kind and degree, a power of a higher order than any of the other forms of animated life, which, like him, are nourished at the table of bounteous nature.

The publishing of this work is an important landmark in this history; it symbolizes a shift in Americans' understanding of their relationship with the outdoors from one of endless abundance to one of finiteness. Man and Nature begins with a cautionary tale about the fall of the Roman Empire. Marsh asserts that the irreverence for the laws of nature was the main reason for the empire's descent (p. 5). In doing so, Marsh provides a clear warning to Americans – "mankind has been an inexorable and often destructive modifier of the face of the earth" (Gade, 1983, p. 341)[5]. This warning bell may well ring louder in coming decades.

Important to this discussion of our historical relationship with the outdoor world is recognition that this discussion has, up to this point, been recounting a dominant American historical discourse. Blum (2003)states that "the way people view their surroundings varies greatly by time period, race, class, and gender" (p. 248). Her article, "Power, Danger, and Control: Slave Women's Perceptions of Wilderness in the Nineteenth Century," gives voice to another segment of the American population's relationship with the environment. Through analysis of slave narratives recorded in the 1930s by the Works Progress Administration, Blum found that "evidence exists that black women's views of their environment contained influences from their African predecessors" (p. 249). This provides a

[5] Marsh's message was "rediscovered" in the 1950s and 60s during the environmental movement (p. 341).

contrast to the Euro-American relationship with nature previously discussed. Blum argues that slaves' perceptions of the outdoor world were nuanced. On one hand, wilderness represented refuge, a "temporary retreat from white supervision and control" (p. 250), and a source of remedies and food. On the other hand, wilderness was also represented in the recorded narratives as a source of danger. Blum sums up the complicated relationship that slave women had with the "natural world" by saying, "overall, slaves realized the natural world yielded benefits, and yet needed to be treated with respect, fear, and knowledge to avoid harm" (p. 263). This historical example of slaves' relationship with the outdoors is a potent reminder that culture matters. People, their histories, and their influences are not homogeneous; nor are the meanings they create with the out-of-doors.

By the end of the nineteenth century, the American notion of abundance had become complicated with issues of scarcity. The effects of unmanaged hunting and trading were becoming apparent and states had begun to regulate the usage of such natural resources (Harvey, 1996, p. 6). As more of the nation's population moved to urban areas and cities became crowded, the notion of a pristine outdoor world served as a foil to the dense, often trash-ridden urban centers of the day. "By 1900, urban dwellers experienced a growing fondness for mountains, forests, and wilderness landscapes" (p. 6). Privileged Americans often were those who had the means of traveling to and advocating for such "pristine" landscapes. Such preservationists, spurred on by the Romantic, transcendentally sublime writings of previous decades (e.g. Thoreau, Muir), championed the creation of a National Park Service dedicated to the preservation of a natural heritage. Harvey (1996) argues that the notion of preservationism "became an important aspect of environmental thought" throughout the classes of society, not just the upper classes (p. 6).

Controversy arose in these early 20th century decades over whether to preserve or to manage natural resources. Should land be carefully saved or sustainably managed? This debate continues to this day and echoes similarly throughout many conversations over environmental issues. The Duck Stamp Act of 1934 required the purchase of a stamp for hunting and the proceeds of this stamp were used to support and protect the wetlands. This was an important movement towards management by the national wildlife refuge system. The 1930s and 1940s heralded many advancements in the scientific understandings of ecology, even though biological studies were still regarded as the stepchild of scientific inquiry, which preferred to direct its focus on physics and chemistry (Harvey, 1996, p. 8). The ecological understanding, which children now commonly learn in terms of the "food web," and that explains the important role that each animal in an ecosystem plays, was beginning to be more fully understood during these times. This understanding of the roles of different aspects of the ecosystem is an important precursor to the notion and understanding that humans, too, are part of this web and are thus interconnected to each of its components.

The dropping of the atomic bombs on Hiroshima and Nagasaki in 1945 was a powerful symbol of destruction that changed our relationship with the environment. Humans, through science, had conquered the world in such a way that it was now within our power to not only irrevocably change the face of the planet on such a large scale, but also to make godlike decisions about life. Life itself was at the mercy of humans and their science. In spite of national allegiances and the politics that went along with the dropping of the nuclear bombs, the entire world, in one brief moment of time, became acutely aware of the consequences of human interference with nature.

American pride and nationalism about the nuclear capabilities of the U.S. began to turn into apprehension in the decade following the bombing of Hiroshima and Nagasaki. National concern over nuclear bomb testing "sparked fears about radioactive fallout" (Harvey, 1996, p. 9). Reports from Utah about thousands of ewes and lambs dying, reports from citizens about losing their hair and fingernails, and reports of a four-hour "snow" of radioactive fallout after nuclear testing episodes began to alarm the general American public (Lutts, 1985, pp. 211-213). The public was beginning to understand that what humans put into the natural environment might come back to harm them later.

Perhaps the environmental disasters and scares of the 1940s, 50s, and future decades solidified the concept of the interconnectedness of humans and their natural world, or perhaps it was the other way around. Could the growing understanding of humans' connectedness to their natural world have prompted the public's response to the environmental scares of the coming decades?

In addition to the recognition of the deleterious effects of radioactive fallout, the nation's love affair with pesticides, fertilizers, and other chemicals was beginning to turn sour in the late 1950s and early 1960s. One such embittering moment occurred when thalidomide, a chemical drug given to pregnant women for morning sickness, was proven to cause to birth defects. The public, haunted by the images of deformed babies, took another step towards understanding the impact of human-made chemicals in the natural world. Both Harvey (1996) and Lutts (1985) mention the "Cranberry Scare" or "Cranberry Scandal" of 1959 as another pivotal moment that sparked American environmental concern. Before 1959's Thanksgiving, a trace amount of an insecticide was feared to have contaminated the cranberry supply, and Americans' "uncertainty at bewildering new environmental hazards

grew" (Harvey, p. 9). Americans were beginning to become more publicly skeptical about the addition of human-made chemicals to their environment. The concept of humans' interconnectedness with the natural world was becoming more apparent and more readily accepted by the public.

Published one month before the Cuban Missile Crisis, Rachel Carson's seminal book, Silent Spring (1962), epitomized as well as contributed to the public's growing understanding of the relatedness of humans and their environments. The public was starting to understand that we may indeed reap what we have sown. Carson's argument in Silent Spring is that what had been "indiscriminate[ly]" sown was the pesticide DDT (**d**ichloro**d**iphenyl**t**richloroethane). DDT was one of the chemicals "used in man's war against nature"(p. 7)[6]. She argued that this type of war was never won, but rather that "all life is caught in its violent crossfire" (p. 8). Carson linked our human health with that of the environment[7] and questioned the indiscriminate use of "poisons" in our home and on our crops. These chemicals were non-visible killers much like, Lutts (1985) argues, radioactive fallout. Lutts contends that Carson's public was "prepared" and "pre-educated" (p. 212) to understand the basic ideas of her book because of their fears and prior experiences with the notion of radioactive fallout.

Regardless of the specific reasons why, Carson's questions struck a chord with American society. In 1963, President John F. Kennedy, accompanied by Senator Gaylord Nelson, took a "Conservation Tour" of the U.S. As the 1960s progressed, the public increasingly

[6] One of Carson's chapters is entitled "Elixirs of Death"

[7] In Carson's "Fable for tomorrow" she writes "The farmers spoke of much illness among their families. In town, the doctors had become more and more puzzled by new kinds of sickness appearing among their patients. There had been several sudden and unexplained deaths, not only among adults but even among children, who would be stricken while at play and die within a few hours." (p.2)… "No witchcraft, no enemy action had silenced the rebirth of new life in this stricken world. The people had done it themselves" (p.3).

questioned and blamed the "establishment" and large corporations for many things including the pollution of the air and water (Harvey, 1996, p. 9). A major oil spill off Santa Barbara, California, in 1969, as well as the burning of the Cuyahoga River, brought air and water quality into mainstream American conversation. Nineteen sixty nine was not the first year that the Cuyahoga River burned due to its severe pollution, but it was the first year that the incident received national press in Time magazine (a testament to changing culture and the rise of environmentalism). Time magazine reported, "No Visible Life. Some river! Chocolate-brown, oily, bubbling with subsurface gases, it oozes rather than flows" ("America's sewage system and the price of optimism," 8/1/1969).

Americans' understanding of their role in the world was changing. The environmental movement was beginning to take hold, but the flourishing of the movement cannot solely be attributed to the aforementioned environmental scares. The changing economic stratification of the populace as well as the general post-WWII prosperity could also be said to have contributed to the growth of the environmental movement. The burgeoning of the middle class of the 1950s and 60s created a generation of people with more leisure time than ever before (Harvey, 1996, p. 10). It was the era of the family road trip. "More Americans than ever took vacations to parks and forests, where they encountered and photographed wildlife and wilderness vistas" (p. 10). The American public became politically involved with the safeguarding of "national parks, monuments, and wilderness areas"(p. 10), leading to the Wilderness Act of 1964 and the Endangered Species Act of 1973. DDT (the chemical Rachel Carson's book focused on) was also eventually banned in 1972[8].

[8] "The 1972 ban revealed how public health concerns were a major wellspring of environmentalism"(Harvey, 1996, p. 9).

The growth of the middle class (its leisure time and leisure money) contributed to the growth of environmentalism, as did concerns for public health, and the countercultural movement of the 1960s and 70s. The countercultural "back-to-the-land" movement of the late 1960s and early 70s also was an example of how our relationship with the natural world was shifting. Edgington explains the "back-to-the-land" countercultural movement as a "markedly American practice of pastoral mythmaking that held rural life and labor as counter to the urban-industrial condition" (2008, p. 279)[9]. Some members of this movement settled in rural communes in an effort to escape the human-made disruptions, stresses, and corruptions of modern life (p. 280). Communards equated their physical and emotional well-being with the strength of their relationship with the natural world. Communards (many of whom were from white, middle-class backgrounds) were also seeking to challenge American individualism and bureaucracy. They viewed collective farming as "emancipation from the homogenous patterns of work, living, and consumption found in an urban and suburban life"(p. 283). Though many communes failed over the years, many of the cooperative food markets and natural food stores survived and fostered some of the organic, sustainable, and whole food movements that continue to this day (p. 300). These movements are based on the idea that humans' physical well-being is directly related to that of nature especially via the consumption of food. This idea is still present today and is a large contributor to the demand for natural and organic foods. Edgington argues that the "back-to-the-land" cultural

[9] A British comedic television show from the late 1970s, "The Good Life," is perhaps a good example of how these notions had pervaded popular culture of the time. In the series, the main character has a mid-life crisis and quits his job making plastic toys for cereal boxes because he cannot find real meaning in his work. He and his wife decide to try to sustain themselves through a "back-to-the-land"-type of lifestyle and turn their urban garden into a small farm (much to the chagrin of their more conventional neighbors). The notions of emancipation, meaningful work, and the connection between humans' well-being and that of nature are all present in this television series.

movement is a critical time of reconceptualization of the relationship between humans and the natural world. "The back-to-the-land belief in the connection between healthy bodies, environments, and a collective identity helped to expand a new form of consumer environmentalism" (p. 279).

Continuing environmental disasters throughout the 1970s and 1980s – the Love Canal Disaster, Chernobyl, Three Mile Island Accident, the Exxon Valdez oil spill, and others - continued to fuel the growing environmental movement. Citizens continued to support environmental laws in spite of industry's attempts to overthrow or relax the laws. The concept of environmental justice began to come into public consciousness. In 1987, the United Church of Christ's Commission for Racial Justice published a national report that found that "three out of every five Black and Hispanic Americans lived in communities with uncontrolled toxic wastes sites" (p. 13). Their study found clear patterns linking the percentage of minority population and the presence of hazardous waste facilities. At the end of the report, the Commission called for the federal, state, municipal, church, and community organizations to address these issues. Within several years of this report the Environmental Protection Agency created a workgroup to address the issues brought up by this report.

Recognition that environmental issues were affecting different people differently and perhaps unfairly was an important part of the urban environmentalism movement of these and current decades. Benton-Short and Short (1999) categorize the three strands of the "new urban environmentalism" as "reforming the city," "the greening of the city," and "the detoxification of the city" (p. 121). Along with the deindustrialization of the American urban center, the social issue of environmental racism was an important aspect of "reforming the

city" and a significant contributor to the "new urban environmentalism" movement (p. 120). "Greening" cities includes building parks, saving open spaces, creating urban havens for wildlife, etc. The detoxification of the city includes both the cleaning up of and prevention of air, water, noise, and light pollution. Significant backlash in the 1980s and 1990s to this movement generally "argue[d] that current legislation is too costly and too inefficient" (p. 125). Environmentalism was no longer just concerned with non-urban, wild areas, but now also with the urban environment.

Environmental issues started taking on a global scope during the 1980s and 1990s. In 1992, 172 different national governments participated in the Earth Summit. The scope of human's impact on the world was beginning to be recognized. The Earth Summit represented "…a clear recognition that today's environmental problems cannot be solved by national policies alone" (Benton-Short & Short, 1999, p. 88). Concepts such as global warming and ozone depletion began to enter public discourse and the livability of the future planet started to be called into question. The release, in 2006, of a documentary film called "An Inconvenient Truth," written by and starring former United States Vice President Al Gore, could be said to be an important moment for the public understanding of the human-environment relationship.

In recent years, the human-environment discourse has been refocused on the individual. The sense of helplessness and lack of individual control caused by the growing understanding of world-wide problems such as climate change and ozone depletion has been recently countered with discourses of individual empowerment. Our understanding of the interconnectedness of humans and the environment coupled with the strong commercialization of the environment has morphed into a sense of individual power to

make better consumer and post-consumer choices. Many Americans are wielding their power with their wallets and developing a new breed of consumerism - "consumerism with a conscience" (Benton-Short & Short, 1999, p. 209).

Americans' experiences and relationship with the out-of-doors has changed over time. Our attitudes towards our environment have also shifted. Our cultural, historical, and institutional settings are constantly providing new tools for us to understand the environment and our relationship to the out-of-doors. Science Camp is one such setting which may be actively working to foster certain attitudes towards the environment and understandings of the relationship between participants and the out-of-doors. How does Science Camp's curriculum represent the environment and the human-environment relationship?

Overview of the Findings

This study investigated the curriculum provided to students at one residential science camp program (Science Camp). Specifically, this research sought to understand this site's curricular representations of the human-nature relationship. While the site's hope was to connect students to the outdoors, I argue that aspects of the curriculum of Science Camp unintentionally distanced students from nature. Students became tourists on vacation at Science Camp. This tourist like representation of students' proper relationship with the outdoors distanced students from the outdoors. Nature became a place that existed far from home in exotic locations. Students became spectators of the outdoors. The outdoors also became a place that became separate from the real and modern world. In fact, nature and modernity were positioned as mutually exclusive at Science Camp. The use of indigenous peoples as representatives of the proper human-nature relationship was one example of how

Science Camp distanced both nature and the proper human-nature relationship from modern times. These curricular representations of the human-nature relationship positioned students as tourists on vacation at Science Camp. The most important implication of this type of relationship with the outdoors was the positioning of nature itself, nature was a place that existed away from home, reality, and modernity.

Outline of the Dissertation

This introductory chapter introduces my research questions as well as provides an overview of our changing historical relationship with the outdoors. Chapter two outlines the theoretical framework that I utilized to understand the curriculum as a set of cultural tools that mediated students' understanding of the human-environment relationship. In addition, chapter two situates this research within the larger field of environmental education. Chapter two provides an overview of the ideas and literature that shape environmental education. In addition, this chapter provides a literature review that looks at research on field trips, camp, and environmental education camp.

Chapter three offers an introduction to my research site and the qualitative methods utilized in the study. The methods section includes information on my selection of a site as well as a description of the site itself. In addition, the chapter offers information about the participants of my study. Chapter three also includes information regarding the collection and analysis of my data.

The official curriculum of Science Camp is described in chapter four. This chapter presents an understanding of the curriculum of Science Camp as a response to a problem - students' disconnected relationship with the outdoors. The chapter continues with a description of Science Camp's curriculum as described by the participants of Science Camp.

The geology, ecology, and wildlife biology academic trails of Science Camp are also reviewed.

Chapter five argues that Science Camp unintentionally distances students from nature by representing the human-nature relationship as tourist-like. The chapter discusses the ways in which Science Camp presents a vacation like experience for students. Science Camp's location, its emphasis on fun, and the standardized nature of the experience are examined. These aspects of the Science Camp experience lent a vacation like feel to the experience for students. Chapter five proposes that this representation of the human-nature relationship distances students from the outdoors in important ways.

The final chapter presents a summary of this research's findings. The implications of this research for the field of environmental education are examined. I also present suggestions for environmental educators with regards to the way technology is used (or omitted) in environmental education programs, the representation of indigenous peoples in curricular materials, and the ways that educators interact with students in outdoor education settings. Finally, this chapter discusses recommendations for future research.

CHAPTER TWO: THEORETICAL FRAMEWORK AND LITERATURE REVIEW

Introduction

This chapter provides a background to the field of environmental education and explores some of the pervasive ideas that define the field. This chapter also investigates current environmental education literature about field trips, camps, and environmental education camps. I begin with an overview of the theoretical framework that I used to conduct my research and analyze my data.

Theoretical Framework: The Cultural Politics of Educational Knowledge

This study is, at its core, a curricular case study. Its goal is to more fully understand the cultural tools and texts (Wertsch, 1991, 1998; Wills, 2011) being provided to participants of one residential outdoor education camp through the camp's official and enacted curriculum. This study will take a mediated action, socio-cultural approach (Wertsch, 1991, 1998) to understanding the official and enacted curriculum of Science Camp.

Curriculum is a representation of a selective body of knowledge deemed to be of the most worth to students. Curriculum can often be used as a tool for viewing the historical present as well as the dominant cultural and societal influences of the curriculum's time. Apple and Christian-Smith (1991) explain textbooks, representations of the official curriculum, as "particular constructions of reality, particular ways of selecting and organizing that vast universe of possible knowledge" as well as participants in the "organized knowledge system of society" (pp. 3-4). Curriculum is a contested issue because of its responsibility in providing new understandings and tools for students to use when interacting with their worlds. Through this interaction with both the aforementioned official curriculum as well as the enacted curriculum, students consciously and subconsciously create

their own knowledge. Controversies over textbooks and curriculum are often a form of cultural politics (p. 7) because "the selection and organization of knowledge for schools is an ideological process, one that serves the interests of particular classes and social groups" (pp. 9-10). Many debates over the representation of minority groups, historical events, religious education, sexual education, etc., have raged for years in the public schools (Zimmerman, 2002), proving that curriculum is not a neutral "construction of reality," but rather it is socially and culturally contested. The curriculum of Science Camp favors some representations of the human-environment relationship over others. Understanding how Science Camp represents the relationship students should have with the environment will give me a peek into the social and cultural forces that have constructed the camp's curriculum as well as some of the environmental politics of the culture at large.

While textbooks and other physical representations of the official curriculum can be studied and understood in terms of power, cultural politics, and historical place, in order to fully understand the ideologies and ontologies of the current curriculum of Science Camp, it is necessary to observe curriculum in use or the "enacted curriculum" (Jackson, 1992a). This study will look at both the official and enacted curriculum of Science Camp.

This study is most broadly interested in the construction of knowledge about the out-of-doors and is particularly focused on the set of cultural tools provided by Science Camp to participants with regards to the human-environment relationship. Previous research suggests that experiences like Science Camp may be considered a "significant life experience" (Chawla, 1998; Palmer, 1993; Palmer & Suggate, 1996; Tanner, 1980) for participants, which indicates that Science Camp may indeed function as a specific social context where memorable and transformative work is being accomplished.

Through investigation of the resources provided (official and enacted curricula) to participants by Science Camp, I sought to understand Science Camp's representations of the environment, the human-environment relationship, and the environmental behaviors and attitudes Science Camp sought to instill in participants. My socio-cultural approach to the study of curriculum is reflected in the constructs of "enacted" and "official" curricula used in this proposal. Through the use of these constructs, I place value on the "act" in the term "enacted" and am inclined to believe that meaning is created through social activity. This research will view the official and enacted curricula as forms of mediated action (Jackson, 1992b; Wertsch, 1991, 1998).

The way that we shape and are shaped by the world is through the use of these symbolic tools. These signs are not neutral, rather they are imbued with cultural and social meanings. These "mediational means, or cultural tools, are resources for individuals that shape, empower, constrain, and have the potential to transform action" (Penuel & Wertsch, 1995, p. 86). Meaning is socially constructed through the use of signs.

Wertsch describes "mediated action" as a "unit of analysis" (1998, p. 17) of a socio-cultural approach which gives "action" "…analytic priority, [in which] human beings are viewed as coming into contact with, and creating, their surroundings as well as themselves through the actions in which they engage" (1991, p. 8). Wertsch unites human action with sign systems (such as language), rather than investigating one without the other, or viewing one as determining of the other. Rather, human action is determined and determines (mediates) the systems of signs that we create and vice versa. Mind and human action is mediated (and thus constrained and facilitated) through the use of socio-cultural tools such as language, narrative, technology, etc. Understanding mind and human action in this way

has important implications for understanding how students' learning and conceptions are mediated by the cultural tools provided by the official and enacted curricula. Curriculum, as a cultural resource, is not only *determined* by the time, actors, institutions, culture, and society within which it operates but is also *determining* of the systems of meaning that are given voice within society and culture and with which we, as human agents, interact. Thus understood, the official and enacted curricula itself should be viewed as a mediating tool of culture and society.

Wills (2011) presents an important example of how the fifth-grade California history curriculum itself creates a powerful cultural narrative tool that mediates students' remembrances and misremembrances of history. Through analysis of classroom observation of the enacted curriculum as well as study of the more official representations of curriculum ("textbooks and other curricular materials"), Wills "reveal[ed] the presence of the basic plot and thematic elements that constitute the *Quest for Gold* schematic narrative template" (p. 123). Both students' remembrances and misremembrances of this period of history were mediated by the "*Quest for Gold"* schematic narrative template created by the official and enacted curriculum. Thus understood, the curriculum presented and created with students in schools (and out of schools!) is a cultural tool that mediates students' actions, understandings, and systems of meaning.

Schweber (2004) presents another example of this type of interpretive research into the representations of curriculum in social and history studies. Schweber's research asked the questions, "How do experienced high school teachers teach about the Holocaust," "What moral messages do they convey implicitly and communicate explicitly," and "…What do their students learn?" (p. 12). Schweber studied both the official Holocaust curricula and the

enacted curriculum. Schweber describes the enacted curriculum as "how those adaptations [by the teacher of the curriculum] were in turn transformed by classroom interaction"(p. 12). Schweber's findings from her observations of four different teachers and their classes uncovered a range of representations of the Holocaust. These varying representations and narratives presented of the Holocaust equipped students of the classes with differing social and cultural ways of knowing and understanding this historical event and privileged some historical narratives over others.

Wills' and Schweber's research provide two important examples of curricular studies that understand the official and enacted curriculum as creating cultural tools for mediating students' learning. This study will understand the official and enacted curricula of Science Camp as mediating cultural tools and resources which thereby privilege some representations of the environment, the human-environment relationship, and environmental attitudes and behaviors over others. By understanding the official and enacted curriculum of Science Camp in this way, I will gain further insight into how the curriculum of environmental education camp mediates Science Camp participants' understandings of the human-environment relationship.

Background to the Study: Environmental Education

What is it? How does it define itself?

Environmental education (EE) is one important component responsible for the shifts in our conceptualizations of humans' relationship with the outside world. In fact, the field of environmental education could be most broadly defined by its interest in the relationship(s) humans have with our biophysical environment. Likewise, its ultimate goal is to strengthen this bond for the purpose of creating and enacting solutions to environmental problems.

Environmental education is a field of study that was "emerging and evolving in the minds of a number of people in the late 50s and early 60s…"[10] (Roth, 1978, p. 12). Environmental education grounds its roots upon prior, more distinctly defined disciplines. "Nature study," "outdoor education," and "conservation education" are commonly known as antecedents to the field of EE. It is from these roots that environmental education has branched forth (Disinger, 2005).

Each of these approaches – nature study, conservation education, and outdoor education – has influenced the field of environmental education, perhaps to the point of confusion. Not surprisingly, during the past several decades, the field of environmental education (EE) has faced an acute definitional challenge. Within the field of EE, there has been much contention about where EE *is* heading and where it *should be* heading. Advocates for population growth, sustainable development education, climate change education, biodiversity education, and solid waste management (to name a few) have all sought to incorporate their ideas into the field (H. Hungerford, 2010). "All of these varied approaches, along with their advocates, resulted in a poorly defined mixture of philosophies about where EE should be headed" (H. Hungerford, 2010, p. 2).

Thus, a definition of the field is neither set nor unanimously decided upon. However, one of the most broadly used definitions of EE was developed by William B. Stapp and his graduate students in 1969. "Environmental education is aimed at producing a citizenry that is knowledgeable concerning their biophysical environment and its associated problems, aware

[10] Of note: "In spite of widespread perception to the contrary, environmental education did not begin in 1969 or 70. The false perception appears because that is the time when Environmental Education began to get big press-due to two major events---worldwide viewing of the first pictures of the whole Earth from space and the first Earth Day Teach-Ins" (Roth, p.12).

of how to help solve these problems, and motivated to work toward their solution" (emphasis in original, p. 31). My research will operate under this definition of EE because it is the most commonly accepted and widely used definition of EE.

What are its objectives?

Stapp also iterated his goals for the field in a more expanded form which follows. "The major objectives of environmental education are to help individuals acquire:

1. A clear understanding that man is an inseparable part of a system, consisting of man, culture, and the biophysical environment, and that man has the ability to alter the interrelationships of this system.
2. A broad understanding of the biophysical environment, both natural and man-made, and its role in contemporary society
3. A fundamental understanding of the biophysical environmental problems confronting man, how these problems can be solved, and the responsibility of citizens and government to work toward their solution
4. Attitudes of concern for the quality of the biophysical environment which will motivate citizens to participate in biophysical environmental problem-solving."

(Stapp, pp. 34-35)

Stapp's definitional goals and objectives for the field were echoed during the Tbilisi conference of 1977. This was a seminal conference for the conceptualization EE and is often referenced.

Common terms and concepts: Environmental literacy

The Tbilisi Declaration's objectives are generally talked about, more succinctly, as "developing environmentally literate citizens" for the goal of promoting "responsible environmental behavior" (Culen, 2005, p. 37). Roth similarly asserts that the goal of EE is to "develop an environmentally literate citizenry that can develop a fulfilling life that does not impair the planetary support system for living things" (1978, p. 12).

"Environmental literacy" is viewed as the end-product or culmination of successful environmental education. In other words, the "environmentally literate" citizen embodies the Stapp and Tbilisi goals mentioned above and is thus more likely to engage in "environmentally responsible behaviors" (recycling, conserving energy, reducing carbon footprint, etc.). Reynolds defined the term "environmental literacy" as "an understanding of the environmental, social, and economic dimensions of human-environment interactions and the skills and ethics to translate this understanding into life choices that promote the sustainable flourishing of diverse human communities and the ecological systems within which they are embedded" (2010, p. 18). "Environmentally responsible behavior" is wrapped up in this concept of "environmental literacy."

Thus, the goal of "environmental literacy" is one that encompasses more than just concepts and information, but also incorporates more affective ideals. Hungerford, Litherland, Peyton, Ramsey, and Volk (1996) identified seven variables associated with environmental literacy which served to define the term more thoroughly. The contributing skills or factors which they listed as important to the development of environmental literacy are: *knowledge of action strategies, skill in using action strategies, environmental sensitivity, locus of control, knowledge of issues, beliefs and values, and ecological concepts.*

In a separate paper, Volk mentioned that the development and incorporation of the contributing skills and factors of environmental literacy (those listed above) should be a primary goal of environmental education curriculum developers (2005, p. 141). Within the field it is believed that the fostering of "environmental literacy" can most accurately predict future "environmentally responsible behavior."

However, environmental education considers itself far from accomplishing its goal of an environmental literate populace. Volk and McBeth (2005) stated:

> Based on a review of research studies, the overall assessment summary suggests that the affective dimensions of environmental literacy are at a moderate level, ecological and socio-political knowledge are low, and both environmental issue knowledge and environmentally responsible behavior tend to be low. (p. 74)

Volk and McBeth suggested that a more nationally conducted survey would give a more accurate reading of the nation's environmental literacy temperature (p. 80). Environmental education is far from defining, measuring, and accomplishing environmental literacy. However, a significant base of knowledge and research is being developed in this area.

Common terms and concepts: Environmentally responsible behavior

The concept of environmentally responsible behavior is directly related to the idea of the environmentally literate citizen. Environmentally responsible behaviors are individuals' personal choices which take into consideration and promote the quality of the biophysical environment. Citizens make choices every day about what transportation to utilize, which state proposition to vote for, what to do with their waste, which bath products to buy, what experiences they coordinate for their children, how to use electricity, etc. When citizens make choices with the health of the environment in mind, they are exhibiting environmentally responsible behavior. Many of the "green" movements interest themselves in promoting specific environmentally responsible behaviors (e.g. Eat Local/Locavore, Bring Your Own Bag, Reduce, Reuse, Recycle). Often, environmentally responsible behaviors are encouraged through equating them with responsible local or global citizenship (e.g. Don't Mess with Texas, Don't Trash California, Keep Delaware Beautiful- Don't Be a Litterbug).

A number of psychological quantitative measures have been developed in an attempt to quantitatively measure an individual's disposition towards environmentally responsible behavior. These studies often attempt to explain, through correlation analysis, the factors that predispose people to environmentally responsible behavior. However, "while there is some agreement among researchers that knowledge and attitudes toward the environment influence environmental behavior, little is known about the exact relationships between these variables" (Culen, 2005, p. 37). Thus, the *goal* of environmental education is to advance environmental literacy, but the *hope* is that increasing numbers of individuals feel empowered and motivated to exhibit environmentally responsible behaviors.

Common terms and concepts: Environmental attitudes & environmental sensitivity

Stapp's fourth major objective for environmental education, "attitudes of concern for the quality of the biophysical environment which will motivate citizens to participate in biophysical environmental problem-solving," is most often referred to within the field of environmental education with the term "environmental attitudes" (Stapp, 2005, pp. 34-35). One of the purposes of environmental education instruction, experiences, or curriculum is to promote an affective change (small or large) in participants. Researchers employ varied approaches to promoting and measuring attitudinal change in participants. Why is it so important? "There is a widespread belief that teaching positive environmental attitudes and values is more important in bringing about change in environmental behavior than the teaching of environmental knowledge is" (Ballantyne & Packer, 1996, p. 26). Remember, environmental education is most broadly interested in shifting or creating the relationship between humans and their environments, with the ultimate goal of strengthening the understanding of the connection between the two.

The construct of "environmental sensitivity" is a sub-term of "environmental attitudes." Environmental sensitivity (ES) can most simply be defined as a sense of empathy or concern for the natural environment (Peterson, 2005, p. 295). For example, an individual with a moderate to high level of environmental sensitivity might wince at seeing trees being cut down or disapprove of people littering from their car windows. Peterson more thoroughly casts the term as "a set of affective attributes which resulted in an individual viewing the environment from an empathetic perspective" (p. 296). Peterson's investigation into the factors that attribute to the development of ES yielded a model that identifies "participated in a major outdoor experience" and "important role model" as high predictors of ES (p. 298). Science Camp may function as such a "major outdoor experience."

Common terms and concepts: Significant life experiences

If the superordinate goal of environmental education is creating an environmentally literate and active citizenry, then it seems prudent to ask what sorts of learning and experiences promote the development of such a citizen (Tanner, 1980). Looking at the biographical and autobiographical works of conservationists such as Aldo Leopold, Tanner noticed some similarities in the experiences that were said to contribute to the conservationists' raisons d'être. Following this train of thought, Tanner sent a letter to staff members of prominent conservation associations asking them to respond with an "autobiographical statement in which the person tries to identify the formative influences that led her or him to choose conservation work" as well as information about the "years of the influence" and other biographical details (p. 21). Tanner classified the responses in the following categories (in order of frequency of response): "interaction with the outdoors" (school environmental programs and outdoors-oriented youth groups are mentioned here),

"frequent contact with natural habitats," "parents," "teachers," "books," "adults other than parents or teachers," "habitat alteration," and "solitude" (p. 21). Tanner's main conclusion is that "youthful experience of the outdoors and relatively pristine[11] environments emerges as a dominant influence in these lives" (p. 22). And so Tanner began a trend of research within the field of EE which is focused on the significant life experiences which encourage the development of the environmentally literate citizen.

In 1993, Palmer replicated Tanner's investigation with a larger sample with many similar results. Ninety-one percent of the subjects' autobiographical statements were classified as identifying with the meta-category of "outdoors" (subcategories within this category were "childhood outdoors," "outdoor activities," and "wilderness/solitude."), but new categories were also identified such as "TV/media," "travel abroad," "disasters/negative issues," "keeping pets/animals," and "religion/God" (Palmer, p. 28). Palmer's "results confirm Tanner's finding that childhood experience of the outdoors is the single most important factor in developing personal concern for the environment" (pp. 29-30). In 1996, Palmer and Suggate reexamined the 1993 data and created a more detailed list of significant life experiences culled from the autobiographical statements of participants. Educational experiences like courses in school and field trips were listed.

The definition that resonates most with me, as a researcher, for the concept of significant life experiences is "…an exchange between the qualities of the physical world, social mediators, and the responding child [which] implies that constellations of environmental sensitivity change as people, places, and cultural interpretations change…"

[11] This notion of "pristine" is an interesting one which may be considered as falling into Judeo-Christian notions of nature-as-Eden (Cronon, 1996).

(Chawla, 1998, p. 381). Science Camp is a place where the aforementioned exchanges between the "qualities of the physical world," "social mediators," and "responding child[ren]" could take place. Chawla rejects the notion that significant life experiences *singularly* and *linearly* predict future pro-environmental behavior or environmental literacy. However, it seems clear that interaction between children and the out-of-doors is a necessary component to developing pro-environmental attitudes and behaviors. Because it has been documented that today's children are less likely to have opportunities for contact with the out-of-doors, Science Camp may be a "significant life experience" for many of the children.

Common terms and concepts: "Nature Deficit Disorder"

I believe that the most important thing to note at the beginning of this discussion is that a deficit model of thinking pervades the rhetoric of EE, not unlike education in general. Citizens and students are viewed as "lacking" in environmental literacy. The goals of EE suggest that citizens should "acquire" attitudes of concern, knowledge about ecological concepts, etc. Richard Louv, in his widely read book, Last Child in the Woods, coined the term "nature deficit disorder.[12]" which may serve as an extreme example of deficit thinking in EE (2005).

Louv's argument suggests that children of current generations spend less time outdoors than their parents' generations. "Within the space of a few decades, the way children understand and experience nature has changed radically…today, kids are aware of the global

[12]The medical/psychological terminology in this newly coined phrase is likely the author's effort to draw attention to the importance of his cause. I found the following quote about Louv's choice of terminology: "Some researchers now recommend that parents and educators make available more nature experiences – especially green places – to children with ADHD [Attention Deficit Hyperactivity Disorder], and thereby support their attentional functioning and minimize their symptoms. Indeed, this research inspires use of the broader term, *nature-deficit* disorder, as a way to help us better understand what many children experience, whether or not they have been diagnosed with ADHD"(Louv, 2005, p. 99).

threats to the environment – but their physical contact, their intimacy with nature, is fading" (Louv, 2005, p. 1). Louv is concerned about the bond that is breaking between children and the environment; he suggests that this impacts children (and our future) in many ways. He feels that the absence of nature in children's lives is a threat to their physical, emotional, and spiritual health. Though not explicitly stated, there is a feeling from this book that part of our cultural heritage (perhaps Americans' connection with the wilderness) is also threatened by the dwindling relationship that current generations have with their environment. Implicit in this thinking is the theory that increased time outside in the natural environment stimulates some of the more affective (such as environmental sensitivity) aspects of environmental literacy, thus more likely encouraging future environmentally responsible behaviors.

This thinking has likely spurred on advocacy movements such as "No Child Left Inside" (NCLI). The NCLI Coalition formed in response to the perception of the narrowing of curriculum under No Child Left Behind. Decreased time spent on subjects such as social studies (Wills, 2007) and science also reduced the potential for environmental education to take place during the school day. This coalition pushed legislation which would amend the "No Child Left Behind" law to provide new federal funding for environmental education and give states incentives to improve environmental instruction" (Sarbanes Press Release 7-17-07). This act was introduced in 2009.

Beyond the simple metaphor of filling up students with knowledge (or in this case experiences) that generally follows this discussion of the learner as lacking, the field of EE also genuinely seeks to build knowledge through hands-on experiences.

Field trip research

During a field trip, interactions between students, teachers, and knowledge remain, but the context in which these interactions take place completely (and often radically) departs from the usual and consistent contexts of the school, classroom, playground, etc. Using this understanding of what a "field trip" is, participation in a residential science camp experience could most certainly be viewed as a type of field trip. For this reason, I take a look at research on field trips. I focus this portion of the literature review specifically on field trips whose curricular goals fall along the disciplines of science, environmental education, or ecology. What do students take-away from these short-term field trip experiences? How does the official and enacted curriculum of the experience impact what students take-away from the trip?

Farmer and Wott (1995) designed a simple research study that investigated the effectiveness of follow-up activities on cognitive learning. The researchers used one hundred and eleven public school fourth-grade students on a field trip to a local arboretum as subjects for this research. Students were randomly assigned to different groups. Two groups received the treatment and one group received the placebo treatment. The experimental treatment was forty-five minutes of follow-up activities that emphasized the concepts taught at the field trip; the follow-up activities for the placebo group did not emphasize the concepts taught at the field trip to the arboretum. Both follow-up treatments were delivered two weeks after the field trip. Students completed a written, short answer pre-test before the field trip and a post-test two weeks after the field trip. Both tests were the same. Results showed increases in the test scores for all groups, but significant increases for those groups

who received the relevant follow-up activity treatment. The authors suggested that this research can be used to validate the importance of follow-up activities after a field trip.

Sibthorp and Knapp's (1998) research is also concerned with the notion of retention. In their article, "Evaluating short term and long term retention of experiences associated with an interpretive school field trip," the researchers were interested in how long students remembered the activities from the field trip and whether or not students' memories from the field trip were "interpreter-derived program objectives" or "tertiary variables such as social or environmental factors" (p. 92). Using a theory of memory called the "information processing model" which seems to liken human memory to that of a computer, the authors conceptualized the field trip experience in terms of "input," "sensory memory," "working memory," and "long term memory." Subjects were 71 third and fourth graders on a field trip to a local park. Interpreters followed a scripted schedule of activities. Students were asked to fill out a survey which consisted of four open-ended questions[13] about what they did during the field trip at two different time points – one month after the field trip and 18 months after the field trip. Although the study "revealed that memories were non-specific and disassociated from specific information given by the interpreter" (p. 99), the results did support the idea that multiple sensory activities like games and songs were more memorable to the students perhaps because they were "both novel and emotionally charged" (p. 98). Although the study was limited by a low response rate for the 18 month time point, results indicated that students remembered their experiences in non-specific terms (Knapp, 2000).

[13] Questions 1 and 2 asked about the "most memorable" experience and the "three activities that they did" on the field trip (p. 97). Question 3 asked if students remembered the specifics about an activity they did with the interpreter and Question 4 asked students whether they would like to go back to the same park to learn about plants, another park, or if they would not like to go another park.

Results also indicated that students gained positive responses about wanting to return to the park. Conclusions indicate that the science field trip was remembered (in general terms) by students and that students "gained improved attitudes"(Knapp, 2000, p. 90). Researchers suggest that the follow up activities by classroom teacher and students could "enhance the quality" of the information remembered from the science field trip (p. 90).

Likening the goals of environmental interpretation to those of environmental education, Knapp and Poff used a qualitative approach to understand the impact of an environmental interpretive experience on environmental ethic, using pre- and post-interview data from 24 fourth graders from rural Indiana who had participated in a U.S. Forest Service led field trip at a wilderness site in a national park. The researchers coded student responses and found that "student actions formed the basis for recollection of the interpretive program and those actions were important in influencing knowledge and attitude" (2001, p. 59). Students' remembered learning was linked to running, searching, catching, exploring, game-playing, etc. Cognitive information (ecological concepts, wilderness information) that the students passively received was not well recalled one week after the experience and even less so at the four month time point. Nearly all students had a positive attitude about the field trip one week after the field trip and also four months after the field trip.

In another study aimed at determining what students remembered from a short-term environmental education field trip, researchers Farmer, Knapp, and Benton (2007) conducted informal interviews with fifteen students one year after their field trip (students were in fourth grade at the time of the field trip in the year 2001). The researchers claim that this study was the first to attempt to assess long-term (beyond six months) outcomes from environmental education field trips. Using a phenomenological approach to analyzing the

interview data, the researchers identified the following themes of students' long-term recollections: "(a) student actions, (b) general content knowledge, (c) ecological and environmental knowledge, and (d) perceived proenvironment attitude" (p. 36). Similarly to Knapp and Poff's 2001 study, students were observed to use recollected actions from the field trip to mediate their memories. The findings of this study suggest that many students remembered the "ecological and environmental tangibles that were derived from the program" (p. 40). This research supports the 2001 study in the notion that "active cognitive skills" were highly memorable. The study also supports the previous research, which may suggest that environmental field trips are successful in fostering pro-environmental attitudes.

Knapp (2007) replicated this study again with a new group of twenty-three rural West Virginian fifth graders who took a field trip in 2004 to the Shenandoah National Park. In this study, Knapp discouraged the classroom teachers from engaging in pre- and post-classroom activities with the students (this was not done in the previous study) in order to be able to isolate the impacts from the field trip alone. Knapp interviewed seven of the twenty-three students in similar fashion to the students on the 2001 field trip. Results "seem to support the notion that active based experiences have an important role in episodic recall" (p. 48). These studies are an attempt at understanding how students learn and remember what they learn during out-of-school science experiences.

The research on environmental education/science/ecology field trip experiences seems to indicate the importance of classroom follow-up activities. The reviewed literature also suggests that students' memories and learning from their field trips were, more often than not, linked to active experiences such as game-playing. The researchers reviewed also

indicate that interpretive field trips can be successful at fostering a pro-environmental attitude within students.

Camp research

This section will look at general research about the residential camp experience. Then, I will focus in more detail about research done with respect to science camp-like settings. While many of us may hearken back to "The Parent Trap" as an example of the prototypical camp, there are many different types of camp. Throughout my reading about camps and the camp experience, I have kept a list of the different types of camps I have run across in the literature (this list is by no means complete): *sports, grieving, diabetes, summer, visual impairment, cancer, severe disabilities, autism, gay & lesbian, international, addiction, science, technology, space, chronic illness, Bible, Boy Scouts, Girl Scouts, dialysis*. There are hundreds upon hundreds of camps in the United States that categorize themselves in many different ways. The issues addressed in camp literature are just as varied as the types of camps. Some issues I have noted in the literature: *self-esteem, homesickness, moral growth, self-concept, therapy, interracial attitudes & beliefs, confidence, values/value development, career exploration, dependency, distress, autonomy*. Just by the sheer number and types of camps[14], it seems safe to say that as a broad culture, we seem to value the experience of camp[15].

In an overview of camping research, Henderson, Bialeschki, and James (2007) found that the "two major areas of research conducted in camps might be classified as operations and outcome research" (p. 758). Henderson et al. defined the research category of "operations"

[14] The American Camp Association estimates that "(American Camp Association)10 million children participate in camp each year"(American Camp Association, p. 4)
[15] This does not necessarily hold true for different subcultures or ethnic groups. I have certainly run across parents and students who did not understand the idea of "camp" nor did they see any value in the experience.

to include topics such as "staffing, camp evaluation, and business analyses" (p. 758) and the area of "outcome research" to focus on measuring positive growth in youth development ("physical, emotional, civic, and social competence") (p. 760). This literature review purposefully does not include overviews of "operations" focused research because it is not topical to the questions posed by this proposal. There are very few research studies that break out of the binary mold of outcomes and operations into new areas of investigation.

The camp experience: Outcomes

A study completed by the American Camp Association and Philliber Research Associates ("Youth development outcomes of the camp experience," 2005) used a random sampling of both day and residential camps across the country to determine the developmental outcomes for children who participated in the camp experience. Pre-, post-, and follow-up surveys were completed by the campers and campers' families. The surveys and results were categorized into four conceptual developmental domains: positive identity (self esteem, independence), social skills (leadership, friendship skills, social comfort, peer relationships), physical thinking skills (adventure and exploration, environmental awareness), and positive values & spirituality (values and decisions, spirituality). Long term and/or short term increases were noted in all categories for campers *except* the categories of environmental awareness and values and decisions. While this study randomly selected from many different types of camps (day, residential, for-profit, non-profit, religious, co-ed, etc.), this research seems to indicate that the general experience or general context of camp itself is not enough to sponsor changes in "environmental awareness."

Other studies and many anecdotal pieces of writing have also measured the growth in self-esteem or self-concept of students who participate in camp-type experiences. Readdick

and Schaller (2005), using the Piers-Harris Children's Self-concept Scale, measured significant post-camp change in the self-esteem of New York inner-city, economically disadvantaged students. Gillett, Thomas, Skok, and McLaughlin (1991) also found that a six-day wilderness experience with high school students "had statistically significant increases in certain aspects of self-concept" (p. 38).

The American Camp Association's study did not find a pre- and post-camp change in "environmental awareness" in campers, which suggested that something other than the general context of "camp," like camp curriculum or camp mission, may contribute to changes in environmental awareness. Another study conducted by Dresner and Gill (1994) investigated a residential camp with specific environmental education goals. Dresner and Gill conducted an evaluation of the Wolf Creek Nature Camp in Redwood National Park in northern California during the early 1990s. This camp is a two-week program for pre-teens that teaches activities designed to promote "environmental awareness, knowledge of ecosystems, and skills in resolving environmental issues. It also emphasizes naturalist skills"(p. 38). Twenty eight campers between the ages of ten to thirteen were surveyed over the course of two summers. Students were pre-tested on the first day of camp and then post-tested with questionnaires mailed six weeks after camp. Students' camp journals were analyzed, parental comments were collected, and staff observations were also taken into account. While, the researchers do not make a clear description of how their pre- and post-tests were designed or organized, results suggest that after attending camp campers were more active in expressing their concern for environmental issues. "The next greatest change was an increase in curiosity, eagerness, and excitement about observing the natural world. There was also a significant change in campers' interest in environmental material at

school"(p. 38). Parental and student questionnaires also indicated that students' self-esteem was bolstered by the experience, that students' outdoor skills (hiking, camping, tracking) increased, and that students were less fearful in the out-of-doors. Dresner and Gill found that a "significant number of campers showed increased awareness of environmental issues after camp" (p. 39). The contrast of the research completed by Dresner and Gill and the American Camp Association with regard to environmental awareness could suggest that the curriculum, focus, or intentions of the camp make a difference in students' experiences and outcomes.

In an article entitled, "What do students gain from a week at science camp? Youth perceptions and the design of an immersive, research-oriented astronomy camp" (2009), researcher Fields investigated the impacts on campers of a camp with a very focused curriculum and intent (astronomy). The director of the camp as well as the staff consistently expressed their wish that the campers experience the entire "process of science." This science camp took place during summer and was not part of a school-sponsored outing. This camp was also for high school students – an older than typical population. Fields' interviews with staff members, students, and observations within the camp elucidated four themes of "what campers found valuable about the Camp" (p. 160): the importance of peer relationships, personal autonomy, positive staff relationships, and science knowledge. This study suggests that a camp with strong curricular goals may make a difference in student outcomes. Although students in this study still mentioned the affective aspects of the camp experience more often than the understanding of science they gained, they did self-report a growth in their understanding of science and scientific concepts. Indeed, Fields argued that the camp itself was an "affinity space" where students and staff alike could explore a

common interest in science. Science learning was thus inextricably linked to the peer and staff relationships that the students built at camp.

Environmental education camp

The aforementioned, broad categories of camp research (operations and outcome) also accurately classify the more specific collection of research done with environmental education motivated camping programs. The research reviewed in the previous section concentrated on some of the outcomes research for field trips and camps in general. However, the following review will focus specifically on the research conducted in contexts most like my proposed research site – a residential camping experience with explicit environmental education goals.

Bogner conducted an outcomes oriented study at a four-day residential outdoor program for youth at an established nature center in France under the hypothesis that "an outdoor education programme will be capable of increasing some facets of young peoples' initial environmental perceptions"(2002, p. 21). Bogner's psychometric pre- and post-tests were created with the purpose of measuring the effects of participation in the outdoor experience. The Likert-scale instrument created the following primary factors for measurement: "enjoyment of nature," "altering nature," "intent of support," "care with resources," and "human dominance" (p. 23). Results indicated that participation in the education program (experimental group) versus participation in outdoor activities only without a specific education program (control group) yielded statistically significant differences between the groups in the areas of "human dominance" and "altering nature." Experimental group participants showed an increase in sensitivity to these areas after their involvement in the educational program. Bogner's conclusions "affirm the notion that outdoor education

proves effective in altering pupil attitudinal preferences provided that a sufficiently long period of appropriate instruction is provided" (p. 30).

In an article titled "Evaluating the effectiveness of residential environmental education programs in fostering positive attitudes toward wildlife," Dettman-Easler (1999) and investigated six residential programs across the Midwest region using "attitudes toward wildlife as a means to evaluate programs"(p. 34). Citing previous studies which, tended to generalize the category of environmental attitudes, the authors in this study specifically used wildlife as a symbol for the environment. Students in the experimental group were fifth and sixth graders who had attended one of the camps. Students in the control group did not attend camp, but instead received an in-class wildlife environmental education program. Each group of students completed Likert-scale pre- and post- and delayed post-test questionnaire designed to "determine students' attitudes toward different types of wildlife"(p. 35). Researchers also conducted in-person and phone interviews with students and parents of students who had the camp experience. Interview data suggested that students enjoyed their experience at camp, but not many students "reported attitude changes as a result of the residential program" (p. 35). Parents also had favorable things to say about the experience and some reported "changes in their children's attitudes toward wildlife," and a greater awareness of natural surroundings. Teacher interviews cited "the outdoors is the best place for EE to take place," "tradition," and "help[ing] the class to grow socially," as reasons for attending the residential camp program (p. 37). All in all, "results indicated that students had significantly more positive attitudes toward wildlife after residential programs than they did after an in-class wildlife program, and that these changes were retained at least 3 months after the program." (p. 33).

In contrast to other camp-outcomes-oriented research studies, Eagles and Demare found that the residential camp Sunship Earth experience had no effect on the environmental attitudes of the Canadian sixth grade students investigated (1999). Using Kellert's pre-defined categories of environmental attitudes, the authors focused their pre- and post-survey on the moralistic and ecologistic attitude dimensions being emphasized by a Sunship Earth program. The authors used a Likert-scale pre- and post-test survey modeled after questions posed by Eagles and Muffitt in 1990. Survey questions were mainly focused on determining students' moralistic and ecologistic attitudes. The authors' results indicated there "was no statistically significant attitude change after the program for either ecologistic or moralistic attitudes" (p. 35). In another outcomes-oriented research study of the Sunship Earth camp program in Australia, Keen (1991) similarly found that the program had no significant effect on students' environmental attitudes. However, Keen did note that students showed significant increases in categories of ecological knowledge. Eagles and Demare posed two possible explanations for the lack of change in students' attitudes. The authors suggested that "long-term media and family influences are creating an environmental attitude profile that is similar to that desired by planners of the Sunship Earth program. Therefore, it is not surprising that the weeklong camp program did not increase existing ecologistic and moralistic attitudes" (p. 37). Eagles and Demare also advised, that a "holistic EE curricula over many years" might be the most effective at affecting environmental attitudes because attitudes form over long periods of time and are influenced by many different factors (p. 37).

In an effort to fill the void of research on the long-term effects of a residential environmental education program on students, Knapp and Benton (2006) conducted

interviews with ten students one year after they had participated as fifth graders in a residential environmental education program called Expedition Yellowstone. Following Knapp's prior research into issues of recall and memory, the researchers sought to answer "how much does a participant of a residential program *remember* long after the experience?" (p. 166). Three themes emerged from the researchers' interview data, "(a) recollections were highly influenced by actions taken by the students; (b) program content/subject matter was retained by all of the students to varying degrees; and (c) emotional reactions to the experience were present" (p. 170). Similar to Knapp's aforementioned research on field trip experiences, active experiences were found to be a key variable in students' long term recollections and knowledge associated with their residential environmental education program (p. 175).

Mittelstaedt, Sanker, and VanderVeer (1999) conducted their research at a week-long experiential education program, "Summer Science Camp," run by an Ohioan museum. Using an instrument called the Millward-Ginter Outdoor Attitude Inventory as well as responses to a question that asked students to "identify three specific things they intended to do after camp, as a result of what they had learned during their week at camp," (p. 141) Mittelstaedt et al. used a pre- and post-test research design to measure a change in environmental attitudes. Students' self-reported intentions indicated an association between their week spent at camp and the "development of a positive mindset" (p. 144). Results of the attitude inventory showed a significant increase in attitude improvement toward the environment after the camp experience.

In a research article titled, "What difference does it make? Assessing outcomes from participation in a residential environmental education program," the authors Stern, Powell,

and Ardoin (2008) make another contribution to the environmental education outcomes-based literature on residential school camping experiences. The authors used pre-, post-, and delayed follow-up surveys. The researchers mirrored the camp staff's self-reported program goals in creating the survey and created the following indexes for measurement: "connection with nature;" "environmental stewardship;" "interest in learning and discovery;" and "knowledge and awareness of GSMNP [Great Smoky Mountain National Park] and biological diversity" (p. 34). The authors found that long-term gains were made in the areas of "environmental stewardship" and "awareness."

Smith-Sebasto and Semrau (2004), in another study focused on determining student outcomes of an EE residential experience (intervention), used pre- and post-test of the Children's Attitudes Toward the Environment Scale (CATES) to investigate the experiences of 419 middle school students who attended a New Jersey EE residential program. After identifying and coding the objectives of the program overall as well as the official curriculum (lesson plans), the researchers identified instrument items that corresponded to the coded items. Findings showed that the "intervention was assessed by the instrument as ineffective in improving students' attitudes toward the environment" (p. 16).

Smith-Sebasto and Obenchain (2009) investigated student perceptions of a residential environmental education experience. The authors asked students to complete a minute-paper which asked them to answer the following questions, " what was the most meaningful thing they learned," "what was the most confusing aspect of their experience," and "what was the experience they would like to repeat or topic about which they would like to learn more" (p. 52). Students completed this minute-paper directly after their camp experience and then again six months after the experience. Student responses were coded into categories for

further interpretation. Students' answers to the first question about meaningful things they learned at camp fell most often into the social ("trust myself," "teamwork") and safety ("how to act when you encounter a bear") categories. In response to the second question, students often found the scientific topics discussed at the camp to be the most confusing. Students also found safety issues to be confusing, which the authors potentially contribute to "uncomfortable or uneasy [feelings] in [a] nonhuman-dominated environment" (p. 59). Results showed that in response to the third question, students were most interested in learning more "about issues in the scientific category" (p. 60).

James and Bixler (2008) conducted an ethnography with the intention of "…describ[ing] children's lived experiences from a social-historical-cultural context through participat[ion] in a residential EE program" (p. 44). This research took place at a 3-day residential EE program in a coastal environment. Pre and post-field trip lessons were conducted by the classroom teacher of the participants. The study's participants were twenty "gifted and talented" fourth and fifth grade students from two different schools (although both had same teacher). The researchers conducted field observations at both the camp and in the classroom, interviews, and asked students to complete several assignments for researcher-review. One example of such an assignment included one in which students were asked to "create words, phrases, or pictures about what they thought and knew about" the prompt "ocean environment" (a modified "personal meaning map") prior to the camp experience (p. 46). Students' "personal meaning map" was used with the student during the interview as a discussion topic. The researchers identified the following themes, which "best represent[ed] the children's lived experiences from the social-historical-cultural context of their participation in the EE program" (p. 50): sensory orientation (lots of touch and first-hand

experience with outside things), social relations (important relationships developed with peers and family), novelty (novel objects, people, and experiences), free time (sense of freedom, minimal supervision), personal welfare concerns (getting enough food, missing parents). The ethnographers conclude that "children's nonformal environmental-learning experience is negotiated through the feeling of having choices and enhanced through sensory perception and personal relationships"(p. 44).

Conclusion

Much of the literature regarding camps and environmental education residential experiences is focused on student outcomes (American Camp Association; Bogner, 2002; Dettman-Easler & Pease, 1999; Dresner & Gill, 1994; Eagles & Demare, 1999; Fields, 2009; Gillett, Thomas, Skok & McLaughlin, 1991; Mittelstaedt, Sanker & VanderVeer,1999; Readdick & Schaller, 2005; Smith-Sebasto & Semrau, 2004; Stern, Powell & Ardoin, 2008). Specifically, these studies are focused on cognitive, affective, and conative student outcomes. The camp itself and the specific experiences it provides through its official and enacted curriculum are drastically overlooked. My research will shift the focus from the camper to the curriculum of camp itself and ask important questions regarding the curricular representation of the environment, the human-environment relationship, and attitudes and behaviors towards the environment.

CHAPTER THREE: RESEARCH SITE AND METHODS

Introduction

Our relationship with the environment is constantly shifting. This relationship is continuously being defined and redefined by the cultures in which we find ourselves situated. This case study into the curricular representations of the human-environment relationship at one residential school sponsored science camp is a window into current representations of the proper human-environment relationship. How Science Camp[16] represented and understood the environment is a product of our time and culture. This research will not only be useful in understanding the curriculum of Science Camp, but will also contribute to our understanding of our changing relationship with the environment.

Participants' involvement in a residential school sponsored camp experience like Science Camp was a time of purposeful definition and redefinition of their relationship with the environment. This study utilized qualitative methods to understand how the official and enacted curriculum of Science Camp represented the environment and the human-environment relationship. Through case study examination of the official and enacted curriculum in one science camp over four weeks, I considered Science Camp's curricular representations of the environment, the "proper" human-environment relationship, as well as the attitudes and understandings that Science Camp may seek to instill in its participants.

[16] All names of places and people are pseudonyms. Science Camp is the pseudonym chosen for my study's location. Most students and teachers referred to the site as "science camp." Some administrators seemed to embrace the term "science camp" and used it themselves. Others were quick to point out that Science Camp was a school not a camp. The site's real name does not include the word "camp."

Research Questions

The following research questions guided my inquiry:

a) How does the official and enacted curriculum at Science Camp represent the environment/out-of-doors?

b) How does the official and enacted curriculum at Science Camp represent the environment in terms of the relationship participants should have towards the environment?

c) What understandings, attitudes, and behaviors towards the environment does the official and enacted curriculum of Science Camp seek to instill in participants?

Methods

Choosing a site

I chose Science Camp as the place to do my observations for several reasons. First, I was interested in researching at a site where children were outdoors because I wanted to look at a place where the site itself was invested in creating, changing, or redefining the human-environment relationship. My personal experience informed my decision to pick a camp. I attended a residential camp with my classmates in fifth grade and I felt like the experience made a significant impact on my career, educational decisions, and relationship with the out-of-doors. I also remember feeling more grown up and worldly after my stint at camp. Important things happened at camp for me and the literature suggests that residential camp experiences have transformative impacts on other people, too (American Camp Association; Dettman-Easler & Pease, 1999; Dresner & Gill, 1994; Fields, 2009; Gillett, et al., 1991; James & Bixler, 2008; Mittelstaedt, et al., 1999; Readdick & Schaller, 2005). And so, a residential

camp experience was another criteria; I wanted to pick a place that would be more impactful than just a day field trip.

I also wanted to pick a site that had environmental education goals. While Science Camp officially had science-oriented goals for the students, the mission statement of all of the Outdoor Explorations programs alluded to some of the cognitive, affective, and conative goals of the field of environmental education. This also attracted me to Science Camp as a research site.

> [Outdoor Explorations'] programs empower students, teachers, parents, and the community to explore natural areas and expand their knowledge, understanding, and stewardship of the environment[17].

My final criteria during site searching had to do with the attendees of the site. I was particularly interested in the experience that students get as a part of their regular schooling experience. The students that go to Science Camp do so during the school year and through their school. In theory, this allows for all types of students to attend. A summer camp might, for instance, only draw a group of students that were already familiar with camp, excited about being outdoors, and came from families that were able to afford such an experience. I was interested in examining the curricular representations of the human-environment relationship as they were presented to the general student population, rather than a specific population of young people.

Science Camp fit all of these criteria. Science Camp's mission statement indicated that it was a place where purposeful redefinition of the human-environment relationship with children was taking place. Science Camp was a residential four or five-day long experience geared towards the general student population. Additionally, the fact that Science Camp was

[17] retrieved from Science Camp's "Teacher's Guide" and "Coordinator's Guide"

organized through Ocean County's department of education indicated to me that its curriculum was sanctioned by a major cultural agent. Science Camp was a carefully crafted, purposeful experience designed by the official representatives of Science Camp and Ocean County Department of Education, the state's science standards, history, tradition, and culture.

Introduction to Science Camp

There were two main roads that headed up to Science Camp from this side of the mountains. One highway sprung forth from a main thoroughfare of an impoverished city that seemed to have had its heyday in railroad times. The other highway offered an opportunity to skip this privilege-guilt inducing road and connect straight from highway to highway without being assaulted by real world problems; this was the road I took. The road up to Science Camp twisted up from the smoggy urban sprawl of a major metropolitan area and into the rocky, forested, often fire-scarred peaks of a national forest. The sinuous road was bordered by signs. There were warnings to carry snow chains (which terrified me). There were signs which pled slower vehicles to use turnouts (which I happily heeded). There were signs that pictured a truck on a downward slope that warned about steep grades (which also terrified me). The journey also featured Smokey Bear holding a sign that indicated the day's fire risk and reminded passersby to "prevent wildfires." As I drove, I could feel the mountain locals in their four-wheel drive vehicles rolling their eyes at my cautiousness and urging me to go faster and faster. At the beginning of my field work, I refused to give in to their peer pressure and would continue to mosey along at my own pace, but by the end of my research at Science Camp, I felt as if I had mastered the twists and turns of the road and

could play ball with the locals. However, each time I reached the top of the mountains, I always seemed to let out a sigh of relief that I didn't know I had been holding in.

The mountains that housed Science Camp also harbored many small communities that were often built around reservoirs. These centers of town often had an Alpine chalet meets gold rush architectural feel to them. The towns hosted events like Oktoberfest, Fourth of July fireworks, and family Christmas bonfires. One town also boasted an all-in-good-fun annual longest pine cone contest. These towns had a small community feel to them that extended from their cramped grocery marts to their low-budget websites. The people in the mountain towns were a mix of people that lived up there all year round, others who had mountain vacation homes, or others that visited the mountains from the surrounding areas for day or weekend trips. Local businesses were a reflection of the dichotomy of the mountains' customers. There were ski shops, candy shops, and places that sold jerky meat for tourists interspersed with realtors, banks, and cell phone company businesses for the locals. The place made you feel as if you had to pick between being a tourist or a local; you weren't just passing through. The mountains were the destination.

Science Camp was located off the main highway along a road that led to the Copper Lake mountain community. Copper Lake was one of the less crowded communities and proclaimed itself to be the "best kept secret on the mountain[18]." Copper Lake rested at a higher elevation than some of the larger mountain communities (a fact of which the residents were proud). After turning off the main road, Science Camp was located at the end of a long bumpy drive. Science Camp was a leased property and its multi-use responsibilities

[18] sourced from town's website

were evident. There were several residential homes located around the parking lot that were not affiliated with Science Camp.

The camp itself consisted of many wooden buildings of various styles connected by concrete paths. One of the buildings was called the "sanctuary" and had a large mural of Jesus's face in the foyer. This site was used as a religious camp during the summer months and for conferences over weekends. The sanctuary was one of the main meeting spaces used during times when the whole camp group needed to get together in one place. The inside seating space was reminiscent of a modern church with tall, steeple ceilings and thin and narrow windows that let banded light into the room. There was a stage, multimedia equipment, and chairs that got repeatedly stacked and unstacked every week.

Another building on the campus was shaped like an upside U. It had slices of shellacked tree trunks scalloped down the front of the building. The inside was dark, thinly carpeted, and had chairs piled along the edges. This room was used for small group activities with children and some of the staff meetings. The main office was located off the main room of this building. The office consisted of two tiny rooms crammed full of paper-piled desks, a photocopier, a computer for staff, and an old couch. The walls were decorated with calendars and push-pinned papers. Outside of the main office, there were long picnic tables that oozed sap in warm weather (I learned this the hard way). These tables were often used by staff to gather and organize supplies for hikes or other activities. The camp also had an amphitheater area where skit nights and weekly photos took place.

Students lived in barrack-like dormitories with bunk beds. These heated buildings were scattered around camp and contained bathrooms. The dining hall was a large room with picnic-like tables arranged in rows. The tables were outfitted with pitchers of water that were

unceremoniously filled with water from a hose in the kitchen, napkins, condiments, and silverware prior to meals. The kitchen was at one end of the room and food was served by kitchen staff from a cafeteria line from this end of the room. On the other end of the room, there was a salad bar, containers with drinks, and a small area where staff kept their teas, condiments, and personal food. The sides of the dining halls were adorned with scores of clothes hooks mounted to the walls for the students' winter jackets.

The area surrounding Science Camp was wooded and felt secluded. One of the guides written for teachers by Science Camp describes its sites' locations as "between 4000 and 7000 feet in Yellow Pine Forest, Mixed Evergreen Forest, and Oak Woodland [ecosystems]. Year round and intermittent streams support Riparian ecosystems and the dry, south-facing slopes have Chaparral.[19]" Hikes led to fabulous vistas, rocky outcrops, and meadows. The trails that surrounded Science Camp were marked with colored plastic tags hanging from tree branches. This method of marking the trail was likely advantageous because the tags were both removable and visible when snow had piled up. A small stream ran through a part of camp and tall conifer trees towered over camp. Clouds whizzed by at a startling angle as they rushed down the mountain slopes. The weather at Science Camp changed quickly from sunny to cloudy, warm to cold, and cold to frigid. The weather didn't slow anyone down around camp and the students adjusted quickly.

Science Camp had operated in this area for decades. Teachers sometimes came to camp and recognized the place and realized that they had arrived at the camp that they had attended as children. The Ocean County Department of Education administered an environmental education program called, "Outdoor Explorations" whose mission was "to

[19] retrieved from Science Camp's "Teacher's Guide" and "Coordinator's Guide"

empower students, teachers, parents, and the community to explore natural areas and expand their knowledge.[20]" "Outdoor Explorations" organized four different environmental education experiences for students: full and half-day field trips at 13 different Ocean County sites for K-6th graders; a traveling scientist program for pre-K through 6th grade which sought to "develop an awareness and appreciation of science concepts[21]" through animal and physical science presentations; community programs designed to "cultivate a bond with nature that lasts a lifetime[22]"; and three sites similar to Science Camp which offered four to five day residential programs for 5th and 6th graders at three different sites[23] high up in the [Bosque] Mountains.

My observations took place at one of the three sites, Science Camp, that was in operation at the time of my observations. The amount of simultaneously operating sites was funding dependent and three sites was considered by my informants to be few. Several staff members mentioned to me that there had been a long-time donor that contributed significantly to the program. This allowed for more sites to be in operation at once and for more students to attend the program. The downturn of the economy in the year 2008 impacted the funder's ability to continue giving to the program. At the time of my observations, the donor was no longer contributing to the program. Currently, the residential programs are no longer in operation but the other non-residential programs operated by Ocean County are still running.

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[20] retrieved from Science Camp's "Teacher's Guide" and "Coordinator's Guide"
[21] retrieved from Science Camp's website
[22] retrieved from Science Camp's website
[23] "The sites are adjacent to the [Bosque] National Forest and provide a unique opportunity to study the natural environment. The weeklong experience also provides an ideal atmosphere for the development of social skills and self-esteem. Both students and teachers leave [Science Camp] knowing more about the natural world and themselves." (retrieved from Science Camp's "Information for Parents" brochure)

Participants and becoming a participant

During my interviews, I often asked staff members to tell me about the participants of Science Camp. Without fail, each of my informants told me that everyone is a participant at Science Camp – staff members, teachers, visiting principals, and students. I, too, became a participant in Science Camp. Because my research questions focused on the curriculum and practices of Science Camp as they relate to the human-environment relationship, the primary participants of this study were the official representatives of Science Camp. For the purposes of this research, the manager, program manager, assistant program managers, lead instructors and instructors were all considered official representatives of Science Camp. Other participants in the Science Camp experience, such as students and their classroom teachers, were also included in the research, but to a lesser degree. While "commonly, the camper is the unit of measurement examined, particularly related to outcomes achieved from camp experiences" (Henderson, et al., 2007, p. 757) in residential camp research literature, the students that attended Science Camp were not the primary units of focus of my research. Because I was interested in considering the cultural tools and resources provided by the camp to the students through the official and enacted curriculum, the curriculum of Science Camp was the primary focus of the study. In this section, I discuss my entry into Science Camp and introduce and discuss my observations of staff members, teachers, and students.

The purpose of my first visit to Science Camp was to introduce myself to the staff and gain permission from individual staff members for interviews and observations. Gaining access to Science Camp took longer than I expected and so when everything was finally approved, I felt like I really needed to get my first impression right with the site's staff. So, I spent a bit of time figuring out how I wanted to present myself. I wanted to seem casual and

approachable but also aware and respectful of my outsider status. As instructed, I decided to wear closed-toed shoes and a Science Camp lanyard that was given to me with my university's student identification card dangling from the clasp at the bottom. I didn't wear any snow-boots or hiking boots as I didn't want to appear over-eager or one of those types who just has to think about a mountain and they're sent running to REI (Recreational Equipment, Inc.) to buy the most expensive hiking boots. I just stuck to regular shoes. On my first visit, I decided against wearing the staff shirts that had been given to me because I didn't want staff to feel like I was already "in" before I had gained their acceptance. So, I wore gray pants, a light blue t-shirt, and a beige corduroy jacket. When I arrived, I introduced myself to Mike, the program manager, in his office and then was quickly ushered to the staff meeting to introduce myself to the rest of the staff.

The staff meeting was held in the sanctuary, a room much too large for the meeting. Staff spread out casually in chairs throughout the room. I took a seat near the back and nervously organized my papers and thought through my talking points. The meeting was informal and chatty. When it was my turn to speak, I thanked them for letting me be there, introduced myself, made some jokes about being in school forever, and talked about my project. I assured staff that I was not *evaluating* the program, their teaching, or the curriculum. I talked about confidentiality and the times I would and would not be observing and passed around forms for them to fill out if they would be willing to participate. Most staff members signed the papers and the staff meeting continued on quickly. Mike continued a showing of the documentary "Cadillac Desert." The film is based on a famous book, which discusses the environmental issue of water in the American Southwest and the environmental cost of damming rivers. The staff watched with interest and I thought to

myself, "wow, three minutes after I get here and the human-environment relationship is already being discussed!"

Science Camp was run through the Ocean County Department of Education. Science Camp employees were employees of Ocean County Department of Education. Blake was the manager of all each of the residential sites including Science Camp and liaised between the department and the operating camp sites. Blake was a former teacher and appeared to be in his fifties. Blake came across as laidback, but professional. He had previously been a program manager at one of the camp sites. Each of the sites had a program manager. Mike was the program manager at Science Camp. Mike described himself as "basically the one that organizes and is charge of everything" (personal communication, March 27, 2013). Mike had shoulder length blonde hair tied in a short pony tail, a small chin beard, and appeared to be in his mid or late thirties. His accent, speech pattern, and the way he carried himself reminded me of "dudes" who rock climb or snowboard.

Mike had two assistant program managers, Michelle and David. David described their position as "we're the on call guy, the on call person that takes care of emergencies, disciplinary, and program. We get to create a little bit of program, write a little a bit of program, but mostly we're the ones keeping it on task, making sure program runs how Mike wants it to run or [Ocean County] wants it to run" (personal communication, March 27, 2013). David had long hair, a mountain man beard, and walked quickly. He seemed to me to be a friendly, soft-spoken person with a nervous laugh. In his interview, he alluded to his work at Science Camp as having helped him gain self-confidence. David spent much of his youth outdoors and learned a lot on his dad's fishing boat. At the end of our interview, I

asked David if there was anything else he thought I should know and part of his response included:

> All of these people, teachers, real teachers, they're listening to me, this grubby ol' contractor's kid, learned this on a fishing boat, but at, I was, I was encouraged because everything I learned as a kid was accurate, you know, it wasn't a bunch of shenanigans, you know, I'm not, I'm teaching accurate stuff and for Chris [a supervisor] to come up and say it was accurate, it really just, it made me feel good. It created this domino effect of me wanting to be here, me wanting to stay [at Science Camp]. (personal communication, March 27, 2013)

David thought this job was a perfect fit for him.

Michelle, the other assistant program manager, was talkative, lively, and funny. She had the air of the theater about her and described herself as a creative type. When I asked Michelle about what kept her in her position at Science Camp, part of her response included:

> …there's not that many people of color that are in this program that are in the position that I'm in and we do [have] kids that, you know, that come up here and they always think that white people are always the only ones that camp and do stuff and are outdoorsy. So when they [the students] come and they see me they're like ohhh okay, we can do this too. So, part of that I think the subtext of it, is that too is lettin' people see that yeah there are people of color that are interested in the environment, they enjoy being outdoors, they're crazy, they're fun, they're cool, you know? That kind of thing. (personal communication, March 26, 2013)

Michelle felt that her racial identity helped students break their stereotypes of what an "outdoorsy" person looks like. She also made a point to tell me how much she loved her job. She mentioned the word "energy" often. She loved the staff's energy and the energy of the students. She said that the energy at Science Camp kept her young.

At Science Camp, instructors and lead instructors directly taught students. The lead instructors often did not have their own group of students in a cabin but rather functioned as an organizer, trainer, and supervisor for the instructors. Lead instructors also filled in for sick or absent instructors. Instructors taught trails and science sessions as well as lived in the

dormitories with the students. Lead instructors and instructors, for the most part, appeared to be in their twenties. There was a relatively even split between male and female staff members. The staff members seemed to manage to personalize their staff shirt uniform with coats, jewelry, hair-styles, and accessories. Many of the men wore facial hair. One of the male staff members, Eliot, had a leather backpack outfitted with tiny solar panels (possibly for charging electronic devices) and a patent leather cowboy hat that lent to an overall steam punk aesthetic. The group struck me as friendly, laid-back, casual, and as if they had worked together for a while already. The instructors had varying amounts of educational experiences. Some had high school diplomas, others had attended undergraduate school, and at least one instructor had a master's degree and teaching credential.

The students that came to Science Camp were fifth and sixth graders from Ocean County and other surrounding counties. Ocean County was approximately eighty miles from Science Camp. The majority of schools that attended Science Camp were public schools, but some private schools also attended. Often schools from the same district organized their trips together, as Science Camp could accommodate over a two hundred students. This way students that would be soon attending the same middle school had the opportunity to meet one another before middle school began. Ocean County was considered by many as an affluent area of the state; however, the demographics of this area were more mixed than its reputation suggested. Many schools and students had trouble finding the funds to attend Science Camp. Some students came to Science Camp with brand new jackets and gear for the cold weather and others' didn't seem to have the resources to do so. Science Camp had a large collection of "borrow wear" to keep students dry and warm. The socio-economic status of the student population from Cypress School District was varied but mostly

appeared to be middle class. Some students' families had vacation homes in these mountains and others were excited at the prospect of three meals every day.

I focused my observations one specific school district, Cypress. This school district had many schools booked to attend Science Camp during my availability for observations. I chose to focus on just one school district because I hoped to gain permission from the district to conduct teacher and student group interviews. Cypress operated forty-seven elementary schools. Teachers from the attending school chaperoned students to Science Camp. Teachers had a few responsibilities while they were at Science Camp and some participated more than others. Teachers stayed in furnished cabins with a common lounge area. Many teachers were happy with the amenities and felt as if their stay at Science Camp was a welcome break from full-time instruction.

Data collection

This qualitative case study drew on common data collection methods of qualitative research: participant observation, interviews, and document collection. My role at Science Camp was that of a participant-observer. I participated in hikes, meals, science sessions and staff meetings. Students were introduced to my presence during their hikes as someone who was in school and wanted to learn a bit more about what goes on at Science Camp.

Observations

I observed over four weeks at Science Camp. My observation time at Science Camp was limited by weather, my job, my pregnancy, and by a long (but civil) permission process to access the site. I observed at Science Camp at the end of 2012-2013 school year. After my initial meeting with the manager of Science Camp and after looking at the schedule of remaining schools attending Science Camp, I decided to pick weeks to observe when

Cypress School District (located in Ocean County) schools were attending. This decision was made because I hoped to get permission to interview teachers and groups of students and obtaining permission from one rather than multiple school districts seemed more feasible in the given time frame. Cypress School District allowed me to interview teachers they pre-selected for me, but not to talk with students.

During my observations, I spent the majority of my time participating in hikes with instructors and students. The geology, wildlife, and ecology trails seemed to be considered the core curriculum of Science Camp, so this is where I focused a lot of my time. The schedule at Science Camp shifted depending on whether the visiting schools were staying for four or five days. However, these three trails were always presented to students regardless of their schedule. In addition to these trails, I also participated in evening activities (night hike, astronomy session), additional day-time activities (science sessions and activity hikes), and other general weekly events (bus drop-off, student introduction to the site session, teacher training hikes). I frequently ate lunch on site and was assigned a table of students to supervise, like a staff member. I did not participate in any parts of the schedule which may have been deemed socially questionable or unacceptable such as cabin cleanup time, wake-up, bed-time, bed checks, or bathroom time even though I did believe it to be likely that the curriculum of Science Camp extended into these times (for instance, students may have been encouraged to take shorter showers in order to save water). As a participant-observer, I took hand-written field notes during my observations. I reviewed and added to my field notes shortly after my observations.

Interviews

Interviews with staff members at Science Camp proved invaluable. Interviews not only allowed me to gain an understanding of the official and enacted curriculum through the eyes of those who lived the curriculum every day, but also gave me a sense of the place and its people. These interviews helped me better understand Science Camp's curricular representations of the environment, the "proper" human-environment relationship, as well as the attitudes and understandings that Science Camp sought to instill in its participants.

Interviews were conducted with the manager, program manager, assistant program managers, and four lead instructors. In order to allay potential concerns, interviewees were assured confidentiality and that their real names would not be used in this research. Interviews took place on site in semi-private locations (offices and picnic tables, mostly) and they were digitally audio-recorded and transcribed. Interviews were semi-structured in that they were guided by a set of open-ended questions and prompts (see Appendix A). Happily, informant responses steered conversation in different and interesting directions. For instance, I found my discussion with Michelle regarding her notions of student perceptions of outdoorsy people and race to be fascinating. I also enjoyed getting a sense for how the staff members perceived students' relationship with the outdoors as damaged and broken by the modern world and its technology. Some of these conversations contributed towards themes that helped me answer the questions that this dissertation posed and the others helped me understand the place and its people to a greater degree.

Interviewing classroom teachers that attended Science Camp with their students was important to me. I wanted to get a feel for the teacher's view of the students' experience, their thoughts on the usefulness, efficacy, and message of Science Camp's curriculum, their

own curriculum, and their perception of the value of Science Camp. Three teachers were interviewed, two whose students attended Science Camp and one teacher whose students attended a camp that was not sponsored by the same organization.

Collection of documents

In order to gain a richer understanding of Science Camp and its curriculum, I collected a variety of documents. Because written documents are a form of communication and language which can signify meaning, intent, tone, and importance, I took as many opportunities as I could to collect such items. Some examples of the artifacts I saved and studied are: teacher and coordinator guides to Science Camp, student journal templates, Science Camp's guide for parents, trail guides, staff manuals, student and parent post-camp surveys, and the Science Camp website.

These documents have helped me understand some of the logistical details necessary to organize this experience for students and teachers. They have also given me a sense of some of the students' remembrances of their experience. Most importantly, these items allowed me to see how Science Camp formally represented its site, its experience, and its curriculum to others.

Data analysis

In order to analyze the data I collected, I coded my observational notes, interview transcriptions, and collected documents. I paid specific attention to the curriculum and its representations of the outside world, but I coded for other topics that also appeared in my notes, interviews, or documents. The most frequent themes were: Science Camp, Science Camp end goal, curriculum, social, nature, students, student issues, participation, teachers, staff, schools, television/media. Each theme also had sub-codes. For instance, the category

of "student issues" came to represent problems that students had before attending Science Camp as well as adult explanations of negative student behavior. In example, the sub-codes for "student issues" were: first time to have a bed to themselves, first time having three meals a day, medications, low SES (socio-economic status), high SES, lack of attention at home, lack of positive role models, discipline problems, scared of the dark, bed-wetting, homesickness, and financial. After coding my data, I imported my codes into a Microsoft Excel document and organized the codes by informant. This document helped me note the prevalence of some of my codes and provided me with an index of sorts to help me quickly re-locate specific examples in my data.

After reviewing my coding, I began to pay particular attention to how Science Camp representatives discussed the curriculum, Science Camp itself, and the goals and perceived results of the Science Camp experience. But, the data also held some surprises. The prevalence of the codes "social" and "tv/media" was unexpected. The "social" code referred to the affective social goals and results of Science Camp. And the "tv/media" code most often appeared in my data as staff expressions of displeasure for electronic distractions in students' lives. These themes represented a finding which didn't seem to directly answer my research questions. So, I began to look at my themes in relation to one another. I also looked back at my notes of musings and thoughts from my time in the field and noted whether or not my ideas were supported with data from interviews, documents, and other field experiences. In this way, larger themes emerged in response to my research questions. My results are a representation of these themes.

CHAPTER FOUR: THE OFFICIAL CURRICULUM

Introduction

The official curriculum is the formal curriculum. It is what is supposed to happen, what is expected to happen, and what the developers of the curriculum think should happen. Indeed, if teaching weren't such a human endeavor taking place in an ever-changing context lessons would go exactly according to plan. Teachers would teach things exactly as the curriculum writers intended, students would learn precisely what was intended, and the learning context would have no impact on the teachers, students, or the curriculum. Fortunately, this is not how things work. Teachers change the curriculum to suit their students better; students ask questions which lead conversations in unintended directions; and, the learning context itself presents opportunities for students to understand material in ways beyond what the written curriculum could have predicted. This chapter views the official curriculum of Science Camp as both the formal, written curriculum as well as how Science Camp informants represent the curriculum in action.

In this chapter, I will discuss two perceived problems that shaped the Science Camp curriculum. The first was staff member and classroom teacher perceptions of students' disconnected relationship with the outdoors. The second issue voiced by staff members and teachers was an uneven exposure of students to science in public schools. Understanding these key issues was important for comprehending the raison d'etre of Science Camp and its curriculum. The curriculum was a response to these perceived issues.

This chapter will also discuss how the curriculum was described to me by official representatives of Science Camp as well how it was represented in official Science Camp documents. Additionally, this chapter will utilize some of my observations of the curriculum

in action to support these characterizations. This chapter will provide a summary of the official curricula of each of the academic hikes (ecology, wildlife biology, and geology). Finally, this chapter will briefly discuss other instructional times at Science Camp.

The problem – "Nature Deficit Disorder"

Figure 1. Example of "Unplug" billboard

Figure 2. Another example of "Unplug" billboard

On a recent trip to the airport, I noticed these billboards sponsored by the Forest Service. I was taken with the boards because they perfectly encapsulated a pervasive idea about this generation's relationship with the outdoors: the idea that children are disconnected with nature and don't spend time (or perhaps the right kind of time) outdoors

anymore. Technology (especially video games and smart-phones) is often demonized as having broken the relationship between people and the outdoors. Interestingly, the Forest Service's website called these ads "public service announcements" (PSAs) indicating that the message was raising awareness about an important social issue. This excerpt was taken from their website:

> This PSA campaign aims to inspire tweens (aged 8-12) and their parents to re-connect with nature, experiencing it first-hand. The campaign brings to life the joy and excitement kids have when they discover the wonders of nature, helping create interest in their environment and a lifelong relationship with it.[24]

The ideas of reconnecting with nature, having first-hand experiences with nature, and creating fun and excitement outdoors in order to develop a relationship between child and nature resonated deeply with the goals and ideas of both Science Camp and the field of environmental education in general.

There was a pervasive understanding among Science Camp staff members that attending students had limited outdoor experiences. Science Camp saw itself as an opportunity for students to connect with and "experience a natural environment.[25]" Much research has outlined this issue; this generation of children spends less time outside than any prior generation (Harrell, Gansky, Bradley, & McMurray, 1997; Hofferth & Sandberg, 2001; Louv, 2005; Malone, 2007). In fact, during or after my interviews, several staff members mentioned Richard Louv's book, Last Child in the Woods to me (Louv, 2005). Louv's book is a popular example of current environmental thought. Louv suggests that children nowadays suffer from "nature deficit disorder.[26]" One staff member even showed me a flyer from a talk by

[24] retrieved on June 21, 2015 from http://www.discovertheforest.org/about/
[25] retrieved from Science Camp's "Teacher's Guide"
[26] See the literature review for a more in-depth discussion of Louv's, Last Child in the Woods.

Louv that he had attended. On the third occasion that someone mentioned Louv's book to me, I questioned my interviewee, Eliot, further about his exposure to the author. I was interested to see if the thesis of Louv's book had been discussed perhaps in a staff meeting. Eliot confirmed that the book had not been read as a staff but that he had read the book and found it inspiring for outdoor educators.

Even though the book had not been discussed as a large group, it did seem that staff and teacher ideas about students' relationship with the outdoors were similar to the thesis of Louv's book. Clearly, for some, Louv's book had proven inspirational. This was important for me to understand because the adoption of Louv's ideas by many of the staff was not necessarily organizationally endorsed. Rather, it seemed that staff members had developed these ideas about students' lack of outdoor experiences and the disconnection between children and nature through their own observations as well as perhaps through their extracurricular reading.

When staff and teachers discussed their understandings of students' relationship with the out-of-doors, they painted a bleak picture. They described students as lacking in outdoor experiences, even experiences that staff would consider common to all humans, like observing the night sky. When describing Science Camp to me, Mike explained with a sigh how many outdoor experiences students haven't had.

> It's like a fun experience where kids learn a lot up in the mountains, it's, I mean a lot of these kids are coming out they're out of their element, they're coming up from all different kinds of neighborhoods, a lot of them have never seen snow, a lot of them have never been in a forest, a lot of them have never felt freezing cold weather, um, haven't seen the stars at night. (personal communication, March 27, 2013)

Later in the interview when he discussed student perceptions of Science Camp with me he also said:

> I think a big one [student experience] is just seeing the stars at night. A lot of the kids have never seen such a open starry sky cuz you know light pollution down below, if they're lucky they can see four or five stars where they live. Here it's on a good, clear, dark, no moon night you can see millions, I don't know how many. I think that's actually a total overestimate, I think it's like twenty thousand is what you see with the naked eye on a good dark night but [it] seems like millions.
>
> (personal communication, March 27, 2013)

Mike used the example of students' inexperience with seeing the stars at night as the epitomizing example of how lacking in outdoor experiences students were. David described students as prisoners in their own homes, "Kids are being trapped in their houses. They go to school and they come home and they don't go outdoors anymore" (personal communication, March 27, 2013). There was a definite sense among staff and teachers that students were not being exposed to the outdoors and that two things were mainly to blame: family situation and technology.

David described his childhood to me during our interview as being free to explore outside of the house. He grew up fishing, hunting, and spending time on his father's boat. He and his friends were allowed to go to the beach by themselves. He described his experience to me as a foil to that of the students. "Even the kids that live thirteen blocks from the beach, they're not allowed to go to the beach anymore, because it's dangerous." David blamed parents for kids being "trapped in their houses." He continued to say:

> "They [kids] don't go outside anymore and it's not just because of the computer. The computer, the computer is a great scapegoat, but it's the parents. Mom and Dad are both working, so you got this kid in some kind of daycare or maybe watching themselves but they're not allowed to go out. They're not allowed to go anywhere. They're not allowed to roam the city – it's dangerous, you know, gangs and violence and da da da" (personal communication, March 27, 2013)

Sandra, a classroom teacher, described her students as oblivious of and completely disconnected to the outside world. In our interview, Sandra blamed media, parents, and finances for students' separation from the outdoors.

> Terrill: How do you think students view the outdoors? Or *your* students view the outdoors?
> Sandra: They don't. That's one thing about that camp is [there are] so many video games now and their parents can't afford to take them to a lot of places and therefore they're not as familiar or comfortable being out in the outdoors. I mean, to be honest they're lazy so they'll sit inside and not do much. So it's like a foreign entity. (personal communication, June 11, 2013)

When Chris discussed his hopes for students after they leave Science Camp, he discussed them in terms of "indoor kids" and "outdoor kids."

> I hope that they are a little more excited about being in nature by the time they leave. They they may be an "indoor kid," just like you have "indoor" and "outdoor" pets, you may have "indoor" and "outdoor" kids. I hope we're making them into more "outdoor kids" that they wanna go out and explore nature more. Or when they drive by a park at home, it's like "oh yeah, I know those kind of trees. I know why that might live there" So just increasing your awareness for the world around them. (personal communication, May 16, 2013)

The dichotomy that Chris drew was telling. In his estimation, there were kids that spent some time outdoors and there were kids that spent *all* of their time indoors. Chris's analogy to pets seemed to suggest that children were at the mercy of the decisions that their parents made for them and their environment. Indeed, some staff members suggested that students were not allowed outside of their homes because their parents did not consider their neighborhood to be safe.

Technology, especially phones, television, and video games, was also a common culprit in the blame game of why kids didn't spend time outdoors anymore. In fact, David at one point in our interview described today's video games as "addicting." There were many

references during my interviews to technology as a wedge that separated children and the outdoors.

In a discussion with Michelle about what keeps her in her job, she mentioned how much fun she had in her position and how the impactful experiences of her youth involved creativity in the outdoors. In this excerpt from our interview, she explained that providing similar experiences for students was important to her. She continued to explain how the youth of today are totally disconnected from the experiences of her youth and cited technology as a source of that disconnection.

> So when they leave here, they [students] feel like that they are connected because we always joke that, you know, um, kids now they're just so like, "being outside?" Like, the funniest thing that ever happened, I ever saw was maybe 11 years ago, some kids got off the bus and we were waiting for another school. I said, "well okay let's go play, we're going to get this ball, we're going to play this game" and they're like, "<exaggerated sigh> running? what?" You know? For a minute there, I didn't really take them seriously. "I mean, you guys play?" "No, there are like video games." Like the idea of running around outside and playing a game was just so..... "what?" And I realized, wow, we are totally disconnected from when I was coming up [growing up] playing, being outdoors, compared to kids watching tv and that's all they know...tv, video games, and sitting on their butts, you know? And moving around and enjoying nature and not just thinking, "oh it's just dirt we're going to get dirty" and "it's outside and there's bugs," just kind of like reconnecting them, I guess, if that make sense? (personal communication, March 26, 2013)

The idea that technology kept kids on their couches was echoed by Sandra, a classroom teacher. During our interview, I asked the following question because I wanted to get a sense for how many students from the grade level did not attend Science Camp and what some of the reasons might be for students not attending Science Camp. The following is an excerpt from that conversation:

> Terrill: And did most of the students go [to Science Camp] or do some stay or…?
> Sandra: Most of 'em went I think we had ten to twelve [students] that stayed back. I think financially… some [reasons for staying back] were finances some were homesickness and some were video games, couldn't leave the video game and then

> the parents weren't willing to push them because they don't know any better and so... that's what we've heard, you know.
>
> Terrill: that's what you've heard
> Sandra: Couple of 'em, couple of 'em flat out admitted that.
> (personal communication, June 11, 2013)

Sandra described the pull of technology as so strong for some students that they would rather stay home and miss out on an activity that all of their peers were participating in just so that they could continue to play their video games. The student-who-wouldn't-come-to-Science-Camp-because-they-couldn't-leave-their-video-games was a sort of whispered legend around Science Camp. I caught wisps of the tale in different conversations but Sandra's admission was the first real evidence I had that this child may have existed.

Another side effect of students' technological addiction mentioned in my data was the erosion of social skills. In a question to Krista about the changes she had seen at Science Camp over the years, part of her response addressed the changes in the students that she believed technology had caused:

> Um, one difference that I have seen you know throughout the years too um, is just like with the kids, the difference between how they were a little bit more out-not-more-outgoing, I should say and social cuz there was the technology [but it] wasn't as advanced as much so you can tell the difference now compared to when I first started how there wasn't as many kids that say "I miss my phone" but now they're missing their PlayStations, their Xbox, they're missing all that cuz that's what they do during their spare time they don't get out and play as much anymore. So just seeing the difference in the social cuz they're used to not talking personally to somebody, you know they're more text or... (personal communication, May 15, 2013)

Staff members and teachers described students as disconnected from the outdoors. My research indicated two reasons for this: family and technology. In summary, some of the familial reasons for this generation's disconnect with the outdoors were: parents were overprotective and did not allow children to go outside or out of the home anymore; the

family did not make much money and lived in an unsafe neighborhood which prohibited them from letting their kids play outside; and parents were working so much that they did not have the time or the money to take kids out of the neighborhood. Some of the technology-based reasons evidenced in my data for the disconnect between children and nature were: technology (video games in particular) was a drug that children were addicted to and technology was a force that kept kids inside and on their couches rather than outside.

The legend of "The Child Who Wouldn't Come to Camp" was told to me almost as a cautionary tale. It always seemed to carry the hidden questions, "do you see what the world has come to?" and "can you see how necessary the Science Camp experience is for children of this era?" Science Camp saw itself as the antidote to both the technology drug and students' lack of opportunity to go outside.

"Classic"

When I asked the manager, Blake, to describe the curriculum of the sites to me, he said:

> …so the curriculum's been developed and we look at it every, every year and throughout the year. Uh it's, it's kind of classic I think, I mean, I think we could teach this stuff the exact same way for a while. And they always say 'oh the kids change' and 'you know the way they learn and all the different personalities' well, you know, well you're going to be the you know, educational doctorate, I'm just old school that's like 'you know what, I've been doing this and it seems to work' you know, at the risk of sounding like a dinosaur, so uh I think the curriculum itself is, is pretty rock solid. (personal communication, April 1, 2013)

Blake explained that Science Camp's curriculum changed in small ways over the years. He went on to tell me that sometimes the site staff members came up with small tweaks to the way things were done and he would "rubber stamp" the changes. For instance, staff suggested coming up with an activity or experiment for the geology hike in order to cut down on the amount of talking and to attempt to engage students more. These were the

sorts of small changes that modified the delivery of the curriculum over the years. But, the core science concepts seemed to remain "classic." Blake preferred to say that the curriculum was "classic," but not "static." By this he meant that the science concepts in the curriculum had stayed the same over the years and that he felt that "we [Science Camp staff] could teach this stuff the exact same way for a while," but he did not want to indicate that no changes to the curriculum had ever been made (personal communication, April 1, 2013).

The official curriculum seemed set. In fact, Mike told me about how funding from different grants did not necessarily change the curriculum in his mind but rather created slight alterations in how things were done. For instance, funding received from Project Zero Waste started a composting practice at each of the sites. Because of this, students were introduced to the how's and why's of composting at one of the initial meal-times and then they composted some of their food waste at each subsequent meal. In my informant's mind, this was just a slight change to how things were already done, not a major curricular change.

The sense I got from long-time staff members was that curricular fads and grant funding came and went. They also gave me the impression that these changes impacted how staff members talked about and represented the curriculum, but that the fads didn't significantly change the content of the Science Camp experience. Science Camp was happy with their curriculum. When I asked instructors about whether they would add or subtract anything to the curriculum, no one suggested changing any of the content areas (geology, wildlife biology, or ecology). Rather, they indicated that they liked the curriculum in its current state or they suggested making minor changes to the enactment of the curriculum.

In addition to keeping the curriculum much the same over the years, each of the Outdoor Explorations' residential camp sites had very similar curricular guides. In part of

Mike's response to the initial interview question regarding his position, he explained that he didn't "operate in a vacuum" because:

> Our programs are pretty much similar among the three sites and then we all have our own styles and how we like to do things and whatever but more or less the same, you could walk on to [either of the other two Outdoor Explorations residential sites] and like [feel like] "ahh this is a lot like [Science Camp]."
>
> (personal communication, March 27, 2013)

Krista explained part of the logic for this practice is that keeping curriculum across sites the same allowed staff members to be moved from site to site as weekly student enrollment numbers fluctuated.

"Standards-based"

When I asked my informants to tell me about the curriculum of Science Camp, they seemed to have a protective knee-jerk response to the question. They would very quickly mention something about the science standards to me. The manager described the curriculum as "standards-based." The program manager said, "It's just, it's basic fifth and sixth grade science standard curriculum for the outdoor sciences" (personal communication, March 27, 2013). Michelle, an assistant program manager, said:

> Um we do follow the [state's] Science Standards so whatever they have for fifth and sixth graders our curriculum, our trail cards, our science sessions ummm we definitely like follow in line. I mean a lot of it is the basic science they would learn at fifth grade level anyway ummm the main thing we do really is (*whispering excitedly*) do it outside! You know what I mean? (personal communication, March 26, 2013)

When I asked David to describe to me the main things that happened at Science Camp, he said the following:

> ….It's, it's [Science Camp] creating social growth and I think it's one of the biggest secrets of [Science Camp], cuz when we talk about it the main thing is always the science standards and the school and they're going to learn astronomy here, you can't learn astronomy in a classroom… (personal communication, March 27, 2013)

David indicated that when staff talk about Science Camp the first thing was always the science standards. I sensed that an organizational commitment to mentioning the state standards when talking about the curriculum existed. It was clear to me that my informants wanted me to note first and foremost that the curriculum was standards-based. According to Michelle, aligning the curriculum of Science Camp with the state's standards was something that had happened in the past eight or nine years as a way to:

> …justify why the kids should come up [to Science Camp] because a lot of schools were like "well...we don't want to do that [go to Science Camp] because you know that's taking away from their learning time, like, you know, we need to be in the classroom getting ready for these tests." (personal communication, March 26, 2013)

Michelle indicated that Science Camp had aligned their curriculum to the science standards so that students' attendance at Science Camp did not detract from students' in-class learning time. I got the sense from Michelle that she felt as if the Science Camp experience whether or not it was aligned with state's science standards was important for students, but that the inclusion of state science standards in the Science Camp curriculum provided a justification for why schools should send their students to Science Camp. Later on in her response she mentioned the following:

> We're still doing our sciences but now it's like we create something [in the curriculum] now the biggest question we have is "okay, how can we incorporate this into the standards, what are some things that we can point out to teachers that show them this?" I mean it's not, I don't want to say to justify being able to do it [creation of new curriculum] ....but in the back of the mind I'm thinking, "yeah, that's probably why we're doing it" to make sure that people aren't like, "well that's [Science Camp] a waste of time, why are we spending money to send kids up there just willy nilly?" you know? "they're not learning anything" (personal communication, March 26, 2013)

The state science standards were often mentioned in the written materials associated with Science Camp. Indeed, the first goal listed in Science Camp's posted goals is that "students will attain knowledge of select biological and earth science concepts as defined in

the [state's[27]] Science Content Standards.[28]" The standards (see Appendix B) that Science Camp incorporated into the curriculum fell under the categories of "earth science," "life science," and "investigation and experimentation.[29]"

The classroom teachers I talked to thought that the science concepts covered at Science Camp were mostly a review for their students. Gloria thought most of the concepts introduced at Science Camp had been discussed in class in fourth and fifth grade, "so it's [the curriculum] nothing that's like brand new or they've [students] never heard of it" (personal communication, June 11, 2013).

However, according to Science Camp staff, students' familiarity with the science concepts covered by the curriculum widely varied. According to the staff members, some schools seemed to have had more exposure to science than others. In fact, in many of my interviews with Science Camp staff members there was mention that for some schools their Science Camp experience was the only science that students would receive all year. In a discussion with Blake, the program manager, about the participants of Science Camp, the conversation shifted to discussing students' prior science knowledge and then to the amount of science students were receiving in schools.

> I remember talking to a bunch of teachers one week and it was about this time of year and "so how much science" they were saying "we're really glad (inaudible, possibly: "we're here") cuz it really helps them on the science test," the state standards test and uh I said, "well how much science do they get?" and they say "this is it, this is all the science they get because" and they were testing the next week and most schools don't want to come the week before testing and they said, "oh we wanna come" because the teachers are so handcuffed with uh language whatever, and math I think, whatever they're gonna get scored on. Science, music, art, um, they just don't get to it, it's not their fault. (personal communication, April 1, 2013)

[27] State's name redacted
[28] retrieved from Science Camp's "Coordinator's Guide"
[29] retrieved from Science Camp's "Teacher's Guide"

My interview with Sandra supported Blake's recounting of his discussions with teachers about the amount of science presented in school.

> Terrill: So how does, so you're telling, so tell me a little bit about your science curriculum this year?
> Sandra: This year, well we don't really, you know our science unfortunately is taught on a superficial level, we get it across like, we did volcanoes uh but and I did energy cuz we switch so I taught some of it and so what Gloria taught was different so we taught, I taught half science a little bit of science and more life skills and she taught more science and less life skills. So my units were on energy and motion and um light energy, wave energy, and then solar energy so we talked about that kind of stuff and then we talked about raw materials so that was kind of nice because the recycling, reduce, recycle they emphasize that a ton. And that's useful for them today. I think some of it they probably took back home or were familiar with just from doing it at their own house, so that's kind of what my…
>
> Terrill: What do you mean when you said "superficial"?
> Sandra: We just don't dive in to, unfortunately we have not as long in the afternoon to teach science cuz by the time we finish with the core curriculum of writing, reading, and math we have social studies still, we have science, we have this life skills, AND we've got P.E. [physical education] all tied in together in a whole hour and a half after lunch. So it doesn't get in depth like we should and like they will in seventh grade when it's a fixed hour into there [the schedule] and that's all that teacher does is get to teach the sciences for an hour, no outside, so we cover it we just don't I don't feel like we can get into depth on it because there's so much to cover in the afternoon. (personal communication, June 11, 2013)

There was a sense that science had been pushed out of the school curriculum in order to create more time for the "core curriculum." There was also a sense that Science Camp was the solution to this problem of reduced in-school curricular time being allotted to science[30][31].

"Experiential"

Other terms that came up frequently when I discussed the curriculum with staff members were the curricular descriptors of "hands-on" or "experiential." Science Camp

[30] This supports Wills' (2007) conclusion that subjects other than language arts and mathematics were being "squeezed" out of the elementary curriculum in the No Child Left Behind era.
[31] See Appendix C for a complete list of quotes regarding this subject

aimed to be a place where students could see and touch the scientific concepts that were presented to them. The coordinator's guide said that Science Camp "encourages children to investigate the natural environment using a hands-on approach." The teacher's guide noted that the state standards "covered [at Science Camp] reflect concepts that are best taught outdoors."

According to my informants, experiencing the outdoors at Science Camp had the benefits of helping students remember the concepts they've learned, making science less abstract, and making nature more real to students. Experiential learning was also said to be an age-appropriate pedagogical approach for Science Camp's students. Becca, in discussing students' perceptions of their connection (a word she brought up often) to the outdoors, mentioned how making contact with the outdoors made it more real to students.

> …so when they [students] come up here [Science Camp], um, it's funny because they, they don't necessarily always know how to express it, but you can see them picking up sticks, it's like every child wants to hold a stick for some reason but I think it's because it's something they just don't experience on a daily routine, in their daily life and so um, just that that physical touch when they come out here and it becomes more real to them… (personal communication, May 15, 2013)

Eliot mentioned in response to a question about the understandings of science that students brought with them to Science Camp, that the use of human observations in the curriculum made it less abstract and was a good age-appropriate approach for Science Camp.

> Now I do feel that the kind of naturalist science focus of the program tends to make it [Science Camp's job of teaching science] a little easier, I mean we're using fundamental like human observations so you're using your senses, it's not like some abstract uh physics theory "what do you see?" "what do you smell?" "what do you taste?" like using your senses and I think that really goes well with this particular age group cuz they are so stimulated by those things at this point.
> (personal communication, May 16, 2013)

Staff members told me that the more familiar students were with the science concepts when they arrived at Science Camp, the more experiential their learning experience could be. When I asked David about what knowledge students already came with to Science Camp with he explained:

> … and we have some schools, like these schools right here, this week, they're prepared, they know what ecosystems are, they know what a lot of these big words are already, so it kind of makes the teaching of them more hands-on and less lecture.
> (personal communication, March 27, 2013)

According to the David, students' experience of the curriculum seemed to shift along an invisible continuum with lecture-based instruction on one end to hands-on instruction on the other. David's statement indicated that the "lecture" (or covering the science standards based curriculum) was the main priority of Science Camp and that hands-on experiences were of secondary importance. Students' prior science knowledge dictated, to some extent, their experience at Science Camp. Eliot, in describing the curriculum, also mentioned how the different levels of student preparation affected instruction.

> Uh, I would actually say that there's a, a very wide range of what students come prepared with when they arrive here at our camp, um and I think that depends on a lot of the perspectives of the teachers and what they expect of us as [a science camp]. We've had some schools that are uh front-loaded to the max, they already, they pretty much already know all this stuff this is just an opportunity for kids to get a hands-on understanding of it, and, so those kids I feel are just enhanced by the experience. Other kids, however, their teachers don't teach them a thing about science up until the week that they go to [Science Camp] and their perspective tends to be "well you'll learn all the science up at [Science Camp]" and so that really puts a heavier burden on us to really get this information across, uh, which makes it a little bit more of a struggle cuz there's a lot of vocabulary…
> (personal communication, May 16, 2013)

In fact, a large section of the Teacher's Guide to Science Camp encouraged teachers to prepare their students academically for their Science Camp experience. "Academic preparation will reinforce the idea that the students are attending a school. It will also allow

[Science Camp] staff to build upon the students' knowledge and enrich their experience.[32]" Once again, the implication might be here that unprepared students may receive less enriching experiences than prepared students. The guide also included vocabulary and definitions for words like "adaptation," "evergreen," "metamorphic rock," and "nocturnal" for the teachers. It suggested that teachers and students create rap songs with the new vocabulary or write a creative story incorporating the vocabulary words along with a few other ideas for activities. In addition to vocabulary, the guide included background information about the local mountain ecosystems, ecological processes (food chain, water cycle), geology, common trees, and local wildlife. The vocabulary and background information were designed to prepare teachers and students for the core of Science Camp's curriculum that occurred on the academic trails.

From the perspective of my informants, the experiential nature of the Science Camp educational experience was one of the ways that Science Camp and school differed. It was important for my informants to draw this distinction for me in our conversations. Eliot, in explaining his path towards becoming an instructor at Science Camp, said:

> I just enjoy teaching. And the reason I'm at this program primarily is because of its combination outdoor learning and also its emphasis on uh experiential hands-on learning, that's just a very different style of teaching than you find in a classroom, teaching classroom setting, um so I really, really value that.
>
> (personal communication, May 16, 2013)

In a question I posed to Michelle, the assistant program manager, about the main things that happened at Science Camp she also mentioned how the hands-on curriculum distinguished Science Camp from the classroom:

[32] retrieved from Science Camp's "Teacher Guide"

> Well, I think the main thing is, one, being outdoors like you're learning the sciences and it's one thing to be in the classroom talking about yeah, geology and this, it's another to actually be out there, we're touching a rock, we're hammering it, we're hugging the trees, we're looking at it and just being outdoors.
>
> (personal communication, March 26, 2013)

Science Camp teaching was not intended to be school teaching or learning from a textbook. It was intended to be learning "by observing and actually seeing things and doing experiments out here [Science Camp] to where we're not just reading it from a book" (personal communication, May 15, 2013). Eliot referred to Science Camp's curriculum as "naturalist science." When I asked him to explain what he meant by that term he offered the following:

> Uh, well being a science school program and I feel that's kind of the, the theme of the sixth grade science standards are these things, so the ecosystems and the geology, things that can be experienced hands-on rather than um uh rather than on a like it has to be in a laboratory….(interruption in interview) Yeah, yeah so what naturalist science means to me, so naturalist science means that it's relating to uh the natural world, so the ecology, geology, wildlife biology, uh things that … (interruption by Eliot's radio). So things that can be like experienced just by walking outside, it's things that are observable in daily life, whether you're in the woods, whether you're in the city these things pretty much hold constant - what kind of soil are you walking on? what kind of animals are around? what kind of trees? and is, like, there water present? So being able to identify all these kinds of elements of nature.
>
> (personal communication, May 16, 2013)

The enacted curriculum extended several opportunities for students to have these interactions with the outdoors. Specifically, Science Camp's curriculum utilized the human senses to engage students in a sensory learning experience. The science curriculum presented at Science Camp was typically mediated through the five human senses: touch, smell, hearing, sight, and taste. Eliot described Science Camp's sensory approach as an age-appropriate and engaging way of presenting material to students. He also indicated that he

believed that the naturalist science focus of the program was a more concrete and observable branch of science for students to be introduced to.

> Now I do feel that the kind of naturalist science focus of the program tends to make it [Science Camp's job of teaching science] a little easier, I mean we're using fundamental like human observations so you're using your senses, it's not like some abstract uh physics theory "what do you see?" "what do you smell?" "what do you taste?" like using your senses and I think that really goes well with this particular age group cuz they are so stimulated by those things at this point.
>
> (personal communication, May 16, 2013)

The definition of science given to students during their introductory "discovery" hike with their cabin leader was "an orderly branch of knowledge of the physical world gained through observation" (field notes, March 4, 2013). During this hike the students reviewed the five human senses (sight, sound, touch, smell, and taste) and applied them to their new outdoor setting at Science Camp. On one of the discovery hikes that I observed, students mentioned that they saw "snow," "trees," "moss," "water," "dirt," and "logs" (field notes, March 4, 2013). The instructor asked them "what don't you see?" and the students responded with "cars," "buildings," and "people." Students heard the "creek," "rushing water," and "people's feet on the dirt" but didn't hear "traffic." During this hike, students also had the opportunity to taste the citrusy, bitter needles of the white fir tree.

This sensory exploration of the outdoors was echoed again in the wildlife biology trail. I followed the lead instructor, Krista, with her group on the wildlife biology trail. During the wildlife biology hike, Krista asked her students to keep their five senses open for signs of animals while they're out on the trail. Then she quickly retorted, "well, maybe not taste. I don't want you tasting animals." She reviewed some of the senses and asked students "what might you smell?" One student replied "their stink." Krista, in response, asked "like what?" The student replied "waste." Krista redefined the student's answer with the more scientific

term of "scat." Another student said that they might smell an animal's "leftover lunch." Once again, Krista responded with the more scientific term and said, "okay, a carcass." Another student said, "rabbit dung." Krista chuckled and replied, "okay, I've never smelled that before, you'd have to get pretty close." Krista seemed to be trying to lead the students to the answer of a skunk but the scatological theme of the pre-hike bathroom questions continued to dominate students' thoughts. She moved on. "Hearing. What can we hear?" Students answered with "leaves rustling," "chirps," "growling," "cries," "snakes hissing." Next Krista asked about the sense of "touch" but then quickly said, "let's keep our hands to ourselves" and continued on with her discussion (this was interesting to me because later in the hike the students did get to *touch* a wild bird during the bird feeding session). Krista asked "seeing?" A student responded with "paws" and once again Krista corrected with "tracks." Other student answers included the "animal itself," "shelter," "territory marks or scratches," and once again… "scat." After the student mentioned scat, another students said "no thanks" and Krista tied up the whole discussion about the importance of students keeping their senses open by replying, "there's a good reason to keep your eyes open; because, otherwise you might step in it." During the rest of this hike, we observed much less scat than students predicted.

The night hike was another time when students were reminded of using their human senses for exploring the outside world. One night we heard a frog and followed its sound to the creek but could not find it even with the whole group using flashlights to hunt for it. During the night hike, the focus was on animal and human senses and adaptations for nocturnal living. Students reviewed the difference between diurnal (active during the day), nocturnal (active during the night), and crepuscular (active during dusk) animals.

Students learned about night vision by doing an experiment with their own pupils. Once it had been dark outside for a while, students were instructed to put one hand over one of their eyes (preserving the dilated pupil) and then to use their other eye to stare at a flashlight illuminated spot on the ground (constricting the pupil). The flashlight was then turned off and the trail returned to darkness. Students alternated looking out of each of their eyes and could see that their preserved night vision (dilated pupil) allowed them to see in the dark, but their eye with the constricted pupil made it very difficult to see in the dark. Students also conducted an experiment with smell during this hike. I will allow Krista to describe this part of the night hike in her words rather than my own:

> we do one [experiment] with scent so we have the kids smell different scent and then they wet their nose like a dog would, like a canine, cuz with a wet nose it's supposed to hold those scent molecules, so when they smell it again a lot of them feel like they can smell it a little bit stronger. So, then they can you know see like "oh dogs are good for search and rescue cuz they can keep that scent with the wet nose" so it's, that's pretty cool. (personal communication, May 15, 2013)

Using the human senses to explore an environment allowed students to have a very concrete understanding of the world around them. It was Science Camp's purpose to create experiences like this for students. Gloria, a classroom teacher, mentioned the benefits of the hands-on style of Science Camp for all students in a question I posed to her about the experiences that were memorable for the students and again in a question about the school's science curriculum.

> Um, in terms of the curriculum and the learning experience, I think the kids definitely um benefit from the hands-on experience to actually go see snow, touch, or like not just through like papers and books, you know and umm I think as a teacher you just kind of enjoy seeing that it's just kind of a different environment and so um, you know like the hikes and the presentations and then even the food. I think the kids definitely learn um, even for the kids that are low performing they you know get to see and learn things you know it's, I think it's a little bit easier than just reading off a page or book, you know, they hear about it and see it, so um I

> think you know it's kind of like what they've seen on in in a book now they can actually see out there, you know, in real life, so...
>
> (personal communication, June 11, 2013)

Gloria indicated that the hands-on experience that was available to students at Science Camp was a departure from the "papers and books" of school. She also noted that Science Camp was a "different environment" for students. Gloria saw Science Camp as a new environment for students, a place that provided a different instructional style, and an experience that even exposed students to different food. It is important to note that for Gloria the outdoors exists at Science Camp "in real life," but only in a "papers and books" at school.

Teachable moments were another way that Science Camp viewed its curriculum as being experiential. There were times at Science Camp when something out of the ordinary was observed and it gave instructors and students a unique opportunity to discuss something that they might not have otherwise. The teachable moment was learning based on a shared experience; it was experiential. David, in describing the overall curriculum of Science Camp, mentioned that the curriculum is "hands-on," "kinesthetic," and rife with "teachable moments." I asked him to tell me what some of the special teachable moments might be and he replied:

> Well for example last night with the bear. The kids don't get to see things like that. But, without even touching any of the science standards you're able to bring a problem of humanity into nature and open a discussion about it. You know? "Why is the bear eating out of the trash can instead of blackberries and acorns like he's supposed to be eating?" Well, it just kind of opens up discussions and conversations like that. The teachable moments around here, we have a science standard and we have a list and we have an outline and this is what you're supposed to teach on the trail but the kids' excitement can almost guide the trail. "Look a squirrel!" Well, that just opened the window for squirrels and mammals and now all of the sudden we're talking about energy flow and it works right into your trail card so instead of lecturing the kids you get to use a technique that's not used enough in schools, it's not, you're not able to use it enough in schools, but here there's so much exciting things going on. Teachable moments everywhere, every time and it's amazing what it

> is, not just the science but the social aspect. When these kids are talking to each other we are involved with that. And, and not on purpose like we're eavesdropping necessarily but kind of on purpose, you know we're there to make sure everything's moving smooth and going but you have a teachable moment with these conversations, you know just yesterday a couple of kids made fun of a girl for her size and ooh that's a teachable moment. We're able to take those kids in and talk about how you deal with other people, how you talk to other children….And none of it's on paper, none of it's "you have to do this," it's all stuff that comes up naturally. And I guess that's a teachable moment for me. It comes up naturally and you get to use it. They're everywhere. (personal communication, March 27, 2013)

The teachable moment was one way that my informants felt that they connected students with the outdoors. During my interview with Eliot, I asked him my usual final open-ended question, "what else should I know about?" and he pressed me to be more specific. After telling him that I was interested in the curricular representation of the human-nature relationship, he said the following:

> Okay, absolutely. Um, I absolutely believe that that is both in academic practice and in kind of the teachable moments, the what was the word for it? the um behind-the-scenes lessons, the unseen learning, that is absolutely kind of the heart of what we're trying to get across, cuz you can't it's hard to feel a connection with something if you don't understand it and science is um our most effective way of having them understand it …
>
> Terrill: Understand the connection?
> Yeah understand nature and in understanding nature you develop this connection, because just experiencing things, interacting with things between like us and um tasting the plant or smashing the rock or holding the bird, all of these things are generative of that kind of connection and it is nature and it's something that we do through our stories uh in the nonacademic um messages that we're putting out or actively trying to convey. Above uh like some people go off on tangents about their kind of what is it uh ecoactivism, which I don't I don't necessarily approve of or disapprove of, but my personal emphasis is exactly on that point of the the use of science to develop a personal connection with nature. So I think our… the aims and means and ways that we utilize in this program are absolutely in line with that goal.
> (personal communication, May 16, 2013)

Eliot explained that he felt that science and scientific teaching and learning was the "most effective" way to help students understand nature. He also mentioned that the

students developed a "connection" to nature through experiencing and interacting with the outdoors. He touted several of the key experiential, hands-on moments (hammering rocks, holding the bird, and tasting fir needles) from the formal curriculum as exempla of how students generated a connection to nature while they were at Science Camp as well as some of the "nonacademic messages" that Science Camp conveyed.

Trails

All school groups participated in the three main trails of Science Camp despite the length of their stay at Science Camp. If schools attended for the shortened four-day experience, two of the academic trails took place on one day versus the usual one per day routine. I note this because it indicates the importance of these trails. These trails were the core of curriculum. These trails were where the science standards are being addressed. They were where the official curriculum was enacted.

The trails were called "wildlife biology," "ecology," and "geology." They were led by instructors and classroom teachers. Classroom teachers were given a lesson plan and trained on the trail they were to teach ahead of time. The lesson plans were correlated to the state's standards and students were quizzed by other staff members after they had returned from each trail to ensure that they had learned the pertinent concepts (and also probably to keep instructors accountable for teaching the lesson plan).

Hiking on the trails was a combination of going and stopping. Often, the group would sit down and talk about a concept or conduct an experiment. Sometimes the topics of discussion related to the location of the stop, but often the stops seemed chosen not because the location offered a specific example of a concept but because sufficient time had passed since the last stop. Generally, there were about seven to eight students per instructor. There

were often four or five groups going on the same trail at one time, so instructors took different paths or used different starting points to avoid traffic jams at key locations. For instance, not all of the groups could conduct the bird-feeding of the wildlife biology trail at the same time. Instructors carried backpacks with visual aids and other teaching tools as well as a radio and first aid waist-pack. Students carried water bottles and one student usually volunteered to carry the canteen of extra water. What follows is a description of the official curriculum of each of these three trails.

Geology

This hike was the steepest. At the end of the hike, students reached the top of a peak and got to hammer rocks into smaller pieces to see what was inside. On the way to the peak, the instructor discussed the difference between renewable and non-renewable resources with the students. There was also a discussion of how everyday products like electronics and plastics are made from natural resources. Another discussion that happened on this trail was of the layers of the earth (which from my observations students seemed to be already familiar with.) Students discussed plate tectonics and learned that they crossed over the boundary of one plate into another when they traveled to Science Camp. Students were asked if they had felt earthquakes before (most usually had). They talked about the Richter scale and earthquake intensity. They discussed the mountain building processes: folding, faulting, and volcanism. Students gathered a rock that they liked along the trail and carried it to the rock hammering area. Students were reminded of the three rock classifications: igneous, metamorphic, and sedimentary. After a safety discussion, students gathered around large boulders at the top of a peak and used rock hammers to break their rocks. Instructors moved around and helped students identify minerals like mica, feldspar, and quartz in their

rock sample. This component of the lesson was only scheduled to take twenty minutes but it seemed like instructors often spent much longer there with their group.

In addition, fifth grade students reviewed the concept of a watershed and the effects of pollutants on the water cycle. They played a water cycle game where they each represented a water droplet moving through the water cycle. The game concluded with most of them getting stuck in the oceans which represent 97% of the Earth's water. Students discussed weathering and erosion. One instructor pointed out the effect that ice had on breaking open a rock we saw. The lesson plan included an activity where students are supposed to use their arm as a timeline to estimate when events like dinosaurs and humans occurred but I didn't observe any instructors discussing geologic time with students. At the end of trail, students were asked how geology affected our everyday life, if anything they're wearing contained a mineral product, and if students could have traveled up the mountain to Science Camp without the study of geology (think: pavement, oil, gasoline). The student objectives as listed in the lesson plan for this trail were as follows:

> Students will learn:
> • Geology is the study of the earth, its structure, its history and the forces that affect it
> • The structure and composition of the earth
> • How the earth's appearance has changed over time
> • Theory of plate tectonics
> • The processes by which mountains are made
> • How weathering and erosion change the land
> • How to classify different types of rocks and identify the minerals that make up the rocks
> • How geology affects us in everyday life [33]

[33] retrieved from Science Camp's "Geology" trail guide

Ecology

The ecology trail focused on ecosystems, classifying local trees, tree structure, photosynthesis, fire ecology, and the scientific method. The trail used for this hike was a loop that took students through some wooded copses, an area of fire scarred trees, the "gorilla face" rock structure, and by a local stream. Students moved through riparian and mixed conifer ecosystems on this trail.

The hike began with an explanation of the term "ecology." The term "L.A.W.S." was reiterated on this trail but had already been introduced to students on their initial discovery hike. "L.A.W.S." is an acronym for land, air, water, sunlight. These represented the non-living components of an ecosystem. At a stop on the trail, students were split into small groups and given a laminated picture of an area that represents an ecosystem. Pictures included a forest scene, an underwater scene, a desert, and a mountainous arctic scene. They were asked to identify the "L.A.W.S." of each of the represented ecosystems. The fluctuation of non-living resources in different areas of the world were explained as having created different ecosystems.

The trail continued with a review of the scientific method. One of the instructors used the mnemonic "quick horses eat Oreo cookies" to help students remember the different steps of the scientific method: question, hypothesis, experiment, observation, and conclusion. Students conducted an experiment to compare and contrast each of the two different ecosystems. After breaking into groups, students looked at the tree canopy through densitometers (short tubes) and checked the ambient temperature. As students moved to the next ecosystem area, students made observations about the change in sunlight and different kinds of shrubs and trees. Students used laminated tree keys to identify trees in the area.

At another stop along the path, instructors pointed out fire scar marks on the base of a tree. Fires that were caused by lightning strikes swept through this area in 2007. Instructors and students discussed the positive and negative effects of fire and the instructors assured students that fire in this forest is a natural part of the ecosystem. At another stop, instructors asked students what the process is called whereby plants make food for themselves. A brief discussion of photosynthesis ensued. Instructors asked students what we, as humans, gained from plants. Oxygen and food were common answers.

Further along the trail, students stopped by a tree stump and discussed the specialized structures that trees had to transport water and food. Then they did the "tree trunk jamboree" and students became different parts of the tree (cambium, xylem, branches, etc.). Each different tree part representative had their own specific noise. For example, the student that represented the branches said, "reach for the sun." After all of the students were organized, the instructor pointed to each of the students and they made their noise. This reminded me much of the "Do Re Mi" scene in "The Sound of Music."

The student objectives as listed in the lesson plan for this trail are as follows:

> Students will learn:
> • Photosynthesis and the sun as the major energy source for the Earth's surface
> • Introduce the Scientific Method
> • Review definition of an ecosystem
> • Identify different ecosystems/plant communities
> • Use scientific instruments to make observations
> • Characteristics of trees and how to identify trees[34]

[34] retrieved from Science Camp's "Ecology" trail guide

Wildlife Biology

The wildlife biology trail included a stop at Science Camp's "museum," a creek, and a thinly wooded area where students conducted bird-feeding. At the beginning of the hike, students received a pair of binoculars and a mini-lesson on how to use them properly and safely. The students and instructors defined the words "wildlife" and "biology." Students received an observation chart and a common bird chart. Students were asked to look for evidence of wildlife (like tracks or scat) as they hike. The instructor carried a pictorial guide to animal tracks in their pack.

After a short walk, students arrived at the "museum," a small dimly lit building filled with pelts, animal skeletons, mounted animal specimens, and several microscope stations. Students and instructors discussed the concept of adaptation here. They examined the location of animals' eyes (forward facing or side facing) on skulls and mounted specimens to make a guess about whether the animal is commonly a predator or preyed upon. They observed the nose or muzzle size and made predictions about the animal's sense of smell. They looked at tooth structure and thought about the animal's diet while reviewing the terms: omnivore, herbivore, and carnivore. Bird beaks and feet were another discussion and example of adaptations. Long thin beaks were said to be adapted to eating insects and sharp and curved beaks were said to be adapted to tearing meat. Students were allowed to touch the pelts of some animals and to look at slides of algae with the microscopes if they wanted.

The next stop after the museum was by the creek. Here students discussed how dead things decomposed. Instructors used the mnemonic "F.B.I." to help students remember that fungus, bacteria, and insects were decomposers. Students then received a small clear box

with a lid that had a magnifying component and went on a bug hunt. Students looked at their caught insects and then released them.

Further along in the trail, students discussed the four things animals needed to survive: food, water, shelter, and space. The instructor demonstrated hand gestures for each of these things and then everyone played a game called "Oh Deer[35]." In the game, some students represented one of these four resources and others represented the deer in need of these resources. The game represented the ecological concept of natural population fluctuation. As resources were abundant, the population of animals dependent on that resource increased. Then the population got too large and there were no longer enough resources for the population to maintain its numbers. After the game, students were introduced to the concept of "carrying capacity[36]" and discussed what factors might limit an area's carrying capacity (drought, fire, flood, seasons). A discussion of what an animal might do if its area no longer has the resources it needs took place. Students were given the acronym "M.A.D." to represent the options resource-deficient animals had: move, adapt, or die. Students also discussed the ways that animals shared resources. Some animals were said to operate at different times of the day, others were said to spend most of their time in different parts of the ecosystem (some in trees others on the ground).

The next stop along the hike was the bird-feeding area. The area was marked by a plywood sign tacked to a tree with the words "bird-feeding" spray-painted in orange on it. Students were supposed to have a discussion about the difference between resident and migratory birds and note the behaviors of the birds (I never witnessed this discussion taking

[35] This is a very popular game used in many environmental education programs that comes from the Project Wild curricular guide.
[36] The largest population an area can support at any given time

place before the bird-feeding activity; however, the guide suggested that instructors cover this material). For this activity, students spread out under the trees in this area with bird seed in their palms. They raised their hand up and waited quietly. Slowly, mountain chickadees fluttered down and quickly grabbed a seed (they prefer the sunflower seeds) from the children's hands. Almost all children got an opportunity to have a bird eat out of their hand. This activity often lasted longer than it was scheduled for.

The next stop after bird-feeding dealt with the energy flow of the nutrient cycle. The instructor displayed a visual aid that showed the sun and the earth with arrows indicating energy flow. Energy traveled from the sun into the plants. Then, animals ate the plants for energy. The instructor explained that only 10% of energy taken in by an organism was passed along to the next organism in the food chain. Students discussed the different roles organisms had in an ecosystem. There were producers, consumers, and decomposers. Students played the "classify" game and identified different pictures of organisms and animals as producers, consumers, or decomposers.

At the end of the hike, students reviewed their observation checklist and noted how many different species they saw, what evidence they noted, which species were numerous, and what factors might have influenced what different groups observed on the hike.

The student objectives as listed in the lesson plan for this trail were as follows:

> Students will learn:
> - To identify and classify local wildlife
> - Techniques for observing wildlife
> - Energy is transferred through a food chain
> - That nutrients are recycled and promote the growth of living things [37]

[37] retrieved from Science Camp's "Wildlife Biology" trail guide

Other Instructional Times

The three trails discussed at length above comprised what I considered to be the core of the official curriculum. However, there were many other instructional times at Science Camp. All students participated in an introductory hike, a night hike, and an astronomy session. The introductory hike was short and covered a few concepts from each of the three main trails. The night hike focused on animal and human senses and adaptations for nocturnal living. The astronomy session started in the sanctuary with a PowerPoint presentation that situated Earth as one unique planet in just one of the many galaxies in space. Students had the opportunity to examine the night sky through telescopes after the presentation.

Students also participated in one science session during their stay at Science Camp. Students chose which sessions they were most interested in attending and usually got one of their choices. Science sessions differed greatly from one another. In one session, students learned about surviving outdoors on your own. In another, they did arts and crafts with natural materials found outside. Another session explored the properties of water with simple experiments. On another day, students also chose an activity hike. These hikes differed from the academic hikes in that there was no set curriculum for the hike. The hike was more walking than stopping which differed from the official trails. Some hikes were strenuous and ended on high scenic overlooks and others were less strenuous and explored new areas around Science Camp. Schools attending Science Camp for a shorter period typically did not do a science session or an activity hike.

Conclusion

The official curriculum of Science Camp covered ecological, biological, and geological concepts at the elementary school level. Some students were given a pre-test at the beginning of their stay and a post-test at the end of their stay. Thirteen out of fifteen questions on this quiz related directly to the three main trails. The wildlife biology, ecology, and geology hike represented the official curriculum of Science Camp.

The curriculum of Science Camp was a response to the perceived problems of students' lack of connection with the outdoors and lack of exposure to science in school. Science Camp worked to define itself as a school but also to differentiate itself from school. The experiential style of curricular delivery as defined by the staff members was a way that Science Camp believed itself to be different from public school. However, Science Camp was also committed to presenting curriculum that was aligned to the state's science standards. Connecting students with the outdoor world through outdoor, science-oriented experiences was a major goal of Science Camp.

CHAPTER FIVE – DISTANCING NATURE AT SCIENCE CAMP

Introduction

Science Camp was a time of purposeful definition of students' understandings of their relationship to the out-of-doors. Science Camp crafted a memorable experience for students with an aim of re-creating their conceptions of "nature" and the proper human-nature relationship. Science Camp hoped to create a lasting positive connection between students and the out-of-doors. The Science Camp experience, the curriculum in action and on paper, was designed in response to students' perceived aforementioned deficits in outdoor experiences. The experiential, sensory, hands-on aspects of the curriculum were designed in response to students' perceived lack of connection with the outdoors. These characteristics of the experience were designed to connect students with the outdoors. However, in this chapter I will argue that Science Camp's enacted curriculum unintentionally positioned students as separate from nature and nature as separate from students' everyday lives.

> The representation of the human-outdoor relationship that Science Camp offered to students could best be summed up with an analogy to vacationing. When people are vacationing they are tourists of a place and they develop a specific relationship to that place. That relationship of tourist to place is categorically different than that of a local. Tourists interact with a place in a different way than locals do. They vacation for pleasure and are perhaps experiencing new things, trying new foods, meeting new people, experiencing a new culture, and taking in new scenery during their travels. Tourists are rarely engaged in the everyday nuisances of home life. Rather, tourists are geared up to do something fun. Most importantly, tourists are temporary visitors that have left their own "real world" for a short vacation and are destined to return to their "real world." They may return with new understandings of the place they visited and of their own place in the larger world.

Science Camp's curriculum offered a tourist-like understanding of the human-outdoor relationship in several ways. The location and setting of the site itself in reference to students' homes positioned Science Camp as a vacation destination. The addition and emphasis on fun in the curriculum also added to a tourist-like understanding of the human

relationship with the outdoors. The carefully scripted and organized nature of the official curricular trails lent a sort of itinerary-feel to the experience. Aspects of the Science Camp experience placed the outdoors as part of the past giving the experience a heritage tourism feel. Overall, the Science Camp experience was a packaged tour to the outdoors. In what follows, I will examine how the official and enacted curriculum of Science Camp positioned the human in the human-outdoor relationship as a tourist and argue how these vacation-like aspects of the curriculum worked to distance humans – and therefore students - from nature. I will also discuss the significant implications for environmental and outdoor education of positioning students at Science Camp as tourists.

"It Smells Good Up Here" – Vacationing at Science Camp

When students arrived at Science Camp after an hour and a half bus ride their enthusiasm was palpable. Students piled off of the school buses in a buzz of chatter and luggage. I giggled to myself as one student arrived ambitiously wearing a pair of binoculars. Another student held a Sudoku puzzle book in his hand. Several girls stepped off of the bus wearing similar braids in their hair as if they had done each other's hair on the bus. Some of the students brought rolling luggage and duffel bags and others had packed their belongings in black garbage bags closed with personally labeled zip ties. On arrival day, it seemed as if the students were all thinking, "the time has finally arrived, we are finally here!" During one arrival morning, my ears perked up as I listened as one student exclaimed to another upon exiting the school bus, "it smells good up here."

This statement really stood out as evidence of how the location of Science Camp itself, in reference to students' homes, began to position the students (or humans in the human-outdoor relationship) as tourists to the outdoors. The student in this example recognized that they were in a completely different place – they were "here" and not there. This place was "up" and not down. This place "smell[ed] good." This place was *not* like home.

Figure 3. Personal photo of area near Science Camp

Science Camp's location was not just the site of the experience; it was an integral part of the curriculum. Science Camp's curriculum was closely tied to the site's geography, ecology, and wildlife. The students spent the majority of their time outside in their new environment and the official curriculum was conducted outside during hikes. Students and instructors interacted with (to a certain extent) the site itself. The site itself passively conveyed some understandings of what "nature" was and should thusly be considered a part of the enacted curriculum that was offered to students by Science Camp.

During my interview with Becca, she discussed the formation of students' connection with the outdoors while they were at Science Camp. I asked her to describe students' connection with the outdoors and she mentioned the following about students' perceptions of Science Camp's location:

> Okay, hmm. I think from a lot of the students before they come up here it's as if it's something totally separate from where they live, it's a separate, just a different landscape, a different place you go. Just like going to Paris is different, going to the mountains is like a totally separate unrelated concept and location.
>
> (personal communication, May 15, 2013)

Becca indicated that she felt that students viewed Science Camp as totally separate, like Paris, from where they lived. Students arrived looking like tourists getting off of a tour bus. They travelled on buses and packed luggage and went on a vacation to Science Camp. They often journeyed almost two hours by bus to arrive at Science Camp. Students were prepared to be tourists at Science Camp.

During Mike's interview he indicated, in a question concerning which teachers decided to attend Science Camp with their students, that many of the teachers that attended saw their experience (and that of the kids) at Science Camp like a vacation (not school).

> And a lot of teachers show up here and they just think this is like being a vacation. This is like a vacation week for them, up in the mountains, they love coming up here and it's like "yeah we're teaching trails" but they only go out and teach the kids um you know? They're psyched to see the kids outside of the classroom doin' stuff, you know? Like, our staff is like "no snowball fights, kids aren't allowed to throw snowballs at each other" [but the] teachers [tell the students to] "go for it."
>
> (personal communication, March 27, 2013)

Mike's observation made allusion to travel ("up in the mountains"), having fun (throwing snowballs), and the contrast of Science Camp to the regular school day ("outside of the classroom") as reasons for Science Camp feeling like a vacation to teachers. Teachers and students were geared up to be tourists at Science Camp.

Students had traveled to a new and exotic location. Science Camp was the location of students' vacation week and there were many reminders to students that the place where they stepped off of the bus was very different than the place where they had gotten on the bus. Science Camp looked nothing like the students' home communities. The topography was different, the trees were different, and the air was different. Even the weather was often drastically different from students' homes. The following excerpt from my field notes indicated students' unfamiliarity and fascination with the new weather conditions of Science Camp.

> Along the way, we pass through a field that's soggy with melted snow. A couple of the boys are fascinated by the un-cracked patch of ice about a 2 feet long by 1 foot wide. They stomp on it and listen to it crack and say, "it's cool, it's like ice!" Another one of them says something like, "it IS ice!"
>
> (field notes, March 5, 2013)

The change in weather was a physical indication of the fact that students were in a very different place. Many students experienced wintery weather for the first time during their trip. Because students were so unfamiliar with their new place, their cabin leaders instructed students on what kind of clothes they needed to wear each day. The (often drastic) change in weather reinforced the shift in student's location and emphasized students' distance from home.

Students were also reminded of their distance from home during the geology trail. At one point of the trail students looked at a map of the fault lines of the tectonic plates in the United States and noted that on their drive to Science Camp they crossed from one tectonic plate to another. In the students' journals there is a fill-in-the-blank section about plate tectonics. The first two questions asked, "My school is on the _____ Plate" and "[Science Camp] is on the _____Plate." The students were often jokingly told that if

there were a major earthquake their parents could be floating on their own island out to sea while the students remained on their current tectonic plate. This interesting and frightening idea reified the distance between students and home by emphasizing that being on the mountain is very different from being at home.

Even the stories included in Science Camp's storybook promoted the difference between students' homes and Science Camp's location. One of the first stories in the storybook was titled, "The Coin and the Cricket." This was, notably, the only story included in the storybook that was set in the modern world. This story contrasted city life and rural, Native American reservation life. The story's narrator was presumably a modern-day, Anglo man that met and befriended a Navajo Indian man, George, many years prior to the telling of the story. In the short story, George visited the narrator on the West coast and was "terror"[38]ized by the "noise and confusion, the hurry and waste of the large city." One day on an outing in the city, George heard a cricket in the midst of all of the city noise and stopped to find it. Our narrator was surprised George heard the cricket because he would not have heard such a thing. George, in response to the narrator's surprise, flipped a nickel in the air and the noise it made as it landed on the pavement made "every head within twenty feet" turn and listen. In the final lesson of the story, the narrator wrote:

> "And we must not only listen to the noise of commerce, business, traffic, television, and the noise of the city, but let us, my friends, learn to understand the quiet of the night, the dew that settles in the forest, the sun rising over a wilderness, all that our modern lives encourage us to deny.[39]"

[38] Are Native Americans positioned as animals with this quote? This seems to be the way you would discuss a non-rational being's response to a situation. "On George's part, his terror came from the noise and confusion, the hurry and the waste of a large city. Having only seen dirt roads, the freeways and neon-lit expressways were beyond belief…"

[39] retrieved from Science Camp's "Storybook"

In this story the Native American, rural life represents the outdoors. Nature was positioned in opposition to the city. The students that attended Science Camp came from urban areas. This story was another reminder that nature existed here (at Science Camp) and not there (home).

The staff members echoed this theme of separateness between Science Camp and students' homes in their everyday discourse. In my discussions with staff members I often noticed them drawing a distinction between "on the mountain" and "off the mountain." In a question I posed to Mike about whether he noticed a difference in the level of student science preparedness between schools, he commented that he had difficulty distinguishing between places that were "off the mountain."

> Mike: Nooo, I don't know, that's a good question, I don't know if that's one I could answer here per se, part of it is cuz to me like I still think of [southern part of the state] as just being like that out there, but you know, I don't really, like, [Cypress] you know, I don't know where a lot of places are, I just know
>
> Terrill: it's over there...
> Mike: Yeah
>
> Terrill: it's off the mountain
> Mike: Yeah, so...
>
> (personal communication, March 27, 2013)

During my interview, my understanding from Mike's comment and his body language was that he was unable and (a bit unwilling) to distinguish individual towns among the urban sprawl[40] that existed off the mountain.

The references to Science Camp being "up the mountain" were endless and happened incidentally. During a fun get-to-know-you exercise prior to a geology hike, Lee (the

[40] A place he later describes as lacking in an "open, starry sky" because "you know, the light pollution down below" (personal communication, March 27, 2103)

instructor) asked students to introduce themselves to one another by saying their name and also sharing their favorite type of body of water. Lee gave an example to the students. He said that since he was up here in the mountains, he would say that he liked a good rushing river. During the initial introductory to Science Camp, one of the PowerPoint slides asked students, "don't have fancy mountain gear? ask us!" (field notes, March 4, 2013). This indicated that specialized clothes were needed for the "mountain." This on-the-mountain vs. off-the-mountain rhetoric, students' travel distance to Science Camp, and the change in weather and topography drew a stark distinction between Science Camp and where students lived.

Science Camp's physical distance from the students' homes was an integral part of the residential camp experience. Drawing a distinction between Science Camp's location and where the students typically lived created a sense of "here" versus "there." Separating students from their school and their home for the better part of the week was an aspect of Science Camp that made it much different than just a field trip or a regular day at school.

> Terrill: Um, so do you think it's a valuable that it's a residential program or it could be a day program or ...what do you think the difference is there?
>
> Eliot: I absolutely feel that the value of this program relies very much on its residential nature as opposed to the day program, uh element of [Outdoor Explorations], uh, field trip[s] are awesome I think they're a very, very valuable experience but it, it, it's like going to a movie, you'll be there, you'll get something, you'll get an experience out of it, but as soon as you walk out the door, then that's it. I feel that the duration and the intensity of the experience up here really gives them an opportunity to, I don't know, to manifest a change in themselves not just to learn something cool and then potentially forget it as soon as they walk out the door. It's going to be really difficult to forget this experience because they are here for the period of time that they are and because they're experiencing just like the depth and diversity of things that we uh, we make available to them.
>
> (personal communication, May 16, 2013)

Eliot explained that the length of time that students spend at Science Camp allowed them to have a more immersive and unforgettable experience. The length of time also made the experience feel more like a trip. The length of time students spent at Science Camp coupled with the drastic change locale set the stage for a tourist understanding of the human-environment relationship.

During my observation period, I noted that no schools from local mountain school districts were scheduled to visit Science Camp. This made me wonder if going to a science camp in your own backyard would somehow not really count. Would the experience be less valuable if it was not a "trip" to get there or if you were already familiar with the location? Must the experience take place in a different location than one's home and one's regular life?

There were other aspects of the Science Camp experience that encouraged a vacation or tourist like understanding of the human-environment relationship. In addition to the duration of the trip and the new location of the trip, students were exposed to a new culture – a camp culture. Eliot explained that part of the importance of the residential aspect of Science Camp was that when students "are away from home they get to see a different lifestyle…" (personal communication, May 16, 2013). Something as simple as the food served to students at Science Camp represented an introduction to the new culture at Science Camp. In a question to the Gloria, a classroom teacher, about students' experiences she iterated the difference between Science Camp and many students' home cultures.

> "…and then even the food, like they've never, some of them have never eaten some of the stuff that they give, you know, and they've only grown up with you know certain foods that just their family eats so then just a lot of, a lot of stuff that I think they're exposed to, they learn a lot about you know outside of their bubble and um, aside from science…" (personal communication, June 11, 2013)

Science Camp represented new ways of doing things that were different from what students may be used to at home. Science Camp was a vacation from the everyday for students.

Students, parents, and school staff members were prepped for this new experience with a series of guides. There were parent brochures and teacher and coordinator guides that were distributed ahead of the Science Camp experience. They provided a glimpse into what life might be like at Science Camp.

> Our students also learn new songs and games, participate in line and folk dances, and create and perform science or nature-oriented skits at skit night. Learning responsibility and cooperation through group living and practicing courtesy and table manners at meals are some of the ways students develop their social skills.
>
> Living in the mountains allows the students to develop an awareness and appreciation of the environment. They learn that the choices they make can have a positive effect on their world. Students are asked to limit their impact on trails, respect wildlife, take short showers, and recycle. Students go home knowing more about the natural world and themselves.[41]

The guide indicated to parents that students would be living as a group, learning new table manners, and courtesy skills. They would participate in folk dancing and skits. Some of these aspects of living may or may not have matched up with students' home culture, but I imagine that it is safe to say that no student's home culture was a complete match with that of the camp.

Because of this, students required an introduction to their new place. One of the first things that students did upon arrival was to attend an introductory session in the sanctuary. One of the main purposes of the assembly was to introduce students to the rules and goals of Science Camp. The staff used a PowerPoint presentation to conduct the assembly. The staff told students that during their week at Science Camp they would "learn about nature in

[41] retrieved from Science Camp's "Information for Parents" brochure

nature," "play games, sing songs," "eat delicious food," and "have lots of fun and make new friends." The next slides discussed safety, respecting nature, conserving water and energy, respecting others, appropriate and inappropriate times for students to use their cameras, taking care of themselves, and appropriate clothing. Students were instructed to take three minute showers, clean up their bathrooms, close doors, use the bathrooms before activities, and to wear their hats facing forward. During my first observation of this session, I wrote down "so many rules!" in my field notes (March 4, 2013).

There were even new rules and expectations for the dining hall. Staff emphasized to students that the dining hall was not a school cafeteria. Rather, it was a "formal dining hall." Students were expected to enter the dining hall silently in two, single-file lines. They were randomly assigned to tables with numbered poker chips. Students were also assigned roles. One student served as a "hopper" and set the table before the meal was served. There were rules for getting more food, rules for throwing your trash away, and rules for the minimum amount of water to drink. There were even guidelines for how to interact with one another at the dining table. Many of the meals had discussion topics that followed a weekly theme. For instance, one week's theme was "science fiction" and one of the meal questions was "do you think life can exist on the moon?" An adult "guest" sat at each table and was expected to help facilitate group discussion at the table as well as monitor students' behavior. The dining room rules and its food represented Science Camp's new culture to students.

Another important aspect of Science Camp's culture was its eschewal of media. As outlined previously, there was a definite understanding among staff that in the good ol' days, kids played outside. That students were more disconnected from the outdoors than ever before percolated throughout my conversations with staff members. Media, like television,

phones, and video games, were often discussed as the barrier that separated students and outdoor experiences. Students were expected to leave the modern day world behind when they came to camp. They were on a vacation from regular life and reminders of the real world were unwelcome.

In a discussion with Michelle about the residential nature of the program, she described Science Camp as a place that was devoid of electronic distractions.

> I mean four days [length of stay at Science Camp] is pretty short but if they [students] can be here for the full five days, I think the impact is so much stronger. Cuz you know, it wears off. They can come up for a day, oh it's a day trip and they go back home and then they forget because they're focused on tv, you know, the radio, video games, and they and it's very easily [sic] to just whatever they've learned that day to shove it out. Here, there is no tv. There is…you're not calling home, you're not seeing the homies outside, this is it, you know?
>
> (personal communication, March 26, 2013)

Michelle suggested a battle between institutions of learning and the media for students' attention. Electronics "shove[d]" out learning. She indicated that the longer students were away from media and electronics, the better chance that Science Camp had of making an impact on students. Students were on vacation at Science Camp; they were unplugging and getting away from it all and experiencing a new technology-free camp culture.

There was some evidence from my limited interactions with students that the way that Science Camp perceived students' relationship with electronics was not far from reality. During one of my shared lunches with students, the table hopper awkwardly tried to initiate conversation with her tablemates by asking what the other students liked to do outside of school for fun. One student replied that he came home and did homework and then played video games all night long. Another student at the table nodded in agreement.

If students must be removed from their video games and phones when they come to Science Camp because they are "addicting" ("David," personal communication, March 27, 2013), then Science Camp represented a cold turkey treatment for students. Students were required to "unplug" at Science Camp (as the Forest Service billboards suggested). Student, parent, and teacher materials advised against students bringing "cell phones, radios, electronic games, mp3 players etc." with them from home. Part of the behavior contract that students and their parents signed before attending Science Camp stipulated that these electronic items were to be left at home.

In fact, there existed a sentiment at Science Camp that nature and technology were antithetical to one another. In a response to a question regarding how Krista felt students perceived the outdoors, she mentioned the following:

> …I love doing all my trails is having them [students] sit and just listen for a minute and you can actually see the look on their face of like "ahh this is peaceful." So, I feel a lot of kids don't get to experience it [the outdoors] and when they do it's almost a little overwhelming at first and then they realize like "oh this is what nature is like, this is what it's like when you don't have your iPhone, your iPod, your PlayStation, you know? It's actually nice and relaxing."
>
> (personal communication, May 15, 2013)

Notice how she positioned nature and technology. One existed only in the absence of the other. And there was an absence of technology at Science Camp. Students did not use computers, phones, or television while they were at Science Camp. These present-day artifacts had no place at Science Camp for students. Students were on vacation from their everyday lives and the distractions of the modern, technological world were not welcome.

Students brought home tangible and intangible souvenirs from their vacation to Science Camp. There was evidence that suggested that Science Camp was a memorable experience. The uniqueness of the Science Camp experience made it a vacation that students

remembered for years. The program director told me several anecdotes about running into former campers and how amazed he was at how much students remembered from their Science Camp experience. In one story, Mike was snowboarding and was plowed down by a young man "and as I'm laying [sic] there, he's looking down at me, he's like 'you're [Science Camp] guy, you were my cabin leader!'" (personal communication, March 27, 2013). Mike also told a story of "a girl actually that graduated from college and came up here and worked and actually showed up the following week with her tree cookie and photos from her cabin group" (personal communication, March 27, 2013). Tree cookies were thin slices of tree branches that were made into medallions and given to students as a parting gift. Mike also told an anecdote about being in a used bookstore and having a girl come up to him and ask if he remembered her. She was still wearing her tree cookie that she had received at Science Camp three weeks after she had left. These experiences were just glimpses into the memorable impact of Science Camp on students' lives.

Memories were the intangible souvenirs that students took with them from Science Camp but Science Camp also had several tangible souvenirs for students to take back home with them from their vacation. Science Camp worked to create tangible souvenirs for students from their Science Camp vacation. Students took a camp picture while they were at Science Camp. Students could purchase Science Camp shirts, sweatshirts, and other paraphernalia online. Cabin leaders created tree cookies for students and fashioned them into necklaces for students. Additionally, students filled out a student journal while they are at Science Camp. The student journal told students the following on its first page:

> This is your journal. At the end of the week it will be full of your thoughts, your ideas and your feelings about the things you have learned and your experiences at [Science Camp]. This journal can be a treasure that you will have long after your

> week with us is over. You can pick it up and read it anytime you want to remember your time at [Science Camp]. So put your very best effort into this journal. After all, this journal is a lot like your week with us - the more you put into it, the more you will get out of it. Have fun![42]

Other pages in the journal encouraged students to list their cabin mates and to talk about the skit they did for skit night. The journal also included an "autograph" page (like a yearbook might). The journal was meant to be a memento from the Science Camp experience.

Figure 4. Excerpt from Science Camp's "Student Journal"

[42] retrieved from Science Camp's "Student Journal

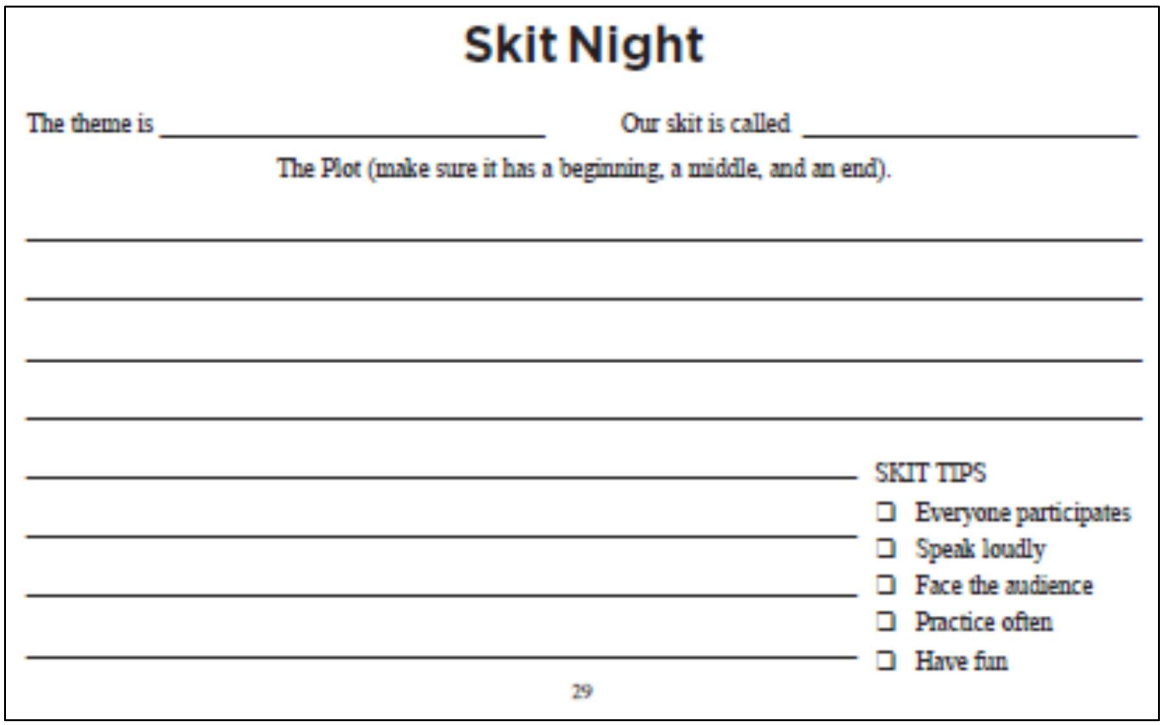

Figure 5. Excerpt from Science Camp's "Student Journal"

Students became tourists on a vacation at Science Camp. Science Camp was not only in a different physical location than students' schools and homes, it also represented a new way of doing things for students. Tourists, in preparation for vacation, often buy guides to their intended destination in order to prepare themselves for the changes they will encounter, to make sure they pack the right items, ensure that they are familiar with the cultural customs of the place, and to just get excited about their upcoming trip. Students were on vacation at Science Camp and the guides, brochures, introductory sessions, and rules presented to teachers, parents and students demonstrated the work that was necessary to acculturate students to their new place and its new culture. The travel time necessary to get to Science Camp, its topographical distinction from students' homes, along with its new way of doing things really created a sense of having traveled to a new place. Students came home from

Science Camp with tangible souvenirs from their experience. Science Camp was a vacation and students were tourists.

Let the Good Times Roll

Another important way that Science Camp defined the human aspect of the human-nature relationship into that of a tourist was by creating a fun, memorable, "once-in-a-lifetime" experience for students (field notes, March 4, 2013). Because staff members at Science Camp saw students' relationship with the outdoors as disconnected (especially by video games and electronics), the fun that they created for students at Science Camp took on a greater importance. It came to represent an alternative to video games. David, in expressing his desires for students' future behaviors, mentioned that "some [students] are going to go right back to video games, but I think are some of them are going to go outside" (personal communication, March 27, 2013). Creating a fun, memorable outdoor experience for students was important to Science Camp.

Figure 6. Students having fun at Science Camp

Science Camp was not a regular school day. Science Camp was a vacation from school. There were skit nights and hoedowns, songs and games, and general silliness throughout the week. The idea that a residential camping experience would be designed to be fun seemed obvious. But, the fact that students were attending a camp instead of a lecture or a day trip was important to think about. In fact, the formal and informal curriculum represented a concerted effort to incorporate fun activities into the Science Camp experience. The camp fun that Science Camp provided to students had an important role in representing students as tourists on vacation in the human-nature relationship.

Despite Science Camp's party line that the site is a "school," everyone understood that this was not *really* school. This fact was evidenced by the site's colloquial name: "Science Camp." The original name of Science Camp intentionally steered clear of using the word "camp," because the site wanted to be more school-like. But, informally everyone referred to the site as a "camp." During the initial assembly, staff members tried to convince the students that they really had not left school. They reminded students that Science Camp was a school and that the same rules that applied at school applied at Science Camp. David also told the students in the assembly that, "luckily we get to disguise this school as a forest." And one of the final slides of the PowerPoint urged students to "remember you are at school." However, no one seemed convinced - not me, not the teachers. School is serious and by this early point in students' week at Science Camp, students knew that Science Camp was too fun to be school. Even Mike, the program manager, referred to the site as "camp" and not a "school" in our interview, "yeah, I think that I mean [Science Camp] to me is like basically science camp, it's like a fun experience where kids learn a lot up in the mountains…" In the same interview he indicated, in a question concerning which teachers

decided to attend Science Camp with their students, he mentioned the fun that students in teachers had at Science Camp in contrast to their everyday school lives.

> And a lot of teachers show up here and they just think this is like being a vacation. This is like a vacation week for them, up in the mountains, they love coming up here and it's like "yeah we're teaching trails" but they only go out and teach the kids um you know? They're psyched to see the kids outside of the classroom doin' stuff, you know? Like, our staff is like "no snowball fights, kids aren't allowed to throw snowballs at each other" [but the] teachers [tell the students to] "go for it."
>
> (personal communication, March 27, 2013)

Teachers were "psyched" to see their kids in a new environment and promoted the fun atmosphere of Science Camp.

Science Camp had a reputation for being fun. Many students had been looking forward to coming to Science Camp for many years. Science Camp is unlike any other school experience that students have during their educational career. When I was on site, I often served as a "guest" at a lunchroom dining table. This allowed me to have some informal chit-chat with students. One day, I asked students from a school with a long history of Science Camp attendance how long they had been excited to come to Science Camp or how long they had known they were going to go to Science Camp. One girl responded "since kindergarten" and another girl sitting at our table nodded in agreement.

I learned through informal conversations with staff members that many students looked forward to their trip to Science Camp for years. Some had siblings that had attended. For some families and schools a legacy of Science Camp attendance seemed to exist where older students, siblings, and teachers passed down information about Science Camp to younger students who had not yet had the chance to attend Science Camp. In a question I posed to Mike about what students might be saying to each other about their Science Camp experience, he mentioned the following.

> Uh, I think a lot of the kids, I mean a lot of them just talk about how fun it is, a lot of em talk about how great the food is, um, and I do ask the kids, I like to ask them how many of you have siblings that have come up here and what did they tell you? And usually all I get is, "oh they said it's a lot of fun and there's really good food here"… (personal communication, March 27, 2013)

Some schools, in order to continue their legacy of attendance, fundraised the money for their class to attend Science Camp over a span of several years. These practices (advanced fundraising and word-of-mouth) got students excited about Science Camp and likely gave the experience a sort of mystique.

The fun of Science Camp began as soon as students arrived and the staff wasted no time in setting the stage for a fun week. As the staff waited for all of the buses to arrive from the various schools, they channeled the students' energy into fun icebreaker games with the large group. One of the games was a forced-choice game. Students were forced to pick which of two things they liked better: "pineapples or bananas?," "spaghetti or lasagna?," "lasagna or burritos?," "tacos or chimichangas?," "soccer or basketball?," "biking or skateboarding?," etc. Another game was a repeat-after-me song. "A roosta-shah, a roosta-shah, a roosta-shah-shah." In between the chorus lines the students were given directions and expected to sing while performing cumulative body actions like: elbow clapping, wrists together, knees together, rump out, and finally tongue out. By the end of the song, there was quite a bit of giggling as the students tried to sing with their tongues out. Students played games like this throughout their stay. These games served important social purposes. These initial games familiarized students with the fun school-but-not-really-school tone of Science Camp, introduced students to the staff members and each other, and got all of the students participating and buying-in to the Science Camp experience immediately.

Fun was both written into the curriculum and also spontaneous. For instance, the "Oh Deer," water cycle, and "tree trunk jamboree" activities incorporated into the formal curriculum were intended to be fun activities that also taught scientific concepts. Students participated in these activities during the curricular hikes but in general the students seemed to enjoy more authentic and spontaneous fun during less formal times of Science Camp.

My first visit to the site happened on picture day. The students were gathered in the outdoor amphitheater area to take a group photo as Mike stood on a ladder and told them to repeat back phrases like "I love snow," and reminded them to not look like a "goofball" because their parents were going to see these photos. While students were exiting, Chris, an instructor, was showing off a cool snowball trick to students. He propped a snowball at the top of the stairs' metal handrail and released it. Students stopped and watched as snowballs of various sizes were launched down the rail. Chris videotaped the snowballs' descent. This was an example of some of the spontaneous fun that occurred at Science Camp. As far as I know, this snowball play had nothing to do with any other curricular activity planned for the week. A staff member and children were just simply engaging in fun outside.

In addition to this example of unplanned fun, students sung songs or followed chants with their cabin leader and played games outside during free time. Staff members received a "games book" from Science Camp that included "name games," "indoor games," "outdoor games," "environmental games," and "cooperation games" to play with their students. Many of the cabin leaders developed unique calls to get their group's attention. Although I did not witness any in-cabin time, I was told that many of the staff members sing songs or read stories to the students in the evening before bed. On the morning before students leave, a "hoe-down" dance was planned and on the night before students left there was a skit night.

These fun activities represented a departure from school activities. These types of events were fun and memorable but not necessarily part of the academic mission of the program. These activities encouraged the idea that students were tourists on vacation.

The hoedown and skit night took place towards the end of students' stay. Hoedowns are firmly a part of Americana; patriotic nostalgia oozes at a hoedown. If the purpose of the hoedown was purely social then Science Camp could just as easily have held a dance with current music rather than a hoedown. So, why was a hoedown incorporated into the weekly activities? Good, old-fashioned, clean fun was likely the reason. Skit nights were another aspect of the informal curriculum that represented this back to the good ol' days pre-electronic entertainment for students. At skit night, students created skits with their cabin mates and cabin leaders to present to the other campers in an evening of fun.

These types of entertainment defined Science Camp's culture of fun. The positive, fun experiences that the curriculum provided to students were expected to give some students the tools they needed to go outside again in the future. The curriculum of Science Camp represented an obligation to both the state's science standards and to Science Camp's own conception of the importance of a positive and fun Science Camp experience. A positive experience at Science Camp was hoped to equate with a positive personal connection with the out-of-doors. Staff members expressed this sentiment to me during interviews. Chris, in answering a question about what he hoped students got out of their Science Camp experience mentioned, "I hope that they are a little more excited about being in nature by the time they leave" (personal communication, May 16, 2013). Krista, in answering the same question appeared to link a fun experience at Science Camp and fun outdoors to an appreciation for nature and future environmentally responsible actions.

> What do I hope? Um, I gu (trails off), one of course, appreciation for nature a little bit more, you know saying like, knowing that we're the ones, being here at this [Science Camp], we're the ones that we're trying to provide them with that knowledge to where they can research and make a change, yeah, so I feel like we're giving them that opportunity and I hope that even you know, one a week, at least one a week, you know thirty two weeks that's thirty-two kids, you never know that can start exponentially changing but just hoping that they can change something, you know, giving them that opportunity and seeing working here, seeing like "wow, I had it really great as a kid and I took that for granted" and trying to show kids, you know you're a kid, have fun, know about where you're at, know your surroundings, know everything but have fun and be able to take this [experience at Science Camp] in, you know? (personal communication, May 15, 2013)

Because technology was seen as the root of the human-environment disconnection, Science Camp seemed to say to students, "look at all of this fun you can have outdoors and without technology!" In this way, Science Camp represented the outdoors as a vacation from students' realities. The fun of Science Camp made the experience a pleasurable departure from the everyday – a vacation.

Standardizing the Wilderness: Performing Animals & Tours

During my observations, I was surprised at the rigidity and standardization of the academic trails. Science Camp personnel talked at length about the "experiential" and "hands-on" nature of the curriculum. They also extolled the virtue of the "teachable moments" that were said to be plentiful in such a changing outdoor environment. These ideas also resonated throughout Science Camp's written materials. However, these notions did not ring true for me as I participated in the hikes. Rather, the hikes operated like a tour. It felt as if the students and I were participants in a group that was following a tour guide around a museum.

The hikes were rife with procedure and structure. Students were divided into new, non-cabin groups for the hikes. Placards labeled with each group's letters hung around the center

plaza of Science Camp. Students waited for their instructor by their group's letter. Then the instructor called roll, went over the rules, made sure the students had water, proper clothing, and any medicine they may have needed to take with them. After that, there was usually a lengthy stop at the bathrooms. Then the hike would finally begin. This excerpt from my field notes gives a fuller description of the process of getting the hike started.

> It took a while to get our group together. Once we did, two kids went back to their cabins to grab their inhalers (I believe). While we waited on the boys to go back to the cabin, Krista spent a good amount of time calling roll and trying to learn everyone's names. She encouraged the students to learn each other's names because this group would be going on two more hikes together as a group. Krista reviewed the rules and expectations by asking the students what types of rules and expectations they remembered. Once again, the students shouted out the same rules that have been repeated over and over. "Walk, don't run." "Stay with the group." "Ask to take pictures." "Stay behind the leader." "Respect." And then someone said humorously, "don't run in to trees." Krista promised that if everyone was good that there would be some snow play at the end of the hike. She also told students that there are some low branches on the trail, so "don't get whacked in the face."
>
> This hike, like yesterday, was a series of stops and questions. Overall the hike was not too far in distance and seemed to be a loop. We went through riparian and mixed conifer ecosystems. (field notes, March 5, 2013)

I wrote in my notes that this hike (like others before it) was a series of "stops and questions." All of the academic hikes operated in this way. What was interesting was that the going and stopping of the hike was not always dictated by the surroundings. The place that we stopped to discuss something or do an activity did not always have any specific relevance to the topic we were considering; it was arbitrary. The hikes operated like one long discussion that had been broken up into smaller bits to be doled out at each of the stops.

During the aforementioned ecology hike, the instructor's first stop on the trail was to ask students what "-ology" means. The next stop was to review the "LAWS" (land, air, water, sunlight) and to talk about the definition of an ecosystem. At the next stop, Krista asked

students if the amount of water in an ecosystem affected the plants and animals that lived there. Then, the students looked at pictures of different ecosystems (marine, desert, etc.) and worked in groups to describe the "LAWS" of that place. During the next stop, the students were asked to list the steps of the scientific method.

The places we stopped for each of these questions or activities was not relevant to the topic and often the topics were not relevant to the place. For instance, during the "LAWS" discussion, students were not asked to look around at the ecosystem they were currently walking through and describe the "LAWS" that they observed around them. Later on in the hike, Krista informed the students that they had been walking through two different types of ecosystems on the trail. But we did not tie this observation back in the previous "LAWS" discussion. Many of the stops were arbitrary.

My observations of other academic trails were similar. The abstract nature of the information being covered in the hike made the curricular material even more separate from the students' surroundings. This is an excerpt from my field notes on a geology hike I took with Lee.

> There are several other geology hike groups passing us or around us for this hike. This is probably a symptom of the large sized group at [Science Camp] this week. We arrive at an area off the path that has quite a few wood chips on the ground and a small pile of logs. Lee asks everyone to sit down although many are reticent to do so. He consults his well-folded geology guide and starts over again.
>
> Lee: Who knows what geology is?
> Student: study of rocks
>
> Lee: Well, not exactly. What are rocks and land all a part of?
> Student: earth
>
> So what is geology? (Lee seems to be looking for the answer on his sheet.)
>
> Lee: But not just earth, that's too broad

Student: surface?

Lee: Well, it's the surface and everything else. It's the study of earth=geo, ology=study. It's history, it's, structure, the physical part of earth.

At this point this discussion seems like a guessing game and the students are being led to the wrong answer. I'm slightly frustrated at this point and throughout the hike because Lee seems to be looking for the exact answer that's printed on his sheet. Also, it seems as if a student has given him the right answer! No one seems confident about their answers – the instructor or the students. I am also put out because whatever the students' say is hardly ever right or does he make it feel right. These are probably my ideas about 'good' teaching influencing these feelings.

Lee: Let's look around and try to find two rocks and hold on to them. They should be small. They should fit between your thumb and forefinger. Once you have them, put in your fists and hold them up high. Most all kids have their two rocks.

Lee: What are natural resources?
Student: land
Student: oil
Student: ocean
Student: air

Lee (in seeming disagreement responds): materials that we have in nature. Products made from natural resources (what is he talking about?!).

Lee: What's an example of a renewable resource?
Student: wood

Lee: is it? (he says this kind of leadingly, as if the student should be thinking more about this response)
Student: nuclear energy

Lee's not quite sure how to answer about nuclear energy.

Lee: What is a renewable resource?
Student: plants

Lee explains that renewable resource are things that have the ability to reproduce themselves…sun, wind, water.

Lee: What would be a nonrenewable resource?
Student: petroleum
Student: fossil fuels

> Lee asks the student what fossil fuels are and the student says "made from dead plants and animals." Lee doesn't make any of these answers seem right. I feel like the rest of the students don't know if these are correct answers or not.
>
> (field notes, March 6, 2013)

The lack of correspondence between the curricular material and the physical surroundings of the students as they completed this hike was confusing. None of the topics that Lee covered in the above excerpt were tied in to the students' surroundings. Two of the three main curricular hikes had a key activity that was "experiential" that was designed to connect the students' surroundings to the curriculum. The wildlife biology hike had bird feeding and the geology hike had a rock hammering session. The ecology hike had no key, memorable moments. A couple of the instructors mentioned to me during interviews that because of this the ecology hike wasn't often students' favorite hike. In a discussion with the program manager, Blake, about how changes to the Science Camp curriculum were made, he mentioned the changes they had made to make the trail less information heavy.

> So we also noticed that ecology, our ecology trail we get reports that it's kind of dry and boring whichever [Outdoor Explorations] site and they're all basically the same, except the route, even when you have your dynamite teachers um doin' it and we realized that that the uh ecology trail was very information, a lot of information and we had one little section of experiments, so we basically redesigned the um trail where we kind of peppered it with more activity instead of talk, talk, talk. Talk, move, move, move, talk and then a block of experiments and then talk, talk, talk, talk that kind of thing.
>
> (personal communication, April 1, 2013)

Blake's quote mirrored my observations of the hikes. The hikes were a series of stoppings and goings. My notes often became numbered lists of the stops we took and the discussion that occurred at each of the stops. Often, there was not much discussion between stops. In Eliot's description of the adventure hikes, he contrasted them with the academic hikes.

> Terrill: Yeah, adventure hikes, exactly! Tell me about those, what happens on those?
> Eliot: Uh, those I feel are more of that kind of unstructured experience with nature. I mean yes we're on a trail but along the way there's not the emphasis of "okay, sit, stand there, sit still, raise your hand, answer this question."
>
> (personal communication, May 16, 2013)

He described the academic trails as structured. The academic trails were "okay, sit, stand there, sit still, raise your hand, answer this question." This encapsulated my experience with the trails. Besides the token "experiential" moments of the wildlife biology and geology trails, there was not much interaction between students and instructors and the outdoors. It felt as if the curriculum was simply being delivered in the outdoors. The natural surroundings were not vital to the lesson but rather they functioned as just a setting for the lesson because they weren't incorporated into the discussion.

The enactment of the curriculum reflected Science Camp's emphasis on the science standards. It was important that all the material on the hike guide be covered. And, a series of checks and balances existed to ensure that students were, in fact, having the proper information delivered to them via the instructor and that they were retaining that knowledge. The first of these checks and balances occurred when students reached the end of each of their academic hikes; when the group returned back to the main courtyard of Science Camp, they were greeted by another staff member (usually someone in a more authoritative role than the instructor). This person quizzed the students on what they had learned during the trail. The quiz not only ensured that students were retaining the information that they are presented with but also must have served as insurance that the instructors were staying on the script that Science Camp had provided for them. I sometimes witnessed the instructors conducting purposeful reviews at the end of the hike (but before we had reached camp) in

preparation for the quiz. This indicated to me that instructors found it important for their students to do well on the quiz.

In addition to these informal quizzes, Science Camp conducted a pre- and post-assessment with about ten percent of the groups that attended. Many of the questions noted the corresponding state standard in parenthesis. Here is an excerpt from the 5th grade assessment.

1. What is the last step of the Scientific Method? (5th-6)
   a. Question b. Hypothesis c. Experiment d. Conclusion

2. Starting with the sun, how does energy flow through an ecosystem (food chain)?
   a. Sun, plants, deer, mountain lion b. Sun, mountain lion, deer, plants
   c. Plants, sun, mountain lion, deer d. Deer, plants, mountain lion, sun

3. Plants make their own food through a process called _____. (5th-2g)
   a. Chlorophyll b. The food chain c. Photosynthesis d. Symbiosis[43]

The quiz was another example of the checks and balances Science Camp conducted for themselves to ensure that students were learning the material they presented.

Student journals were another example of the system of accountability that encouraged instructors to remain on script during their hikes. Students received a journal at Science Camp. In order for students to successfully complete their journal, they had to have the specific information requested by the journal provided to them during the academic trails. For example, in the "ecology trail" section of the student journal, the students are asked to name the four nonliving things in an ecosystem (LAWS) and to compare the LAWS in the forest to the desert. The student journal served as another assurance that the curriculum was

[43] retrieved from Science Camp's "Fifth Grade Student Survey"

delivered as it was written. If the instructors deviated too much from the script, then students would have been unable to properly complete their student journal.

The scripted and structured nature of the hikes made them feel more like tours than hikes. And, students seemed to implicitly understand their role in the tour. They listened and participated when asked. They chatted with each other while we walked in between stops, but students rarely asked questions during the hikes. I believe this was because of the scripted nature of the hike. The leaders were performing the script and students were loath to interrupt. The lack of total correspondence between the leader's script and the students' surroundings made it feel as if student observations of the outdoors would not be welcome interruptions.

For instance, had the instructors been walking through the forest with students pointing out things they saw as they walked along, a student observation of a squirrel or a bird would have felt more like a welcome interruption. However, when the students were walking along and making a stop to talk about the magma at the core of the earth, a student observation of a squirrel or a bird would have felt less welcome because it would have been off topic and off script. This was the subtle way that the scripted nature of the hikes disconnected students from their surroundings. Hike leaders also seemed similarly impacted by the scripted nature of the curriculum. The student quiz at the end of the hike, the curricular guides, the student journal, and likely my presence encouraged leaders to stay on script. In fact, I rarely witnessed any of the "teachable moments" that the staff often mentioned.

The scripted nature of the Science Camp experience lent a certain inauthenticity to the experience. When I came back from a hike and participated in the quiz led by a staff member that had not accompanied us on the hike, I almost felt betrayed. How could this

person who had not even participated in our group experience know exactly what we talked about? The practice of standardization of the hikes made the outdoor experience also feel standardized. Students were taking turns with other groups in participating in the same tours of Science Camp. Students across camp were participating in the same, planned experiences. This standardization of the Science Camp experience added to the feeling that students were participating in a packaged vacation to the outdoors; everything had been pre-planned on their behalf.

The standardization of the hikes reached into the planned experiential moments of the academic hikes. The bird feeding activity was an example of how even wild animals were expected to perform on students' tours of nature. I have spent a lot of time considering the bird feeding aspect of the wildlife hike because there was something that haunted me about the experience. The longest stop on the wildlife hike was under a copse of trees in an area labeled "bird feeding" by a piece of plywood nailed to a tree. At this point on the hike, students were given some bird seed to put in their hands and they spread out under the trees and waited quietly and hopefully with their palms lifted up to the branches. The mountain chickadees (well trained, I'm told) descended and quickly snatched seeds from the students' hands and flew back up to the overhead branches to eat their treat. The students displayed hushed excitement and usually put their hands back up to try again if they had had the luck of being visited by a chickadee. Some students were disappointed that others had been visited by the chickadees and they had not. Eventually, the instructor asked the students that had been visited by the chickadees to sit down to allow the other students to have a greater probability of being visited. There was a real effort to make sure that almost every student had the experience of having a chickadee eat out of her or his hand.

The bird-feeding aspect of the wildlife trail was written into the curricular guide for the hike. This was a scheduled and scripted aspect of the curriculum. However, I never witnessed much discussion about the bird feeding by the instructors either before or after the experience. There was no discussion of migratory versus non-migratory birds as the curricular guide suggested. There wasn't even reference back to the bird beak adaptations discussed previously during the "museum" stop of the hike even though I often heard instructors mentioning to students that the chickadees preferred sunflower seeds (which likely had something to do with their beak shape). Information about the bird itself was not even discussed. The bird feeding was simply the fun stop on the wildlife hike tour.

In many ways, bird feeding was akin to feeding animals at the zoo. You got the food; you presented the food; and then, you watched as the animals responded. There was one notable exception to the similarities – the birds were wild, not caged. This experience was unlike others at Science Camp because it promoted physical touch between students and wildlife. During the initial rules-giving meeting at Science Camp, the "respect nature" PowerPoint slide tells students to "observe wildlife by remaining calm and curious" and "if you do not have permission to touch, leave it alone." This was one of the instances when student had permission to touch something. Otherwise, they were asked to stay off stumps, rocks, and logs and to leave rocks, sticks, and snow on the ground (unless they had permission).

I was interested in understanding why bird feeding was included in the curriculum. I asked several of my informants about the bird feeding. Becca and Eliot suggested that the bird feeding promoted a connection between students and nature. At this point in the interview, Becca had mentioned the students and staff members growing and developing a

"connection" with the outdoors. I asked her to tell me more about students' connection with the outdoors.

> Becca: ...they'll remember that connection and holding the bird in their hand when they're bird feeding, kinda' having that firsthand experience. I think even when they come here they still think it's something kind of cool and separate from where they live but they're just, they start to make the connections between taking a three minute shower and conserving water and why that's important or um, recycling and composting to that. And just also how beautiful it is and that it's cool that these wild animals live out there and uh, yeah, so I think that's...?
>
> Terrill: Let me ask you something, tell me more about the bird feeding.
> Becca: The bird feeding, okay. Like what?
>
> Terrill: Well like what, why you think it's in the curriculum. Like why is it part…do they do it at every site, or is it just here or...?
> Becca: I think they do it at every site. I think, but I'm not a hundred percent sure. Um, hmm. I think it's part of the curriculum so that they [students] have that experience to take back with them. They can make that connection with this bird in their hands or in their friend's hand that this is a real living thing that um, is affected by what we do but it's also just a beautiful part of nature that they can experience up close, in person and maybe for whatever reason want to in the future protect that and take care of it. Um the same for if you take kids hiking up a mountain and they get to see these beautiful views or um, maybe it's sort of a similar way to the goal of some zoos in a sense. And I know there's a lot of moral ethical dilemmas over that and same, could be same said for bird-feeding, too. Um, but I think it's so that you have this personal connection that tugs at your heart-strings a little bit and even if they don't think about it consciously necessarily in the future but it may be just one of many things that makes them think about wanting… having that that emotional connection to the environment and …wanting to protect it, take care of it, that's my opinion on why. (personal communication, May 15, 2013)

The bird-feeding experience was something that students could "take back with them" when they left. This activity was intended to create a memory that was a souvenir for students to take back home with them. She also described Science Camp as "something kind of cool and separate from where they [students] live." This hearkened back to my argument that Science Camp functioned as an exotic location for students. The bird feeding was

designed to a memorable and positive event so that students remembered it when they return home from their trip to Science Camp.

Becca also suggested that the she believed the curricular intention of the bird feeding may be to promote an emotional connection with the environment that then led to the development of students' personal desires to protect the environment. Eliot also agreed that the bird-feeding experience promoted a connection between students and nature.

> Terrill: What are, what do you think the students' favorite part of each of those academic hikes is?
> Eliot: Uh, I really, the more hands-on the activity the better. So for wildlife, I think the wildlife has some of the most uh engaging things, um, with the bird feeding, having another living thing like come and land on your hand.
>
> Terrill: And what's the value of that piece, do you think?
> Eliot: Uh, the value is, is just is that connection with nature, like being like there and like having the bird on your hand, um in addition to being able to like, see the bird like up close and see it and it's cool and like being able to observe "well which seed is he gonna' choose?" and they tend to prefer the black (searching for word)
>
> Terrill: Sunflowers…
> Eliot: sunflower seeds, so they can make that observation, um, but yeah, but socially it's about that connection with nature like this bird and like thinking about what like the bird needs and that kind of stuff.
>
> (personal communication, May 16, 2013)

Krista seemed to indicate that the bird feeding activity, in addition to promoting a connection between nature and students, also functioned to ensure that the students actually saw live wildlife during their trip to Science Camp. She also felt that the wildlife trail (of which bird feeding was a part) allowed for some of the calm and quiet time that she had previously indicated as important to her understanding of promoting the proper human-nature relationship (one that is free from the distractions of technology).

> Terrill: Mmhmm, what about the other academic hikes, what do you think are like the main drive-home points of those?
> Krista: Um, what of the main ones? I think, like especially being up here we don't we don't see as much wildlife… we did see a couple deer you know within the last few weeks we've seem 'em a little bit more, but there's a lot of birds around, you know? I think when we try to do the bird feeding, them seeing that "oh we can interact with," you know, "birds that are out in nature, we can look at the animals, they don't have to be scary , knowing it's a wild animal, no we can get along with them" you know "we don't have to be the kid …<long yelling in background makes us laugh> we don't have to be the kid that's like 'oh, I don't like that, let's get rid of it'" you know, they can kind of open up see the nature with the wildlife and see how different things interact in different environments , you know…
>
> …so being able to interact with like the birds and do a bird watching I feel like wildlife is kind of the calm trail where they can kind, they can just take in more and enjoy and listen to what's out here.
>
> (personal communication, May 15, 2013)

Krista saw the benefit in having students and wildlife interact. She also indicated that she hoped a connection was forged between students and wildlife when she mentioned that she hoped they could "get along." She hoped that this connection would encourage students to preserve nature in their futures instead of saying "oh, I don't like that, let's get rid of it."

Making sure that students had a wildlife encounter was an important way that Science Camp's curriculum positioned the human-nature relationship as that of a tourist. There was a real expectation (from the students, staff, and teachers) that all students should be able to equally participate in the bird feeding activity. The set-up of this activity and the amount of time the instructors spent at the bird feeding station led me to understand that they believed that every student deserved to experience the bird landing in their palm. Sandra, one of the classroom teachers that visited Science Camp, also demonstrated this idea as she responded to my query regarding Science Camp's curriculum.

> Terrill: huh, new time, um, let's see, um, would you add anything to the curriculum up there?
> Sandra: Um, probably like I said…
>
> Terrill: take away anything?
> Sandra: …if it's the timing (inaudible), see we're only there the three nights so I don't know what they do on that fourth day kind of thing cuz one day's used by getting there, one day's used coming home, and so you don't really, you only have two days, um, it would be nice to maybe build on, they [students] always get excited about animals, you know? Try to build in the living creatures a little bit more. I didn't have that as my hike but you go out there and if you don't see the birds, you don't see the birds, if they're not there, so can you have 'em in kind of a cage or have a they have a um sanctuary or a…? (personal communication, June 11, 2013)

Sandra suggested that Science Camp cage animals so that students could each have the opportunity to see them. This was interesting because it indicated that Sandra viewed Science Camp like a tourist trip. She seemed to say, "we don't have much time at camp, so let's make sure the students get what they want, and they want to see animals, can Science Camp make that happen?" Sandra attended Science Camp and her thinking indicated that she perceived Science Camp as a tourist destination. She believed that each child should have the opportunity to have the same experience on the Science Camp tour as the child who had passed before them. If this was not possible, Sandra suggested that animals be caged.

Sandra seemed to indicate that she wished Science Camp functioned more like a zoo. At a zoo, there is a public expectation that the animals be visible and open for viewing. That is the public's understanding of the purpose of zoo animals. They are caged for our viewing pleasure. Zoos create underwater viewing areas and specially designed platforms so that the public's expectation can be met. In fact, a zoo sign is usually required to warn patrons against from tapping the glass, whistling, or throwing items at the animals in the event that they are unable to sufficiently view the animals. This was the type of experience that Sandra

suggested that Science Camp provide for students. This notion of creating a connection with a wild animal rather than a tame animal did not seem to resonate with Sandra. She was more interested in making sure that each of her students had the opportunity to see an animal. Perhaps this expectation informed Science Camp's creation of the bird feeding activity.

Interestingly, Science Camp did provide a zoo, of sorts. The "museum" that students visited during part of the wildlife trail included a collection of pelts, mounted specimens, and skulls. These animals and their parts were used for instruction about adaptation, but they also served the purpose of introducing students to the wildlife of the area. The museum represented the wildlife that students were unlikely to encounter at Science Camp – coyotes, snakes, and mule deer. Science Camp's "museum" and bird-feeding activities placed students in the spectator role of tourist.

The bird feeding activity gave students the tools for understanding the proper human-nature relationship as tourist-like. Bird feeding, in particular, was intended to be memorable for students. That was one of its purposes. This experience was an intentional memory-making moment that was part of the standard Science Camp experience. Science Camp hoped students would take the bird feeding memory home with them as a souvenir from their trip. And, as Eliot and Becca indicated, a hope existed that feeding the birds fostered a connection between students and the outdoors.

This memorable experience designedly provided students with tools for understanding the human-nature relationship as connected. It took me a long time to pinpoint why the bird feeding aspect of the curriculum was so troubling for me. It was a complicated experience. On the one hand, instructors firmly believed that the contact with wildlife connected students to the outdoor. But on the other hand, the experience domesticated wild

animals. Importantly, the bird feeding activity represented a standardization of the outdoors. This activity positioned Science Camp (and the wilderness it purports to exist upon) as a place where expected things happened over and over again. If you fed the birds, they would come. This was very different from Science Camp's "teachable moments" mentality. That mentality recognized the outdoors as a place where unexpected things might happen and promised that the curriculum in action would shift to accommodate the unexpected. The bird feeding activity was a stark contrast to the "teachable moments" curricular descriptor. There was something fundamentally unnatural about creating a standard experience in the wilderness. Bird feeding was a faux wildlife encounter that was written into the curriculum and labeled with a sign. Bird feeding was just another stop on the students' tour of Science Camp.

Legends of the Past

Science Camp encouraged a vacation and tourist like understanding of the human-nature relationship. At certain times, the tours of Science Camp became cultural heritage tours. Students were also encouraged to think about how they would use the land to survive if they were dependent on the land for survival. Students also became tourists learning about indigenous peoples' use of and dependence on the land. The discussion of past peoples' use of the land and the incorporation of some legendary mysticism about a Science Camp land feature provided a specific representation of the proper human-nature relationship to students. This distanced students' relationship to the outdoors by portraying the proper human-nature relationship as separate from reality and modernity.

The science session, "Survival," asked students to use the land as indigenous peoples might have done. In this science session, students pretended they needed to subsist on the

land because they were lost in the woods. Students reimagined their lives without modern tools or comforts. This was another way that Science Camp asked students to become cultural heritage tourists. They were asked to experience nature as someone from the past might have done.

At the beginning of the session, students were given laminated cards with the following represented: glasses, knife, sunblock, cell phone, hatchet, whistle, iPod, flashlight, food, first aid kid, map and compass, matches, water, tent, flashlight. Then, students were placed in groups and they were asked to deliberate with one another and to pick five of the cards that the group deemed "essential" to take with you on a hike.

I listened to one group deliberate. One boy said, "I'm in Boy Scouts" to give himself some authoritative presence in the decision-making process. The same boy argued later with the group that, "we don't need water, we can always find it." Someone argued that clothing was not important. Another person argued that a map and compass were not really necessary because it did not help you survive, it just helped you get out of the woods. Someone countered, "but you've got to get out!" Humorously, Mr. Boy Scout advocated for bringing the cell phone and when someone argued that there wouldn't be any reception he countered with "but at least we could play video games!" The groups made the following decisions:

Group 1 – map/compass, first aid kit, hatchet (to hunt and cut down wood), matches, water
Group 2 – water, first aid kit, map & compass, matches, food
Group 3 – water, food, tent, hatchet, clothing
Group 4 – map & compass, knife, matches, water, first aid kit

After this activity, the ten essential things to pack for a hike were explained to the students. They were: map and compass, flashlight or headlamp, first aid kit, matches or lighter in a waterproof container, knife, food, water, extra clothing, mirror, and sunscreen or

sun protection. These survival necessities represented a marked lack of technology. Students were told that these are the ten essential things to take with them on a hike, but I was dubious. What about a cell phone with an extra battery pack? What about a global positioning system (GPS)?

The survival necessities presented to students represented tools of the past. Modern tools (like cell phones) were noticeably removed from the necessity list. This curricular piece indicated that the proper human-environment relationship did not value the importance of modern necessities like cell phones. Being outdoors excluded technology.

During the rest of the science session, students made observations about what they could forage to eat (one student took a few acorns out of his pocket and really wanted details from the instructor about how to prepare them for eating), the instructor boiled tea out of white fir leaves and snow, and teams of students built shelters using materials from the outdoors. Some students built shelters between trees, others constructed a shelter up against a tree, some used rocks, some used pine needles, and one opportunistic group claimed a pre-made shelter seemingly left from another week's campers. Students were also encouraged to think about living in the past as they constructed shelters and thought about surviving in the woods without the luxuries of modern life. The survival class contributed to the cultural heritage tourism feel of Science Camp.

Figure 7. Photo of a student-built shelter

In my interview with the instructor that taught this session, Becca, I asked her to tell me about some of the different science sessions. The first thing she mentioned about Survival was, "survival is neat, it's fun, it's um getting them [students] to think about what you need if you're a human out in the woods um on your own without all the technology and things that we have…" She went on to talk about the necessity of students knowing how "wild the wilderness can be" and being properly prepared for outdoor adventures. She expressed that the course gave students an opportunity to confront their "own needs as a human animal species" as well as to work on their teamwork skills (personal communication, May 15, 2013). This session asked students to imagine that modernity had been stripped away from them and to picture a situation in which the resources that they once depended on were no longer there for them.

Science Camp's curricular incorporation of Native Americans encouraged a tourist like understanding of the human nature relationship by positioning students as cultural heritage tourists. My ears always perk up when I hear people talking about indigenous peoples' uses of the natural world because learning how people survived in the past, in a world devoid of supermarkets and air conditioning is fascinating. There is a romanticism about the idea of living off the land that exists for modern day people that almost certainly did not exist for the people who actually lived that life. From my cultural observations, Native Americans, in particular, often serve as representatives of the proper human-nature relationship. Their subsistence, communal, and spiritual relationship with the outdoors is often glorified and held up as an example of the way in which humans should interact with the outdoors. This is a type of cultural heritage tourism that I was expecting at Science Camp because I remember sewing moccasins and making dream-catchers during my days at camp as a youth. This is something I spent time thinking about before I arrived at Science Camp and quite frankly, there was less reference to Native Americans than I would have expected at Science Camp, but the theme still definitely existed at Science Camp.

I most often heard references to Native Americans during the ecology trail hike. On one walk with Krista, we stopped under a copse of trees and one of the trees had a sign on it that labeled it as an "incense cedar." The instructor, Krista, went off the curricular guide's script to tell students that Native Americans used the bark of the tree to line their baby carrying sacks because there weren't diapers back then and the bark would soak up some of the baby urine. There wasn't much further discussion of this and we continued to examine the tree's trunk for bear claw marks. The story of the Native American use of the incense cedar tree changed a little bit when I visited the same incense cedar on another ecology hike with

another instructor, Leo. He told students that Native American mothers put the incense cedar bark in their child's diapers because of its pleasant fragrance. He also said that Native Americans would use the leaves to mask their human scent when they went hunting. In addition, he stated that the Native Americans used the tree to construct boats because it floated very well. He was quick to mention that Native Americans "never cut stuff down" and used only parts of the tree which had fallen down.

Under a black oak tree, Leo mentioned that the Native Americans that roamed these mountains ate acorns and their teeth were all "grimy" and "chipped" from the inclusion of acorns in their diet. He also mentioned that Native Americans tied sacks of acorns to posts and put the sack in the river to allow the tannins to leach out so that the Native Americans could make breads and tortillas. These were some examples of how Native Americans use of the land was incorporated into the enacted curriculum of Science Camp.

Staff members were given a storybook to use with their students and staff members at their discretion used stories from the storybook. Stories could have been read to students at bed or rest time and on one occasion I observed a story being read to a group of students during one of the adventure hikes.

References to Native Americans were also included in Science Camp's storybook. The storybook, developed by Science Camp, had an entire section devoted to Native American stories. Other sections included: "Star Myths and Legends," "Fables from Around the World," and "General Stories." I looked at how Native Americans' relationship with nature was represented in each of the stories. Native Americans were often characterized as part of nature. "The [local Native American tribe] believed they were a part of nature no more or less important than other living things" ("The Legend of the Iron Door," pg 20). Often the

Native American's dependence on the land was emphasized. Native Americans were also referred to as the "valley's first conservationists" because they were "in tune with the land and believed the path of balance and harmony was the right path" ("The Legend of Sunset Point," pg. 26). In "Why the Animals do Not Talk," the Native Americans were characterized as being taught by the animals. "The beaver taught the people where to snag the salmon, and how to build houses that would keep out the rains and frost. The bear and coyote led the men out on the plains and through the forests and imparted to them their skill in following the trail" (pg. 30). These stories represented the proper human-nature connection. An understanding of humans as inextricably linked and dependent on the outside world and, in addition, grateful and thankful for what nature provided represented the "proper" human-nature connection.

In these stories, settlers often served as a foil to the Native Americans and represented the improper human-nature relationship. Settlers were characterized as greedy, comfort-seeking, pleasure-seeking, destroyers and abusers of nature. In "The Legend of Sunset Point," settlers "began to abuse the land in the name of greed and sport. Logging and hunting increased and mining began with little regard for the consequences" ("The Legend of Sunset Point," pg. 26).

These stories were printed and bound as Science Camp's storybook, but I only witnessed one use of the storybook. On one afternoon, I followed Eliot as he led students on the Eagle Rock adventure hike. Mid-way through the hike, we stopped and rested at the top of a small hill with large boulders. The students scurried around looking for a shady spot to sit down, they drank water, and Eliot pulled out Science Camp's storybook and read one of the Native American lore stories to the students. I was interested in getting Eliot's perspective

on the prominent Native American theme in the storybook since I had observed him using the storybook during the adventure hike, so I questioned him about it during our interview.

> Terrill: Mmhmm, so I went out on one [adventure hike] with you, I forgot what it was called, um, Wagon, it was Wagon Trail.
> Eliot: Wagon Trail?
>
> Terrill: Um, and then you read a Native American lore kind of story
> Eliot: Oh yeah, that was Eagle Rock,
>
> Terrill: Oh was it? Okay, yeah, yeah that was Eagle Rock.
> Eliot: Yeah, yeah
>
> Terrill: So tell me more, so is there like a lot of Native American lore built into the ...or not...or?
> Eliot: Um, there is and there isn't. I mean we have a, a storybook which ranges from Native American tales to Japanese to African to all …
>
> Terrill (trying to demonstrate my familiarity with the storybook): Greek...
> Eliot: Yeah, Greek a lot of Greek as it relates to astronomy…a lot of our kind of um, yeah, our astronomy ties into kind of the Greek constellations, cuz every culture has their own constellations. So I do think that kind of is part of that non-academic storytelling side of what we're trying to get through or get to, because these are ways of kind of providing, not necessarily a specific moral objective but kind of getting kids to think not just about academics but also about like how to be a good person which I feel is the ultimate point of like bedtime stories and that kind of stuff. And the nonacademic kind of things that we discuss is how to be a good person and a lot of these stories kind of carry on that message.
>
> Terrill: Do you think that pops up at other times in the um...week?
> Eliot: I would say yes,
>
> <<interruption by someone needing directions>>
>
> Terrill: So the Native American stuff does that or other like storytelling so what...
> Eliot (defensively): Okay, so let me address the Native American a little bit. Now, I believe the reason why we do have an emphasis, not necessarily an emphasis but there is a there is a strong presence of Native American stories is because we are in an area which was previously inhabited by indigenous peoples and a lot of the stories that we tell uh actually come from those particular groups. Um…
>
> Terrill (trying to soften tension): I knew should ask the anthropologist about this!
> Eliot: Yeah, right! (laughter) Personal specialty of mine. Yeah but also because uh, whether it's true or not and I personally believe it's generally true, there's this kind of

> perspective in understand (sic) or this thought that Native Americans had a closer relationship with nature and that's something that we're trying to emphasize is a connection with nature, uh, because we're part of it. That interconnection thing between us and nature is very much true in that the stories kind of um, in a nonacademic way, kind of convey that that message…um, that these people existed in in kind of a connection whether it was the perfect harmony, the stereotype which I don't believe, but there was definitely a recognition within these people so (inaudible) within these stories that human beings are in nature are inextricably connected, it's unavoidable, it's obvious to anyone that looks around. Um and so I think that these are just a convenient vehicle for that, but again, I do think that the emphasis on the stories that come from these particular indigenous groups um are there, but we have like I said ones that are from Japan, "Greatest Samurai" and a couple of other
>
> Terrill: Are these from the storybook the night time stories do they come from the storybook or are they just
> Eliot: Um, for the most part yes. I mean I'm sure there are some instructors that have their own stories that they tell. I know a lot of uh the more musically inclined instructors will sing songs um and that kind of stuff or just play music, um, but I'm I'm a story teller, I emphasize stories. Um, so the ones that I tell just to kind of keep in line with uh the program's expectations uh are stories from the book...
>
> (personal communication, May 16, 2013)

Eliot explained that he felt that the inclusion of Native Americans in the storybook emphasized the connection and interconnection with nature that Science Camp hoped to promote for students. But, the inclusion of Native Americans in the curriculum did more than just exemplify the proper human-nature relationship. It also positioned that relationship as one of the past. All of the stories were set in the past. Native Americans were part of the history of the mountains where Science Camp is located. In fact, the "background information" given to teachers in the handbook distributed to them prior to arriving at Science Camp began with a history section. In this history section, information about the Native Americans that settled the mountains where Science Camp was located were given the first paragraph in the section. Native Americans were definitely situated as a part of the past.

Native Americans' relationship with the land was symbolically used in the curriculum to represent the proper human-nature relationship position. Modernization (as represented by settlers and loggers in the storybook) ruined that relationship and continued to threaten the human-nature relationship. Science Camp's curriculum required that students remove themselves from technological modernity and provided historical examples of the proper human-nature relationship.

In addition to using Native Americans as representatives of the past, there was an interesting incorporation of mysticism during the ecology hike. There was an imposing rock formation that hovered above the ecology trail. The boulders were large and easy to see. In advance of arriving at this point in the trail, I observed instructors asking students to pick up a stick, rock, or something else to leave as an "offering" at this rock formation. They called this rock formation, "Gorilla Face Rock." When we arrived at the bottom of the formation, students would add their "offering" to one of the many pre-existing piles (some piled teeteringly tall). Leo told the legend of Gorilla Face Rock to the students. He explained that there were once two brother gorillas that were kings of the mountain. One was good and was mischievous and bad. One day when the good gorilla was gathering food, the bad gorilla caught the mountain on fire. This destroyed towns and the forest. The brother gorillas got into a huge fight and the bad brother threw the good brother off of the cliff. The bad brother is Gorilla Face Rock and students are asked offer a sacrifice to keep him docile and asleep in the hopes that he will not start any more fires. This example of the use of legends and myths as well as the many other examples from the storybook served to distance nature from both reality and modernity.

Figure 8. Photo of "Gorilla Face Rock"

By positioning the human-outdoor relationship in the past, students became visitors to the past. They went back in time to see how things used to be before electronic technology was a part of our daily existence. This was cultural heritage tourism. Students were on a trip to see how people of past times lived outdoors. In this way, Science Camp became very similar to a field trip to a farm. At the farm, you may milk a cow and brush a horse. But, at home you never do those things again. At Science Camp, you may walk around outside smelling trees and drinking white fir tea, but at home you never do those things again. The removal of aspects of modern life that were important to students' daily lives and the distance of students from their homes allowed for an understanding of the outdoors as not only distant from home but also distant from modern life. Students became tourists exploring their American cultural heritage.

Distancing Students from Nature: On the Outside Looking In

In fact, despite Science Camp's intention of connecting students to the outdoors, there were several ways that the packaged vacation and tourist like representation of the human-nature relationship at Science Camp distanced students from the outdoors in unintentional ways.

One of the most literal ways that Science Camp distanced humans from nature was by emphasizing students' physical distance from home. Students were on a vacation away from home to take a tour of nature. Everything was pre-planned, organized, and standardized for the students. This made Science Camp feel like a pre-packaged vacation or an all-inclusive vacation. The curriculum reiterated the differences between students' homes and Science Camp in ways that were not obvious to the staff and teachers at Science Camp. Beyond just being distant from students' homes, Science Camp represented a new culture to students. Camp was a whole other world - one that was new and unusual. It was a place that had new rules, food, customs, and leaders that sung songs throughout the day.

This notion of Science Camp as a travel destination to a very new and different place had interesting implications. Science Camp came to be equated with nature and "in possession" of nature in a way that students' everyday world was not. Nature existed at Science Camp. As Science Camp came to signify nature for students, it also represented an exotic notion of nature. Nature wasn't an ordinary place. It was a place that existed away from home.

During an ecology hike with Leo, we stopped to do an activity about ecosystems. We had discussed the living and nonliving aspects of ecosystems and Leo stopped the group and asked them to think about whether or not where they lived was an ecosystem. After a few moments of thought, only half of the students believed that where they lived was an

ecosystem. Leo asked if students' school was an ecosystem. Most of the students responded affirmatively. When Leo asked if Science Camp was an ecosystem, the students quickly agreed. There was no doubt in students' minds that Science Camp was an ecosystem. It seemed as if many of the students were equating the term ecosystem with their idea of what nature was. Science Camp was nature for students and that is why there was no hesitation and almost a "duh!" response when students were asked if Science Camp was an ecosystem. This was a troubling representation to me of how locating nature at Science Camp continued to distance students' understandings of their relationship with the outdoors.

I discussed this incident with one of the classroom teachers, Gloria, and she noted that the concept of an ecosystem was "more like it's [ecosystem] just contextualized in a book rather than in their life, you know, their own life" (personal communication, June 11, 2013). She described the book's illustration of an ecosystem as "it's like a river and there's deer, raccoon, there's rocks and dirt and trees. So it's very just picture out of a mountain (laughter) but you don't see buildings and cars and ... yeah so…." (personal communication, June 11, 2013). The textbook's illustration matched up with the illustration of a "forest ecosystem" presented to students in their camp journal. Importantly, the textbook's illustration matched up with what Science Camp looked like. Even the textbook confirmed to students that Science Camp "possessed" nature in a way that their homes did not.

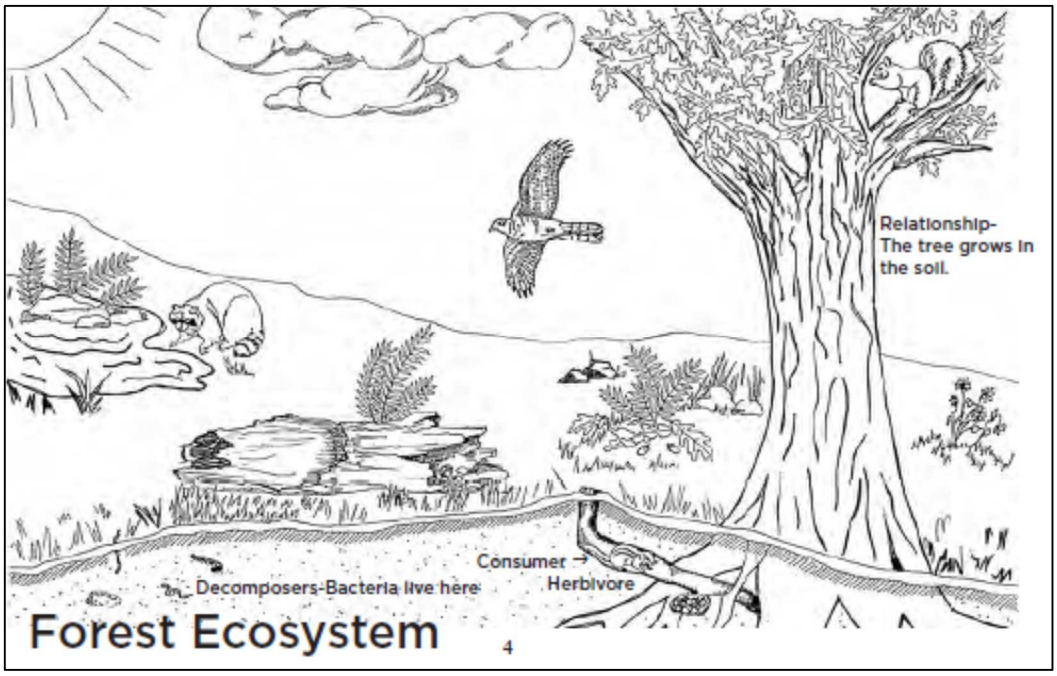

Figure 9. Illustration of an ecosystem from Science Camp's "Student Journal"

The idea that nature existed, but that you had to travel to get to it, distanced students from nature by separating the natural world from their everyday lives. Nature not only did not exist where students lived, it existed only in special locations. Science Camp provided an understanding for students that may have left them thinking, "nature was at Science Camp. I don't live at Science Camp. Therefore, I do not live in nature." The most important implication of this tourist and vacation like understanding of the human-outdoor relationship was that the outdoors became a place that was separate from the everyday lives of students.

This notion is problematic for individuals' conservation and environmentally responsible behaviors. If nature doesn't exist where people live then how can everyday actions support positive environmental change? If nature doesn't exist in my backyard, then why should I worry about the chemicals I spray for weeds? If nature is never right here, then where is it?

The fun of Science Camp continued to prove to students that they were on vacation. Creating memorable and fun experiences for students was one of the most lasting ways that Science Camp hoped to connect students to the environment. In their estimation, having fun at Science Camp meant having fun in nature. And having fun in nature might yield positive, sympathetic, and environmentally responsible future behaviors. However, the fun and memorable aspects of Science Camp were an important way that Science Camp's enacted curriculum unintentionally created an understanding of the outdoors as distant from humans by positioning students as tourists.

Without devaluing the purpose of the fun at Science Camp, because I believe that it served important social purposes, I must also argue that it contributed to the vacation-like feel of the experience and reinforced a tourist-like understanding of the human-environment relationship. Students were on vacation in a new place having a good time. Their days were scheduled with hikes, evening skit entertainment and programs, and meals (almost like a cruise ship). Because Science Camp's curriculum provided students with the tools for understanding their relationship with the outdoors, it was important to understand how the fun of Science Camp may have been represented nature as not existing in the "real world." The "real world" isn't organized for the purpose of fun and entertainment. The fun of Science Camp was vacation like fun; students were on a break from the school, home, and their reality.

By casting Science Camp (and thus, the outdoors) as a fun experience with an artificial schedule of group activities from dawn 'til dusk, nature merely became a setting for a pleasurable and social experience – a vacation. If being outside is fun, does nature have to be taken seriously? Is the outdoors a place to escape from the real world? How does that shape

the understandings students may come to have of people who spend more of their lives outdoors (farmers, people who live in the country, indigenous peoples)? Does the real world only exist in urban places? Does nature exist for the purpose of having fun? Does that make it important? Does that make it something that you consider on a daily basis in your "real" life?

Another aspect consistent with touring and tourism that was promoted through the formal and informal curriculum was an understanding of nature as removed from the modern world. In trying to reconnect students to the outdoors, it seemed necessary to remove them not only from their home and their school, but also (to a certain extent) from modernity. Science Camp accomplished this in two ways. First, it denied students access to modern day electronics and entertainment. Secondly, the curriculum incorporated some extolment of indigenous peoples' past uses and relationships with the outdoors.

In trying to connect "kids back to nature," Science Camp felt as if it must separate students from their modern lives, places, and technology. Instead of lessening the distance between students and the outdoors, I believe eschewing technology distanced students from the outdoors by positioning the human-nature relationship as one of the past. Krista, in expressing her hopes for students' Science Camp experience, talked about taking them back to the past, "before all this technology."

> …and trying to show kids, you know you're a kid, have fun, know about where you're at, know your surroundings, know everything, but have fun and be able to take this in, you know? I, I just, I really wish that you know they appreciate it more and I feel like that's something that we have gotten away from, where it's… you know, before all this technology, like when you're out in the woods hiking like before technology this is where we would be right now. This is it. "What would you do here? What would you do right now? What could we use to make a house? What could we do here?" You know just trying to take kids back to nature how everything

> was you know before we have [sic] all this advancement bring it back to "okay, this is where I came from, oh this is where I could be living"
>
> (personal communication, May 15, 2013)

Krista discussed Science Camp as an experience that tried to show students the way things used to be before "technology" and "advancement."

Students were not only tourists at Science Camp, they were also visiting the past when they came to Science Camp. They were experiencing a pre-television, pre-smartphone, pre-videogame time possibly for the first time in their life. This must have seemed quaint to children of this generation. The Survival science session distanced students from the outdoors by representing the outdoors as a place that exists in the past, a place where modernity was not a resource. This science session also presented the idea of the wilderness as a place that needed to be escaped from. Even the examples of entertainment (skit night and hoe-down) that Science Camp provided to students reinforced the idea of that Science Camp existed in the technology-free past. Skit nights, hoedowns, and the story-telling that occurred for some before bed were all representations of pre-electronic entertainment and they all lent an understanding that Science Camp, nature, and the proper human-nature relationship belonged to the past.

Another important way that the curriculum of Science Camp distanced the human-nature relationship from modernity was by promoting the idea that indigenous people represented the proper human-nature relationship. Native people existed in the past. The "Coin and the Cricket" story in Science Camp's storybook positioned native people (and thus nature, as they came to represent nature) as not coexisting with modernity. In the story, modernity was represented by city life. The past, though not mentioned explicitly, was linked with the rural, Native American lifestyle. The only story in the camp's storybook that

was set in modern times was in fact a cautionary tale about allowing modernity to distance oneself too much from nature. The story served as another curricular reminder that the past better represented the proper human-nature relationship than the modern world. Skit nights, hoedowns, and the story-telling that occurred for some before bed were all representations of pre-electronic entertainment and they all lent an understanding that Science Camp, nature, and the proper human-nature relationship belonged to the past.

Positioning the outdoors as part of the past distanced and disconnected students even further from the outdoors. Not only did nature not exist in the physical location where students lived, but it also did not coexist with the modern world. Nature and modernity were positioned as mutually exclusive by the curriculum of Science Camp. This begs the following questions. If nature exists in the past, then are there any consequences for forgetting about it in our present day lives? If we represent nature as part of our cultural heritage, do environmentally responsible behaviors serve any purpose in our present-day and future? Is it possible for modernity and nature to exist simultaneously, harmoniously, or benefit one another?

The Science Camp vacation was complete with standardized tours. The academic hikes of Science Camp operated like tours. The instructors were tour guides that followed the script. Students were tourists on a superficial tour of nature and their cultural heritage. The standardized tour experience that the hikes provided situated humans (in the human-nature relationship) as spectators. The implication of this tourist like relationship was the distancing of humans and nature. Humans were spectators of the outdoors. People existed in one space and the wilderness existed in another. The trail itself became the pathway through the museum of nature. Students were encouraged to respect nature by staying on the trail,

staying off rocks and logs. They were reminded, "if you do not have permission to touch, leave it alone." Science Camp seemed much like a museum – a place where you looked but didn't touch, a place where items were arranged and organized for human's purposes, a place where students were on the outside of the glass looking in at nature.

This standardized nature of the curriculum in action also prompted an understanding that people's experience with nature should be ordered and not spontaneous. Staying on trails, following the leader, and listening to information were the proper ways to interact with the outdoors. Because people don't often take tours of familiar places, the idea that nature existed at Science Camp and not elsewhere was reinforced by the tour-like experience of the hikes. The scripted and inauthentic exchange of the hikes between students, instructors, and the outdoors may have also promoted the idea that only tour guides or experts see and experience nature in the "right" way.

Additionally, because the hikes operated like tours, an understanding of the finiteness of nature was promoted. Structured tours, like the ones at Science Camp, promote the idea to the visitor that all that there is to experience in a given place has been experienced on the tour. At least, all that is *worth* being experienced was presented on the tour. In this way, tours also place differential values on things, experiences, places, animals, etc. For example, identifying trees and understanding trees' vascular system was more important to the ecology trail than learning about aquifers. The tours of Science Camp made the place itself function more as a living museum than a wilderness.

Finally, activities such as the bird feeding reinforced the distancing notion of a tourist like understanding of the human-nature relationship and also positioned humans as dominant to nature. The fun novelty of feeding wild animals was supposed to be an

innocent encounter with nature. It was simply designed to be a memorable experience for students, something that connected them with the outdoors. However, the experience did more than that. It positioned the outdoors as a zoo or a museum. It standardized the wilderness. Bird feeding became another stop on the tour of the outdoors and the birds became timed and trained actors playing their part in the entertainment of the tourists.

This aspect of the curriculum represented to students the idea that people had the power to order nature and to impose their will upon it. The value of the tourists' wills and desires were more important than that of the local birds. Humans were dominant in the human-nature relationship. And the birds were quite literally at the beck and call of humans. Nature existed for humans' purposes.

Conclusion

The curriculum of Science Camp provided tools for students to understand their relationship with the outdoors as well as the proper human-nature relationship. The Science Camp experience positioned the proper human-nature relationship as one of a tourist in several key ways. In spite of Science Camp's mission of connecting students with the outdoors, the tourist-like experience distanced students from the outdoors. Science Camp came to represent nature and nature became a place that students visited, not where they lived.

CHAPTER SIX: CONCLUSION

Summary of Findings

This dissertation has demonstrated how aspects of the enacted curriculum of Science Camp represented nature in ways that positioned students as tourists on vacation in the outdoors and effectively, though unintentionally and unknowingly, distanced humans from nature. Science Camp's curriculum positioned students as tourists of the outdoors in several important ways. Students were introduced to nature as a place that existed in a location that was very different than students' home environments. The fun and memorable moments of Science Camp reinforced a tourist-like understanding of the human-environment relationship by creating a vacation for students. In addition, Science Camp's curriculum represented nature as a place that existed in the past. The prohibition of technology promoted an understanding of nature and technology as mutually exclusive, thusly distancing modernity and nature. Additionally, the positioning of past Native American peoples indigenous to the area as representatives of the proper human-nature relationship also served to represent that relationship as well as nature in general as having existed in the past. By distancing nature and the proper human-nature relationship from modernity, students became cultural heritage tourists of another era. The scripted nature of the hikes and curricular experiences served as packaged tours through the outdoors. The bird feeding activity was an important stop on one of those tours. This activity reinforced the idea of students as tourists by standardizing and taming a wildlife encounter, much like a zoo or a museum might. In these unintended ways, the curriculum of Science Camp positioned humans as tourists of the outdoors and thereby distanced them from the natural world.

Implications

This research has viewed curriculum as a contested (not neutral) "construction of reality" (Zimmerman, 2002). It has also considered the enacted curriculum of Science Camp as providing students with knowledge, or cultural tools, for understanding nature and their relationship to nature (Wertsch, 1991, 1998; Wills, 2011). By understanding curriculum in this way, the curriculum of Science Camp may be understood as being uniquely situated as being both a *product* of our past and current cultural understandings of the human-nature relationship, as well as a *source* for future cultural understandings. By positioning students as tourists of the outdoors, Science Camp provided students with certain tools that enabled and constrained their understandings of nature and the human-nature relationship. Namely, this research suggests that the curriculum of Science Camp provided students with a tourist-like view of the human-nature relationship, one that inadvertently distanced students from the natural world. This tourist-like view enabled an understanding of nature as part of the past and humans as separate, dominant, and removed from nature. It is important to use this curricular theory to think about the implications of these understandings when we think about the curriculum as a source of future cultural understandings of nature and the human-nature relationship.

My research adds to a small body of literature about residential camp experiences. This research is often quantitative in nature, focused on student outcomes, and does not examine the context of camp itself. In contrast, my research is qualitative and focused on the curriculum of one residential environmental education camp.

Knapp and Benton's (2006) research focused on student remembrances of a residential environmental education program. Their findings suggested that students remembered active

experiences like hiking and game playing and that they recalled their experience as being fun and pleasant. The Science Camp curriculum included an emphasis on providing fun and active experiences for students. Knapp and Benton's research may suggest that these curricular emphases were effective and perhaps important for creating memories for students. My research suggests that this emphasis, however, contributes to the notion of the residential camp experience as a vacation and thus distances nature from students.

The eschewing of technology at Science Camp was another key way that Science Camp distanced students from nature by distancing nature from modernity. Recent research by Teffer, Bodzin, and Smith (2013) examined the use of technology by non-formal environmental educators. Their findings suggested that there was a "willingness" among educators to use technology in non-formal environmental education settings but much "concern that technology might have negative consequences on student['s] connection to the natural environment" (p. 16). My research also discovered a similar reluctance (or "technology avoidance" (p. 34) as these authors call it) to allow nature and technology to intertwine. I suggest in this research that this sentiment distances the human-nature relationship from modernity.

Smith-Sebasto and Obenchain's (2009) research suggested that students' "most meaningful" experiences at a residential environmental education program were social. My experience at Science Camp also yielded a lot of data that identified students' social growth as one of the main goals of the program. In explaining the main things that happened at Science Camp to me, David said, "…it's, it's creating social growth and I think it's one of the biggest secrets of [Science Camp], cuz when we talk about it the main thing is always the science standards…" (personal communication, March 27, 2013). In David's estimation,

students' social growth at Science Camp was part of the hidden curriculum at Science Camp. Similarly, Becca told me in our interview that when she described her job to others she would say, "I teach them [students] about the environment and how to be good people" (personal communication, May 15, 2013). In the following future research section, I discuss the linking of personal and environmental responsibility that I took note of at Science Camp.

Throughout the environmental education body of literature, there is very little research that has examined the implications of environmental education programs' curriculum on the human-nature relationship. Instead, much of the literature focuses on curricular design and development. My research will add to this small body of research and add a new understanding of the curriculum as providing cultural tools that students use to understand their relationship with the outdoors.

The full implications of the cultural tools that Science Camp provided to students through the curriculum can never really be fully understood. With recognition that this research only provides a glimpse and one voice to the characterization of the modern human-environment relationship, it is important to theorize about the possible implications that a tourist-like understanding of human-nature environment promotes.

The most troubling implication of this understanding of the human-nature relationship is separating the outdoors from the everyday experiences of people. This enables an understanding that nature only exists in certain places. And those places don't likely correspond with the locations where people actually live. The positioning of students as tourists may help explain Shepardson's study's conclusion that suggested that students "tended not to see humans as part of the environment or human-made environments as environments" (2005, p.57). Do students' tourist experiences at sites like Science Camp give

them the idea that they are looking through the museum glass at "the natural environment?" Might they think to themselves, "ah, that is what the natural environment looks like?" And, when they picture an "environment" or "nature" or the "outdoors" for the rest of their lives, do they see themselves inside or outside of the glass? My research suggests that the curriculum of Science Camp suggests that the proper human-nature relationship exists when students are outside of the glass looking in on "nature."

With this view, people may see themselves as temporary users of the outdoors – tourists. The outdoors becomes a destination rather than our situation. The curriculum may constrain our view where the outdoors is actually located. With this understanding, does the value of non-destination, non-tourist wilderness decrease in comparison to destination outdoors locations (think: the Grand Canyon)? If differential values can be placed on the outdoors, then do the sparrows in Yosemite, the Kansas plains, and the ones that jump around in the alley behind my house differ? What about the grasses? If nature is always a destination then how do we understand where we live?

I believe that this research also holds significant implications for environmental education in practice. I would encourage practitioners to think about the ways in which the curriculum at their site may inadvertently distance students from nature by enabling or constraining certain views of nature or the human-nature relationship. Specifically, I think the role of technology and media in environmental education sites needs to be reexamined. Incorporating technology into environmental education need not be cumbersome. Students could use applications like Google Earth to compare places, terrains, or ecosystems with one another. Satellite imagery might also be useful in matching up tectonic plates with visible land changes. Online maps might be used to plot a hike or to situate students' in their new

location. In addition to examining planets and stars with a telescope, using an application like Google Sky may give students a way to take camp home with them. Students are more likely to have access to Google Sky than a telescope in their "real lives." Students could identify trees, birds, or insects using online guides. Instead of completing a student journal on paper, students could create or complete a blog. This could allow students to share their experiences with their families. There are many ways that technology could be incorporated into environmental education programs. This is vital because viewing nature and the wilderness as separate from modernity by excluding technology allows students to exclude nature from their modern world. The proper human-nature relationship should not be situated in the past. By doing so, we allow students to forget the outdoors and to see it as separate from their lives and their futures. It is time to move past the rhetoric of technology as cause of students' disconnection with the outdoors and find a more useful way of including modernity in students' experiences with the outdoors.

Additionally, I would encourage practitioners to think about the ways that indigenous peoples are used in their site's curriculum. Do they represent the proper human-nature relationship? And if they do, are these people represented as part of our cultural heritage? Thinking about how presenting this historical example of the proper human-nature relationship may in fact not only demonize our present day human-nature relationship but also position nature as a part of the past is crucial. Might modern day people or environmental programs be used in place of indigenous peoples as representatives of the proper human-nature relationship? Why are we still hanging on to these controversial representations of indigenous peoples?

In addition, I would encourage practitioners to move away from standardized and scripted interactions with the outdoors and provide more authentic student-led investigations in the outdoors. This would require knowledgeable staff and a program that is focused more on student engagement with the outdoors than covering state science standards. Creating tours through the outdoors distances students from the outdoors and disempowers them from exploring nature on their own.

Finally, in response to my research that suggests that Science Camp is a vacation for students that gives students a tourist like understanding of their relationship with the outdoors, I believe that students should engage with the outdoors on a more day-to-day basis. Experiences like Science Camp shouldn't be one of the few times that students are encouraged to explore in the outdoors. Students should have formal and informal educational opportunities to investigate the outdoors in their own geographical place. My suggestion here echoes many of the ideas of place-based education popularized by Sobel (2005). Instead of traveling to a place that is very different from their home to look at nature, students should familiarize themselves with the place where they are geographically situated. This encourages the understanding that nature exists everywhere rather than in specific, distant locations. Exploring nature locally does not preclude trips to places like Science Camp, but local trips can provide a reference point for comparison between local and distant locations.

In our interview, Mike suggested that Science Camp shift from being a one-time experience to a series of experiences.

> Mike: That's what I think would be really cool with this program, is if we got these kids back every couple of years so we could see 'em from sixth grade to eighth grade

> to tenth grade. Teach them progressively more. But yeah, I think you know probably...
>
> Terrill: Is there talk about doing that or no...?
> Mike: It's just me. (laughter) It's just me talking about doing that.
>
> Terrill: What do you think the value would be in like keeping in having them multiple times?
> Mike: Oh, I think you could definitely teach them a lot more in depth maybe more critical thinking, um, you know just about the environment…
>
> (personal communication, March 27, 2013)

This would allow the curriculum to build upon itself and give the experience less of a novel vacation like feel.

It is my hope that this dissertation will contribute to a deepening of thinking about how we represent the human-nature relationship throughout our environmental education curricula.

Future Research

This dissertation discussed the cultural tools and understandings of the human-nature relationship that Science Camp's curriculum provided to students. This section will discuss recommendations for future research into these cultural tools with the understanding that they constrain and enable certain representations of the human-nature relationship. I use this theoretical lens to suggest further research that might further the ideas that I have included in this dissertation.

My first suggestion for research would be to replicate the questions I have asked in this research about the curricular representations of the human-nature relationship in other environmental education settings. It would be significant to know if the themes represented at Science Camp were common in other programs. Furthermore, additional research could be conducted in these environmental education programs that incorporated students. For

instance, a longer study that investigated not only the curricular tools provided to students but also how students picked up and used those tools would yield interesting data. How might students' understandings of science and science concepts change after their Science Camp trip? How might students express their understanding of their place in the natural world? After many years, would students that attended Science Camp have different attitudes and understandings of the human-nature relationship that children that did not have a Science Camp experience? Replicating Shepardson's research with students who had and who had not attended Science Camp could also give some insight into how students perceived their relationship with the outdoors. How might students of each group define an "environment?"

Further research into other types of experiences that young people have that might shape their understanding of the human-nature relationship would also be of interest. What other curricula provide cultural tools that may enable or constrain certain understandings of nature and the human-nature relationship? Perhaps further inquiry into the representation of nature and humans' place in nature in popular media shows or cartoons, or museums, or popular children's books (think: Make Way for Ducklings and The Lorax) or other school-sanctioned field trips would also be of interest.

As I mentioned earlier, quite a bit of data existed regarding students' social growth from their residential camping experience. The idea that students learned personal responsibility while they were at Science Camp came up frequently in my data. While the social outcomes of Science Camp weren't a topic of my inquiry, there was some evidence to support the idea that Science Camp's purposeful development of social skills (think: dining room table discussion topics and cabin cleaning) also supported the camp's environmental goals. For

instance, Eliot, in discussing what students took away from their Science Camp experience, intertwined personal responsibility with environmentally responsible behaviors.

> So, I think we really try to encourage that and we kind of model for them a responsible way of being so, cleaning up after yourselves, taking care of the environment, not wasting, um being clean and hygienic, all of these things are emphases of our program. (personal communication, May 16, 2013)

Later, he explained that he felt that many of ecological concepts (think: carrying capacity) introduced to students on the ecology trail also held true for humans.

> I think there's a fundamental connection between understanding the natural world and understanding kind of the, I'm going to use this word again, social dynamics between people and there's a lot of kind of overlap in the concepts uh that that we're using and that we're putting forward. (personal communication, May 16, 2013)

Understanding the natural world was important for understanding the human world. He mentioned that this connection was not made explicit for students but that he hoped they would link the concepts themselves.

This idea was somewhat mirrored in a comment made by Becca about community living. She indicated that Science Camp taught students how to live in a community (a social goal). But, she also said that she thought Science Camp implicitly taught students to understand that the environment was also a part of that community.

> Um, I think one of the biggest lessons that we teach them without explicitly saying it is how to live in a community and this concept of what it means to be in a community because in our culture we're very individual-centric and even when you're living back at home um, some of these kids it's your it's you and your family or even just you and yourself to take care of yourself and that's it and you don't realize how connected you are to everyone else….. So you're taking care of each other human-wise as a community, you're taking care of the environment as part of that larger community and realizing our role in that.
>
> (personal communication, May 15, 2013)

The idea that the social goals of Science Camp were not completely separate from the scientific learning goals was significant. How might the curriculum of Science Camp

designed to further students' social skills be linked to the site's environmental education goals? And how might the social aspects of camp provide specific tools for students' understandings of nature and their relationship to it? The linking of personal and environmental responsibility was unusual and could merit further investigation.

Another idea that merits further investigation would be to think about camp as an acculturating institution, much like school. Camp might be viewed as a representation of dominant American white, male culture. Flag ceremonies, hoe-downs, skit nights, panning for gold, camp fires, camp songs may all be things which typify and glorify white America (and perhaps American expansionism). Camp may be a place where students are learning what it means to be an American and what an American relationship with the outdoors should look like. It is conceivable that this American relationship could be characterized as both white and male.

This reminds us to think about the politics of school knowledge and curricula (Apple, 1993). Apple suggests that curriculum should be considered as culled from "part of a selective tradition, someone's selection, some group's vision of legitimate knowledge" (p.222). What are the politics behind characterizing camp and nature in this way? Perhaps by representing native peoples and their legendary human-nature relationship as part of the past we continue the rhetoric of white man's superiority over Native Americans and nature. Perhaps we also propagate the idea that white people are mostly or wholly responsible for American progress and modernity.

If camp is an acculturating institution where students are provided with a curriculum that exalts white America, do the cultural tools or representations (curriculum) provided to students at Science Camp include or exclude students of color and students of other "non-

dominant" groups to participate in nature? Is camp providing a mono-cultural representation of the outdoors? The way that Native Americans were represented in the storybook certainly seemed to align with the stereotypical white, American way of characterizing native peoples. Are there other cultural ways of interacting with the outdoors and understanding the human-nature relationship that are excluded in the curriculum?

Additionally, if camp is a white male institution could the proper human-nature relationship be masculinized? A masculinized understanding of the human-nature relationship may dictate that domination of nature is the proper human-nature relationship. In response, Native Americans and other peoples that are seen as being closer to nature may be feminized, thus able to be dominated (Plumwood, 1993). To live in "harmony" with nature may be constructed as feminine. How might this curricular representation of the human-nature relationship differentially attract or repel students of different genders, cultures, identities, nationalities? Are there gendered ways of relating to the outdoors? In order to reject the idea of the domination of nature, does one have to in some way reject one's American culture or masculinity?

My final suggestion for future research comes from my interview with Michelle and ties in with the aforementioned ideas that people of color or of "non-dominant" groups may be excluded from nature. Her discussion of the lack of "people of color" role models at Science Camp triggered other wonderings I have had about whether the attributes of caring about the natural world and/or being involved in "outdoorsy" things may be positioned as "white" things to do.

> Plus, there's not that many people of color that are in this program that are in the position that I'm in and we do kids that, you know, that come up here and they always think that white people are always the only ones that camp and do stuff and

> outdoorsy. So when they come and they see me they're like ohhh okay, we can do this too. So, part of that I think the subtext of it is that too is lettin' people see that yeah there are people of color that are interested in the environment, they enjoy being outdoors, they're crazy, they're fun, they're cool you know that kind of thing. So, there's a stereotype like there's hippies but not necessarily there's different types of people and plus the kids keep me young, too, you know?
>
> (personal communication, March 26, 2013)

If so, does an oppositional cultural ideology (Ogbu, 2008) exist in reaction to that position? Could participation in environmentally responsible behaviors constitute "acting white?" And how might that impact trends in environmentally responsible behaviors like recycling?

This research could also be furthered by nuancing the understanding of the "proper" human-nature relationship by investigating different cultural constructions of the human-nature relationship. It is unlikely that all people construct this relationship similarly. Blum's article, "Power, danger, and control: Slave women's perceptions of wilderness in the nineteenth century," provides an important reminder that our historical relationship provides us with specific cultural tools for understanding our present-day relationship with the outdoors (2003). Sheppard's article, "The black-white environmental concern gap: An examination of environmental paradigms," provides further evidence that "subcultural values" regarding the environment are historically and culturally influenced (1995; Taylor, 1989). Investigating different cultures' historical relationship with the outdoors may yield interesting data that nuances and personalizes the human-nature relationship.

These suggestions encourage not only further research into different topics, but also continuing inquiry into the implications of how we represent nature and the human-nature relationship.

APPENDIX A – INTERVIEW GUIDES

This is the basic outline of questions I developed for interviewing Science Camp staff members.

- Could you tell me a little bit about your position?
- Could you describe Science Camp to me?
- What are the main things that you think happen at Science Camp?
- How would you describe the curriculum at Science Camp?
- What do you think about the curriculum? Would you add anything, subtract anything, change anything?
- Could you describe the participants of Science Camp?
- If I listened to students talking about their experience at Science Camp, what do you think I'd hear?
- If I listened to teachers talking about the Science Camp experience, what do you think they'd be talking about?
- Is there anything else you think I should know?

This is the basic outline of questions I developed for interviewing classroom teachers that had attended Science Camp.

- Could you tell me a little bit about yourself, how long been working as a teacher?
- Has his school attended Science Camp for a long time?
- Tell me about Science Camp.
- What were the teacher and student experiences of Science Camp.
    - When teachers talk about Science Camp, what are some of the things they talk about?
- Tell me about the curriculum of Science Camp.
- What science are students learning in the classroom this year?
- How do you think students view the outdoors?
    - Do you think that changed after their visit to Science Camp?
- What were some of the memorable experiences for the students at camp?
- What do you see the value of Science Camp being?
- What else do you think I should know about Science Camp?

APPENDIX B – SCIENCE CONTENT STANDARDS

This document is a copy of the science standards Science Camp's curriculum covers. This document is given to schools and classroom teachers. Identifying information has been removed.

5th Grade Standards

Life Science

2.e. How sugar, water, and minerals are transported in a vascular plant.
2.f,g Photosynthesis and respiration

Earth Science

3. a-e Water Cycle, availability of fresh water
4.a,b,c,e Weather
5.a-c Solar System

Investigation and Experimentation

6.a. Classify objects
6.b,g,h How to develop a testable question, record data, make inferences, and draw conclusions.

6th Grade Standards

Earth Science

1.a-f Plate Tectonics
2.a,b,d Reshaping of land by weathering, erosion, and deposition

Physical Science

4.a,b The sun is the major source of energy for phenomena on Earth's surface
4.e Differences in pressure, heat, air movement, and humidity result in changes of weather

Life Science (Ecology)

5.a,b,c,e Organisms in ecosystems exchange energy and nutrients among themselves and
with the environment.
6.b,c Renewable and nonrenewable resources

Investigation and Experimentation

7.a,d,e How to develop a hypothesis, communicate the steps and results, and recognize
whether evidence is consistent with a proposed explanation.
7.g Interpret natural events by sequence and time.
7.h How to identify changes in natural phenomena over time.

APPENDIX C – QUOTES REGARDING SCIENCE IN SCHOOL

1) ("Sandra," personal communication, June 11, 2013)

Terrill: So how does, so you're telling, so tell me a little bit about your science curriculum this year?1

This year, well we don't really, you know our science unfortunately is taught on a superficial level, we get it across like, we did volcanoes uh but and I did energy cuz we switch so I taught some of it and so what Mrs. Lee taught was different so we taught, I taught half science a little bit of science and more life skills and she taught more science and less life skills. So my units were on energy and motion and um light energy, wave energy, and then solar energy so we talked about that kind of stuff and then we talked about raw materials so that was kind of nice because the recycling, reduce, recycle they emphasize that a ton. And that's useful for them today. I think some of it they probably took back home or were familiar with just from doing it at their own house, so that's kind of what my…

Terrill: What do you mean when you said "superficial"?

We just don't dive in to, unfortunately we have not as long in the afternoon to teach science cuz by the time we finish with the core curriculum of writing, reading, and math we have social studies still, we have science, we have this life skills, AND we've got PE all tied in together in a whole hour and a half after lunch. So it doesn't get in depth like we should and like they will in seventh grade when it's a fixed hour into there and that's all that teacher does is get to teach the sciences for an hour, no outside, so we cover it we just don't I don't feel like we can get into depth on it because there's so much to cover in the afternoon

2) ("Michelle," personal communication, March 26, 2013)

Terrill: So kind of in line with that, could you describe the curriculum of [Science Camp]?

…for schools unfortunately this is like the only science they get in a week is when they come to [Science Camp]. We've literally had a teacher tell us this like this is ….

Interview interrupted by call on radio to Michelle. The following happens later in the conversation:

Terrill: Can you tell me some more about like you mentioned some of the teachers saying you know like this is the only time they get science...can you tell me more about like stuff you've heard?

One of the biggest problems a lot of the schools that don't have the money to afford to come up here, what we're hearing more and more is umm because they are just teaching to tests and things like that what they're allowed to teach in the classrooms is so regimented like they don't have time to do like ummm I remember this one, I can't remember what school it was

couple of years ago but she said that they used to do like this really fun like like a social studies combination of using arts, social studies, kind of fun stuff to teach something and she says now it's like we have to focus in on whatever's going to be on the test so that these kids are prepared. And she kind of missed that because a lot of things that she would like to teach they don't have time to teach a lot of sciences. It's focusing on math or English and things like that, so they were just saying well this is pretty much it like by the time we get a chance to do a science unit they may have maybe a couple days (before) the test show up, you know, and so pretty much this is it. So we kind of cram in as much as we can ummm a lot of the schools that have been coming to us before umm a lot of times too they'll prep their kids like they'll say, hey this is what we're going to be learning so that kind of helps reinforce when they do come up like oh yeah you know, I do remember this!

3) Excerpt from Blake discussing student participants of Science Camp, discussing students' prior science knowledge (personal communication, April 1, 2013)

I remember talking to a bunch of teachers one week and it was about this time of year and "so how much science" they were saying "we're really glad (inaudible, possibly: "we're here") cuz it really helps them on the science test," the state standards test and uh I said, "well how much science do they get?" and they say "this is it, this is all the science they get because" and they were testing the next week and most schools don't want to come the week before testing and they said, "oh we wanna come" because the teachers are so handcuffed with uh language whatever, and math I think, whatever they're gonna get scored on. Science, music, art, um, they just don't get to it, it's not their fault.

4) ("Mike," personal communication, March 27, 2013)

Terrill: How do you find um like schools' levels of preparedness or understanding of the concepts before they get here or do you want them to understand the concepts before they get here?

They're...varies, I would say most of the time we have fairly veteran teachers now, I get new teachers pretty often but even the veteran teachers they have different takes on how, like some of them will spend a week or two before prepping their kids and they know all the curriculum and they put it all out there for the kids to start learning, so they come up here and they already have the basics so you can kind of tag onto that, other teachers are like "this is the only science my kids are getting all year, this week, they don't know, just, let em have it" and uh then they haven't been prepped at all and they just get basically their science for the year here.

5) Excerpt from Krista discussing students' understandings of what an ecosystem is (personal communication, May 15, 2013)

I've talked to some of the teachers that come up, some of the classroom teachers and I don't know how true it is but, they talk about how you know

like science, a lot of science is being cut from schools, so the kids aren't learning as much about science anymore. They're learning some but I feel that they're not learning as much or they're week up here is the majority of what they're learning for the year and it's tough because getting away from science like, you're getting away from studying life, you know?

6) ("David," personal communication, March 27, 2013)

Terrill: I guess, I guess my next question's about student preparedness for coming here, I mean you said something about you know they breeze over astronomy so they can do it here. I mean, what are you are you finding kids to be prepared and understanding of some of the concepts here or they don't?

It totally depends, it really depends. In fact when the kids come, that's part of what the discovery hike is about is gauging your kids for the rest of the week, you're trying to ask questions and see how they answer them. What do you, what is your prior knowledge and we have some schools, like these schools right here, this week, they're prepared, they know what ecosystems are, they know what a lot of these big words are already, so it kind of makes the teaching of them more hands-on and less lecture, but then you will have kids come up where the teacher hasn't mentioned any kind of science saving it for us because a lot of times the teachers don't understand it as much you know we'll come up on Monday and the kids go on the discovery hike, I'll take teachers out and I have to do the same thing with them, I have to gauge their prior knowledge.

7) ("Chris," personal communication, May 16, 2013)

Terrill: Um, what science knowledge do students bring with them to [Science Camp]?

That's a trickier one, cuz it differs from week to week. Um, some of the students are prepared by their teachers and so they will spend a month or two month actually studying all of this stuff before they come up here. And so they'll come up here and we have very little, very little to do except play with the kids out in the woods because they already know about the rocks, they already know the plants, they've got the knowledge they've done the lecture, now they're coming up here to do the lab work. So, we can still do all the fun experiments and everything with them but they already know stuff, makes it a little more fun and exciting for us. Um, then you have other groups where they have had no preparation and we have to start from square one. What is science? They don't even know. What is an ecosystem? What is a tree? in some cases. What's the differences between a tree and a rock? Some of em don't know.

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