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Whale Watching in Early Childhood

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Whale Watching in Early Childhood

by

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A capstone submitted in partial fulfillment of the requirements for the degree of Master
of Arts in Education: Natural Sciences and Environmental Education.

Hamline University

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“In the end, we will conserve only what we love, we will love only what we understand, and we will understand only what we are taught.” -Baba Dioum

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CHAPTER ONE

Introduction

Beginnings

For as long as I can remember, I have been taking care of kids. When I was young, I always had younger cousins. I often babysat them with my grandmother and my first nanny job was for two of my cousins during my senior year of high school. When I went off to college, I found babysitting and nanny jobs to pay the rent. During my undergraduate degree, I took an internship as a division director at an all girls overnight camp in Northern Minnesota. I went back for many years each September to help facilitate a weekend of outdoor activities for dozens of Minnesota Girl Scout troops. For five years after receiving my Bachelors Degree, I worked full-time for a family that grew to three children. If there is anything I have known about the trajectory of my life, it is that I was meant to work with children. Working with children has always brought me joy and energy. I spent a little time in my undergraduate years considering teaching in a formal education setting, but I ultimately decided that being outdoors was another key element to my happiness, and a key element in childhood development.

Growing up with parents who valued time outside, my childhood was filled with adventure. This led me to major in Parks, Recreation and Leisure Studies. Since completing my Bachelors of Science, I have worked in conservation and informal outdoor education. My passion for working outdoors with kids is the result of both childhood experiences in nature and trusting in what brings me joy. My capstone seeks to answer: *How can whale watching experiences contribute to the conservation efforts of*

ecotourism, educate youth on the importance of whales, and enhance the human-nature connection during early childhood?

Overview

Chapter One of my capstone includes three sections. In the first section, I begin by sharing my personal journey in developing a relationship with nature. My parents played a significant role in providing me with diverse outdoors experiences that I have continued filling my life with as an adult. In section two, I talk about my connection to ecotourism and its role in providing educational nature experiences. Finally, I provide a summary of this chapter, introduce Chapter Two and outline the remainder of my capstone.

Formative Moments

Land of 10,000 Lakes

Growing up in Minnesota, I have spent much of my life on or near a lake. In the summers, we fish, kayak, water ski, swim and boat; in the winter we ice fish, snowshoe, ice skate, and cross country or downhill ski. In the land of 10,000 lakes, it is hard not to develop a deep connection with water. I had the privilege of growing up with parents who were knowledgeable about and valued the outdoors. They also had the funds and time to make outdoor experiences a priority. They took my older sister and me on adventures to local, state and national parks regularly. We spent most summer weekends at our family cabin on a lake. If we were not swimming in the lake over the summer, we were signed up for swimming lessons at an indoor pool all winter. As I think back on my strongest childhood memories, they involve the outdoors.

National Parks

One such memory was my first time going to a national park. When I was eight years old, we packed up our vehicle and headed west to Glacier National Park and the Grand Tetons in late August. The only thing that topped the grandiosity of those mountains was the wildlife. We went horseback riding one day and while skirting the high, steep edge of a mountain, down below in the lake, I saw a grizzly bear swimming on its back. Considering how high up we were, the bear was no real threat to us, but I vividly remember how close my horse was to the edge of that trail, making me anxious about tumbling down the mountainside. The rush of seeing the bear while also highly alert about my horse's footing, all senses now heightened, left a lasting impression, creating this memory. Looking back, I can say that this seemingly short moment in time created feelings strong enough to make me want to experience something similar again. It was a formative moment in my developing relationship with nature.

Four years later, my family once again packed up our truck and headed southwest to Yellowstone National Park. It was here I remember being stuck, waiting for a herd of bison to cross the road. I could have rolled down my window, reached out and touched its back, both unpermitted and dangerous. I am not sure how long it took until those bison finally moved, but I was in the middle of yet another formative moment.

Cold

During my undergraduate years, I took an outdoor leadership course, taught by the co-founder of an outdoor adventure nonprofit. At the end of the spring semester, we went to one of their base camps for a long weekend, located near the south shore of Lake Superior in Wisconsin. Here, we put to practice what we had learned. It was early spring

and nighttime temperatures were still dropping below freezing, a new experience for most of us, including myself. That first night was the longest. Paired up and sleeping in tents, my classmate and I huddled as close as we could for warmth. We were not well prepared for these conditions and waited with cold noses for daylight to break. Drifting off at some unknown time, we awoke to the smell of coffee and campfire. It took us all the energy we had to get out of what little warmth our sleeping bags provided and move around to properly warm our bodies. Thankfully, we were all provided with extra clothing layers and second sleeping bags for the nights that followed and we slept a little easier. Though, the smell of coffee was the only thing that coerced any of us to leave the comfort of our warm sleep spots.

These four days challenged me in ways I could not have predicted; most notably, and strongest of memory, was the cold. Something so basic and yet all consuming, the lack of comfort in being able to get warm at any point of the day or night changed me. It made me mentally tougher and more likely to engage in an ever-rising level of risk. This experience increased my tolerance levels for temperatures; I am more comfortable with using less heat or air conditioning throughout the changing seasons and leaving windows open instead. Just one more formative moment in building my relationship with nature.

Baja California Sur

Almejas Bay

These childhood experiences created a lasting impression, causing me to search out similar situations in adulthood and also continue educating myself on the environment. In January of 2022, I embarked on an adventure to Baja California Sur, Mexico, for a whale ecology research course hosted by Hamline University, Ecology

Project International (EPI) and Eco Migrations. It was during our five days of camping on a remote island in Almejas Bay, off the southwest coast of the peninsula, that I saw my first whale. “Spyhop! Eleven o’clock!” I shouted while pointing slightly left of the bow of the boat. There it was: more massive than I could have ever imagined, moving more gracefully than I did getting into the boat. Sticking its nose up and out of the water about ten feet, a gray whale was coming to greet us for the day. I got chills, my eyes were wide and time slowed down. The response I get in my body, just recalling that moment, is powerful. Fortunately, there were more than one hundred exhilarating moments like this in the coming days; and each moment was as magical as the first. It was here I fell in love with whales. This time in Almejas Bay was a deeply emotional experience, and one of the recent formative moments in my relationship with nature.

Eco Migrations

My time on that remote island in Almejas Bay was supported by an ecotourism company called Eco Migrations. Outside of partnering with educational institutions, this company provides whale watching tours to tourists from around the world. An important part of their mission is the “wellbeing and restoration of [the] environment” (Eco Migrations, 2022, About us section). It could be said that by providing these nature experiences to see gray whales, Eco Migrations is looking to capture the hearts of tourists, capitalizing on their emotional responses, and hoping to create more pro-environmental behaviors. To engage in pro-environmental behaviors is to choose to change a behavior for the purposes of having less negative impact on the environment or create a new behavior that has a positive impact on the environment. One example of these behaviors is less consumption of single-use plastics. Having had the opportunity to

collect plankton samples and observe them under a microscope, I learned that microplastics are a significant contributor to ocean pollution, affecting all sea life, especially filter feeders, like gray whales. I have made intentional shifts in my daily life after witnessing the majesty of gray whales and learning about the impacts of microplastics on their health. As an ecotourism company, Eco Migrations has a unique opportunity to educate their clients while providing an enjoyable service.

In order to participate in a gray whale watching tour with Eco Migrations, it is common to spend a two-hour car ride traveling from La Paz or Cabo San Lucas, on the east coast of the Baja Peninsula, to Puerto Chale where the tour boats launch, on the west coast of the peninsula. It is this chunk of time that Eco Migrations would like to spend educating their clients by providing background information on gray whales and Almejas Bay. This will prepare participants for their time on the water and help tell the story of gray whales, with a focus on human impact. Many of the boat captains are local fishermen from the town of Puerto Chale and speak only Spanish, limiting communications during the actual whale watching tour. To be able to provide an interpretive guide for tourists during the drive across Baja is valuable to Eco Migration.

Phase One

Mahin Hamilton, a classmate in the Whale Ecology course in January 2022, completed phase one of developing this interpretive guide. It was determined that, for adults, an audio guide was best due to the setting of being in a moving vehicle (Hamilton, 2022). Hamilton (2022) researched the importance of creating an interpretive audio guide aimed at a sixth-grade and higher literacy level and determined what content should be included in this guide. Erin Francke, a researcher for Eco Migrations and our partner in

developing these guides, was then able to create a script for the interpretive audio guide. It is this script and Hamilton's capstone that I have built on with my research.

Phase Two

My contributions to this project included an adaptation of the audio guide into a physical activity book, targeting first through fifth-grade literacy levels. Since the content of the guide has already been researched and created, my research focused on why adapting this guide to a younger audience is important. As someone who had many formative nature experiences as a young child and works with youth in outdoor education, I know the value in providing outdoor experiences in early childhood. Education is one way to enhance those experiences and can help create stronger emotional connections with a place. This kind of bond results in caring for and wanting to preserve the environment, potentially leading to pro-environmental behaviors. This chain, from early childhood nature experiences to exhibiting pro-environmental behaviors, is what my research will link through the lens of ecotourism.

Summary

Seeing a majestic animal in the wild for the first time is a grounding moment: senses are heightened, time slows and our complete attention is locked. These moments are few and far between for most of us, but the emotion of it can stick with us long after we have returned home. This is a window of opportunity for conservationists employed in many outdoor educational settings: zoos, national parks, nature centers and wilderness trips. It is in the state of emotional connection that we feel a need to act on what we have just learned or witnessed; we want to protect and preserve for our children, our grandchildren; we want them to feel what we have just felt and learn what we have just

learned. If we are to conserve what remains of our natural world, we have to find ways to engage with nature that sparks an emotional connection.

Fifteen years ago, I would not have been able to predict where my life was headed. I took advantage of opportunities as they came and learned how to lean into the roles I filled. Along the way, I realized how much joy I received working with children. Having personally witnessed and accomplished significant growth in experiential outdoor settings, it is the context in which I believe all youth excel. Meaningful time spent in nature is a determining factor in building an emotional connection and relationship with nature (Cleary et al., 2020). Emotional connections with nature can lead to caring about the environment, resulting in pro-environmental behaviors. The remainder of my capstone seeks to answer: *How can whale watching experiences contribute to the conservation efforts of ecotourism, educate youth on the importance of whales, and enhance the human-nature connection during early childhood?*

This chapter introduced experiences growing up in a family that valued time in the outdoors. Not everyone is as privileged as I to have these experiences regularly, though everyone deserves them. Outdoor experiential learning is vital to youth development and building a lifelong relationship with nature, an important step in caring for and wanting to conserve the natural world.

In Chapter Two, a review of the literature was conducted, examining: conservation efforts of whale watching companies as part of the ecotourism industry; how interpretation plays a vital role in educating whale watching participants; the importance of developing a connection with nature in early childhood; and how these topics converge. In Chapter Three, an interpretive activity book aimed at first through

fifth-grade literacy levels is described in detail, to be used by Eco Migrations: a regenerative, whale watching tour company based out of La Paz, Mexico (Eco Migrations, 2023). In Chapter Four, this process of writing this capstone and creating an activity book is reflected on, sharing what has been learned along the way. Limitations are considered on this capstone and expanded on potential next steps for further research.

CHAPTER TWO

Literature Review

Introduction

The goal for Chapter Two was to determine the current knowledge, issues, and gaps that exist in the literature related to whale watching as an ecotourism industry, the value of interpretation for whale watching participants, and how nature experiences in early childhood contribute to a lifelong relationship with nature. These findings helped build the foundation for this research project, detailed in Chapter Three, and determine how the project can help address any issues or gaps in the literature. This chapter is a review of current and past literature, seeking to answer each aspect of the research question: *How can whale watching experiences contribute to the conservation efforts of ecotourism, educate youth on the importance of whales, and enhance the human-nature connection during early childhood?*

Overview

The first subtopic of the literature review explores the value of whales and their unique impact on the marine environment. Whales are among the largest living creatures on the planet, shrouded in mystery with their life below water. The second part of this section looks at whale watching, a unique experience, drawing in people of all ages from around the world for the opportunity to see a whale in its natural habitat. The third part of this section examines the goals of the ecotourism industry, and by extension the whale watching industry, and how their values of conservation and sustainability differentiate them from other forms of tourism.

The second subtopic of the literature review explores the role of interpretation in achieving industry goals and positively contributing to the safety and knowledge of whale watching participants. Education is a significant component in aiding conservation efforts and helping facilitate changes in participants' environmental attitudes and beliefs, driving them to make changes in their daily lives to reduce their impact on the marine environment. Education also keeps participants safe during their time actively watching for whales on a passenger boat. The second part of this section discusses how interpretation plays a specific role in enhancing whale watching experiences for youth by giving them language to make meaning out of and connections with what they are observing.

The final subtopic of the literature review explores childhood nature experiences. With more time being spent indoors and on screens, finding ways to engage youth in nature can be challenging, but rewarding. The first section investigates the human-nature connection: how we develop a relationship with nature and why it is important. The second section examines the role of formative experiences and how emotion plays a role in creating memorable experiences. The third section reviews the concept of identity formation in early childhood and its contributions to relationship building.

Whale Watching: An Ecotourism Experience

Ecotourism is centered in building relationships with the local community and ecosystem through employment and engagement of community members and through education on native flora, fauna and culture (Cini & Passafaro, 2019; Lee & Jan, 2018). It is a sustainable alternative to the traditional tourism industry (Lee & Jan, 2018) and seeks to provide a holistic experiential product (Chan & Saikim, 2022). It plays an increasingly

important role in conservation and the reduction of species extinction (Buckley et al., 2016). Additionally, the prospect of viewing wild animals has been identified as a motivating factor in planning ecotourism vacations (Chan & Saikim, 2022). These kinds of experiences help reconnect humans with nature; an important connection to have when facing the global ecological crises of today (Dunkley, 2016).

Whale watching (WW), specifically, is a growing branch of the ecotourism industry; it provides a unique opportunity to educate about human impacts on the oceans and marine life (Wearing et al., 2014). For purposes of this review, WW refers to the experience of searching for and observing whale activity in their natural habitat from a passenger boat on the water. Interactions with wild animals, such as whales, may reduce anthropocentric thought patterns in humans (Yerbury & Lukey, 2021). This may open the door into seeing ourselves as part of nature instead of separate from it, leading to relationship formation with nature (Takano et al., 2009). Experiences with wild animals may lead to increased respect for indigenous knowledge and adopting their holistic mindset, viewing humans as part of the environment versus viewing humans as controllers of the environment (Takano et al., 2009; Yerbury & Lukey, 2021). These sections seek to answer *how whale watching experiences contribute to the conservation efforts of ecotourism* through a review of the literature on the role of whales in the marine environment, how the potential for animal interaction can influence human activity choices, and the goals of the WW industry.

Whales

Whales are among the largest living creatures on the planet. They are mammals, too, meaning they breathe air, give live birth and breastfeed; they have complex language

and culture; and most of them travel thousands of miles a year for favorable feeding or mating grounds. What is most intriguing is that they manage to do all of this in the oceans. Two significant advantages of whales as living marine mammals are that they enhance nutrient cycles through their vertical and horizontal movements and they have the ability to sequester large amounts of carbon (Giggs, 2020; Roman et al., 2014; Dr. M. Savoca, personal communications, November 8th, 2021). Maintaining current whale populations, and encouraging growth, is important in balancing the climate of earth (Roman & McCarthy, 2010); it is also one important conservation goal of the ecotourism industry.

As the largest ecosystem, the health of the oceans impacts the health of the planet (Cook et al., 2020). One way whales contribute to the health and sustainability of the oceans is through their movement: both at depth and at length. Due to the size of most whales, the amount of area they cover is vast. Whales travel thousands of miles between the poles and equator, as well as miles deep beneath the surface of the ocean (Roman et al., 2014). Large whales dive to great depths to hunt for food (Giggs, 2020). For example, blue whales move through the water column up to a 200 meter depth to hunt for food (Roman et al., 2014). Through this up and down motion, whales are mixing together numerous nutrient layers of the marine environment (Giggs, 2020; Roman et al., 2014). This helps feed unicellular organisms at great depths; brings plant life closer to the surface where light is stronger; and kicks up plankton, mimicking the natural patterns of upwelling, which helps bring denser, cold nutrient-rich water to the ocean's surface (Giggs, 2020). These plankton are uniquely important in this process because of their capacity to

absorb carbon dioxide and emit oxygen on a planetary scale. [...] This mechanism, the circulation of plankton, is thought to currently account for the absorption and displacement of roughly half the carbon dioxide produced by the burning of fossil fuels—a greater proportion that is sequestered by rainforests and by all other land-based vegetation combined. (Giggs, 2020, p. 58)

It is not just their vertical movements that have such a dramatic impact on the marine environment. All whale species travel exceptional distances throughout the oceans. Like gray whales, many species migrate from the poles to the equator and back again each year, further impacting nutrient cycles (Roman et al., 2014).

Along this journey, most whale species travel close to shore for protection from predators and higher food supply for less work in times of extreme energy expenditure. It is here that whales risk ship strikes and being caught in fishing gear (Giggs, 2020); and where humans have the most potential for helping reduce both types of incidents. Roman and McCarthy (2010) wrote, “In coastal areas, whales retain nutrients locally, increasing ecosystem productivity and perhaps raising the carrying capacity for other marine consumers, including commercial fish species” (p. 5). Whales provide vital services to the health of the ocean and the health of coastal fishing communities.

Whales play an important role in sustaining oceanic health. Without awareness surrounding this role, these mammals may silently disappear. Educating youth in early childhood on the value of whales through experiential learning, like WW, can be vital in maintaining and supporting further growth of whale populations (Cini & Passafaro, 2019). Youth, especially, are capable of building strong emotional bonds with life outside of themselves.

Human Interactions with Wild Animals

Humans often seek to increase knowledge through meaning making and connection. Additionally, as animals, humans may be naturally curious about how other animals exist in the world. Other mammals typically operate in similar cultural systems, including whales. It is in this kinship of shared experiences that humans can actually relate to the life of whales. As fellow mammals, humans know what it is like to give birth, breathe air, raise a family, communicate efficiently for survival and pleasure, build community and enjoy life. In taking the position of the whale, it is possible to understand their joy and their suffering. Giggs (2020) wrote, “We look to wild animals to see the history of our material intimacy with remote places and the outer edge of our compassion” (p. 24). Through nature experiences, like WW, it is possible to find meaning and connection with life outside of the human species.

As children, specifically, are naturally curious, most notably in the outdoors, whales are an engaging way to introduce wild animals to youth (Sisson, 2017). The grandeur and mystery of whales are captivating; young children are enthralled by gigantic things. Collins et al. (2020) articulated that viewing animals in their natural habitat has been shown to increase learning among children. Going WW as a family can be a positive experience, aiding in early childhood education of the natural world and conservation efforts of the industry.

Whale Watching Industry Goals

The WW industry is expanding (Wearing et al., 2014). It seeks to educate the masses on conservation efforts of researchers and marine biologists (García-Cegarra & Pacheco, 2017). Knowing how important whales are to the marine environment makes it

easier to understand why their existence and support for healthy population growth is so important to share and why the conservation effort matters. The WW industry aids international conservation efforts and seeks to alter our behaviors and attitudes.

Ecotourism plays an increasingly important role in conservation and the reduction of species extinction; however, funding is a major obstacle for most species conservation efforts (Buckley et al., 2016). While zoos and wildlife reserves often take the lead for production of funds for certain species, they can be limited to what types of animals they house. Although some cetacean species have been raised in captivity, large whales need the entirety of an ocean to thrive. This limits direct human contact and observability, reducing the funding options for conservation efforts by zoos and wildlife reserves. Having encounters with wildlife, in a zoo or in its natural habitat, increases the likelihood that humans want to protect that animal (Wearing et al., 2014). Therefore, WW, when practiced with human and marine mammal safety at the forefront, is an important way for funding to be generated for conservation and research needs. Going WW provides an opportunity for individuals to encounter whales in the wild, increasing chances of wanting to protect them (Wearing et al., 2014). Additionally, part of the revenue generated by ecotourism often goes back into conservation and preservation efforts in that immediate environment (Lee & Jan, 2018). Most WW companies are locally based operations, helping generate revenue for the community and the conservation efforts of its members. While these are several of the positive outcomes of WW, some studies have found negative impacts associated with this industry (Hoyt, 2005; Parsons, 2012; Stronza et al., 2019).

Parsons (2012) articulated some short-term behavioral changes of whales due to frequent interactions with humans and WW boats. For example, there have been record shifts in frequency of surfacing, swimming speed and direction, and changes in feeding and resting patterns (Parsons, 2012). Hoyt (2005) also pointed out potential costs of WW beyond observed short-term behavioral changes in whales. Some examples include water pollution due to boat fuel and litter, local infrastructure problems due to increase in tourism, and disturbances to behavior patterns of whales due to boat traffic and human encounters (Hoyt, 2005). Hoyt (2005) and Parsons (2012) both acknowledged the difficulty in determining cost-benefits of WW. Parsons (2012) determined that the best way to mitigate negative impacts of WW is to require high quality training of guides and determine strict codes of conduct for operations. Hoyt (2005) stated that a thorough cost-benefit analysis of the industry could be helpful in deciding continued operations. Unfortunately, as this industry is rapidly expanding with little-to-no international guidelines, many WW businesses are not making their best attempts at reducing their impact (Parsons, 2012).

In conjunction with conservation efforts, the literature also revealed that the WW industry seeks to alter our behaviors and attitudes (García-Cegarra & Pacheco, 2017). A qualitative study conducted by García-Cegarra and Pacheco (2017) revealed that the perception of safety for people and whales is important in cultivation of pro-environmental behaviors. While several studies have found that changing human behavior is difficult (García-Cegarra & Pacheco, 2017; Finkler et al., 2019), having an educational component during a WW experience may lead to shifts in attitudes and behaviors through an increase in environmental knowledge (Walker & Moscardo, 2014).

If there is no effort made to alter the behaviors of individuals on WW tours, it is difficult to support continued whale population growth.

Education can be used for informing companies on sustainable practices and for informing tourists on the benefits of whales and how everyday life decisions can positively or negatively impact their populations. For youth, becoming aware of daily choices that impact the marine environment can have a compounding effect over a lifetime. By learning about microplastics and other forms of pollution that negatively burden whale populations at a young age, an entire generation could be raised with knowledge of the impacts humans have on the marine environment. Zeppel's 2008 study determined that there is a need for more marine-based interpretive programs.

Additionally, Zeppel (2008) found that there is also a need for research "to identify the types of human impacts or disturbances in marine environments that are minimized as a result of interpretative programs" (p. 12). While research is not yet abundant on the impacts of marine interpretation, due to a lack of interpretive marine materials, studies of land-based interpretive programs can be useful in determining the importance of interpretation materials in altering participant behaviors.

In the United States, the National Park Service has a land-based program called Junior Rangers. In Powell's 2017 study, it was observed that the junior ranger interpretive program at Great Smoky Mountains National Park "positively influenced" (p. 11) pro-environmental attitudes and behaviors. While these are land-based interpretive programs, they demonstrate the impacts of interpretation on youth. Understanding the role of youth as ecotourists is important because of their abilities to impact future conservation efforts (Cini & Passafaro, 2019).

In addition to a lack of marine-based interpretive materials for youth, Wearing et al. (2015) stated a need for more research into WW as ecotourism, with a focus on local community impact; trying to understand how both ecotourism and WW industry impact the tourism industry as a whole. While gaps exist in the literature, beneficial decisions can be made towards helping maintain current whale populations and minimizing the consequences of WW industry practices.

Interpretation: Increasing Environmental Knowledge

The goals of ecotourism, sustainable development and conservation, are what set it apart from other forms of tourism and recreation. Education plays a key role in achieving those goals (Stronza et al., 2019). It can be the conduit for altering our behaviors and attitudes, potentially reducing impact on a place or thing after we return home. Ecotourists are motivated to be immersed in a natural environment while engaging in educational activities about that environment. With wildlife being the main attraction to some ecotourism destinations, education surrounding those wildlife is important for safety, enjoyment and conservation (Chan & Saikim, 2022). Interpretation is a type of communication used to share knowledge and stories about a place and features within them in an informal, outdoor setting. It can happen before, during or after an experience and ultimately enhances the ability to learn, connect and make meaning out of what is happening. Ecotourists have expressed a desire for more educational material on the marine environment (Zeppel & Muloin, 2014). For WW companies, this provides an opportunity to inform visitors on the role whales and humans have in balancing the health of the marine environment. These sections seek to answer *how whale watching experiences educate youth on the importance of whales* through a review of the literature

on how interpretation plays a crucial role in the conservation efforts of WW tour companies and can teach young children about the importance of protecting whale populations.

Interpretation for Whale Watching

Interpretation plays an important role in setting the scene prior to getting on a WW boat (Zeppel & Muloin, 2013). Seeing a whale in the ocean is a moment rich with emotion for most viewers. Knowing how to look for evidence of a whale near the surface increases the likelihood of simply getting to see a whale breach the surface (Zeppel & Muloin, 2013). Receiving background information on an ecosystem before interacting with it provides an opportunity for deeper connections and understanding during the actual experience by providing language to make sense of what is happening (Collins et al., 2020; Madin & Fenton, 2004; Walker & Moscardo, 2014; Weiler & Smith, 2009).

One of the main goals of the WW industry is shifting attitudes and behaviors regarding the marine environment (E. Francke, personal communications, February 27th, 2023). For example, Eco Migrations, a WW company based in La Paz, Mexico, educates their participants on the effects of microplastics on gray whale and marine health, with the aim of reducing single-use plastic consumption and microplastic accumulation in the ocean (E. Francke, personal communications, February 27th, 2023). In a study conducted by Walker and Moscardo (2014), it was found that beliefs, attitudes and behaviors about the environment often come from informal environmental education experiences. These types of experiences aim to educate participants through interactive, unstructured activities of choice in the outdoors. Walker and Moscardo's (2014) study also found that interpretation is the central method of obtaining knowledge in recreational settings, such

as WW. It was noted, however, that not all participants display a change in attitudes or behaviors (Hvenegaard, 2009; Walker & Moscardo, 2014).

Due to the immersive nature of WW, being secluded on a boat in the ocean, interpreters have a unique opportunity to captivate their participants. Providing basic information regarding the whale species, its behavior and how it spends its time can be advantageous to understanding our connection with them. WW is an international industry, however, where language can be a barrier between participants and tour guides (Hamilton, 2022). As Hamilton (2022) discovered, language gaps can be addressed with audio or written interpretive guides. This presents WW companies with the freedom to educate their participants before they even get onto the tour boat. Safety information for being on the vessel; basic biology, behaviors, and signs of whales; and human impacts on the marine environment are all subjects that can be incorporated into written or audio guides, made accessible in multiple languages.

In Andersen and Millers (2006) investigation, field notes and tourist accounts showed that interpretation enhanced the WW experience, making it more memorable. Being able to understand what is being experienced helps build connection (Walker & Moscardo, 2014). It is typical of humans to search for meaning, using experience as a guide. Additionally, Andersen and Miller (2006) reported that participants were most excited to learn after they had seen a whale themselves. This presents possibilities for incorporating interpretation after a tour is over, where conservation efforts and pro-environmental behaviors could be the focus of educational content.

Interpretation for Youth

The role of interpretation for youth is important because of its implication for sustainable changes over a longer time period. It has also been shown that youth are more engaged if they understand what is going on around them. Preparing youth for WW experiences matters because it is likely to increase their curiosity, questioning, connection and meaning-making throughout the actual experience on the ocean (Russell & Hodson, 2002). Early childhood is a time full of new information absorption. Elementary-aged youth are developing writing, reading and comprehension skills. They need language to label new things and experiences in order to make meaning out of the outside world. Having a written guide for children to learn from before, during or after a WW experience can increase their ability to build connections and make meaning of whales and their ocean habitat.

The United Nations Sustainable Development Goal 14, regarding life below water, states, “conserve and sustainably use the oceans, seas and marine resources for sustainable development” (United Nations, 2022). This is a long term goal, requiring the help and work of coming generations. With conservation at the top of mind for ecotourism, interpretation in early childhood could help create a foundation of knowledge regarding life below water, and contribute to sustainable oceanic use.

The role of interpretation before, during or after a WW tour is beneficial for tourists who know little to nothing about whales, their history, or the marine environment, and contributes to the conservation efforts of the industry. Andersen and Miller (2006) wrote, “Education can be used to decrease the possible negative effects of harassment on the whales by educated tourists and boat operators who elect to view whales from a

proper distance” (p. 116). Interpretation has been shown to increase participant knowledge about a place and awareness about local issues, and enhance WW experiences by giving language for meaning making and connection building (Madin & Fenton, 2004; Prévot et al., 2016; Hvenegaard, 2009). It helps WW companies contribute to conservation efforts around the globe through our desire to observe wildlife in its natural habitat and willingness to pay to see it up close (Chan & Saikim, 2022). Youth, particularly, can be a positive force for sustainable changes in the marine environment (Forsberg, 2017). Forsberg (2017) writes, “Marine education can provide young people with the skills, tools and perspectives necessary to conserve marine environments.” With a nearly 2 billion worldwide youth population, there is potential for significant changes in environmental attitudes and beliefs around the globe (Forsberg, 2017). Young children are fascinated by wildlife, naturally curious and inquisitive, and crave time outdoors; all factors contributing to inspiring ocean stewardship in our youth.

Childhood Nature Experiences

Children are spending more and more time indoors. Their lack of experiences in the outdoors and knowledge of nature often lead to fear of the outdoors (Louv, 2008). Growing up with parents who had the freedom to explore the outdoors demonstrated how valuable those experiences are in building a connection with nature. In order to build a lifelong, positive relationship with nature, there needs to be frequent interaction and immersion in constructive nature experiences (Cleary et al., 2020). Creating this connection in early childhood is an indicator of continued connection to nature as an adult (Chawla, 2020). For the purposes of this paper, early childhood refers to children ages six through 11. Formative experiences in nature, like those shared in Chapter One,

impact personal identity, creating emotional connection to places (Vining & Merrick, 2012). Humans form much of their identity in early childhood; providing outdoor experiences in this timeframe may help form an identity tied to nature (Dewey, 2021; Molinario et al., 2020; Richardson et al., 2019). Additionally, Kollmuss and Agyeman (2002) and Prévot et al. (2018) pointed out that behaviors come from creating consistent habits, further supporting the idea that positive habits formed in childhood create a foundation for habits in adulthood. These sections seek to answer *How can whale watching experiences enhance the human-nature connection during early childhood?* through a review of the literature regarding the importance of the human nature connection, formative experiences, and identity within early childhood.

Human Nature Connection

The human nature connection (HNC) is a positively influencing relationship between an individual and the natural world. Chawla (2020) stated that nature can be different for everyone, depending on the immediate environment, and the potential to connect with nature is flexible, whether it is a backyard, nature center, forest or tree outside a window. According to Ives (2017), there are three main components of the HNC: mind, experience, and place.

First, *mind* is used to describe the part of the relationship that leads to pro-environmental behaviors (Ives, 2017). For example, while on a WW tour, an individual might learn how microplastics affect the health of filter-feeding gray whales and decide to reduce or eliminate their consumption of single-use plastics. To engage in pro-environmental behaviors is to choose to change a behavior for the purposes of having less negative impact on the environment or create a new behavior that has a positive

impact on the environment. Bögeholz (2006) and Ives (2017) agreed that experiences in nature are a predictor of pro-environmental behaviors. Just like a relationship between two humans, the HNC requires both humans and nature to cooperate in a mutually beneficial way. Developing HNC allows us to see more clearly our impacts on the environment and to change our behaviors accordingly.

Second, the *experience* component of HNC refers to the actual participation of a person in an activity outdoors (Ives, 2017). Being out in Almejas Bay, off the coast of Baja California Sur, Mexico, seeing a gray whale reveal itself on the ocean's surface, is experiencing the HNC. Without experience, there would be no connection between humans and nature. Being intentional about seeking out these types of experiences impacts potential for change. As mentioned by Cleary et al. (2020), in order to start building a connection with nature, there must be experiences directly in nature. This study also found that duration and frequency of time spent in nature play a role in facilitating the HNC. Previous studies have emphasized that when a person begins to form this relationship at an early age, similar to relationship building with parents and other family members, it is very likely to continue engaging in that relationship well into adulthood (Chawla, 2020; Cleary et al., 2020; Prévot et al., 2018). It is the active experience of nature that allows humans to begin forming a connection to nature.

Finally, *place* is the component of the HNC that evokes emotion (Ives, 2017). The moment of *wow*, when seeing a wild animal, can stir primal emotions, leaving a yearning for more. In a recent study conducted by Yerbury and Lukey (2021), participants felt changed after encountering marine life in its natural habitat. The authors wrote, "Feelings of love, belonging, positive feelings, fulfillment and the gaining of perspective, were

linked with the human–animal experience” (p. 10). These emotional responses imprint for days, weeks, and even years to come. The participants in the Yerbury and Lukey study reported feelings of “calmness and the discovery of inner peace” (p. 10). Strong emotions, such as those felt when sharing a moment in time with a wild animal, can result in motivation to seek out more similar experiences, fueling the continued circle of the HNC. When feeling emotionally connected to a place, there is an inclination to want to protect and conserve it (Vining & Merrick, 2012). The mindset begins to shift from caring *about* the environment to caring *for* the environment.

If the HNC begins to form in early childhood, there would be, overall, less harm done to the environment throughout a person’s lifetime. Environmental impacts are compounding over a lifetime; if good habits form at a young age, such as reducing single-use plastic consumption or purchasing second-hand goods, it is likely they will continue into adulthood (Kollmuss & Agyeman, 2002; Prévot et al., 2018). Whale watching is an activity in nature that can begin to build, within early childhood, the HNC. If the habit of experiencing nature in a positive way begins in early childhood, there is evidence to show it is likely to continue into adulthood (Prévot et al., 2018). Those *wow* moments, like seeing a gray whale breach the surface of the ocean, especially as a child, are likely to contribute to a deeper HNC, and therefore lead to pro-environmental attitudes and behaviors as an adult.

Formative Experiences

The phenomenon of experiencing a moment in nature so significant that it almost immediately alters one’s attitudes and behaviors towards the environment in a positive way is called a formative experience (FE). The emotions are provoked by something

extraordinary, leaving a lasting impression in the heart and mind. Often, these are the moments to photograph, share stories about, and remember for a lifetime. It may happen while alone in the backyard gazing up at the stars or with a friend reaching the mountaintop during a hike; FEs can change our attitudes and beliefs about the natural world and help build a positive relationship with nature (Dewey, 2021).

While research about these experiences may be few and far between, Vining and Merrick (2012) believed they were worth studying for three main reasons: they are an interesting aspect of the human experience, they have important behavior outcomes, and they may lead to useful management strategies. Similar to the components of the HNC, researching circumstances that result in pro-environmental behaviors are important for achieving more sustainable ways of life (Vining & Merrick, 2012).

One major component of living more sustainably is reducing consumption of single-use plastics. These types of plastics never completely break down, creating what are known as microplastics, and pollute our oceans (Delgado, 2023). An impactful way of seeing how these microplastics affect marine life is by observing them under a microscope. When viewed beside plankton, the main food source of filter-feeding gray whales, it is apparent how similar in size microplastics are to plankton. As a filter-feeder, gray whales intake massive amounts of ocean water in order to consume plankton-sized food. Seeing under a microscope how easy it is for gray whales to ingest microplastics alongside plankton, can be a memorable moment after developing an emotional connection with gray whales from observing them in their natural environment. That initial *wow*, or FE, can lead a person to make dramatic shifts in their behavior (Merrick, 2008), the outcome researchers and WW companies look for. These claims were

supported by an environmental epiphany study in 2008, where Merrick collected self-reporting data from a diverse pool of individuals. It was reported that more than 75% of participants “reported having changed their environmental values, attitudes or behaviors” (p. 40) as a result of an FE in nature; with 80% of those individuals experiencing lasting changes in behavior long afterwards (Merrick, 2008). This data is further supported by Bögeholz’s (2006) review of German empirical research from the 1990s, which determined that nature experiences played an important role “in influencing pro-environmental behaviors” (p. 68). Participants on a WW tour have the opportunity to see the human impacts on the marine environment with their own eyes, potentially influencing personal attitudes and behaviors regarding those human impacts.

Merrick’s (2008) study also found that the location where FEs occurred “became more meaningful or special” (p. 40) to 70% of participants. This is an important first step in shifting attitudes about a place: in order to care *for* something, one needs to first care *about* it. When a physical place attaches itself to personal identity, it is advantageous to care for it, desiring to protect a piece of the self. Merrick also determined that while FEs can be experienced at any age, they are more prevalent in youth and while engaged in unusual activities or visiting novel environments.

Early childhood is a time full of new experiences; it is a time when exposing youth to new experiences can have a lasting impact. When emotions are stirred by the *extraordinary*, imprinting an experience onto the self, FEs occur. Although it can be challenging to alter human behavior (García-Cegarra and Pacheco, 2017; Finkler et al., 2019), it has been made a goal by the ecotourism industry in attempts to reduce human

impact on the marine environment. Providing FEs for youth in nature can aid in fulfilling this goal and help them build a foundation of care for the natural world.

Identity

Identity is what makes each person uniquely themselves; it grows and develops throughout one's lifetime. Humans form much of their identity in early childhood (Dewey, 2021; Molinario et al., 2020; Richardson et al., 2019). Participants on a WW tour present a unique opportunity to interpreters: they are a willing audience, searching for meaning and identity in the information presented to them. When a person's identity is tied to the natural world, they are more willing and more likely to shift from caring about to caring for all aspects of nature. Alterations in beliefs, attitudes and behaviors are commonplace. Becoming open to more, new experiences in nature, further deepens the relationship with it.

Childhood is mostly when development of self-identity occurs. Developing a strong self-identity at a young age can lead to becoming a productive adult (Richardson et al., 2019). Also, a strong sense of identity is key in developing a connection with nature. In a 2018 study conducted by Prévot et al., it was found that experiences in nature, more than formal education of nature, increased personal environmental identity. The author stated, "The results presented in this paper suggest that nature experiences play a prominent role in allowing nature to become a part of individual identity" (p. 274). This study also found that environmental identity correlates with pro-environmental behaviors (Prévot et al., 2018). It is agreed upon by Dewey (2021) and Molinario et al. (2020) that forming an identity around the environment at an early age can be a predictor of positive

environmental attitudes and behaviors, and that providing nature experiences in childhood may help form an identity tied to nature.

Experiences and values impact self-identity and behaviors, with knowledge as a common thread; therefore, experiences in nature help build a connection with nature, form an identity tied to nature, and can lead to pro-environmental behaviors (Molinario et al., 2002). Knowledge plays a role in being able to understand nature and make meaning from what is observed; however, as the 2018 Prévot et al. study showed, education alone will not change attitudes and behaviors. It is the combination of education and experiences regarding nature that can impact pro-environmental behaviors. Molinario et al. (2002) wrote, “Connectedness with nature and biospheric values should, in turn, contribute to the development of an environmental self-identity” (p. 1142). There are several contributing factors to consider when attempting to change individuals' attitudes and beliefs. If age is a significant factor in determining a lifelong connection with nature and a predictor of pro-environmental behaviors, then it should be made known to WW companies who strive to protect the marine environment.

With alteration of attitudes and beliefs towards the marine environment at the forefront of WW businesses, being able to understand the importance of experiences in nature versus formal education of nature further solidifies their reasoning for engaging youth, when identity formation is strongest. WW is a highly immersive experience, providing opportunities for strengthening our connection with nature and increasing knowledge of the marine environment. When identifying with the natural world, it is natural to feel part of it and can increase understanding of it.

Conclusion

This chapter reviewed the literature surrounding the importance of whales in the marine environment, goals of the WW industry, how interpretation adds value to WW experiences, and the impacts of time in nature during early childhood. The research showed that WW experiences during early childhood that incorporates language-accessible interpretation can help meet industry goals of conservation and changes in environmental attitudes and beliefs. This literature review supports the need for the creation of a marine-based interpretive activity book aimed at youth ages six through 11 to enhance WW experiences for youth.

Chapter Three details the framework and concepts used to construct a project that answers the research question: *How can whale watching experiences contribute to the conservation efforts of ecotourism, educate youth on the importance of whales, and enhance the human-nature connection during early childhood?* It describes the details of the project creation and how it addresses a particular gap in the literature, the intended setting and audience, timeline of creation and implementation, and assessment options.

CHAPTER THREE

Project Description

Introduction

Whale watching (WW) is a growing branch of the ecotourism industry. The main goal of this industry is conservation through education and immersive experiences.

Whales have suffered near extinction through direct and indirect human activities over the past 200 years (Giggs, 2020). Through safe and regulated practices, WW companies can help support the repopulation of many species (Parsons, 2012). By incorporating educational interpretive materials before and after WW experiences, participants are more likely to connect with the environment and take positive steps towards reducing their environmental impact on the marine environment (Zeppel, 2008). For Eco Migrations, an ecotourism company based in La Paz, Mexico, there is an invaluable opportunity to integrate interpretive materials into their WW tours that promote pro-environmental behaviors. In my partnership with Eco Migrations researcher Erin Francke, this capstone project was developed to fulfill their need for youth-oriented interpretive materials to support their WW tours.

Overview

The literature review in Chapter Two sought to answer: *How can whale watching experiences contribute to the conservation efforts of ecotourism, educate youth on the importance of whales, and enhance the human-nature connection during early childhood?* As a result, this capstone project was designed to fill a relevant need in wanting to improve environmental attitudes and beliefs of WW participants through an interpretive activity book, for youth ages six and up. This chapter outlines the partnership

with WW company Eco Migrations; how their needs are being met through the creation of this project; the design of the project and existing literature that supports the framework for its development; the intended setting and audience; timeline; and potential assessment options. This capstone project helped support the conservation efforts of Eco Migrations, will continue to inform youth on the importance of protecting the marine environment for healthy repopulation of whales, and potentially result in increased pro-environmental behaviors.

Eco Migrations

Eco Migrations was founded in 2017 by José Juan Puebla with the intention of “providing fun, safe, ecologically conscious experiences that showcase our wonderful little corner of the world” (About Us, Eco Migrations, 2022). Eco Migrations is a marine tour company based out of La Paz, Mexico. One of the tours they offer is for WW in Almejas Bay, on the west coast of southern Baja California Sur, Mexico. The tours on Almejas Bay provide a unique experience to view gray whales at the end of their three-month long migration from the coast of Alaska. They come to the warmer, safer waters of Almejas Bay each year to mate and give birth from December through March.

Eco Migrations launch their boats from Puerto Chale, a small fishing community on Almejas Bay; these boats are staffed with local fishermen, who know the waters well. These local fishermen often speak only Spanish, creating a language barrier between participants and their tour guide. This can result in diminished questioning and conversations regarding the marine environment, gray whales and Almejas Bay, potentially reducing learning opportunities for participants while on the actual WW tour.

Due to the distance between Eco Migration's main office in La Paz, and the hub of tourism on the east coast of southern Baja California Sur, participating in a gray whale watching tour through Eco Migrations typically requires a two to three hour car ride across the Baja Peninsula. It is during this car ride that Eco Migrations wants to provide information to participants on Almejas Bay, cetaceans, behavior and biology of gray whales, the role of whales in the marine environment and climate change, microplastics in the oceans, and what can be done to help keep the oceans healthy and whales safe. The Eco Migrations WW tour season is January through March each year, mirroring the migration habits of Alaskan gray whales. Eco Migrations is implementing an adult-oriented audio guide and this activity book in the 2024 gray whale watching season.

In January of 2022, I was one of 14 participants in a five-day whale ecology research program hosted by Eco Migrations on Isla Santa Margarita, the mountainous island responsible for protecting Almejas Bay from colder, deeper waters of the Pacific Ocean. Founder, José Juan Puebla, and researcher, Erin Francke, of Eco Migrations were our instructors and guides. It was during this experience that I became emotionally connected to the mating and breeding grounds of Alaskan gray whales. Eco Migrations provided an incredibly unique experience, one that I knew needed to reach as many people as possible. The 2022 whale ecology course linked me with Eco Migrations researcher Erin Francke, which led to a professional partnership and the creation of this capstone.

Project Description

This capstone project is a physical, interpretive activity book for youth ages six and up. While the audio guide, previously developed by Hamilton in 2022, plays in the

vehicle during the participants' drive from the La Paz area on the East coast to Puerto Chale on the West coast, children are simultaneously engaged in the activity book. The topics and ideas presented in the activity book are complementary to the audio guide and were developed with the specific needs of Eco Migrations in mind. This activity book was designed to be printed by participants at home through the Eco Migrations website or picked up at the Eco Migrations office in La Paz before beginning their journey to Almejas Bay.

The overall goal of this activity book was to educate young participants on the geography and cetaceans of Almejas bay, gray whale behavior and biology, the impacts of microplastics on gray whales, the role whales play in mitigating climate change, and what can be done to reduce human impacts on the marine environment and whale populations. It was created on a digital platform to allow for continued editing and collaboration with Eco Migrations throughout the development phase and for any changes in the future. This activity book consists of 17 total pages, including informational content and activities related to these topics:

1. Area map and ecology of Almejas Bay
2. Cetaceans
3. Gray whales: anatomy, size, migration, behavior
4. Climate change: the role of whales and phytoplankton
5. Microplastics and whales
6. Single-use plastics
7. Reduce, reuse, recycle

These topics will be introduced through educational facts and colorable illustrations. The goal for Eco Migrations in providing a youth-oriented activity book is to raise awareness around the beauty and value of gray whales and increase youth engagement in marine conservation.

Setting & Audience

Participants who book a WW tour with Eco Migrations come from all over the world and can consist of families with children as young as six years, retired couples in their 60s, 20-30 year old solo travelers, and everything in between. It is typical that participants speak English either as a first or second language; for this reason, it was requested to develop a youth-oriented activity book in English. Although this activity book and the audio guide are currently only available in English, it is possible they may be converted into other languages, by Eco Migrations, to accommodate their diverse participants, when time and resources allow. The audio guide that was previously designed by Hamilton (2022), and developed by Eco Migrations researcher Erin Francke, was aimed at participants ages 12 and up; whereas, this activity book is aimed at youth ages six and up.

The activity book is simple in design and activities due to the targeted age group. In collaboration with Eco Migrations, it was determined that this activity book not only be entertaining and educational, but also be uplifting and hopeful (E. Francke, personal communications, February 27th, 2023). When educating youth on heavy topics such as climate change and species extinction, it is vital to focus on solutions more than the issue, so as not to cause feelings of hopelessness (L. Dinerman, personal communications, August 10th, 2022).

The intended setting for this interpretive activity book is a moving vehicle, while participants' travel from La Paz to the WW tour boat launch Puerto Chale. This activity book is created digitally, but intended to be consumed in printed format; therefore, writing or coloring utensils are necessary for active participation. Additionally, a hard surface will be beneficial. Items beyond the printed activity book are not furnished by Eco Migrations and are up to the families to provide on their own.

Timeline & Assessment

The conception of this project began in February of 2022 and completed in April of 2023. This timeline was implemented to fulfill a desire by researcher Erin Francke with Eco Migrations to launch this activity book in conjunction with the adult-oriented audio guide for the 2024 WW season, beginning in January 2024. Additionally, this timeline was necessary to fulfill the capstone requirements of Hamline University.

Eco Migrations aims to implement a post-experience survey, asking participants to consider quality of experience, as well as gauge potential changes in participants' environmental attitudes and beliefs. Incorporating questions into the assessment to determine if there is a shift in environment attitudes and beliefs would be valuable in determining the success or failure of these interpretive guides and if they are sufficient in promoting pro-environmental behaviors among WW participants. Eco Migrations has plans to implement this post-survey alongside the launch of the audio guide and activity book in the 2024 WW seasons.

Why & How

Through various forms of communication, such as email, texting and phone calls, it was decided by Erin Francke what content to include in the activity book.

Communication regarding its development started December 2022, after completion of the Chapter Two literature review. Most communication occurred during Eco Migration's active WW season, January through March, of 2023; creating some communication challenges, due to the remoteness of Francke's location in Almejas Bay for WW tours.

In my initial development of the outline for the activity book in January 2023, it was quickly evident I did not have the skills nor tools necessary to create the artwork Francke and I wanted to include in the activity book. The decision was then made, unanimously, to outsource the illustrations. A close friend and previous coworker, artist Bonnie Hoover of Atlas Outpost, was contracted to convert eight Eco Migrations photographs, taken in Almejas Bay by José Juan Puebla, into black and white coloring page illustrations for the activity book. Eco Migrations initially shared 31 photographs with me in early February 2023. After finalizing activity book content requirements with Francke in mid-February 2023, I determined which photographs would be most beneficial to be converted into coloring page illustrations, based on best use of images to pair with the educational content included in the activity book.

In the activity book, 11 pages include a combination of colorable illustrations and educational content and two pages contain only activities. My experiences working with youth in a professional setting for more than 10 years guided my decisions in what types of activities to include in this activity book. Additionally, my personal interests in photography and the arts provided me with the confidence and knowledge to be able to create an aesthetically pleasing activity book. Ultimately, Eco Migration's satisfaction and Francke's final approval regarding content and imagery are what brought this project to a close in April 2023.

Conclusion

This chapter reviewed the details of this capstone project: creating an interpretive activity book for youth ages six and up to prepare participants for gray whale watching tours with Eco Migrations. The purpose of this activity book was to educate youth on the importance of protecting the marine environment for healthy repopulation of whales. This activity book will help bridge the information gap that exists due to a language barrier between the native Spanish-speaking boat drivers and international participants for Eco Migrations. While this activity book was completed in English, it has the potential to be adapted into other languages by Eco Migrations. It is the goal of Eco Migrations to be able to gauge changes in environmental knowledge, attitudes and behaviors as a result of the interpretive guides, both the activity book for youth and the audio guide for adults. Research is an important aspect of Eco Migrations and being able to contribute to the field of marine-based interpretive research, and its impacts on pro-environmental behaviors and conservation, is valued by the company and the research field. Successful implementation of this project leads to more interpretive materials for marine-based ecotourism and raises the bar for industry standards worldwide.

CHAPTER FOUR

Conclusion

Introduction

As the land of 10,000 lakes, Minnesota is as landlocked as a place can be. Growing up here gave me an appreciation for the abundance of life that water can provide: for humans and non-humans alike. Although the lakes, rivers and streams of Minnesota are reflective and calm, the rhythmic crashing of tides and vastness of the ocean always amazed me. I traveled to southern California dozens of times in my childhood to visit family and when my sister moved there in 2011, the number of annual visits increased. I have been called back to the ocean year after year, wondering if my own small self could ever have an impact on something so vast.

When I enrolled in the Natural Sciences and Environmental Education Masters Program at Hamline University, it was under my assumption that I would be going on a J-term course to Baja California Sur, Mexico to study gray whales. Almost a year later, I found myself sitting in the Minneapolis-St. Paul International Airport with 13 other women, all strangers, wondering what exactly camping on a remote island for five days was going to look like. Turned out it meant no running water, dozens of gray whale sightings, endless laughter, and some of the best food I have ever eaten. After our 10 days together, we had become a family.

The emotional bonds I had created with classmates, the island and majestic gray whales reminded me what mattered most in life: connection. It is the human longing to be in relationship with others and with nature that fuels my passion for working with youth in the outdoors. This capstone allowed me to dive into the world of marine science,

discovering how to translate complicated research into youth oriented activities that uplift rather than depress. The impact of that oceanside wilderness experience in Almejas Bay will never leave me. It inspired this capstone and will continue to inspire my journey as an environmental educator.

Overview

This capstone sought to answer: *How can whale watching experiences contribute to the conservation efforts of ecotourism, educate youth on the importance of whales, and enhance the human-nature connection during early childhood?* This chapter details what I have learned through the process as a researcher, writer and learner. Next, the literature review is reflected on, citing influential sources, information that proved particularly useful in supporting my research question and what new connections have been made. Then, implications and limitations are considered regarding both the paper and project. Finally, this chapter examines the potential for further research and development, along with potential benefits to the field.

Major Learnings

Having run a few in my life, I can attest to saying this process was similar to training for and running a marathon. While it is my name attached to the final product, the amount of work necessary to complete this capstone required support from dozens of other people. Not only did this capstone committee help elevate my voice, improve my research synthesis, and personally contribute to the development of the activity book, but my friends and family provided significant support in cheering me on through the tough spots and helping me get to the finish line on time. For me, there was never an option to give up, only to move forward one mile, one week, one page at a time.

Throughout the capstone process, I learned the lines between learner, researcher and writer were blurred; for me, they all happened simultaneously. Early on, I discovered that sitting down and zoning in for an entire day was more productive than trying to write a little bit each day. It provided me with an opportunity to truly get to know a whole section of the paper, understand the research and synthesize common ideas. I was doing weekly long runs on Saturdays, sitting down and writing five to 10 pages at a time; during the week, when work and family were at the center, I ran shorter and faster runs, getting weekly assignments done and making quick edits. There were many highs and many lows along the way, always oscillating between *I know exactly what I am doing* and *I have no idea if I am doing this right*. Thanks to two successful marathon experiences, I took comfort in knowing that if I trusted in the process, if I simply put in the miles like everyone else had done, I would make it to graduation, too.

In the end, my small self could impact the vastness of the ocean. After nine months of partnership with Eco Migrations and Erin Francke, an activity book that educates youth on the importance of gray whales in sustaining ocean health was created and awaiting distribution as of April 2023. The use of this activity book will stretch far beyond the use of Eco Migrations. Landlocked children, like I once was, can also learn about gray whales through this activity book. The goal of the capstone project was to affect environmental attitudes and beliefs of youth through educational materials and whale watching experiences. All of this work was worth it if the research or project alters the behavior of a single person.

Revisiting the Literature Review

As I reflect on the topics presented in the literature review, certain authors, facts and theories influenced my project more than others. Most notable are the impacts of whale-centered industries on the marine environment, how interpretation plays an important role in altering attitudes and beliefs, and findings on formative experiences. Each of these connect directly with the development of the activity book and played a significant role in answering the research question: *How can whale watching experiences contribute to the conservation efforts of ecotourism, educate youth on the importance of whales, and enhance the human-nature connection during early childhood?*

Whale Watching

The biggest takeaway from research conducted in this first section about whale watching (WW) as an industry was how it compares and contrasts to the height of the commercial whaling industry in the mid-late 1800s. While research on the commercial whaling industry is not present in the literature review, my passion for knowledge regarding whales resulted in further understanding of the research that was presented in this first section. Through continued synthesis, it was made evident there existed a similarity between both the commercial whaling industry and the WW industry: they each use(d) whales to improve human experience. The main difference between these industries is that one is internationally regulated and one is not. Learning from the past would be worthwhile for current whale-centered industries.

In the mid-late 1800s, at the height of the commercial whaling industry, there existed extreme profitability in the killing and consumption of whales for many purposes. According to Thornton and Marrero (2022), some examples include:

1. Consuming whale fat, known as blubber, as a protein-dense food.
2. Converting blubber into oil to light lanterns and power machinery.
3. Heating and molding baleen, the material inside the mouth of a filter feeding whale, into a plastic-like material used for corsets, baskets and fishing line.
4. Bones for tool making.

Commercial whaling improved the physical aspect of human experience. It sought to exhaust certain whale populations for their valuable body parts, while ignoring the potential damage to populations and the effects of depleted populations on the marine environment. In 1982, the International Whaling Commission, an international body created for purposes of protecting and improving whale populations as a direct result of the height of the commercial whaling industry, put forth a moratorium, pausing all current and future commercial whaling operations (International Whaling Commission, 2023). While a select few countries refused to participate in this agreement, overall, without this international agreement and regulation regarding commercial whaling, the practices of the industry could have caused irrevocable damage to whales and the marine environment (International Whaling Commission, 2023). It is a direct result of this international agreement that the industry was regulated.

Currently, in the 21st century, WW is profitable in the research, observation and education of whales for purposes of maintaining and improving whale populations, while positively impacting the health of the marine environment (García-Cegarra & Pacheco, 2017). Through sight-seeing boat tours, many WW companies provide a unique opportunity to participants that cannot be experienced in zoos or nature preserves

(Wearing et al., 2014). This industry improves the intellectual and emotional aspect of human experience. However, international regulations and standards have not yet been developed parallel to the rapid growth this branch of tourism is experiencing (Parsons, 2012). Unfortunately, it is of concern to researchers that if common practices are not established around the globe, the WW industry may observe unintended consequences as a result of their oceanic activities, similar to the unforeseen consequences when commercial whaling was unregulated.

Whale watching, as an industry, is in its beginning stages of existence (Stronza et al., 2019). While it does operate on a more ethical platform than did the commercial whaling industry in the mid-late 1800s, it lacks international regulation standards, putting the health and safety of whales, the marine environment, and humans in jeopardy (Parsons, 2012). It is vital to the continued existence and growth of whale populations that WW companies learn from history and do not repeat the tales of industry past. The largest similarity and difference these whale-centered industries exhibit are important when considering further safe and sustainable development of the WW industry.

From this first section of the literature review, the comparing and contrasting of commercial whaling and modern WW informed pieces of the activity book. Eco Migrations researcher Erin Francke made it known to me that including the history of whaling in the activity book was constructive in helping educate youth on the importance of WW as a conservation enterprise. Pointing out why whale populations need protection and continued support for growth is advantageous in an effort to transform environmental attitudes and beliefs among youth participants.

Interpretation

In the interpretation section of the literature review, potential for changes in environmental attitudes and beliefs was the idea most thoroughly researched, tested and supported by a variety of authors. Research conducted by Collins et al. (2020), Finkler et al. (2019), Hvenegaard (2009), Lee and Jan (2018), Prévot et al. (2016), Walker and Moscardo (2014), Weiler and Smith (2009), and Zeppel and Muloin (2013) support the theory that interpretation during an outdoor program positively impacts and enhances participants attitudes and beliefs regarding the environment. This section supported the decision to create a youth oriented activity book for Eco Migrations in hopes of creating more pro-environmental behaviors for participants from a younger age.

Childhood Nature Experiences

In researching childhood nature experiences, formative experiences was the most impactful idea in this section of the literature review. As previously stated, formative experiences are the phenomenon of experiencing a moment in nature so significant that it almost immediately alters one's attitudes and behaviors towards the environment in a positive way. Merrick's (2008) and Vining and Merrick's (2012) studies support the theory that formative experiences have the potential of altering our attitudes and beliefs about the environment. In conjunction with interpretation, researching ways in which human attitudes and beliefs can be altered is important for the WW industry because one of their main goals is to generate more pro-environmental behaviors.

Vining and Merrick (2012) state: "Significant and meaningful environmental experiences contribute to the perception of one's relationship with nature, which can have widespread implications for subsequent beliefs and actions" (p.486). Merrick's (2008)

original study showed that 73.5% of participants who experienced an environmental epiphany “were in locations or engaged in activities that were unusual” (p. 36). For those who do not work directly in the industry, WW qualifies as an unusual activity. The implications of this discovery is useful for WW companies because it demonstrates that the unique services they offer may influence participants through the use of emotional response via environmental epiphanies. In this section of the literature review, the findings on formative experiences demonstrate how unique experiences in early childhood, like WW, could lead to meaningful connections with nature through environmental epiphanies.

In revisiting the literature review, it was made clear how integral some aspects of the research were in supporting the creation of the project. The life of whales, air-breathing but water-bound mammals, is a mystery to most (Cook et al., 2020). For centuries, humans have chased after them, using them for their own benefit. Although commercial whaling is mostly a practice of the past, modern WW companies should be cautious about operating without proper regulations and standards, so as not to repeat history. Interpretation gives WW companies an opportunity to educate their participants on the value whales have to humans and the marine environment and why continued support for healthy population levels is required. Furthermore, the experience of seeing a whale in its natural habitat is what evokes an emotional response and connection, supplying the participant with enough motivation to potentially change the way their life choices affect marine health and whale populations.

Implications & Benefits to the Field

Implications for this project could lead to more pro-environmental behaviors among youth participants of Eco Migrations WW tours or any recipients of this activity book. Through thoughtful design, the activity book could be used solely for educational purposes, with or without the WW experience, and progresses in a way that encourages the reader to make minor changes to behaviors that negatively impact the marine environment. This activity book has the potential to be adapted for marine-based programs or other WW companies. Additionally, if time and resources of Eco Migrations allow in the future, the translation of the activity book into more languages could help reach a larger audience, further impacting the conservation efforts of the ecotourism industry.

Limitations

Due to time restraints and because I am only fluent in English, the activity book was only developed in English; thus translation into other languages was a limitation. Eco Migrations hosts WW participants from all over the world and being able to provide a youth-oriented interpretative activity book in multiple languages would have been ideal. Erin Francke is hopeful that in the coming years, if resources and time allow, that Eco Migrations will be able to cater to more languages in the interpretive materials. If translated into more languages, this activity book could stand alone as an educational material for children around the globe.

Another significant limitation was communication. In the development of the activity book, my ability to communicate with my partner, Erin Francke, was difficult due to the time of year: from January through March of 2023, the active whale watching

season in Almejas Bay for Eco Migrations. Through email and instant messaging, Francke and I were only able to communicate sparingly on the activity book design and content because of her busy schedule at that time of year. It is likely that continued alterations will be made to the activity book until its projected launch in January 2024.

Finally, the third limitation in this process was time. Not only were the courses limited to about 25 weeks, but I constantly made decisions to split up my own time between work, family and school, trying to keep a healthy balance. I often felt overwhelmed, wondering if I would be able to make deadlines without sacrificing too much of my existing life. I am grateful for the challenges this process gave me; my time management, instinct to trust the process, and ability to work hyper-focused under pressure has improved. Given more time for project development, the activity book could have been translated into more languages and featured more content-specific illustrations.

Communicating Results

I will not have any direct results to communicate after the project implementation. However, as Eco Migrations intends to carry out a pre and post assessment starting in 2024, their results could be useful for future research regarding the impacts of interpretive marine materials on environmental attitudes and beliefs.

Future Research

If this capstone sets the stage for further research, one option is to dive deeper into the similarities and differences between the commercial whaling and whale watching industries. Reflecting on the literature review, it became apparent that lack of international regulations and standards did or could lead to harmful effects on whale populations. International agreement is important for these industries because the oceans

are not overseen by any one government entity. While impacts of WW boats and increased human interactions are being researched, long term impacts are still unknown. Learning from the past could be useful in ensuring safe and sustainable practices and protection of whale populations around the globe.

Conclusion

In this chapter, I shared many discoveries about myself and the capstone research and writing process. The biggest takeaway was that a slow and steady pace always gets me to the finish line. Learning how to work within language, time and resource constraints was a necessary challenge, that without, could have led to burnout and incompleteness of the research and project. Partnering with Eco Migrations was the most valuable aspect of this process, learning how to collaborate with a company that is making a difference in the WW industry and has high standards and safe practices. This capstone was the second phase of a two part research and development project with Erin Francke of Eco Migrations. Mahin Hamilton, who also visited Almejas Bay in January of 2022 through Hamline University, completed phase one in spring 2022, developing the framework for an interpretive audio guide aimed at individuals ages 12 and up (Hamilton, 2022). The activity book will give Eco Migrations the ability to enhance the WW experience through improved knowledge regarding whales and the marine environment for their youth participants.

After my experience in January 2022 with Eco Migrations in Baja California Sur, Mexico, and the knowledge I have gained through this capstone process, the path forward is clear. Working with youth and being outdoors has always brought me joy; adding the ocean and marine life into the mix only expands my opportunities in the field of

environmental education. I am grateful to Eco Migrations, and specifically Erin Francke, for partnering with me and trusting me to develop an interpretive activity book for their youth participants for their Almejas Bay WW tours.

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