EXPLORING THE CONCEPTUAL FRAMEWORK AND KNOWLEDGE BASE OF NATURE-BASED EXPERIENTIAL EDUCATION

by

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DEDICATION

May this work provide a useful contribution to the knowledge base of Nature-Based Experiential Education

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ABSTRACT

This study examined the current status of Nature Based Experiential Education (NBEE) with respect to its underlying *knowledge base* and *conceptual framework*. Compared to other professions, including K-12 education, these formalized attributes have appeared to be fairly minimal. Anecdotally, NBEE draws upon an eclectic array of sources for inspiration and knowledge, while practitioners rely extensively on their own acquired base of personal experience for guidance. If this is true, then there is a certain element of rugged individualism to be admired. The tradeoff, though, would be a commensurate inability to form a cohesive discourse community, to identify and codify best practice, to establish a coherent research agenda to advance the state of the art, and to support either professional development or the establishment of standards in any kind of systematic and meaningful manner.

Assuming that these are desirable goals, the initial challenge was to determine what sources of knowledge are most prominent among its practitioners. This study addressed that problem by using a qualitative mixed methods approach. The researcher employed three separate but complementary methods – by critically reviewing NBEE-related *literature*, by *interviewing* individuals with expertise in NBEE, and by *surveying* NBEE practitioners.

The results of this study tend to support the anecdotal view that practitioner knowledge is eclectic, diverse, and largely dependent upon the experiences of individual practitioners, a kind of folk craft which is nevertheless shared among members of the field. It also revealed a small but robust inventory of inspirational and informative publications, some widely known. The project itself was met with interest, as practitioners and experts generally agreed that the profession would benefit from a more systematic and contemporary foundation of canonical knowledge and guiding principles. The study concludes by making several recommendations on how these goals can be served.

CHAPTER ONE

INTRODUCTION

Overview of Dissertation

Learning through direct, personal experience by interacting with nature was humankind's method and mode of learning, yet today it survives as a remnant of that long and venerable tradition. The natural world has served as the touchstone to humankind's long evolutionary development. The natural world set the conditions for humankind's evolutionary challenges, and of our survival across a spectacularly diverse range of environmental conditions, which in turn helps to account for the remarkable diversity of human societies, languages, and cultural practices. The symbiotic relationship between humanity and nature is profound. It shapes who we are as a species. And until recently, it has also largely determined the conditions of every human being's growth and development.

The Agricultural Revolution ten thousand years ago ignited the advent of cities, sedentism, and the cultural-evolutionary pressure on humankind to develop an increasing range of 'tools of the mind.' In the course of a few thousand years, and especially over the past few centuries, humans have replaced the natural environment for one very different – an engineered, purpose-built environment whose features are strikingly different from those of the natural world. Its shapes and forms are straight, flat, and regular. Its light is unnatural, and no longer follows the natural circadian rhythm. Its air is 'conditioned.' Its sounds, scents, and visceral feel are manmade.

We do not really know what the physiological, emotional, and psychological tradeoffs have been for this substitution. Nor have we done an adequate job of studying the effects and benefits of restoring back some of that exposure to nature. Does exposure to the natural world, especially during the formative years of childhood and young adulthood make a difference? It is a question worth asking. Recent empirical research, as well as abundant anecdotal evidence suggest a range of possible benefits, but these piecemeal findings have yet to capture the whole picture.

Similarly, there are various studies and anecdotal accounts supporting the practice of basing at least some instructional effort in the natural environment. This 'so-called' 'nature-based learning' is often coupled with the pedagogical practices of 'experiential learning', which is characterized in part by allowing the learner's own interests and motivation to determine the subject matter, allowing the 'locus of control' for learning to reside primarily within the learner, and basing episodes of learning not on the study of abstract knowledge, but upon authentic physical engagement with features of the natural world for purposes of learning, character development, social development, and so forth.

This was the formula prescribed by Jean Jacques Rousseau in the late 18th century, and it has remained an influential conceptual model ever since. But again, it has not been given the attention it deserves by researchers to determine its effectiveness and to establish what constitutes 'best practice.' Experiential education, occurring within the natural environment, is practiced in countries all over the world. Its effectiveness is worth studying for these and other reasons, but it has received far less attention than state-sponsored formal K-12 schooling.

Interest in learning from experience within naturalistic contexts is not new. A number of scholars have traced its modern conceptual lineage back to Rousseau (e.g., McCree & Cree, 2017), and of course there were numerous precedents before Rousseau published *Emile*. A review of educational history also reveals a pattern of variations of nature learning coming in and out of vogue over time. At present, Jordan and Chawla (2019), Pikus et al. (2019), and recent legislation pilot testing licensure of full day nature-based preschools in Washington (WA SB 5357, 2017) indicate there is an active interest in the development and implementation of formal nature-based learning opportunities for today's children. But as Pikus et al. (2019) hint, the lack of formal training and professional development in nature-based education has led to a range of ways this educational approach is implemented. If it is to remain viable, it would be well served by the articulation of its knowledge base and the clarification of its conceptual framework, so educators have an agreed upon basis from which to practice their specialization.

This dissertation explores the knowledge base and conceptual features associated with conventional educational practices (i.e., public, PK-12 schools) that employ nature-based learning and experiential education. These educational approaches foster learning through authentic (e.g., hands-on) experiences occurring within naturalistic environments and they take the form of nature school where children regularly spend significant portions of their academic day outdoors.

Recent calls for establishing a more comprehensive research agenda for these types of educational approaches (e.g., Jordan & Chawla, 2019; Seaman et al., 2017), coupled with an initial exploration of the associated literature base, suggest they lack

integrated and well agreed upon conceptual frameworks. To better conceptualize the gestalt of this overarching educational construct, it is useful to understand its history, which has been significantly influenced by Rousseau's *Emile* (1762/1969). Although other like-minded pedagogues preceded Rousseau and stressed the importance of learning through experience in nature, Rousseau serves as an important figure in recent past who directly influences today's experiential and nature-based learning approaches given his timely rise early in Modernity and the ways his ideas have impacted pedagogy thereafter.

Turning to the present, an interesting finding of an initial literature review suggests nature-based learning and experiential education each has an established history occurring over the past 70 years, comprised of folk knowledge, and rooted in unique ontological, epistemological, and cultural perspectives (cf. Waite et al., 2016). However, neither appears to possess an agreed upon, overarching, or unified model, making it difficult to comprehensively establish the specific ways these approaches are understood and practiced. Nature-based, experiential, and conventional educational approaches all have important features that can beneficially inform one another. Some aspects of nature-based learning and experiential education are commonly practiced in conventional educational settings, such as school gardens and the use of active, hands-on activities, but theory established in nature-based and experiential traditions supporting the use of those practices tends not to be as widely known. Formal (i.e., K-12 public) education has developed a comprehensive knowledge base and conceptual framework, simply because those things were required due to the twin pressures of professionalization and

accreditation. While the framework of NBEE would have different characteristics, the benefits of that kind of clarity and substantiation would be significant.

This study explores explore nature-based learning and experiential educational approaches to better understand their knowledge bases, conceptual frameworks, and their efforts to establish standards, with the goal of determining what the nature-based experiential education profession knows about itself. To accomplish this, the researcher uses an inductive qualitative mixed method study. This methodology incorporates the following strategies: 1) a critical historical review of nature-based learning and experiential education related literature, 3) interviews of experts in nature-based learning or experiential education, 3) and a survey of educators who practice this type of educational approach within conventional educational settings. This research is intended to generate a useful basis for subsequent development of the knowledge base and conceptual framework of Nature-Based Experiential Education. Development of a conceptual framework and its associated knowledge base can then be used to better inform the theory, practice, and judgement of educators as well as develop an agenda for future research. The overarching goal of this project is to elucidate what this field knows about itself through this thee tiered examination of its current knowledge base and conceptual framework.

Defining Nature-Based Experiential Education

For the purpose of this study I use the term Nature-Based Experiential Education (NBEE) to refer to educational contexts that employ the pedagogical use of learning through hands-on experience and similarly direct and authentic approaches to learning

within natural settings. The main features of NBEE include formal educational opportunities for students to learn (i.e., fulfill mandatory curricular requirements) based on the experience of interacting with one another and using natural materials within naturalistic, outdoor environments. In particular, this study focuses on nature schools as the primary example of an NBEE context.

Outdoor adventure programs, recess, classroom gardens, classroom pets, nature simulations or derivations thereof, and outdoor environmental education programs are not included as part of this analysis of NBEE because they do not address holistic curricular goals, they lack direct nature contact, and/or they do not emphasize whole child learning.

Nature-based experiential education is a hybrid term I use for this study integrating nature-based learning and experiential education. Nature-based learning (NBL) and experiential education (EE) are used commonly and each has its own literature base. However, neither, by itself, fully expresses what I mean by NBEE. *Formal NBL* refers to conventional educational contexts that provide regular and compulsory educational experiences for students to learn in nature (Jordan & Chawla, 2019), but that definition does not overtly suggest incorporating EE as part of the pedagogical process. Moreover, *learning* tends to be associated with an individualistic process whereas *education* refers to formalized schools. Experiential *education* refers to an educational approach that employs the use of direct and authentic (e.g., hands-on) learning to solve problems, coupled with focused reflection as the central feature for accomplishing a specific learning objective (Joplin, 1981; Kolb, 1984; 2015), but that definition does not address the nature of the learning environment. Thus, the overlapping

contexts where conventional educational goals (i.e., PK-12 standards) are achieved purposefully and experientially, while using nature and the context it provides as a co-teacher, is the nexus of NBEE.

Historical Influences

Although it can be argued that NBL has been an important feature of human learning since time immemorial, modern expressions of NBL can been traced to Scandinavia as the cultural value of an open-air lifestyle merged with conventional education. As expressions of NBL expanded, the practices and their accompanying names were modified to fit new cultural contexts. In general, these approaches provided compulsory and regular opportunities for school students to learn outdoors (Bentsen et al., 2009), although the specific expressions of that approach took on different forms.

The current standards and requirements of NBL vary considerably. Waite et al. (2016) explored the differing ways nature schools have been adopted into nationalized curricular models, making it difficult to directly compare programs. Additionally, the way teachers pedagogically use outdoor environments differs considerably, as reported by Meyer et al. (2017) and discussed by Pikus et al. (2019). Efforts are being made to better understand nature schools, such as initiatives like WA SB 5357 (2017), pilot testing licensure for full-day outdoor preschools in Washington, and Jordan and Chawla's (2019) called for the establishment of an NBL research agenda. But, at present, there does not appear to be a well-established knowledge base or an agreed upon conceptual framework to guide these practices, suggesting NBL is still in its early stages of professional development.

Experiential education is in a similar position. It can be understood as a type of student-centered, hands-on educational approach emphasizing the concept of learning through direct, personal experience. Like NBL, EE also has a substantial history and a growing literature base. The U.S. origins of EE can be traced to the 1970s when a variety of educators sought to implement aspects of Outward Bound into mainstream schools (Miner & Boldt, 2002; Schoel et al., 1988). This approach featured pedagogical ideas from Dewey (1916; 1938), Hahn (Miner & Boldt, 2002) and Lewin (Johnson & Johnson, 1991; Kolb, 1984; 2015) discussing the strategic use of experience as a key part of the educational process. However, despite strong interest in implementing experiential methods (Smith et al., 2011), current understandings of experiential education do not appear to be cohesive, neither in the literature (e.g., Warren et al., 2008) nor in practice (Seaman et al., 2017), suggesting that its conceptual framework has not been well developed either.

In general, there seems to be a lack of alignment across literature foundational to NBEE related to how it is defined, its underlying features, or even whether it can be defined (e.g., Chapman et al., 1992). In this way, NBEE and its antecedent approaches seem to operate more as folk crafts than professionalized institutions. Although there is richness to the diversity and flexibility of knowledge of this type, the inherent inconsistencies also create a situation where the underlying conceptual framework lacks integration because one has not been developed by the profession. This creates an interesting problem space for study. If the knowledge bases for NBL and EE can be

established beyond folk knowledge, it is more likely key features from those approaches can be understood and implemented into conventional educational settings.

Efforts seem to be underway to professionalize these educational approaches. Jordan and Chawla (2019) call for the establishment an NBL research agenda and suggest the need to develop a better understanding of ways in which nature contact enhances learning. Similarly, Seaman et al. (2017) discuss the importance of situating EE within more mainstream scholarly traditions. Ultimately, it is important to understand how NBEE impacts learner outcomes, but as these researchers suggest, it is first important to clarify essential features of their underlying conceptual frameworks. Thus, there is a broad need to understand the knowledge base and the conceptual framework of NBEE as it is understood by its experts and practiced by its educators to advance the profession and better serve its students.

Without substantive professionalizing infrastructure, such as an established knowledge base and an agreed upon conceptual framework, the field lacks potential for extensive theory and research, making it difficult to pass on what every NBEE educator should know and be able to do. As it stands, the knowledge base of NBEE appears inconsistent because the canonical works have not been identified. Furthermore, the conceptual framework of NBEE does not appear to be well developed, therefore limiting our capacity to systematically study, assess, and improve this educational approach. The recent calls by Jordan and Chawla (2019) and Seaman et al. (2017) suggest there is an interest within the NBL and EE fields to advance the quality of the profession's

knowledge and best practice; however, because these aspects have not been systematically studied, we do not definitively know the status of NBEE as a whole.

Statement of Problem

Instructing future educators in teacher preparation programs how to teach using an NBEE approach, based on an agreed upon conceptual framework and a well-established knowledge base would provide them with the tools, skills, and knowledge to capably and safely educate students using this approach. Moreover, professionalizing infrastructure would clearly establish what every teacher should know and be able to do in an NBEE context. As it currently stands, the profession's knowledge and best practices are not clearly known. This problem is exemplified by a wide range of ways nature-based approaches are practiced (Pikus et al., 2019) and EE is understood. At present, teachers who want to implement this approach may not have knowledge of, access to, or adequate training in, empirically informed best practices. Not only does this miss important opportunities to support student learning through empirically validated best practice, but it also has the potential to create situations where safety protocols are not clearly established or followed.

Purpose of Study

There are numerous opportunities to strengthen the underlying conceptual and theoretical foundations of NBEE to inform the judgement of practitioners. The purpose of this study is to explore what the NBEE field knows about itself to assess its current level of professionalization. This will be accomplished by identifying the knowledge base and

conceptual features associated with NBEE from its literature, from its experts, and from educators who employ it in their practice.

This problem is important because educational practices incorporating aspects of an NBEE approach have a long history and have made some useful contributions to education, but the knowledge base and conceptual framework does not appear to have been systematically developed or studied. It is important to support the work of NBEE practitioners who directly implement this educational approach with a conceptual understanding grounded in solid theory and research. A lack of understanding can limit practitioner effectiveness, whereas a robust knowledge base and conceptual framework can help the profession promote a shared discourse, establish standards of excellence, and provide a basis for systematic research to advance the quality of services.

The Association for Experiential Education (AEE), which serves as the professional body for EE practitioners, strives to achieve the following principles: a) building a community of professionals, b) supporting and propagating research findings central to the philosophy and practice of EE, and c) presenting resources and knowledge to support the expansion of EE (AEE, 2020). One of the functions of AEE has been to define EE beyond the simplistic slogan of "learning by doing", suggested by AEE's Outdoor and Adventure Education Programs Professional Group. In a similar way, the Nature Based Learning Collaborative Research Network has developed a definition for nature-based learning (Jordan & Chawla, 2019) and surveyed environmental educators to better understand how they connect children to nature as well as how their work can be improved by future research (North American Association for Environmental Educators,

2016). The present study aligns with the goals established by those organizations as it seeks to develop a more coherent overall NBEE knowledge base.

Research Questions

The central research question this study addresses is, "What does the NBEE profession know about itself?" This question is addressed by the following:

- What is the underlying knowledge base informing a nature-based experiential educational approach?
- What is the conceptual framework informing a nature-based experiential educational approach?
- Who are the influential contributors to the knowledge base of a nature-based experiential educational approach and what are their contributions?
- What are the claims related to impacts on learner academic achievement resulting from NBEE approaches?

Significance of the Study

Developing a coherent conceptual model of NBEE is important for several reasons. First, there is a growing social movement concerned with children's alienation from nature, articulated by Louv (2005) and actively addressed by the Children and Nature Network. Additionally, there is a general sense that the U.S. educational system is underperforming, exemplified by international student assessment data indicating that the U.S. educational system is not achieving as well as other countries (National Center for Education Statistics, 2015). There is research to suggest NBEE approaches benefit academic achievement (Freeman et al., 2014; Kuo et al., 2019). However, other

educationalists argue that pedagogical features associated with NBEE impede the learning process (Egan, 2002; Kirschner et al., 2006). These aspects need to be better understood so achievement-supporting features can be adopted, and detrimental features can be discontinued. But because the knowledge bases of NBL and EE have not been clearly established and agreement about their respective conceptual frameworks is uncertain, the opportunities for support by professionalizing infrastructure are lacking and answers to this dilemma are unknown. Thus, it is important to gain a clearer understanding about the knowledge base and conceptual framework of NBEE.

Considering the ongoing interest in implementing NBEE approaches, it is problematic NBEE does not have a well agreed upon conceptual framework to provide its practitioners with a model to ground their work. The AEE has established standards of practice, but these standards are program focused. Beyond providing definitions for experiential education and experiential learning, they do not provide guidelines for EE pedagogy. Consequently, there does not appear to be a standardized understanding related to the best practice of EE pedagogy. The lack of a model may limit potential educational gains that would otherwise be possible with a more established conceptual understanding. A coherent knowledge base and conceptual framework sets the stage for systematic inquiry into the study of ‘what works’ and what does not, and thereby establishing a research trajectory. Therefore, it is anticipated that this study will benefit the NBEE field by contributing needed preliminary steps toward the tasks of identifying, consolidating, integrating, and organizing its conceptual ideas into a coherent framework, and organizing its existing research and other resources into a comprehensive knowledge

base. The purpose of this study is to establish an understanding of where the field is now with respect to these aspects of professionalization.

Conceptual Framework

Due to the nature of the central research question, (i.e., What does the NBEE profession know about itself?), there is not an overarching conceptual framework guiding this study. Instead, the study is inductive and exploratory as it seeks to uncover the conceptual ideas influencing NBEE practice. The following lenses have been useful in this pursuit: foundations of education, educational psychology, and Mind, Brain and Education. Foundations of education considers the historical, philosophical, and social factors influencing historical trends in education using the written record, including primary, and secondary source literature as its data. Educational psychology explores theories of learning and instructional methods by examining learning processes and academic outcomes. Self-regulated learning, referring to a self-directed learning process involving self-awareness, goal setting, monitoring and adaptation, is a useful perspective emerging from educational psychology that can be advantageous for considering benefits NBEE. Mind, Brain, and Education employs insight from cognitive psychology, neuroscience, educational theory, and human development to conceptualize the learning process. As the features of NBEE are identified, aspects from these frameworks are used to conceptualize the findings.

Positionality/Reflexivity Statement

I have been involved in direct and indirect forms of NBEE in several important ways throughout different parts of my life. I grew up in rural Montana and a substantial

cause of my early learnings involved exploring my family's acreage with my brothers. I learned fundamental lessons about life through exploratory and naturalistic experiences involving both adventure and mishap. Years later, while I was in high school, I honed my informal knowledge as a student-leader in a newly offered, experientially based, outdoor activity class. I gained technical skills to safely and capably lead wilderness expeditions through the completion of a National Outdoor Leadership School summer semester. While in graduate school I learned about adventure-based counseling as an experience-based form of mental health counseling, after which I worked as a field therapist for a residential wilderness therapy program serving adolescents at risk of self-harm and/or delinquency. I directed the Experiential Education program at Montana State University, with duties including the management of a ropes course, running wilderness-based freshmen orientation programs, and overseeing several outdoor-based student activity groups. Lastly, I started an experientially based leadership development and consulting business serving clientele ranging from corporate groups to adjudicated adolescents. These opportunities gave me practical experience into the many ways learning can occur in nature-based, experiential contexts.

My practical experiences inspired me to pursue further study to acquire a deeper and more comprehensive understanding about how learning occurs through these approaches. Curiously, I have not found substantial, well agreed upon, cohesive, or integrated support based in canon, training, or professional development related to this inquiry. Instead, I have observed it possesses more of a folk craft, or guild quality in terms of its transmission of knowledge and praxis (though some would argue that this is

actually in keeping with the spirit of ‘experiential education’; cf. Chapman et al., 1992). I am familiar with a few highly specialized graduate programs and associations that feature specific majors and/or sponsor conferences; however, for a fairly small field, it seems as though many of its ideas are siloed. This impedes what could potentially be a much richer discourse. I have long wondered if a broader conceptual framework exists and (more pragmatically) if there are more clearly identified approaches that are successful in creating lasting change, and whether those can be replicated reliably. These are the kinds of benefits one expects from a shared knowledge base and conceptual framework.

Many of my questions emerged when I worked exclusively as a wilderness clinician. I observed our students make substantial progress through their participation in our program. However, the cost of treatment exceeded $20,000, which greatly troubled me because it severely limited who was able to access those services. Since working in wilderness therapy, I have sought to gain a better understanding about the underlying operational features because I suspect it would be useful in strengthening the practice of NBEE. It would also provide the starting point for an organized research agenda.

My initial pursuit of this conceptual line of inquiry led me to Harvard Graduate School of Education where I studied Mind, Brain and Education as a conceptual framework to better understand EE. I continued my inquiry at University of Victoria using the discipline of educational psychology to study NBL. There, I completed original research comparing classroom structure to student physical activity between traditional and nature-based kindergarten classrooms (Meyer et al., 2017). Since attending Montana State University, I have consolidated my research focus around NBEE, incorporating

NBL and EE to synthesize portions of my former pursuits into an approach that, by some accounts (e.g., Chawla, 2015; North American Association for Environmental Education, 2016), is growing within mainstream educational practice.

This pursuit has been the focus of my graduate study and identifying the conceptual features of NBEE represents my goal for this dissertation by seeking to understand what this profession knows about itself. Thus, I am approaching this inquiry as an experienced practitioner and pedagogical researcher, seeking to strengthen this field by connecting those pieces and developing a more cohesive conceptual framework for this educational approach.

Research Methodology

This inductive, qualitative, mixed method study is structured in three phases consisting of a critical historical review of NBEE-related literature, semi-structured interviews of NBEE experts, and a survey of NBEE practitioners to identify their sources of professional development.

The critical historical review strategically examines important historical and canonical literature related to NBL and EE with the goal of articulating foundational ideas, illuminating areas of overlap, and identifying any incongruencies with educational best practice (e.g., Ritter, 2014; Rury, 2006). Although this review is an important aspect of this study, it occurs as a strategic, in-depth extension of the literature review and is included in that chapter.

The purpose for conducting semi-structured interviews of NBEE experts is to inductively gain their perspectives about the conceptual framework and knowledge base

of NBEE. Once gained, this material will be cross referenced with the source material derived from the critical historical review and used as a foundation to explore how it is understood and used by NBEE practitioners.

The survey of NBEE practitioners gathers insight about their overall applied knowledge base and how it relates to the way they understand and incorporate theories and research-based findings within their practice. The methods will be mixed in two ways: A) comparing findings from the critical historical review with source material identified by experts and B) cross referencing the source material identified in part A with what is known and informative to NBEE practitioners. By synthesizing findings from these investigations, I will gain a clearer understanding about what this profession knows about itself as well as important directions for future study.

Ethical Consideration

Given the proposed research agenda, there are minimal risks associated with this study. Interviews were limited (N = 6) and each interview participant was offered a written transcript of her/his interview. Additionally, key information from each interview was member-checked to ensure accuracy. Interviewees were given the option to anonymize their responses or include their identity, which, given their expertise, provides an important form of authentication. Survey responses (N = 103) were anonymized as part of the survey software. It is possible participants were inconvenienced for their time by taking part in the interview or survey. However, findings from this study have the potential to benefit NBEE experts and practitioners alike by providing them with a better understanding about what the field knows about itself, specifically related to its

knowledge base and the comprehensiveness of its conceptual framework, thereby providing participants with useful information in which to inform their work.

Assumptions, Limitations, Delimitations

Assumptions. This multidisciplinary study examines NBEE from the following perspectives: foundations of education, educational theory, educational psychology, cognitive science, and developmental theory. It assumes readers have some familiarity with these frameworks. This study assumes its readers are familiar with a Western approach to education. It also assumes readers possess some knowledge of constructivism and educational progressivism (cf. Labaree, 2005; e.g., Dewey's theorization that knowledge is constructed from experience, Piaget's theorization about development of a learner's schema via assimilation and accommodation, and Vygotsky's notions of cognitive tools and Zone of Proximal Development). Lastly, this study assumes that readers possess a rudimentary understanding of an NBEE approach.

Limitations. One of the limitations to this study includes the limitations of the available historical record. Kurt Lewin and Kurt Hahn are widely regarded as important pedagogues in the development of modern practices of EE, however, neither was prodigious in his writing. In fact, Lewin died shortly after developing his experience-based training group approach, but before he could fully articulate it in the literature. His main ideas, as they have been applied to EE, have been echoed by other scholars, such as Kolb (2015) and Johnson and Johnson (1991). Hahn is also widely regarded as a foundational figure to EE, but his writings are limited and most of his ideas are best preserved by others (e.g., James, 1980; Miner & Boldt, 2002). Although these individuals

are generally regarded as innovators to this approach, they did not engage in the scholarship of their practice, hence the limitations of the current historical record.

This study is also limited by the breadth of interview subjects. The interview participants were purposefully selected based on their professional and/or research expertise related to NBEE (such as influential publications or critical work defining/researching important aspects of NBEE). Although the interviews were designed to explore the knowledge base and conceptual framework of NBEE to achieve saturation, it is possible some concepts were missed due to the small pool of interviewees.

Lastly, survey participants were targeted based on their membership in Children and Nature Network, The Nature Alliance, North American Association for Environmental Education, Montana Association for Environmental Association, and American Forest Kindergarten Association. These organizations were targeted to specifically reach educators who employ an NBEE approach, however, nature-based experiential educators who are not members of these organizations were unable to be located and surveyed. An additional limitation to the surveys relates to the ability to randomly sample participants – randomness was limited due to self-selection. Members self-selected to join those organizations and study participants had to be members of those organizations willing to participate in the survey. In these ways, there were limitations to the methods of this study.

Delimitations. Given the evolutionary development of human knowledge systems, it can be argued that NBEE mechanisms have played an important role in learning throughout human existence. From this perspective, the entire historical record lends

itself to historical analysis. Several important NBEE-related ideas emerged during antiquity, including inspiration Kurt Hahn drew from Plato's *Republic* as well as Aristotle's concept of *phronesis* suggesting that wisdom is cyclically developed from reflection and experience (Stonehouse et al., 2011). However, it is important to strategically delimit the boundaries of this study.

With the establishment of formal systems of education, supported by empiricist ideas generated during the Enlightenment, such as those articulated by John Locke, there was an important educational transformation initiated by Rousseau that set the stage for contemporary thinking about NBEE. Indeed, NBEE ideas precede Rousseau, but Rousseau provides an important delineating moment in the development of modern approaches to education. This study is delimited by examining Rousseau's (1762/1969) reaction to Locke's teacher-directed, empiricist approach, as well as Rousseau's influence upon post-Enlightenment educational theory with his publication of the *Emile* in 1762. This choice was made because many of the foundational concepts related to NBEE can be traced to Rousseauean concepts such as a developmentally based, learner-centered, naturalistic, and hands-on educational model. Thus, this analysis is delimited by using Rousseau as a starting point for inquiry, based on his influence upon educational theory and the multitudinous ideas that subsequently developed after his influence.

This study is also delimited by its focus specifically related to the term *nature-based experiential education*. There are a variety of experiential and nature-based forms of education including: problem-based learning, place-based learning, inquiry-based learning, environmental education, and experimental education with specific meanings

and applications. Correspondingly, defining features of experiential education do not necessarily involve nature and defining features of nature-based learning do not necessarily involve experiential learning. Thus, focusing the study on conventional educational settings utilizing nature-based environments as a setting and experiential education as the pedagogy delimits it.

Operational Definitions

Constructivism. Constructivism is a psychological and educational theory suggesting that learners actively construct knowledge from their lived experience. This theory was strongly influenced by Jean Piaget, John Dewey, and Lev Vygotsky.

Experiential education. An umbrella term referring to a learner-centered educational approach where students are given hands-on opportunities to engage with the content of instruction which is typically proceeded by a reflective process. Experiential education is most simply conceptualized as a cycle consisting of a direct experience and reflection. The Association for Experiential Education considers experiential education to be both an educational approach and an educational philosophy defined as, “Challenge and experience followed by reflection leading to learning and growth” (AEE, 2020).

Experiential learning. A term used by several theorists (e.g., Johnson & Johnson, 1991; Joplin, 1981; Kolb, 1984; 2015) referring to the individualistic learning process that occurs through participation in some form of authentic (e.g., hands-on) experience. Warren et al. (2008) differentiate experiential learning from experiential education and

emphasize that learning is an individualistic process rather than an educational approach or educational philosophy.

Nature-Based Experiential Education (NBEE). A researcher-defined term referring to conventional educational opportunities that employ a pedagogy of experiential learning, occurring within natural settings. This term is simultaneously meant to broaden the construct of experiential education to include formal educational opportunities occurring in natural settings as well as delimit it by excluding non-educationally focused outdoor activities without a specific pedagogical focus, such as outdoor adventure programs.

Nature-Based Learning. An educational approach that incorporates a student's regular and compulsory education within a natural environment as a central feature to the formal educational process (i.e., the type of learning occurring in nature schools).

Nature Schools. Also called forest schools, outdoor classrooms, udeskole (Danish term for forest schools), waldkindergarten, and field schools. These formal educational approaches require learners to regularly and compulsorily attend classes and learn curricular material in outdoor, natural environments rather than in traditional, indoor, purpose-built classroom settings.

Progressive Education. This educational philosophy promotes a learner-centered, pragmatic, non-didactic, non-behavioral educational practice emphasizing the needs of the learner over direction by the teacher.

Reflection. A term describing the process of critical inquiry and self-examination where learners cognitively examine how recent experiences align with their current conceptual models of an idea. Reflection typically involves the Piagetian concepts of assimilation or accommodation.

Chapter Summary

Nature-based experiential education refers to conventional educational approaches that integrate an EE pedagogy within NBL. Recent legislation pilot testing licensure for full-day nature preschools (WA SB 5357, 2017), the call for establishing an NBL research agenda (Jordan & Chawla, 2019), and the call to clarify the relationships between theory, practice, and ideology in EE (Seaman et al., 2017) suggests there is a need to gain clarity related to underlying features associated with this approach. This study addresses part of that problem by seeking to understand what the NBEE profession knows about itself in a three tiered research approach, including a) a critical historical review of NBEE related literature, b) interviews of NBEE experts identifying the knowledge base and clarifying the conceptual framework, and c) a survey of NBEE practitioners to identify the conceptual features that inform their practice. By establishing what this profession knows about itself, this study will have empirical support for establishing an NBEE knowledge base and conceptual framework to inform the judgment and practices of nature-based experiential educators as well as suggest directions for future research.

CHAPTER TWO

LITERATURE REVIEW

In this review, I explore the current state of understanding of nature-based experiential education (NBEE) by examining its shared knowledge base and reviewing its canonical literature. I approach this task by first discussing my own experiences as a student and as a teacher with this approach and how those experiences led to my current research interests. I then discuss the influence of Rousseau's idealization of a nature-based, developmentally focused, and child-directed education, free from the impacts of society. This review then focuses on NBL literature to identify its defining features. It then transitions to a review of EE literature to identify the key features and trends associated with that instructional approach. Lastly, this review synthesizes how these findings pertain to the professional development of NBEE by consolidating key learnings about the knowledge base and conceptual frameworks of NBL and EE.

NBEE Positionality

I have completed 27 years of formal education and most of my academic experiences have involved didactic or discussion based instructional approaches. I have learned from all of my experiences, but some stand out more than others. Most of my formal education occurred indoors, seated at a desk, and led by a teacher. Chemistry labs provide an example of a more hands-on approach, but curiously, something about those labs confused my broader understanding of chemistry rather than supplementing it. On the other hand, I have distinct memories of attending a multi-day outdoor environmental

science camp during grade school, participating in a newly offered outdoor recreation class while in high school, completing a National Outdoor Leadership School semester in college, and traipsing through the foothills near my college campus as part of a geology lab. Each of those experiences involved formal learning, occurring in nature, and supplemented by engagement with curricular material through hands-on activities. These experiences intrigue me, because I know they are common among learners. My experiences suggest traditional and experiential-naturalistic approaches are fairly disconnected and I do not understand why. Nor do I understand why experiential-naturalistic approaches vary so much in the way they are taught. My experience as a learner in NBEE contexts has provided me with one source of knowledge, but I have long sensed the need for developing a clearer understanding of the pedagogical features underlying approaches of this type. Graduate school has provided me with the opportunity to explore these questions more comprehensively.

While completing a graduate program in Mental Health Counseling, I took a class in adventure-based counseling, which employed the use of problem-solving activities as a supplement to the counseling process. In that class we explored the design and practice of using problem-solving and adventure initiatives to achieve therapeutic goals. That approach inspired me because it offered a new way to work with clients using experientially based, problem-solving challenges to guide clients toward greater self-awareness. Rather than solely rely upon dialogue, adventure-based counseling integrated purposeful activity with dialogue to create a richer and more meaningful learning opportunity.

Adventure-Based Counseling utilized two texts to support our learning. Rohnke (1984) served as an activity manual and provided facilitation instructions for 160+ activities. It is well-regarded as an influential (activity) text to this day, but it does not discuss the theory associated with the incorporation of those activities within an educational curriculum. The other text, written by Schoel et al. (1988), briefly describes the history and theory of adventure-based counseling as well as a more extensive explanation about how adventure-based practices can be incorporated into a therapeutic context. Project Adventure published both texts as a way of promoting the incorporation of experiential education into mainstream therapeutic and educational contexts (Project Adventure, 2016; Schoel et al., 1988). Although useful, those texts did not offer an underlying pedagogical theory associated with those approaches.

When I asked my professor about how to further my understanding, rather than direct me toward a more comprehensive knowledge base, he simply suggested I practice what I had learned in class and subsequently learn from that experience (i.e., he suggested that I learn about the process *experientially*). Still feeling inadequately trained, I attempted to heed his advice, but I also began to familiarize myself with other offerings by attending conferences and training sessions in experiential education to broaden my understanding. Professionally, I gained employment as a ropes course manager and later director of an experiential education program. However, my long-term goal was to become a wilderness-based counselor for a wilderness therapy program, which I accomplished and worked intermittently for several years. Those professional experiences intrigued me because, though the programs were different, my students

seemed to make significant gains through their participation and engagement, yet I found myself unsure about the long-term impact of those approaches on achieving my students' underlying needs and goals. Still hoping to discover a coherent, underlying theory, I now found myself also wanting to better understand the outcomes associated with those approaches.

Based on my observations, students appeared to be quite engaged in those approaches and it was my sense that the learning was somehow deeper. At the same time, I realized that my evidence was anecdotal, and I did not have systematically collected data to support my observations. Additionally, I felt troubled by the considerable cost of those programs. It bothered me that the hefty price tag limited availability to the affluent. I believed it should be possible to re-create key aspects of those approaches in a more accessible and cost-effective way, but I lacked an underlying conceptual understanding to ground my intuitions in theory. In the absence of theoretical and empirical knowledge of this type of education, it is difficult to know how such a practice can be transposed into some other approach without losing its functional aspects. We are left to ask, Why and how, does this approach work? And, does it really work as well as we seem to think? The capacity to study it depends upon some framework of analysis, which should derive from its underlying conceptual framework and its canonical literature. But they appeared to be nowhere near as well developed as, for example, the practices of regular K-12 education. Indeed, that pursuit has been my long-term goal and remains the focus of my research.

Interestingly, a similar goal led Jerry Pieh to establish Project Adventure in 1971 as he attempted to replicate salient features of Outward Bound (an expeditionary,

wilderness based, outdoor education program) into a format more congruent with public education (Schoel et al., 1988). During the 1960s and 1970s there was substantial interest in reproducing aspects of Outward Bound within different school-based settings. Wide ranging interest in learning through experience within a natural setting appeared to be the driving force behind those initiatives but identifying their underlying features in order to implement them effectively proved to be difficult. This resulted in some confusion throughout the profession, affecting me several generations after Pieh's influence and ultimately leading me to wonder what the NBEE profession knows about itself (i.e., What is its *de facto* base of knowledge?).

Nature-Based Learning

Educational Impacts of Rousseau

Understanding the impact on education of Jean Jacques Rousseau helps us to make sense of current passions associated with NBEE. In 1762 Rousseau (1762/1969) published *Emile* as an educational treatise denouncing the ills of society and instead promoting his idealized version of a nature-based and learner-directed education. Rousseau proclaimed that society had a denigrating influence. Moreover, he suggested that top-down (i.e., authoritarian) educational approaches were fundamentally flawed. He argued against didactic teaching practices and rote learning, proudly proclaiming that he 'hated books' and declaring, "Reading is the greatest plague on childhood" (Rousseau, 1762/1969, p. 51).

Instead, Rousseau suggested that education should be an individualized process, determined by the needs and interests of the learner, and constructed through naturalistic

experiences aligning with the learner's developmental stages. He promoted active learning, occurring holistically through the senses, and guided by a tutor. Rousseau also advocated for the importance of learning through direct, personal experiences. Rousseau's vision of an ideal education involved the natural unfolding of human potentialities, separated from societal influences, and occurring in natural contexts. In short, Rousseau idealized nature as the perfect teacher and he romanticized the child all the while resisting almost everything that came from society.

Some well-known educators, like Pestalozzi and Fröbel, connected deeply with Rousseau's ideas and they incorporated features like learner-centered, naturalistic, sensory rich, and active learning within their own pedagogical approaches. Of particular interest is the impact of Rousseau's idealization, his use of romanticized language to depict the child and nature, and his rejection of objectivity in preference for the sensory, the emotional, and the subjective. In some ways, nature was spiritualized with theistic reverence while maintaining a high tone of revolution toward society's putative corrupting influence.

Aspects of this trend impacted the Progressive Education movement as student-directed, experiences and hands-on learning challenged existing traditions of education often caricatured as rote learning of classical texts. Progressive educators promoted different ways of 'learning in the real world' rather than study of the Western canon.

Dichotomization is an important theme we observe in *Emile* that has continued long beyond Rousseau's lifetime. For example, Rousseau dichotomized nature-based with human-made environments; childhood innocence with corrupting social influences;

child-centered learning with teacher-directed instruction; subjectivity and emotion with objectivity and cold reason; and learning from personal experiences with rote and book-learning of other people's ideas. Many of these polarities reappeared during the progressive education movement, especially the student-centered versus teacher directed dichotomy. Even today we may observe nature-based education presented in stark contrast against conventional education. Similarly, learning from direct, personal experience is venerated, while learning from books, lectures, classroom presentations, and other conventional educational resources is shunned.

Rousseau's ideas appealed to the rebel in most of us, but their implementation yields decidedly mixed results. As we move forward with our examination of NBEE, these dichotomies and concerns are useful to bear in mind.

Present-Day Literature

The term *Nature-Based Experiential Education (NBEE)* is used because it captures the three parts of this study (i.e., nature-based learning, experiential learning, and formal education). Jordan and Chawla (2019) define *formal NBL* as occurring when children have contact with nature during structured school activities, and that term (formal NBL) aligns closely with what I mean by NBEE. A close read of their definition suggests personal experience is an essential part of the learning process, but they do not make that connection explicit. Additionally, NBL emphasizes *learning*, which is an individual process, whereas *education* implies a formal and professionalized practice. I am interested in understanding how NBL is incorporated, using an experiential educational approach, within conventional educational settings.

I conducted several searches on the term "Nature-Based Experiential Education", and its related acronym NBEE, to determine how extensively it may have been used and what meanings, definitions, and connotations are associated with it. As of 11/19/19, a generic (quoted) Google search produced 1200 hits. A review of those search results does not reveal a central, coherent literature base related to NBEE. Searching the quoted term *nature-based experiential education* using Google Scholar, ERIC and PsychInfo produced 29, zero, and zero results, respectively. GoogleScholar, ERIC and PsychInfo searches using the unquoted term *nature-based experiential education* produces 10,600, one, and four results, respectively. The search results appeared to be related to the publication of Louv's (2005) treatise, *The Last Child in the Woods*, discussing how decreased contact with nature has negatively impacted children's development. The results also refer to environmental education, therapeutic uses of nature, and school-based outdoor education. Beyond that, the results point to nature-based learning and experiential education as approaches which overlap and can be examined independently to formulate a better understanding. Given that the purpose of this study is to better understand the pedagogical use of experiential education conjoined with nature-based learning within conventional education, these findings indicate this research trajectory is appropriate.

In general, these searches suggest that aspects of NBEE are of interest, but also seem to lack specific organization, association, or professionalized differentiation. In some ways, the results emerging from these searches leave one puzzled and somewhat confused – NBEE appears to be of interest, but not well understood. Moreover, the

NBEE term also appears to be understood differently throughout educational, therapeutic, recreational, tourism, child development, family science, and commercial industries. Although useful, this exercise also demonstrates the ease of becoming lost in the myriad hits of Google searches and/or discouraged by the lacuna of information using more focused academic databases such as ERIC and PsychInfo. However, given my professional and academic interests related to understanding the overlap of EE and NBL within formal education contexts, these results provide some indication that this is a topic worthy of further investigation.

Present-day literature associated with NBL and EE tends to be associated with the Children and Nature Network and the Association for Experiential Education. Journalist, Richard Louv co-founded Children and Nature Network (C&NN) after publishing *Last Child in the Woods* (2005), which explores the impact of alienation from nature on child development. Children and Nature Network continues Louv's work by spearheading a movement to increase children's access to nature through initiatives and research, though without the explicit educational or therapeutic purposes found in other 'nature-based' experiential programs for youth. Children and Nature Network has promoted empirical research with an open access Research Library that includes summaries of peer-reviewed research studies related to connecting children with nature. The number of studies summarized by C&NN has increased markedly in recent years, exceeding 1000 submissions in December 2019. A considerable portion of empirical NBL literature has occurred outside the U.S. Fear of litigation appears to have made it more difficult in the U.S. for teachers to take their students outdoors (Charles et al., 2008).

The field of EE has attempted to address these legal concerns through the creation of program standards by the Association for Experiential Education (AEE) to professionalize the field and by establishing organizational programming and risk management protocols (Austin et al., 2019). The AEE began publishing the Journal of Experiential Education in 1978 as a peer-reviewed scholarly resource to explore the theory, practice, and implementation of EE. Additionally, foundational texts have emerged from the AEE network such as Smith and Knapp's (2011) *Sourcebook of Experiential Education*, summarizing important contributions to the field of EE, as well as *Theory and Practice of Experiential Education* (Warren et al., 2008), which provides a compilation of historically significant theoretical articles originally published in the *Journal for Experiential Education*.

Given this background, this review of the literature will first focus on the framework of NBL to explore its knowledge base and conceptual framework. It will then investigate EE in a similar fashion. Lastly, it will compare these approaches with the equivalent features of traditional, mainstream educational practice. Whatever view one might hold toward K-12 education, its visibility and its demand for clear goals, learning outcomes, and accountability, have resulted in a highly developed conceptual framework and knowledge base, which in turn has created an extensive framework for defining and cultivating research on what works. It therefore provides somewhat of a benchmark for assessing the current status of equivalent efforts in the NBEE profession.

What is Nature-Based Learning?

There are many different educational approaches that feature nature contact as a central pedagogical feature such as: science-based outdoor camps, wilderness therapy programs, school gardening, outdoor adventure programs, classroom pets, and forest schools. Although each of these approaches incorporates nature in some way, they differ in terms of defining features, practices, purpose, and outcomes. In fact, the term *nature-based learning* takes on different meanings throughout the literature, which Jordan and Chawla (2019) attempt to clarify with their definition:

> Nature-based learning, or learning through exposure to nature and nature-based activities, occurs in natural settings and where elements of nature have been brought into built environments, such as plants, animals, and water. It encompasses the acquisition of knowledge, skills, values, attitudes, and behaviors in realms including, but not limited to, academic achievement, personal development, and environmental stewardship. It includes learning about the natural world but extends to engagement in any subject, skill or interest while in natural surroundings. NBL can occur with varying degrees of guidance or structure, across the age span, alone or with others, and in urban, suburban, rural, and wilderness settings. NBL occurs in informal, non-formal and formal settings (La Belle, 1982). With respect to children's NBL, it includes *informal* learning during children's free play or discovery in nature in their yards, near their homes, in green schoolyards, on the naturalized grounds of child care centers, or in any other natural area. It includes *non-formal* learning in nature during out-of-school programs, camps, or family visits to parks or nature centers. And it includes *formal* learning when children have contact with nature during structured activities in schools, preschools, child care centers or during outdoor field trips (p. 2).

This definition provides an important foundation for a coordinated NBL research agenda on behalf of the Science of Nature-Based Learning Collaborative Research Network (North American Association for Environmental Education, n/d). It also demonstrates the many ways NBL is understood and practiced. Using the language of this definition, this study explores formal learning approaches incorporating NBL.

Origins of Nature-Based Learning

Scandinavian countries are generally credited with formalizing modern models of NBL application to mainstream schooling in the 1950s and 1960s (Cree & McCree, 2013). This occurred as a cultural connection to nature called *friluftsliv,* in reference to an open-air, free lifestyle emphasizing outdoor activities for recreational and educational purposes, became more formally applied to schools (Bentsen et al., 2009). The educational application of friluftsliv began in Norway and Sweden, however, cultural differences accentuated distinct priorities resulting in varied practice and implementation. Waite et al. (2016) compare Danish and U.K. NBL approaches identifying differences in purpose, content, aims, pedagogy, outcomes, and barriers between countries despite the overarching similarity of providing formal educational opportunities for children to learn outdoors. Even within country, Denmark's NBL approaches tend to arise from the initiative of enthusiastic teachers with varied implementation and practice. NBL practices have expanded beyond Scandinavia to countries such as Germany, Canada, Australia, New Zealand, U.S. and China. As one might expect, NBL is understood and implemented quite differently throughout the world.

To further demonstrate the various ways NBL has been understood and practiced, the models of U.K. and Denmark can be examined for similarities and differences. Denmark refers to its NBL approaches as *udeskole,* meaning "outdoor school". Udeskole involves regular and compulsory educational activities occurring outside the classroom typically in naturalistic settings or cultural sites (Bentsen et al., 2009). Teachers employ udeskole as a way to supplement classroom activities with the aim of increasing motivation, engagement, and achievement (Bentsen & Jensen, 2012). Udeskole is not

associated with a national curriculum and consequently it tends to occur independently through individual teacher initiative (Waite et al., 2016). As a result, udeskole is implemented differently across Denmark.

The U.K.'s approach to formal NBL is referred to as Forest School. Unlike Denmark, Forest School is more centrally organized and managed. Forest schools emerged in the U.K. in the 1990s, modeled after Scandinavian friluftsliv-based nature schools and Danish udeskole practices (Forest School Association, 2018). Forest Schools were designed as an alternative educational model to the outcome-centered approaches dominating U.K. education at that time. The Forest School Association, which provides the following definition: "Forest School is an inspirational process, that offers ALL learners regular opportunities to achieve and develop confidence and self-esteem through hands-on learning experiences in a woodland or natural environment with trees" (Forest School Association, 2018, What is Forest School?), was formed in 2012 to provide structure, training and governance for forest schools. Forest Schools (FS) operate by the following six principles:

> 1) FS is a long-term process of regular sessions, rather than one-off or infrequent visits; the cycle of planning, observation, adaptation and review links each session,
>
> 2) FS takes place in a woodland or natural environment to support the development of a relationship between a learner and the natural world,
>
> 3) FS aims to promote the holistic development of all those involved, fostering resilient, confident, independent and creative learners,
>
> 4) FS offers learners the opportunity to take supported risks appropriate to the environment and to themselves,
>
> 5) FS is run by qualified FS practitioners who continuously maintain and develop their professional practice,

> 6) FS uses a range of learner-centered processes to create a community for development and learning (McCree & Cree, 2017, p. 6).

Unlike udeskole, Forest Schools are more highly structured (Waite et al., 2016) and necessitates that the Forest School leader to have successfully completed Level 3 Forest School training for program implementation.

Given the unique ways NBL is understood and practiced, there is not a consistent definition of NBL in the empirical literature. It varies between classrooms, schools, countries, and cultures, as shown in Waite et al.'s (2016) comparison of udeskole and Forest Schools. We can observe a similar situation within the U.S. related to educational sovereignty afforded to each state. The Constitution does not address education, so it is presumed under the provision of the 10th Amendment to be a function of the individual states to establish their own educational practices and thereby enable them to emphasize culturally specific priorities. (Karier, 1986). This right is balanced by the establishment of national standards (e.g., InTASC Standards developed by the Council of Chief School Officers (CCSSO) and CAEP standards for teacher preparation) designed to define and support expectations for effective teachers.

Recent attempts to define NBL and establish a research agenda for future study (Jordan & Chawla, 2019) as well as clarify evidence exploring the benefit of nature-based experiences on children's well-being (Chawla, 2015; Gill, 2014; Kuo et al., 2019) are part of a broader initiative by the Nature-Based Learning Collaborative Research Network. This initiative seeks to achieve the following: a) advance discovery, understanding, and knowledge about nature-based learning, b) broaden research participation to include underrepresented groups, and c) disseminate synthesized

evidence for effective NBL educational facilitation (North American Association for Environmental Education, n.d.). This study aligns with those goals, and we will now explore the main features and practices associated with NBL.

Features of Nature-Based Learning

Beyond the broad definition of NBL provided by Jordan and Chawla (2019) outlining informal, non-formal and formal contexts in which children learn in nature, a review of NBL literature suggests that there are no other comprehensive definitions of formal, academic NBL based on the varying ways it is implemented. Meyer (2016) conducted a review of NBL literature exploring this question and generated a summary of NBL definitions and/or salient features. This summary has been expanded since its creation and is included as Appendix A. Table 2.1 provides a condensed list of features foundational to NBL derived from that summary.

Table 1. Defining Features of NBL Contexts

Defining Feature	Reference
Child/Learner-Centered	Cree & McCree, 2013; Massey, 2005
Compulsory	Bentsen et al. 2009
Experiential	Department for Education and Skills, 2006; MacEachren, 2013
Exploratory	Massey, 2005
Hands-On	Änggård, 2010; Murray & O'Brien, 2005
Inquiry-Based	MacEachren, 2013
Place-based (i.e., nature, outside, woodland)	Änggård, 2010; Bentsen et al. 2009; Cree & McCree, 2013; Louv, 2005; MacEachren, 2013; Massey, 2005; Maynard, 2007; Moore & Marcus, 2008; Murray a& O'Brien, 2005; Roe & Aspinall, 2011; Shields, 2010; Swarbrick et al., 2004
Regular	Änggård, 2010; Cree & McCree, 2013; FSA, 2018; MacEachren, 2013; Maynard, 2007; Murray & O'Brien, 2005; Shields, 2010; Swarbrick et al., 2004
Repeated/Long-Term	Cree & McCree, 2013; FSA, 2018; MacEachren, 2013; Swarbrick et al., 2004
Sensory-Focused	Moore & Marcus, 2008
Student-Directed	Änggård, 2010; Cree & McCree, 2013; Davies, 1996; Massey, 2005

Comparisons and Distinctions

Each defining feature will now be explained to discuss similarities and differences within the literature.

Place-Based. Place-based (i.e., nature, outside, and woodland locations) is the most commonly occurring feature to each definition of NBL (Änggård, 2010; Bentsen et

al. 2009; Cree & McCree, 2013; Louv, 2005; MacEachren, 2013; Massey, 2005; Maynard, 2007; Moore & Marcus, 2008; Murray & O'Brien, 2005; Roe & Aspinall, 2011; Shields, 2010; Swarbrick et al. 2004). Given the content and focus of this educational approach, this finding makes sense. However, as highlighted by Jordan and Chawla (2019), some expressions of NBL include bringing nature indoors, through classroom pets and indoor gardens. The general consensus suggests that educational practices should occur outside the classroom in naturalistic environments, although there appear to be considerable differences within the literature about suitable locations. Returning to our previous discussion of udeskole, learning outside the classroom is based on teacher discretion and can occur in a variety of open-air environments including natural and cultural settings (Bentsen et al. 2009). Correspondingly, the Forest School described by Swarbrick et al. (2004) provides specific criteria for appropriate walking distance to/from the school as well as public/private access. The concept of place-based is further complicated when one considers the importance of emphasizing other constructs associated with nature, such as freedom, as proposed by Davies (1996). Furthermore, Sobel (2004) suggests nature-based is simply a derivation of a broader place-based construct. Thus, although place-based environments are widely considered to be important, the specific requirements for adequate types of naturalistic locations conducive to NBL varies.

Regularity and Repetitiousness. Regularity (Änggård, 2010; Cree & McCree, 2013; FSA, 2018; MacEachren, 2013; Maynard, 2007; Murray & O'Brien, 2005; Shields, 2010; Swarbrick et al. 2004) and repetitiousness (Cree & McCree, 2013; FSA, 2018;

MacEachren, 2013; Swarbrick et al. 2004) are related yet distinct features found within the NBL literature referring to the importance of providing ongoing, regular and repeated opportunities to learn in naturalistic settings rather than one-time or irregular occurrences. There is a consistent sentiment within the literature that NBL opportunities need to occur regularly and repeatedly (FSA, 2018). This is significant because in the performance-based testing culture pervasive throughout the U.S. educational system, there is an emphasis on dosage effects and determining a minimal number of interventions needed to demonstrate some sort of measurable improvement. Barab (2018) approaches this directly in his articulation of a research agenda to determine the amount of time users need to spend playing educational, digital games to demonstrate measurable conceptual growth. Kuo et al. (2017) consider this question obliquely in a study exploring how nature contact impacts engagement. In general, despite a common understanding that nature contact should be regular and repetitious, the ways in which it occurs in practice appear follow now set pattern. Rather than emphasize the minimum amount of time students need to be outdoors to demonstrate an effect before the intervention is terminated, the literature stresses the importance of providing ongoing, regular, and repeated nature-based experiences. However, the optimal frequency and duration of NBL experiences has not been established. Consequently, we see widely divergent practices such as the Danish educational models that tend to involve day-long excursions on a weekly/biweekly basis (Bentsen et al. 2009), and some forest kindergarten programs in Canada that provide daily excursions regardless of weather conditions (cf. Meyer et al., 2017).

Compulsory. Although only explicitly stated by Bentsen et al. (2009), making nature-based experiences compulsory helps to ensure that NBL approaches will be included as an integral part of the mainstream educational approach. By definition, compulsory outdoor expeditions require student participation regardless of weather conditions. Rather than only engaging in NBL when weather is fair, nature-based experiences occur regardless, ensuring that nature-experiences are central to the academic experience and student experience a socio-cultural milieu under all conditions, including inclement weather. Despite only being mentioned once, this feature is implied throughout the NBL literature.

Student-Directed. Another important commonality in NBL definitions suggests learning should be influenced by student interest (Änggård, 2010; Cree & McCree, 2013; Davies, 1996; Massey, 2005). Student-directed learning shares commonalities with experiential (Department for Education and Skills, 2006; MacEachren, 2013), exploratory (Massey, 2005), hands-on (Änggård, 2010; Murray & O'Brien, 2005), inquiry-based (MacEachren, 2013), and sensory-focused (Marcus & Moore, 2008) learning, but there are differences in how these techniques are emphasized in practice. In each of these approaches, students are afforded opportunities to engage with and learn from naturalistic environments based on their own self-motivated interests. The differences can be understood according to the specific emphasis of each form of student-directed learning. For example, inquiry-based student-directed learning may be driven by the questions that motivate student interests in an NBL environment, whereas hands-on student-directed

learning may involve students taking an active role by participating in a larger class-wide project. These features may or may not be mutually exclusive.

Child-centered. Child-centered practices, referring to the prioritization of the needs of the learner over the agenda of the teacher, are important features to NBL contexts (Cree & McCree, 2013; FSA, 2018; Massey, 2005). It is interesting to note that child-centered and student-direct practices closely align with Rousseau's (1762/1969) assertion that ideal forms of education should be directed by the learner and are associated with educational progressivism.

Conceptual Framework of NBL

Returning to the central question of this study, "What does this NBEE profession know about itself?", we observe a variety of ways NBL has been understood and implemented across participating countries and programs, suggesting that there does not appear to be an agreed upon conceptual framework defining NBL in its practices, features, or relationship to a theoretical research base. This observation is further demonstrated by the many references to educational approaches that incorporate nature as regular pedagogical feature such as: Forest Schools, udeskole, frilufsliv, rain or shine schools, coastal schools, waldkindergarten, learning outside the classroom, third frontier, place-based education, real world learning, and ecoschools. Establishing a clearer expression of the underlying conceptual framework aids, in part, in addressing Jordan and Chawla's (2019) call to establish a research agenda for NBL, which they suggest should occur by a) assembling research perspectives on NBL, b) establishing participant and

process networks to coordinate research, and c) developing a literature review to guide agenda discussion.

Müller and Liben (2017) summarize the current state of literature and indicate that despite there being many diverse, discipline-specific areas examining specialized aspects of nature's role on human development, "there has been little integrative, systematic research examining the role of nature in children's development" (p. 2). This trend has created a problem within the empirical literature where sources of knowledge are diffusely located and not bound to a specific educational domain. But it is also being addressed, suggested by the growing body of empirical literature, some of which has been vetted and summarized for the C&NN Research Library, which recently exceeded 1000 sources. Thus, the literature is growing but the defining features of NBL would benefit from better integration by establishing what is known and how those pieces relate to one another. This can be addressed, in part, by identifying the specific techniques, practices and outcomes of NBL.

Specific Techniques and Practices

Table 2.2 provides a list of specific NBL techniques and practices that vary in the way they are implemented. Although this list is not comprehensive, it provides a useful framework for conceptualizing similarities and differences related to the application of NBL in differing contexts.

Table 2.2. Specific Techniques and Practices Used in NBL Contexts

Specific technique/practice	Reference
Accessible location	Swarbrick et al. 2004
Achievable problem-solving challenges	Maynard, 2007
Engagement with natural materials	Änggård, 2010; Cree & McCree, 2013; Davies, 1996
High adult-child ratio	Maynard, 2007
Play opportunities	Änggård, 2010; Cree & McCree, 2013; Fjørtoft, 2001; MacEachren, 2013; Maynard, 2007; Moore & Marcus, 2008
Practical activities	Cree & McCree, 2013; Maynard, 2007
Purposeful structure	Änggård, 2010; Davies, 1996; Roe & Aspinall, 2011
Risk-taking opportunities (appropriate)	Maynard, 2007; Moore & Marcus, 2008; O'Brien & Murray, 2007: Swarbrick et al. 2004
Safe, but challenging	Massey, 2005; Swarbrick et al. 2004
Space, freedom and solitude	Davies, 1996

Accessibility to/from the NBL sites is important. Swarbrick et al. (2004) provide specific recommendations regarding the distance between an NBL site and the school. But often these distances vary and may not be administrable by the NLB educator. In a study conducted by the author (Meyer et al., 2017), distance to sites varied from a few hundred yards to over a mile. In some cases, the walks doubled as opportunities for physical fitness and in other cases long walks required special arrangements such as developing the physical endurance of students by gradually increasing the length of walks

over a period of time. Teachers often used the walks as teaching moments such as employing activities like scavenger hunts to connect the walks to key learnings or longitudinal observation of dynamic phenomenon in nature, over time. Schools located too far away from appropriate outdoor sites to walk required bus transportation; in these instances, NBL practices tended to last for a longer period of time but were less frequent (Bentsen et al. 2009).

Problem-solving challenges and risk-taking are described in NBL literature as being important (Massey, 2005; Maynard, 2007; O'Brien & Murray, 2009; Swarbrick et al. 2004). In general, there seems to be a preference to challenge students and occasionally push them beyond their comfort zones (Massey, 2005) but these thresholds differed by student, teacher, and NLB program. Safety is a of universal concern as each program navigates how to incorporate problem-solving challenges within outdoor environments that are inherently less controllable and less predictable than traditional educational settings (MacEachren, 2013; Massey, 2005; Swarbrick et al. 2004). In fact, a central purpose of FSA is training Forest School facilitators to promote safety (FSA, 2018), a theme also stressed by Elliott et al. (2014) who describe risk management and creating a "community of safety" as essential features to the implementation of forest schools in Canada. Ensuring child welfare and safety is also a central task of the Washington State Department of Children, Youth and Families, Outdoor Preschool Pilot program, which is finalizing its three-year pilot study analyzing models of outdoor preschools.

Opportunities to engage with natural materials within a spacious and unconstrained environment is unique to NBL contexts especially considering the open and flexible affordances of natural environments and materials found within them (Davies, 1996). Natural materials do not have prescribed functions the same way that educational objects do in traditional classroom settings. Consequently, natural materials are often used in creative ways, as described by Fjørtoft (2001).

The adult-child ratio is another important practical feature to NBL contexts (Maynard, 2007). Because NBL approaches require classes leave a building to go outdoors, the protections and containment afforded by the school diminish when the physical structure of the school is no longer available. As a result, additional adults, such as education assistants and parent volunteers, typically join the class to provide extra support and assist in maintaining safety. A review of international literature indicates the adult-child ratio differs by class, school and governmental requirement (cf. FSA, 2018). Because the adult-child ratio tends to be higher than what is typically found in traditional classes, it is difficult to know how this aspect influences student learning outcomes, such as academic achievement.

Play is a vital feature to healthy child development (Ginsburg, 2007) and opportunities for play are an important feature of NBL. Rousseau (1762/1969) considered *play* and *work* to be synonymous exercises for children. And in developing the kindergarten educational model, Fröbel regarded play to be the central feature to childhood learning experiences. Vygotsky (1978) also viewed play as important to the development of self-control, which he theorized as occurring through the development of

self-imposed rules during imaginary situations. NBL educators often hold similar views positively regarding the importance of play within the NBL educational process. However, there has not been consensus about the amount or type of play that best meets a child's educational needs; although play-based learning is prioritized, approaches vary on how play is implemented and structured into the curriculum (Fjørtoft, 2001).

Practicality, in the sense of scaffolding students to understand and conceptualize the relevance of their learnings, is an important feature to NBL (Cree & McCree, 2013; Maynard, 2007). O'Brien (2009) relates this aspect to constructivism as students "learn by doing" various outdoor activities. Similarly, an important part of the practicality in NBL occurs when students learn that their actions have natural consequences and real-life implications. Rather than emphasize conceptual learning unduly, knowledge acquisition often originates through visceral experiences from the environment. Abstraction follows.

Structure varies considerably between NBL programs (Meyer et al., 2017). Some programs are highly structured, carefully managed by the teacher and guided by linking pedagogical concepts to specific educational activities. Other programs are loosely structured and provide more opportunities for freedom. Based on the author's experience researching this aspect of NBL, this varies considerably by teacher preference and pedagogical orientation.

Research on the Benefits of Nature for Children

In two different systematic reviews of literature examining the impact of nature on children's wellbeing, Gill (2014) finds spending time in nature is part of a "healthy diet" that promotes children's development and Chawla (2015) identifies nature contact

as supporting cognitive functioning, self-control, psychological wellbeing, affiliation, and play. In an integrated 'mini-review' of NBL literature exploring nature's impact on children's learning, Kuo et al. (2019) found that NBL outperforms traditional instruction in a variety of academic categories. They identify eight plausible pathways linking nature and learning. These include: nature has a rejuvenating effect on attention; nature relieves stress; nature contact boosts self-discipline; nature increases student motivation, enjoyment and engagement; time spent outdoors is associated with higher levels of physical activity (fitness); vegetated settings tend to provide calmer, quieter and safer contexts for learning; natural settings seem to foster more cooperative relations; and natural settings may afford uniquely beneficial forms for play. Kuo et al. (2019) assert, "incorporating nature in instruction improves academic achievement over traditional instruction (p. 5).

These reviews show an important pattern. The majority of research measures the effect of nature's impact on children's wellbeing by looking at the effects of green space and natural areas on overall functioning. By comparison there are relatively few studies that look at the effect of nature on children's academic achievement. Kuo et al.'s (2019) review focused on academic contexts and found strong evidence suggesting that nature experiences improve learning. To examine this further, we will turn our attention to outcomes associated with NBL practice, listed in Table 2.3.

Table 2.3. Outcomes Associated with NBL

Outcome	Reference
Achievement	Department for Education and Skills, 2006; Shields, 2010

Attention restoration	Kaplan, 1995
Confidence	Maynard, 2007; Murray & O'Brien, 2005; Shields, 2010
Conflict resolution skills	Moore & Marcus, 2008
Cognitive development	Ulset et al., 2017
Cognitive restoration	Norwood et al., 2019
Creativity	Cree & McCree, 2013; Moore & Marcus, 2008
Curiosity	Moore & Marcus, 2008
Documentation skills	Cree & McCree, 2013
Engagement	Kuo et al., 2017
Environmental consciousness	Louv, 2005; Maynard, 2007
Executive function	Müller et al., 2017; Torquati, et al., 2017; Ulset et al., 2017
Independence skills	Maynard, 2007
Inspiration	Murray & O'Brien, 2005
Mastery development	Änggård, 2010
Motor development	Davies, 1996
Nature awareness	Änggård, 2010; Elliot et al., 2014
Observation skills	Cree & McCree, 2013
Physical activity	Dyment & Bell, 2008; Meyer et al. 2017
Physical fitness	Forest School Canada, 2006; O'Brien, 2009
Psychological wellbeing	Davies, 1996
Self-esteem	Shields, 2010
Self-regulation	Weeland et al., (2019)

Skill building	Massey, 2005
Sociality	Moore & Marcus, 2008
Stewardship	Louv, 2005
Transfer	Massey, 2005
Trust	Moore & Marcus, 2008

Although not comprehensive, this list provides a sampling of the different ways NBL has been examined to understand its impact on students. In most cases, NBL has been shown to have a positive effect as revealed in those types of outcomes. However, given the different ways NBL is practiced, empirical outcomes are varied in the ways they are prioritized and measured. Müller and Liben (2017) suggest this may, in part, be associated with the specialized interests of the researcher.

An interesting aspect of this list is the variation in construct measurability, exemplified by the outcomes of achievement and inspiration. Achievement can be measured in definable terms using standardized and validated assessments, whereas inspiration is more subjective and thereby difficult to directly compare between learners. Thus, empirically supported outcomes range from specific, easily measurable academic constructs to more subjective learner experiences. Indeed, the empirical research is eclectic but given the different ways NBL is practiced, this phenomenon can be more easily understood, especially in light of Müller and Liben's (2017) suggestion that there has been little systematic research around this subject.

Human affiliation with nature has been the subject of much curiosity and investigation. Rousseau (1762/1969) idealized nature's influence on human development

and prompted a romanticization of nature thereafter. More recently, Erich Fromm (1964) is credited with first using the term *biophilia* in juxtaposition to necrophilia, as a way of contrasting the human tendencies toward loving life versus seeking its destruction, respectively. Later, E. O. Wilson (1984) also used the term to describe "the innate tendency to focus on life and lifelike processes" (p. 1). Although those perspectives were more theoretical, they have served as an important touchstone for future understanding about nature's impact on our wellbeing. Ulrich et al. (1991) proposed Stress Reduction Theory to explain the stress reducing and restorative influence occurring from unthreatening natural environments. Kaplan (1995) developed Attention Restoration Theory to describe his understanding of nature's impact on attention. Kaplan proposed that directed attention is the key feature for enabling human effectiveness, however, directed attention is finite and easily depleted, the absence of which results in "human error". According to Attention Restoration Theory, natural environments provide a soft fascination that relieves directed attentional fatigue. In other words, spending time in naturalistic settings helps individuals to restore attention they will need in more effortful situations. Kaplan's model provides a way for explaining nature's impact on human psychological processes, both why constructed environments deplete the capacity for directed attention as well as why naturalistic environments promote attentional restoration. These models provide useful starting points to conceptualize how nature impacts learning and development.

Expanding our gaze from educational practices involving nature to the psychological benefits of nature on child development, we observe a variety of similar

findings demonstrating the benefit of nature contact on general wellbeing (Chawla, 2015; Gill, 2014). More specifically, research suggests that nature provides important benefits on child development ranging from mood, prosociality and attitudes toward nature (Dopko et al., 2019) to cognitive development (Ulset et al., 2017) to the development of self-regulation (Weeland et al., 2019). Many of these studies connect the benefits of nature contact on general wellbeing using the Wilson's (1984) Biophilia Hypothesis and/or Kaplan's (1995) Attention Restoration Theory.

Several recent studies demonstrate important benefits of nature's impact on cognition. In a controlled experiment exploring the mechanisms linking nature contact to mental health, Bratman et al. (2015) found that a 90-minute walk in a natural setting decreased self-reported rumination and neural activity in the subgenual prefrontal cortex whereas a 90-minute walk in an urban setting had no effect. (Subgenual prefrontal cortex activity has been previously linked to rumination and behavioral withdrawal.) In another study, Dopko et al. (2019) compared a four-hour nature school experience with a visit to an aviation/science museum on children's mood, prosociality, and attitudes toward nature. Using a paired-samples t-test, they found significantly higher positive and negative emotions, closer connection to nature, prosocial behaviors, and willingness to protect nature when at the nature school. And in a systematic review of 26 studies exploring the effect of different environments on brain activity and mood responses, Norwood et al. (2019) found natural environments tended to be associated with lower frontal brain activity coupled with low frequency brainwaves corresponding to subjective restorative feelings. Correspondingly, urban environments were more associated with

negative affect. The findings from this study provide support for Kaplan's (1995) Attention Restoration Theory. In an interesting statement the authors claim, "Measuring brain activity is an objective measure of assessing the physiological impact of engaging with the environment" (Norwood et al., 2019, p. 1; which may be a way of addressing problems arising from subjective participant self-report described previously). They describe the person-environment compatibility model suggesting that human activity in busy environments occurs at a cost of effortful processing (Kaplan, 1995). The data suggest greater benefits when more senses are involved (known as the sensory accumulation effect) which leads, in part, to questions about the dose-response relationship of nature and its neurological effects (Norwood et al., 2019).

The effect of nature on self-regulation has been well studied. In a metanalysis of 15 correlational and 16 (quasi) experimental designs exploring the effect of nature on children's self-regulation, Weeland et al. (2019) found a small but significant positive effect ($r = .10$). They group theories into three domains: promotive (direct positive effect), protective (mitigating effect), and restorative (Attention Restoration Theory; Kaplan, 1995). Given the significant, positive findings, they suggest nature provides some important benefits because it can be a) easily implemented into the domains of children's environments (such as schools) and b) nature exposure is affordable, accessible and safe with potential spill over benefits such as health, affect, communication, and social cohesion. In another study examining the effect of greenery on children's self-regulation (cognitive and emotional), Bakir-Demir et al. (2019) did not find significant direct effects. However, when their model incorporated nature connectedness as a

mediating variable, the relationship became significant. This finding suggests children need more than just exposure to natural spaces but should have opportunities to have direct sensory contact with natural features to experience benefits for cognitive and emotional self-regulation.

Lastly, in a longitudinal study following 562 preschoolers over four years, Ulset et al. (2017) used cognitive testing and parent ratings to assess children's attention skills and behavior. The purpose of the study was to examine the link between time devoted to outdoor activities in daycare centers on cognitive skills and behavior, which included the number of hours spent outdoors as part of the analysis. They found positive relation between hours spent outdoors and children's digit span scores and an inverse relation between time spent outdoors and inattention-hyperactivity symptoms. Moreover, they found a positive dose-response related to outdoor hours and children's attentional skills. They make sense of this, in part, using Kaplan (1995), suggesting that natural environments foster optimal development of the nervous system. "Overall, the findings from this study suggest that high exposure to outdoor environments might be a cheap, accessible and environmentally friendly way of supporting and enhancing children's self-regulatory capacities and cognitive development" (p. 78). An interesting takeaway from these studies is the recognition that nature exposure can be implemented into children's environments relatively easily (Weeland et al., 2019) and inexpensively (Ulset et al., 2017).

A Critique of NBL Research

In general, there seems to be a lack of systemization in the way NBL has been empirically studied. Returning to Müller and Liben's (2017) observation, pockets of research seem to emphasize specific researcher interests and skillsets rather than systematically address broader questions about the defining features and mechanisms associated with NBL practice, as demonstrated by the variation found in Table 2.3. It is important to investigate the specific pedagogical mechanisms of NBL but given the variability in the way NBL is practiced, there is insufficient knowledge about what mechanisms and practices are most important to study. Furthermore, the outcomes are not standardized or prioritized by a specific educational model.

Another problem occurring within NBL literature is one of rigor. Unfortunately, many of the qualitative studies seem to romanticize specific NBL outcomes. In this way, ardor for NBL obfuscates important findings. An example of this problem in found in the title of Murry and O'Brien's (2005) report, which reads, "Such enthusiasm – a joy to see: An evaluation of Forest Schools in England". Although their research design seems appropriate, the romanticization found within the title risks compromising their credibility. While it would be easy to write this off as an anomaly, this tendency is pervasive in NBL literature as researchers often romanticize children's experiences in nature. We observed this tendency popularized by Rousseau and find that it continues today. Ironically, the definition for Forest Schools adopted by the FSA is based on Murray and O'Brien's (2005) definition, verbatim. Thus, a critique of NBL literature suggests that romanticizing children's educational experiences in nature diminishes what may otherwise be important findings. This is not to say qualitative features are not

important and should not be acknowledged, of course. Just not romanticized. Müller et al. (2017) provide a good example of what this may look like by describing the five pedagogical principles of the forest school associated with their research, which they identify as: "a) connecting deeply with nature through play, b) emphasizing local ways of knowing and understanding, c) promoting physical and mental health; d) learning collaboratively as part of an empathetic community, and e) the environment serves as a co-teacher" (p. 48). Similarly, Elliot et al. (2014) provides a useful example of data collection using multiple approaches to document qualitative and quantitative features of an NBL experience, which provides important information about the experience as a whole.

The Professional Development of NBL

Because Jordan and Chawla's (2019) call for establishing a research agenda is recent, there has not been an adequate amount of time to determine its impact. There has been important theoretical research investigating nature's positive impact on wellbeing (e.g., Biophilia Hypothesis, Stress Reduction Theory & Attention Restoration Theory). And, as I have presented in Table 2.3, NBL has been associated with a variety of beneficial academic outcomes. That finding is further demonstrated by Kuo et al.'s (2019) 'mini-review' of NBL on educational outcomes, which shows clear, positive benefits of NBL over conventional education. However, as indicated by Müller and Liben (2017), the research process has not occurred systematically, resulting in 'pocketed' research determined more by researcher specialization rather than the agreed-upon needs

of the field. Given that observation, Jordan and Chawla's (2019) call for establishing an agreed upon research agenda becomes all the more important.

There are many areas of overlap between NBL and educational progressivism, such as an emphasis on student-directed learning, a preference for hands-on learning, and a tendency to reject didactic forms of instruction. Egan (2002), Hirsch (1996) and Kirschner et al. (2006) identify a variety of problems associated with educational progressivism and warn that similarly structured educational approaches could also be problematic. Given this warning, it is important to better understand the pedagogical features associated with NBL by clearly distinguishing, disentangling, and differentiating NBL from educational progressivism. One of the ways of accomplishing that task is by articulating the knowledge base and conceptual framework guiding the practice of NBL, which has been a goal of this literature review.

A review of the NBL literature has shown us a diverse literature base that tends to be associated with researcher interests, echoing Müller and Liben's (2017) assertion. Thus, the knowledge base supporting the practice of NBL is quite diverse. Additionally, due to the different ways NBL has been implemented across different countries, the way it is practiced also seems to vary. This is evidenced by different features (Table 2.1) and different techniques (Table 2.2) associated with NBL practice. The U.K. Forest School Association appears to be the most comprehensive body for providing guidance and standardization related to the implementation of Forest Schools by determining what every teacher should know and be able to do in the 'classroom'. But the Forest School's authority is limited to the U.K. The Outdoor Preschool Pilot study occurring in

Washington is significant because it represents a way NBL has been formalized within the U.S. But given its newness, there has not been sufficient time to determine its impact.

These findings indicate that not enough is known about the specific practice of NBL to know how to systematically study its mechanism and practices, suggesting it is still early in its professional development. Jordan and Chawla's (2019) call for establishing an NBL research agenda suggests the NBL field is moving in that direction. If accurate, the process of conventional education becoming professionalized may provide a useful model for consideration. Conventional education underwent a process of establishing standards to determine what every teacher should know and be able to do within the classroom to promote opportunities for students to learn consistent, established content. For example, InTASC standards provide a model for formalizing the essential learnings, content, instructional practice, and professional responsibility (CCSSO, 2013). Those standards provide structure and direction for the practice of teaching and they also guide the trajectory for future research. If further professionalization is to occur, that process needs to occur purposefully and systematically to keep NBL from becoming more fragmented.

Origins of Experiential Education

Experiential education is an instructional approach employing the purposeful use of a learner's direct, personal experience participating in a pedagogical activity coupled with focused reflection to conceptually link the activity to a desired curricular outcome. As the second theme for this study, it is important to understand this approach more clearly.

History of Outward Bound

The majority of contemporary EE literature links the influences of Kurt Lewin and Kurt Hahn to the development of EE (Smith & Knapp, 2011; Warren et al., 2008). The ideas of Lewin and Hahn occurred simultaneously during the 1940s yet developed independently through different disciplines. Neither Hahn nor Lewin adequately articulated his theory in writing, therefore their central ideas tend to be discussed by others (e.g., James, 2000; Johnson & Johnson, 1991; Kolb, 2015; Seaman et al., 2017). This review will examine first Lewin then Hahn before exploring the development of EE by way of Outward Bound as its ideas were incorporated into conventional education.

Seaman et al. (2017) explore the etymology of the term *experiential learning* and conclude that it first came into use during the 1940s by social psychologist Kurt Lewin. Born in 1890, Lewin researched human relations training. He developed the concept of *action research* as a way of employing the scientific method to address problems associated with workplace dynamics (Johnson & Johnson, 1991). Specifically, he used the term *action theory* in reference to the process of theorizing what actions are needed to achieve a desired outcome in a given situation. As part of this approach, Lewin developed an innovative laboratory-training method, referred to as *t-groups* (Lewin's abbreviated name for training-groups), which involved group members discussing the 'here and now' (i.e., present process) of what was occurring within the group, as it occurred (Kolb, 2015). In other words, group members would develop and openly discuss an action theory about a particular group dynamic as it was occurring, and then correspondingly test out their hypothesis in vivo (Johnson & Johnson, 1991). Thus, what occurred was *experiential* because it involved the active experience of hypothesis testing within a

dynamic group process of a human relations laboratory (Seaman et al., 2017). This process was formalized under National Training Laboratories in Bethel, Maine and its research continues today. T-group practice expanded, first to humanistic psychology in the form of sensitivity trainings, and later to diverse types of self-awareness training. As the practice grew, it became generically referred to as 'experiential.'

On the other side of the Atlantic, occurring during the same period of time, Kurt Hahn was developing an educational model that would eventually become Outward Bound (Miner & Boldt, 2002). Hahn was a German pedagogue of Jewish ancestry born in 1886. He founded Salem School in 1920 as an elite boarding school emphasizing Platonic ideals, character development, self-discipline, and physical fitness (James, 2000). Conditions worsened in Germany resulting in Hahn being briefly imprisoned and later, the target of assassination. Hahn fled Germany and relocated in the U.K. There, Hahn founded another school called Gordonstroum in 1934 and Outward Bound in 1941. Gordonstroum was based on many of the same principles as Salem School. However, Outward Bound was designed initially as a program to provide survival training for seamen who were dying in large numbers because they were unable to survive long periods of time in lifeboats after their ships were attacked and sank in WWII. When reconfigured for peacetime purposes, self-sufficiency and service to others became an important part of the Outward Bound way.

Hahn's educational philosophy is summarized in the following five pillars identified by The Outward Bound Trust (2020): an enterprising curiosity, an indefatigable spirit, tenacity in pursuit, readiness for sensible self-denial, and compassion. From a

historical perspective, Itin (1999) suggests that Hahn catalyzed the U.K. progressive education movement similar to the way Dewey impacted progressive education in the U.S. Hahn reconceptualized the purpose of education and shifted its focus away from a classical liberal approach to a more holistic model supporting the growth of the whole child with emphases on character development and physical fitness.

American educator, Josh Miner became interested in Hahn's philosophy when he worked at Andover School and heard about Hahn's educational influences (Miner & Boldt, 2002). After several visits, a sabbatical at Gordonstroum, and substantial consultation with Hahn, Miner introduced Outward Bound to the U.S. The U.S. Outward Bound model initially started in Puerto Rico as a training program for the newly formed Peace Corp program as a way to teach Peace Corps volunteers survival skills necessary for completing their volunteer-tours in developing countries. Colorado Outward Bound began shortly thereafter as a 28-day wilderness-based, survivalist education expedition designed to impart Hahn's values of character development and self-sufficiency to participants as well as rid them of 'slothful' behavior. The Outward Bound model proved to be quite successful and wilderness schools expanded to Minnesota, North Carolina, Hurricane Island (Maine), the Pacific Crest, the Southwest, and Thompson Island (Boston Harbor) in the 1960s and 1970s.

Outward Bound gained national attention and made the cover of the 1964 Readers Digest magazine piquing a nation-wide interest in program offerings (Miner & Boldt, 2002). As interest grew, Outward Bound began experimenting with programs for adjudicated youth as well as initiatives to capture and apply aspects of Outward Bound

into non-wilderness educational settings. Action Bound began operations in 1966 as a school, incorporating Outward Bound instructional approaches to teach traditional subjects within a more conventional educational setting. A variety of other initiatives also began, attempting to replicate Outward Bound concepts into mainstream education; these included: Upward Bound (1966), Dartmouth Center (1969), Project Adventure (1971), and Harvard-Outward Bound Project on Experience-Based Education (1980s). Additionally, Outward Bound experimented with running programs in urban centers as it sought to apply the experiential and adventure-based techniques as part of an instructional approach occurring within urban settings. In these ways, Outward Bound served as a major force in establishing a U.S. model for wilderness-based outdoor education and subsequently develop ways to apply specific features of that experiential process into conventional educational settings.

As Outward Bound expanded its practices into mainstream education, the concept of experiential education manifested in other ways. In 1971 the National Society for Experiential Education was formed. In 1972, the Association for Experiential Education formed and in 1978 it launched the *Journal for Experiential Education* as a forum for experiential education theoretical and empirical study (cf. Garvey, 1995).

Historical Influence of John Dewey

Given the different ways EE is understood, conceptualized and practiced, how do we make sense of it? One way is to look for similar pedagogical ideas beyond the origins described previously. In that search, the person identified most often is John Dewey. Despite not using the word “experiential” in his writings (Seaman, et al., 2017), the

experiential learning approach is largely attributed to the educational philosophy of John Dewey (Kolb, 2015). Amongst his many contributions, Dewey wrote *Democracy in Education* (1916/2007), *Experience and Nature* (1925/1958), *Art as Experience* (1934), and *Experience and Education* (1938) discussing the impact of lived experiences on human learning and knowledge systems. Dewey promoted child-centered educational practices that focused on the learner's experience rather than didactic instruction and learning by rote.

Progressive education fundamentally influenced conventional education by extending educational opportunity, expanding the curriculum, providing pedagogical innovation, democratizing the classroom, and industrializing the learning process by centralizing authority (Cremin, 1961) Dewey was situated in the middle of progressive education, promoting education as a means of achieving democracy while also developing a school-laboratory as a means of experimenting with pedagogy in innovative ways. He sought to reduce the gap between a child's experience and the subject matter, rather than dichotomize it (Kleibard, 1995). And he did this by conceptualizing a continuum of experience related to a child's education (Karier, 1986). Given his influential role within the progressive education movement and the ways he has been linked to EE, it is no surprise there are substantial overlaps between progressive education and EE.

As head of the Philosophy Department at University of Chicago, Dewey started a lab school in association with the university as a means of testing new educational principles in real life. In many ways, that opportunity provided inspiration for his later

work linking experience, learning, democracy, and the educational process. One of the features of Dewey's (1897) Pedagogic Creed suggests the importance of putting the process and goals of education on equal terms, which is a concept also foundational to EE.

Despite his influence on progressive education, in their review of the history of experiential learning theory, Seaman et al. (2017) suggest there is little evidence to connect Dewey to the use of the term *experiential learning*. However, they also propose that the ethos of progressivism, in part led to Lewin's innovative practices, which subsequently evolved into EE. Interestingly, Kolb and Fry's (1975) original model of experiential learning theory incorporates the theories of Lewin and Piaget but not Dewey. It was not until Kolb's (1984) more comprehensive theory was published that Dewey's ideas were incorporated. Given the importance of Dewey's contribution to the progressive education movement and his pragmatic conceptualization of experience as the foundational feature of the learning process, the EE community has a long history of conceptualizing its practice through Dewey. However, the fact that Dewey was not directly connected to the development of EE remains important.

Models of Experiential Education

A variety of models that have been influential to the articulation of EE. Fenwick (2001) identifies five different types of models related to experiential learning. These include the following: constructivist, psychoanalytic, situative, critical cultural, and enactivist. The constructivist model is used by educators to integrate holistic experiences in instructional settings. It typically follows an experience-reflection cycle facilitated by

an educator and it is the focus of this study. I will provide an overview of three different constructivist approaches before reviewing them critically.

Joplin. Joplin (1981) suggested that "all learning is experiential…(however) much that is done under the guise of education does not involve learning" (p. 17). She identified experience and reflection as the primary ingredients that constitute experiential education. More specifically, Joplin developed a model to represent her conceptualization of experiential education in the following five stages: 1) focusing event, 2) challenging action, 3) feedback, 4) support, and 5) debrief. Joplin also identified the following characteristics of experiential education: student directed, personal, process orientated, holistic, organized around experience, perceptually focused, and individually focused. Importantly, Joplin's final characteristic, stressing the importance of individual development over group development, is important because later discussions about EE emphasize the social nature of learning. Joplin's model is still widely regarded as an important conceptual model explaining the process of EE, however, it is important to note that Joplin does not locate her model within other theoretical constructs or support it empirically.

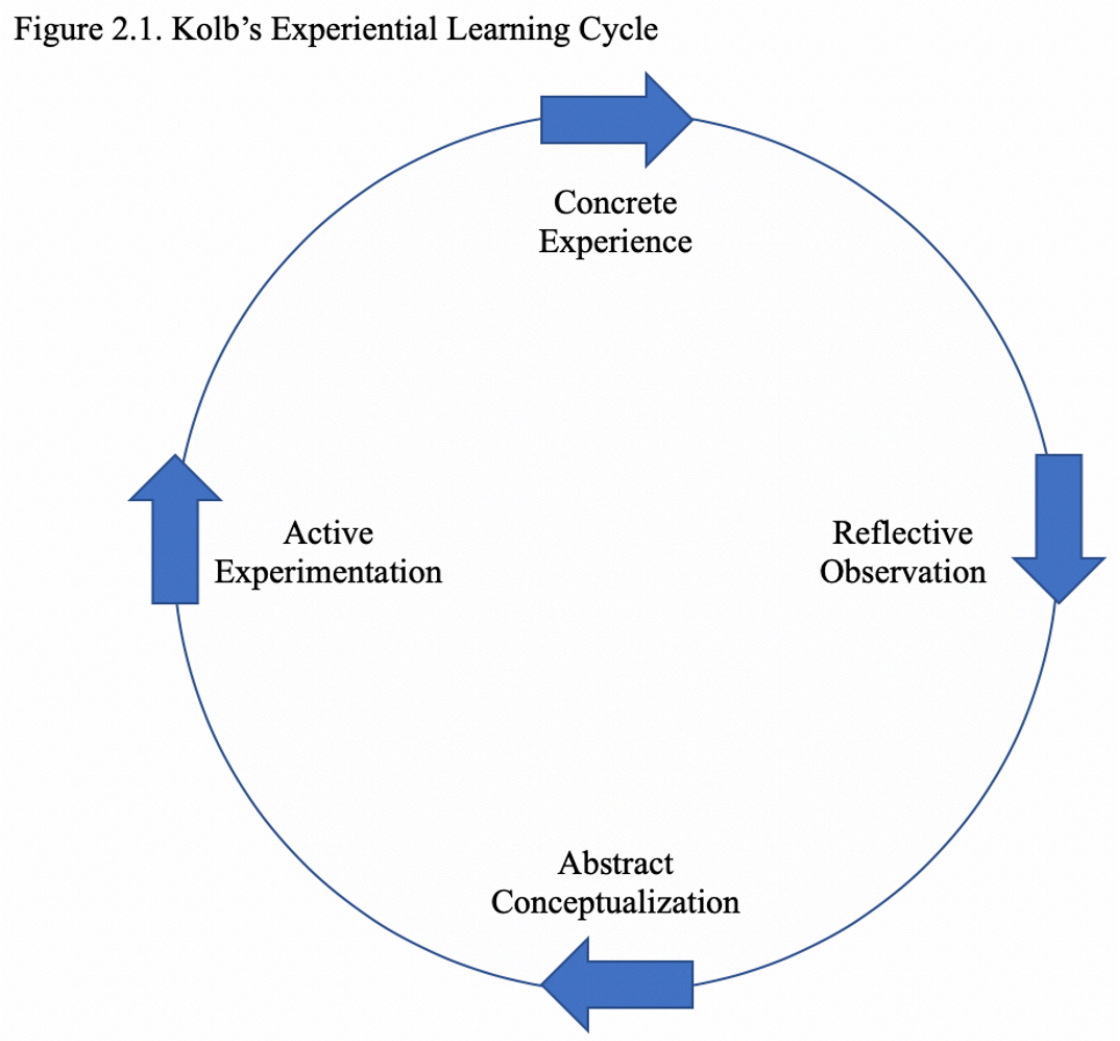
Kolb. David Kolb published *Experiential Learning: Experience as the Source of Learning and Development* in 1984 discussing the conceptual and theoretical foundations of experiential learning, based on a model he had proposed previously (Kolb & Fry, 1975). Unlike Joplin, Kolb (1984) locates his conceptualization of experiential learning in the existing theoretical discourse, citing works by John Dewey, Kurt Hahn, and Jean Piaget, whom he suggests provided the effective foundations of modern experiential

learning theory. In the second edition of his book, Kolb (2015) proposes that William James, Lev Vygotsky, Carl Rogers, Paolo Freire, Carl Jung, and Mary Parker Follett should also be considered foundational scholars for the development of experiential learning theory. Similar to Joplin, Kolb also suggests that all learning is experience based, though he attributes that idea to Dewey (1916/2007). Among the notable accomplishments emerging from Kolb's (1984; 2015) work are Kolb Experiential Learning Theory (KELT) and the extrapolation of his theory as Kolb Experiential Learning Cycle (KELC). Kolb (2015) suggests "learning is *the* major process of human adaptation" (p. 43; emphasis in original) to the environment, involving transactions between the person and the environment, resulting in the creation of knowledge. From this perspective, 'experience' has dual meanings: the first as a subjective, personal, internal state, and the second as objective and environmental. Given its dual nature, learning involves the transaction between subjective and objective states of experience, such as the transaction between personal and social knowledge. Thus, his definition, "Learning is the process whereby knowledge is created through the transformation of experience" (Kolb, 2015, p. 49).

Kolb (2015) identifies six characteristics of experiential learning: 1) Learning is best conceived as an adaptive process, not an outcome to be achieved, 2) Learning is a continuous process based in experience, 3) The process of learning requires a resolution of conflicts between dialectically opposed modes of adaptation to the world (e.g., resolving the concrete vs abstract; active vs reflective), 4) Learning is a holistic process of adaptation to the world (i.e., "Learning is the major process of human adaptation" (p.

43), 5) Learning involves transactions between the person and the environment, and 6) Learning is the process of creating knowledge. Based on those characteristics, Kolb superimposes Lewin's model of action research and laboratory training with Dewey's (1938) spiral model of learning, and Piaget's model of learning and cognitive development to create the Kolb Experiential Learning Cycle. By synthesizing overlapping features from those models, Kolb's cycle is comprised of the following stages: concrete experience, reflective observation, abstract conceptualization, and active experimentation. This model (Figure 2.1) can be understood as follows: a learner undergoes a specific, concrete experience, which is then reflected upon to make sense of the experience, after which the learner develops an abstract conceptualization about that experience, which they then test to determine how their conceptualization aligns with reality. In Kolb's model, opposite quadrants represent opposite ends of the grasping and transforming continuums. For example, concrete experience and abstract conceptualization represent opposite ways of grasping (taking in information) about an experience. Similarly, reflective observation and active experimentation represent opposite ways of transforming (interpreting and acting upon) experience. In an interesting extrapolation, Kolb overlays his model over other cyclical knowledge systems showing areas of similarity. For example, Kolb aligns his model with the scientific method by equating concrete experience with problem finding, reflective observation with question asking, abstract conceptualization with answer seeking, and active experimentation with portrayal of knowledge.

Figure 2.1. Kolb's Experiential Learning Cycle



Although it has been applied to education, Kolb (1984) originally developed his model as a tool for organizational behavior and a way to conceptualize learning styles (convergent, divergent, assimilative, and accommodative) corresponding to each of his four stages. A significant aspect of his career has emphasized identifying and maximizing the potential of each learning style via the Kolb Learning Style Inventory (which lies beyond the scope of this review). Kolb focuses his experiential learning theory on adults, although he has heavily relied upon Piaget's schema theory and its embodiment of

experience as the engine for learning as a major part of his framework. In a historical review of learning cycles literature, Seaman (2008) identifies the KELT model as being widely regarded as the standard model for experiential learning, however he critiques it and other experience-reflect-learn cycles in general as being individualistic, constructivist-focused models prone to being dichotomous, and overly simplistic.

Johnson and Johnson. Johnson and Johnson (1991) provide another influential voice seeking to conceptualize experiential learning as part of their larger work on group development. They juxtapose experiential learning from rote learning (reminiscent of the dichotomization we observed with Rousseau). They identify Lev Vygotsky (for his assertion that learning through experience is the process by which human development occurs) and Lewin (for his conceptualization of action theory as a conceptual model identifying which actions are necessary to achieve a desired outcome) as progenitors of experiential learning theory. Johnson and Johnson define experiential learning as an action theory (i.e., a self-referential theory identifying what actions are needed to achieve a desired outcome) generated from personal experience and designed to improve one's effectiveness on a task. Johnson and Johnson suggest that experiential learning occurs in three ways: the learner's cognitive structures are altered, the learner's attitudes are altered, and the learner's repertoire of behavioral skills are expanded. They conceptualize experiential learning as a cycle consisting of the following steps: 1) action taken on the basis of one's action theory, 2) assessing the consequences and acquiring feedback, 3) reflecting on the effectiveness of the action theory and reformulating if necessary, and 4) implementing a revised action theory. Although not as widely recognized in educational

contexts as Kolb's model (1984), Johnson and Johnson's (1991) model is better known in management education.

As we observe, Joplin (1981), Kolb (1984) and Johnson and Johnson (1991) provide three different models to represent experiential learning with some similar, overlapping features. Each proposes a version of a cyclical model involving experience and reflection to facilitate learning. In a review of experiential learning models, Stehno (1986) summarizes these models in the following generic: a pedagogical question/problem prompts the learner to observe and reflect upon their experience, resulting in a new way of thinking, which is enacted upon to produce new consequences from which the learner is able to repeat the cycle, more knowledgeable.

History of Experiential Learning Cycles

In a historical review of literature discussing the experience-reflect-learn cycles, Seaman (2008) suggests that, while useful to many, those cycle does not adequately capture the complexity of the learning process. Furthermore, given the changes in conceptual understanding related to the learning process, Seaman ponders whether the oversimplicity of these models may be problematic. As part of addressing this question, Seaman (2008) traces this history of experiential learning to a broader movement related to the G.I. Bill. In the period following the implementation of the G.I. Bill, one of its unanticipated consequences was recognizing and quantifying the life-experience of veterans in educational terms. Models in experiential learning developed in the 1960s and 1970s to a) help colleges "devise criteria for awarding credit to adults on the basis of

prior life experience" (Seaman, 2008, p. 6) and b) provide a social means to help adults reconnect with practical life experience to make positive life-change.

> The Cooperative Assessment of Experiential Learning…gathered renowned scholars as well as corporate interests such as the Educational Testing Service to survey the status of experiential learning both as an instructional approach and as a general, existential phenomenon that could be assessed and certified (Seaman, 2008, p. 6).

Stakeholders struggled to develop a model of experiential learning capable of incorporating diverse experiences while also remaining flexible enough to achieve specific aims. The outcome of that tension was the development of a two-part, experience and reflection process with experience delimited to a time-bound episode and reflection serving as the process of self-created knowledge formation. This simplified model served as the progenitor to the experience-reflect-learn cycles that followed. However, as critiqued by Seaman (2008), the pattern of "experience-reflect-learn" might be considered an *ideology* of experiential learning rather than a *philosophy* or a *theory* of experiential learning" (p. 15; emphasis in original), which may help to explain why it has been understood so diversely in its modern expressions.

Given this information, how do we make sense of experiential learning and experiential education? On one hand, it is easy to consider these theories and models outdated, however, given their historical significance well as context in which they emerged, as highlighted by Seaman (2008), they provide important landmarks for a broader historical understanding. The findings of Seaman's historical analysis create the temptation to discount experiential education as being a contrived and politically motivated enterprise. (Indeed, from a Critical Theory perspective, Seaman's account of the development of experiential education constitutes an act of interest convergence.) But

the fact that EE has remained a viable instructional approach for 50+ years speaks to its vitality and viability. Moreover, the idea that experience is regarded as an essential feature of the learning process (e.g., Dewey, 1916/2007; 1938; Rousseau, 1762/1969) long predates these more contemporary models. With this in mind, it is useful to consider some of the major discussions that have occurred related to the broader understanding of experiential education.

Reassessing Kolb

In a systematic review of 60 articles pertaining to Kolb's experiential learning theory, Morris (2019) identified an underlying theme of 'learner responsibility' throughout the literature. Morris also found some discrepancy associated with interpreting what Kolb (1984; 2015) meant by "concrete experience" as it was originally proposed. In particular, Morris (2019) discusses how some literature suggested that experience can consist of varied forms of didactic instruction (e.g., listening to a lecture or reading a book), yet those forms of experience tend not to be what is generally accepted or regarded as being 'relevant' experiences within the experiential education paradigm.

To explore this discrepancy in more depth, Morris (2019) compared experiential learning models in the literature he reviewed. He found general evidence substantiating Kolb's model, but he also found enough discrepancy in the literature to propose minor changes in a model for experiential learning. For example, instead of the four-staged model proposed by Kolb (i.e., direct experience, reflective observation, abstract conceptualization, and active experimentation), Morris identified the following five

stages from EE literature. These include: 1) hands-on participation, 2) situated in context, 3) critical reflection, 4) purposeful-pragmatic, and 5) risk-novel problems. His critical review led him to assert that (1) *hands-on participation* and (2) *situated in context* constitute separate parts of Kolb's *direct experience* stage. Given this finding, Morris (2019) proposes reconceptualizing *direct experience* as "highly contextualized, primary experience that involves hands-on learner experience in uncontrived real-world situations" (p. 7), thereby addressing the question about how to define what Kolb mean by "direct experience." Lastly, Morris notes an important distinction between his model and Kolb's is his proposition that knowledge is situated in context; Morris felt that Kolb's model does not adequately account for the importance of the social, place-based context wherein learning occurs (a theme which is particularly relevant to this study).

Returning to our original question about the connection between nature-based learning and experiential education, Morris's expansion of Kolb's model provides a means for associating NBL and EE if experiential learning is understood to be the educational approach occurring within a nature-based setting. However, Morris's definition of direct experience limits experiential learning to highly contextualized situations. This may be useful for delimiting experiential education, but it may also be problematic by further dichotomizing ways of knowing by not acknowledging the importance of conceptual experience.

Defining Experiential Education

"Learning by doing" has long been the unofficial motto of experiential education with its modern parlance sometimes attributed to the postulations of John Amos

Comenius (cf. Lang, 1965). But the usefulness of that phrase as a way of describing the underlying features of EE has been challenged. As part of that dilemma, EE has been critiqued as being rich in experience and poor in theory (Warren et al., 2008). To combat that critique, a critical function of the Journal for Experiential Education (JEE) has been to develop a stronger theoretical basis for EE. The JEE has served as, "a steady source for putting ideas before the emerging profession of experiential education…(with the majority of the articles) written by practitioners for practitioners" (Warren et al., 1995, p. 8). In these ways, the Association for Experiential Education via JEE has worked to establish a viable way for understanding EE.

The Association for Experiential Education's institutional definition identifies EE as, "a teaching philosophy that informs many methodologies in which educators purposefully engage with learners in direct experience with focused reflection in order to increase knowledge, develop skills, clarify values, and develop people's capacity to contribute to their communities" (Association for Experiential Education, 2020). There are several important aspects of this definition worth further exploration. These include the following: differentiating experiential learning from experiential education, viewing EE as a philosophy versus EE as an instructional approach, a foundational question about whether EE can be defined, and different ways EE is defined internally.

Early models interchangeably used the terms *experiential education* and *experiential learning* to describe a cyclical process involving direct experience coupled with refection as a means for learning (Itin, 1999. For example, Kolb (1984; 2015) clearly identifies his model as a theory of 'experiential learning', yet Joplin (1981)

describes her nearly identical model as ‘experiential education.’ Although similar, this difference in terminology creates confusion. Itin (1999) provides a useful means of differentiating these constructs by suggesting, “Learning is best considered as the process of change that occurs for an individual. Learning is an individual experience. Education, on the other hand, is best considered as a transactive process between an educator and student” (p. 91). In this way, we can think of learning as an individualistic process and education as a broader, transactive, social enterprise. Unfortunately, Itin’s clarification does not address how the profession views itself, and that fundamental question remains unanswered.

More central to Itin’s thesis is a question of how to conceptualize EE. As we have seen, several of the original theorists (Johnson & Johnson, 1991; Joplin, 1981; Kolb 1984) modeled EE as a learning cycle and describe it as a process. This representation of EE seems to align with other conceptualizations of EE as an instructional approach such as those suggested by Chapman et al.’s (1992). However, throughout the 1990s the conceptualization of EE broadened. Initially it seemed to be understood as a way of thinking, before being considered as a philosophy. Itin (1999) suggests that conceptualizing EE as a philosophy broadens the range of topics for discussion and enables experiential learning to be conceptualized as a learning strategy. Furthermore, Itin indicates that this change in how EE is identified provides greater opportunity for additional discussion. Lastly, Itin suggests viewing EE as a philosophy substantiates it to engage in educational reform. Returning our focus to the definition provided by AEE, we observe that the Association appears to have aligned itself with Itin in its identification of

EE as an educational philosophy. However, recognizing that educational philosophy addresses the aims of education arising from educational theory and practice (Sigel et al., 2018), it seems difficult to make this claim. Experiential education focuses on educational aims through a process of experiential learning, but there does not appear to be substantial evidence indicating it incorporates significant learning theory adequately or looks beyond the scope of *direct experience*. Unfortunately, this creates confusion with what is meant by philosophy and ultimately comes across as grasping for validation.

Adding to our exploration of defining EE, Chapman et al. (1992) provide another important perspective. Rather than co-write a single manuscript, each author independently wrote a section addressing the question, "What is Experiential Education?" Chapman indicates there are many different ways experiential education is understood and practiced, and ponders what people are asking when they want to know more about experiential education. McPhee refuses to provide an answer, suggesting instead that there is more value in asking questions seeking understanding than achieving a definitive conclusion. Additionally, McPhee warns that defining experiential education risks turning it into a phenomenon "available for those to regurgitate at will" (p. 19), suggesting a reticence toward anything that could make EE prescriptive. Proudman suggests EE is a teaching methodology that is useful for emotionally engaging a learner in relationships with themselves, the teacher, and the environment. Each of these contributors provides a distinct yet important voice related to the various ways EE is understood. Perhaps most curious is McPhee's perspective, which is reminiscent of

Rousseau's fear of society's denigrating influence and comes across as opposing professionalization.

Another interesting aspect related to defining EE is the extent to which it appears to be understood internally. As we have discussed previously, the Association for Experiential Education (2020) defines EE as "a teaching philosophy that informs many methodologies in which educators purposefully engage with learners in direct experience with focused reflection in order to increase knowledge, develop skills, clarify values, and develop people's capacity to contribute to their communities" (What is Experiential Education?). However, a curious finding emerges when one compares this definition with the definitions of experiential education and experiential learning listed in AEE's Manual for Accreditation Standards (AEE Standards),

> *Experiential learning* is an active rather than passive process, with participants motivated by, responsible for, and accountable for their own learning and growth. All curricula for learning, change, and growth have some form of experience as the base for their selection.
>
> *Experiential education* methods require the participant to be actively engaged in the learning process. The activity itself engages the participant into action and program personnel encourage this process. The educational experience is structured to allow the learner to take initiative, pose questions, solve problems, demonstrate curiosity, exercise creativity, be flexible, experiment, and ultimately, construct meaning from the experience. Adventure activities are created and conducted in a manner that allows students to take part in as many aspects of the activity as possible. Participants understand that they may experience successes, failures, risks, and uncertainty, given that the nature of experience is not entirely predictable (AEE, 2019, p. 10).

I am intrigued and somewhat confused by the fact that these definitions do not align more closely. The AEE Standards' definition of experiential learning identifies it as a 'process', while the definition of experiential education indicates it is more of an

'instructional method.' Interestingly, neither of those definitions describes experiential education as an 'educational philosophy', as we find in AEE's organizational definition. Additionally, the individualistic/plural distinction suggested by Itin (1999) does not seem to apply to the distinction between learning and education found in the AEE Standards. One way to make sense of these differences is by recognizing that the AEE Standards are designed to standardize safe operating procedures for outdoor adventure programs utilizing an experiential (educational) approach. Thus, the main focus of those standards is likely establishing best practices to ensure physical safety as part of an outdoor adventure program, rather than educational best practices. However, the lack of internal congruency within the organization creates unnecessary confusion and also indicates the profession has not fully established its professional identity.

Models for Analyzing Experiential Education

We have observed several different ways EE has been conceptualized through models as well as defined by the professional organization Association for Experiential Education. This process has uncovered some important similarities and differences. Another way to make sense of EE is to internally compare the attributes and outcomes of different EE practices to one another. We observe this in the work of McRae and Johnston (2016) comparing key attributes of experiential learning and Lindsay and Ewert (1999) comparing EE and mainstream education across a variety of parameters.

Work Integrated Experiential Learning.

Given this history, we return to the question, "How do we make sense of experiential education?" After examining its historical roots, we observe that EE has a complicated history making it difficult to

conceptualize, operationalize, and compare different expressions of experiential education. McRae and Johnston (2016) identify this confusion as being especially problematic when comparing models of work integrated experiential learning opportunities (WIL), which are a specific expression of experiential learning similar to college internships,

> There is a history of conflating the definitions of many forms of WIL and many terms have been used interchangeably to describe student learning in work place settings. This conflation of terms without clear understanding of how these models may both differ and align has resulted in confusion amongst all stakeholders (p. 338).

To clarify these differences McRae and Johnston (2016) propose a framework[1] for examining different EE practices across the following four dimensions: experience, curriculum integration, student outcomes, and reflection with each dimension subdivided into specific attributes (Table 2.4). This framework allows various WIL programs to be compared according to each of these dimensions and it provides a way of comparing different expressions of experiential learning.

[1] This model was originally proposed by Johnston, McRae and Mclean (2016), but the variation published in McRae and Johnston (2016) provides a slightly clearer, more comprehensive, and more refined version than the original, resulting in the decision to use the latter in this review.

Table 2.4. Key Attributes of Experiential Learning

Experience	Curriculum Integration	Student Outcomes	Reflection
Has direct learner involvement (is hands-on and learner's choice)	Learning outcomes are articulated and measured	Skills, knowledge and understanding are developed	Is ongoing and meaningful: in and on practice and projected toward future practice
Is meaningful and substantial (not just watching, has impact)	Outcomes and assessment are aligned	Attitudes, values and beliefs are challenged	Is critical vs. descriptive
Is situated/authentic (ideally in place where learning is to be used)	Experiential and academic learning are connected for, and by, the learner	The learner contributes to the learning environment and curriculum	Is socially mediated, supported and assessed
Embraces disruptive moments and supports personal explorations of one's beliefs and values		New meaning is constructed by connecting previous and new learning	

Returning to our question about how to make sense of EE, this model provides an example of distinguishing significant dimensions of experiential learning and then subdividing those by attribute as a means of comparison. It provides a way of identifying and subdividing dimensions of experiential learning and may provide a means for describing the conceptual framework. I conducted reverse citation searches by identifying sources citing McRae and Johnston (2016) using Google Scholar and ERIC to explore

how the profession has made use of this model. The limited findings produced by my search indicate that this framework has not been widely adopted within the EE profession as a means identifying key features associated with experiential learning.

Comparing Mainstream and Experiential Education. Lindsay and Ewert (1999) explored the lack of integration of EE within regular public education and found foundational differences between those approaches. They identified seven parameters for comparison (p. 17; Table 2.5).

Table 2.5. Comparison of Experiential and Mainstream Education on Seven Parameters

Parameter	Experiential Education	Mainstream Education
Goals	Legitimacy of personal and individual growth; Individual development contributes to the larger community and society	Conformity to shared common values, deterministic: to teach students about societal activity rather than ways of living this activity
Concepts of Knowledge	Knowledge does not represent a single view of reality; holistic with the deliberate inclusion of all domains (physical, emotional, cognitive, etc.) into learning	Separation of physical, social, aesthetic, and affective components from the intellectual part of learning
Teaching Strategies (Grouping of Students)	Usually small group environments using shared group experiences as a teaching foundation; learning outcomes are often student-directed rather than teacher-directed	Usually large single groups; Student functioning is often independent of other students; students usually only responsible to the teacher and their own work
Teaching Strategies (Organization of Communication)	Self-organized and task-dependent; Teacher acts as both facilitator and instructor; intra-group communication deemed critical to success	IRE Patterns (initiate, respond, evaluate): directed to and from teacher by the teacher
Teaching Strategies (Organization of Topic)	Constructivist approach: transfer of knowledge to other areas in a student's life	Transmission model of teaching; often little transfer of knowledge to areas outside the specific subject

Resources	Uses settings outside the classroom; direct experiences are an important component of the learning experience	The experiences and thoughts of others; highly restricted by the needs of curriculum
Evaluation Strategies	Often self-appraisal; focused on task accomplishment	By reference to criteria external to the students' own control or authority

Lindsay and Ewert (1999) juxtapose differences between mainstream education and EE, highlighting mainstream education's direction by external criteria, emphasis on achieving norm-based standards, and compartmentalized views of knowledge as being fundamentally different from EE's child-centered, individualistic, and holistic approach. They report that the history of reform in mainstream education has made the adoption of EE approaches less desirable. Interestingly, Lindsay and Ewert suggest that the differences between experiential and mainstream educational approaches may not be reconcilable as evidenced in the comparisons found in Table 5. One underlying concern is rooted in the fear that forced integration may not adequately address the foundational processes endemic to EE. Safety is another concern. Because there is increased risk found in outdoor and adventure-based settings, proper risk management becomes imperative. And while EE has developed an extensive body of knowledge related to minimizing risk, integrating experiential and mainstream educational approaches does not always mean that that knowledge base is holistically incorporated. Given these points, Lindsay and Ewert propose that EE should continue offering programs outside the purview of mainstream education concluding that by maintaining its independence from mainstream

education enables EE to provide an important opportunity for socialization. Thus, they propose that EE should develop its own niche rather than be 'force-integrated' into mainstream approaches as part of broader efforts for educational reform.

Lindsay and Ewert (1999) provide an interesting perspective for several reasons. First, they emerge from the EE field and therefore possess insider knowledge about its inner workings. Second, their underlying concerns seem to be rooted in maintaining the integrity of EE, which differs from other educational theorists who critique progressive educational approaches on the grounds of diminishing the quality of conventional education (cf., Hirsch, 1996; Kirschner et al., 2006). Furthermore, given the year of its publication, Lindsay and Ewert (1999) proposed their ideas before the mainstream educational reforms of high stakes testing were implemented, which have likely compounded the concerns they set forth.

Lindsay and Ewert (1999) provide a useful model in which to compare experiential and mainstream education by considering goals, concepts of knowledge, various teaching strategies, resources, and evaluation. But perhaps more important than their means of comparison is their reticence to the professional development of EE. In particular, their implication that mainstream education is driven by external criteria whereas EE operates as a child-centered, individualistic and holistic approach lies at the heart of this inquiry. Lindsay and Ewert overtly suggest that the differences between EE and mainstream education are irreconcilable and should therefore be conducted as separate educational practices. But as we have seen, many others disagree and desire to see greater integration between EE and conventional education.

The Professionalism of Experiential Education

This review of literature has allowed us to examine the history of EE originating directly through Outward Bound and the Human Potential Movement and indirectly through Deweyan philosophy. We observed how several constructivist pedagogues conceptualized models of experiential learning and how those have been reassessed more recently. Examining the defining features of EE, we observed several ways that EE has been understood differently within the professional body. Experiential education and experiential learning have been used interchangeably within the literature creating confusion about the pedagogical focus. Additionally, the conceptualization of EE initially as an instructional approach and later as a philosophy has also created confusion about its underlying purpose. Questions within the EE profession about whether EE can or should be defined suggest a reticence toward developing an overt conceptual framework. And lastly, the lack of internal consistency within the Association for Experiential Education, which serves as the professional body for EE, indicates its defining features may not be well understood or agreed upon within the profession. McRae and Johnston (2016) provide a model that can be used for comparing key attributes of EE within the profession, but it does not appear to have been widely used as a means of professional self-analysis. Lindsay and Ewert (1999) provide a framework for comparing EE with mainstream education, however, they use that as evidence to propose that EE and mainstream education not be integrated.

Taken together, these findings reflect the diverse theories and ideas related to EE. The literature base is eclectic and closely connected to educational progressivism. However, as we observed with Seaman's (2008) perspective, it varies in agreement about

the meaning and significance of canonical ideas. It is likely these differences impact the conceptual framework as the clarity about what experiential educators should know and be able to do within their practice has not been well articulated within the literature. Similar to what we observed with NBL, EE does not seem to have been extensively professionalized. In part, this appears related to a desire by members of the profession to not be governed by external criteria and norm-based standards, as reported by Lindsay and Ewert (1999).

Chapter Summary

This literature review has explored the professionalization of NBL and EE through their formation and development. Modern expressions of both approaches originated at a similar time as aspects of educational progressivism promoted learner-centered, hands-on, anti-didactic instructional approaches. As part of that process, both approaches developed in diverse ways, which is represented in their broad and varied literature bases. Similarly, the conceptual frameworks, guiding the practices of NBL and EE, developed according to the unique priorities of the broader educational environment.

The practices of NBL and EE have remained distinct, although they share some common ground. For example: an important aspect of NBL typically involves learning through direct, personal experience; Quay (2003) suggests EE can be understood through situated learning theory; and Morris (2019) suggests ‘context’ is an integral feature to understanding EE. We also observe a long history of interconnectedness in the formation of Outward Bound and the development of nature schools.

Related to the research questions of this study, NBEE has an established history with an eclectic knowledge base. Based on the findings from this literature review, the conceptual framework articulating what educators employing this approach should know and be able to do has not been fully developed or agreed upon. From one perspective we can understand this as the profession being in the early stages of its professional development. From another perspective we observe evidence indicating that professionalization is not desired by the profession. To further address these questions, we will now shift our attention to exploring these questions with NBEE experts and practitioners.

CHAPTER THREE

METHODOLOGY

Findings from the Literature Review indicate the knowledge base associated with NBEE is eclectic. Not only does it encompass EE and NBL educational approaches, but aspects of it are found throughout human history. I chose to use Rousseau (1762/1969) as a starting point for my literary exploration due to his influence on contemporary education through the proposition of a child-centered, developmentally conscious, and nature-based educational approach. I explored those ideas into their modern expressions as NBL and EE as I sought to explicate the knowledge base and delineate the conceptual framework of those approaches. Nature-based learning and EE share a variety of overlapping features, but their literature bases remain distinct. The majority of research on NBL indicates it has a beneficial impact on academic achievement but the canonical theory providing structure about what every NBL teacher should know and be able to do appears underdeveloped in comparison to that of other professions. Similarly, the research on EE suggests benefits although the literature reflects fundamental ways it is perceived differently within the profession. Given these differences, there does not appear to be an organized and agreed upon perspective about what every teacher who practices an NBEE approach should know and do in their practice. The purpose of this research is to study the current state of the knowledge base and conceptual framework informing the practice of NBEE. I will now discuss the research method for accomplishing that task.

Methodological Options

How does one come to better understand the conceptual features of an NBEE approach when that approach appears to be so widely varied? Indeed, this question lies at the heart of this inquiry. Given the apparent lack of an established, comprehensive NBEE knowledge base, an inductive, theory-building methodology is needed to gain a better understanding of the lay of the land. There are several research methods that have the potential to achieve this task including the following: a) observational study of representative schools, b) case study, c) pragmatic qualitative research, and d) mixed method analysis.

Morse (1999) proposes conducting an "armchair walkthrough" during the planning stages of a research project. The purpose of this task is to carefully think through a research project according to the parameters of a particular research method. An armchair walkthrough occurs by considering the research question, the different research methods for addressing the research question, and the kinds of data each method will produce. The armchair walkthrough can serve as a useful tool to explore the benefits and limitations associated with different research approaches. Additionally, once a methodological decision is made, the armchair walkthrough becomes an initial, general roadmap to guide the research process. When we consider the central research question of the present study, there are a variety of ways to better understand what the NBEE profession knows about itself. Using an armchair walkthrough process, we will now explore the pros and cons of several different approaches and highlight the ways each research method was considered for this study.

Observational Study

An observational study of representative NBEE schools could provide a way to learn about the knowledge base and conceptual framework of NBEE. Using this approach, a researcher would select a sampling of representative schools, observe their NBEE practices, analyze those findings, and then make inferences about the conceptual framework of NBEE based on that study. However, NBEE programs are unique in every way, taught by unique teachers, with a unique class of students, and occurring in a unique environment. Moreover, it is likely the knowledge bases informing the conceptual frameworks of practicing NBEE teachers would differ in subtle but significant ways. Thus, it is likely the most significant finding of a study of that kind would be variance across the observed programs. This was one of the findings in Meyer et al.'s (2017) exploration of instructional practices across three different nature kindergarten classrooms. With a large enough sample of schools, it is possible specific inferences could be drawn, but gaining access to a sufficient number of schools to draw generalizable conclusions would be immensely challenging. And attaining the requisite permissions needed for observational research of that type would also be too time consuming for such a preliminary study. Furthermore, while a study of that type would shed light on the types of practices occurring within those specific environments, that would not justify generalizing those features into some kind of representations of the larger NBEE industry.

Case Study

Case study is another research method and that would lend itself well to the inductive process of developing an NBEE conceptual framework by identifying and highlighting the key features of an exemplary NBEE program. Given the narrowed focus, gaining requisite permissions for conducting research is more tenable than a broader observational study. However, identifying one or two specific, exemplary NBEE program(s) may be a complex feat wrought with problematic subjectivity. What constitutes exemplary? Determined by whom? Would an NBEE program that generates high marks on academic achievement be considered exemplary or is student satisfaction a better indicator? How does teacher innovation influence selecting an exemplary case? Should these major considerations be weighted equally? Beyond those challenges, a case study approach would only provide information about a limited number of programs and consequently it would likely fail to address the underlying problem associated with gaining a holistic understanding of the conceptual features common to NBEE and shared by its practitioners. Thus, it is likely a case study would not adequately address the research problem either.

Pragmatic Qualitative Research

Savin-Baden and Major (2013) discuss a Pragmatic Qualitative Research design, which is the term they give to a generic inductive qualitative approach similar to the methods described by Caelli et al. (2003) and Cooper and Endacott (2007). The advantages Savin-Baden and Major (2007) identify for this approach include the following: 1) lack of required philosophical, theoretical, or methodological orthodoxy, 2)

increased use and implementation, 3) typical enablement of a study to be conducted more expediently than what is possible with a traditional approach (e.g., ethnography), 4) ability to circumvent criticisms associated with rigidly following other more established approaches.

Correspondingly, pragmatic approaches experience challenges with being less theoretically and philosophically rigorous than other approaches, being less understood and accepted than mainstream approaches, having negative connotations, being perceived as a "fast" and "easy" way to conduct qualitative research, and not having clear standards for evaluation. Given those strengths and criticisms, if I were to use this approach for my study, it would require careful planning to address the challenges presented by Savin-Baden and Major (2007). Because my central research question is inductive in nature, it seems realistic that a pragmatic qualitative approach could be used to adequately establish the current state of the theoretical and conceptual framework of NBEE. A research approach based on this method could include a critical historical review of NBEE-related literature and surveys of NBEE experts and practitioners. However, because many of the methodological problems Savin-Baden and Major attribute to pragmatic qualitative research also apply to the practice of NBEE (e.g., theoretically slipshod, not well understood, lacking clear standards), a more prescribed methodology may be preferable.

Qual-qual Mixed Method Study

A purely qualitative mixed method study is another methodological approach that could be used for conducting this research. Although mixed method approaches have

traditionally been used for combing data from qualitative and quantitative paradigms as part of one methodological approach, Morse (2010) proposes and outlines a qualitative mixed method approach by incorporating two different forms of qualitative analysis to examine the subject of inquiry. For example, Morse describes the long tradition of integrating multiple forms of qualitative analysis within ethnographies (which she considers as a type of qualitative mixed method approach). Morse and Niehaus (2009) suggest, "Mixed method design consists of a complete method (i.e., the core component), plus one (or more) incomplete method(s) (i.e., the supplementary component[s]) that cannot be published alone, within a single study" (p. 9). The characteristics of a qualitative mixed method design require both components have an "inductive theoretical drive" (Morse, 2010, p. 484) for exploratory description and theory building. The core research component includes a complete, standard qualitative method and a supplementary (i.e., incomplete) component of another qualitative method. Furthermore,

> In QUAL-qual mixed method design, the design is dictated primarily by the method but also from the objectives or goals of the study, subsequently the study questions, from what is known (the literature review), and from the research contexts, by limitations/advantages of the research participants and setting (Morse, 2010, p. 486).

The major parts of a qualitative mixed method approach include the study purpose (goals & questions), literature review findings, and the research context. For this project, the purpose of the study is to determine what the NBEE field knows about itself. The literature review findings reflect a broad, yet diffuse knowledge base. And the research context suggests that experts and practitioners likely have important perspectives that have not been well articulated. Thus, it seems likely a study could be developed based on these sources of information.

Morse and Niehaus (2009) suggest that employing more than one research method is ideal for research questions that cannot be adequately answered by a single research method. Completeness of the method is the distinguishing factor differentiating multiple method from mixed method approaches. Multiple method approaches are comprised of two complete empirical methods that can each be published independently. On the other hand, mixed method approaches include a core method and a supplemental method, occurring simultaneously or sequentially, to address the research question. Although the core method can be published independently, the supplemental method cannot (due to an inadequate element in the research design; e.g., poor sampling). Importantly, the research question is best addressed when findings from the two methods are integrated. For this study, it is important to understand the perspectives of both experts and practitioners related to the central research question. Although information generated from those perspectives will likely be different, comparing those sources of information constitutes the integration of those methods.

Morse and Niehaus (2009) recommend identifying the following features of a mixed method design when conducting an armchair walkthrough: the core component, the supplemental component, theoretical drive, pacing, and point of interface. In general, they suggest that identifying the theoretical drive is essential for mixed method approaches, and in particular, qualitatively driven designs should have an inductive theoretical drive. Recognizing that a qualitative mixed method approach passes a cursory analysis, we will now use an armchair walkthrough to specifically consider each of these features for this research study.

The objective of this study is to determine the nature and status of the NBEE profession's knowledge base and conceptual framework (i.e., what the profession knows about itself). Because this study proposes using observations from the literature, experts, and practitioners to develop theory, it is inductive in nature (indicating that a qualitative approach is warranted because it aligns with the requirement of having an inductive drive). In addition to examining the literature bases of NBL and EE, the literature review also explored influences that preceded modern versions of NBL and EE, such as Rousseau and Dewey. Because the findings from the literature review suggest there does not appear to be an agreed upon conceptual framework or knowledge base for NBEE, the next step in this inquiry is to explore the perspectives of current professionals. The core data source for this approach would derive from NBEE experts who are qualified to comment on the current nature and status of the profession's existing conceptual framework and knowledge base. Semi-structured interviews would provide an appropriate means of acquiring this information. The supplemental component to a mixed method study would come from surveying practitioners to understand what available knowledge is useful to their practice. A large and diverse sample of practitioners would be beneficial, and their perspectives could be adequately gained by means of a survey. Thus, the pacing would be sequential as data gathered from the experts would be used to refine a survey for practitioners.

The first point of interface would occur after an initial analysis of information gained from the interviews of experts. That initial analysis would be used to refine the survey for practitioners. The second point of interface would occur when data gathered

from the surveys is compared to fully analyzed data from the core, expert interviews. That comparison would provide a useful way of understanding what the experts identify as being conceptually important and what the practitioners use in practice. Furthermore, data coming from two different samples fulfills a recommendation from Morse and Niehaus (2009) for improving rigor. Thus, an armchair walkthrough of a Qual (semi-structured interview) → qual (survey) mixed method approach aligns well with the broader purposes of the study by incorporating important sources of information from experts and practitioners. Additionally, gaining perspectives from both data sources (experts & practitioners) addresses the research question more comprehensively than either approach, independently. To add further support to this choice, one of the examples Morse and Niehaus (2009) describe for a qualitative mixed method study uses interviews to develop elements for a survey. So, there are precedents for this strategy.

After using Morse's (1999) armchair walkthrough to explore these different approaches in general and a qualitative mixed method approach in particular, I settled on using the mixed method approach. I then began carefully examining each of the components in more depth. I determined the core strategy should consist of interviewing a sample of experts purposefully selected from specific, predetermined criteria (i.e., criterion sampling; Patton, 2002). I identified the following criteria as important for addressing my research questions: experience, expertise, impact, scholarship, and novel program implementation (these features are detailed more comprehensively in Table 3.1).

Using these criteria, a sample of experts was purposefully selected and approached to explore their willingness to participate in this study. I determined the

sample size would be established by achieving saturation. This was achieved by analyzing interview data and considering the emergence of new themes compared to the repetition of previously established themes (i.e., the lack of new data emerging from the interview, coupled with repetition of previously established data signified saturation). The supplemental sampling strategy involved surveying educators who employed a version of NBEE determined by self-report. Given the diffuse nature of the NBEE profession, survey respondents were reached through their membership in national organizations affiliated with EE and NBL (e.g., Natural Start Alliance, C&NN; Montana Association of Environmental Educators, AEE, North American Association for Environmental Education etc.) using newsletters, email, Twitter, and Facebook as ways of targeting NBEE educators. I also asked the interviewees to promote the survey through their networks (e.g., Louv re-tweeted C&NN's Facebook and Twitter feeds about my survey; Yair promoted my survey through her network of forest preschool teachers). These steps outline the ways the ways the core and supplemental components of this study were conducted.

Critically reflecting on the research process, I determined that I could target an adequately representative sample of interviewees based on the specific criteria I had established previously. This would enable me to conduct the core component completely. However, I estimated that a variety of factors would make it difficult to locate and gain participation by survey respondents given that nature-based experiential educators were diffusely located. Although I had planned to target survey respondents through a variety of strategies, I foresaw difficulty reaching a sufficient portion of the population to

achieve an adequate sample. Knowing this, I realized that the survey responses would not likely represent NBEE educators completely and I estimated the supplemental component would not possess adequate strength to be an independent method. This research strategy aligned with Morse's (2010) criteria for qualitative mixed method design. Given these considerations, I determined that a qualitative mixed method design would be an appropriate methodological choice to address the research question. I made the decision to use this approach as the methodology for my study. I now present my research procedure.

Procedure

An important part of the procedure of this study occurred before I conducted the qualitative mixed method portion of my study. In addition to my literature review, I also critically examined historically relevant literature. This process occurred in stages. I conducted an initial review of NBL literature while I attended University of Victoria (Meyer, 2016). I expanded upon that review as part of my comprehensive exams (Meyer, 2018), incorporating additional readings derived from my own research as well as specific recommendations from Dr. Müller. Related to EE, I read Kolb (2015), Miner and Boldt (2002), and Warren et al., (2008) to develop a detailed understanding about EE history, practice, and theory. Beyond those materials, I expanded my literature review further, based on information I gained from my interviews with NBEE experts by including works by Fenwick (2001), Hovelynck (2001), Linnemanstons and Jordan (2012), Pikus et al. (2019), Sobel (2016), Waite (2017), and Waller et al., (2017). Perhaps most foundational, I carefully read Rousseau's *Emile* (1762/1969) and explored its

impact on Western education since its publication. I also familiarized myself with Dewey (1916/2007; 1925/1958; 1934; 1938) to understand his educational philosophy. Together, this literature has provided an important foundation to my understanding of NBEE.

Personal experiences constitute another foundational aspect of my conceptual understanding. In addition to growing up in a rural setting and learning through nature-based experiences in that context, I also gained knowledge formally as a student in college and in graduate school. I then worked in wilderness therapy as well as managed a university experiential education program. Academically, I completed an original research study comparing nature-based and conventional kindergarten classrooms while I studied at University of Victoria (Meyer et al., 2017). That project gave me firsthand knowledge into the ethos of nature schools and how the teachers conducted their practice. Later, I travelled to Finland where I had the opportunity to conduct a site visit of a forest school (Meyer et al., 2020). Those experiences as a practitioner and as a researcher have provided me with an important, initial understanding about the features of NBEE to consider as I have contemplated my dissertation research.

Ethics Application

An ethics application was developed for the study consisting of two methods: semi-structured interviews of NBEE experts and a survey of NBEE practitioners. The interview questions were based on a pilot study conducted during the Spring 2019 exploring the knowledge base and conceptual framework of EE. The results from that study indicated interviewees' knowledge about EE derived from an eclectic mix of personal experience, formal study, and EE literature, but lacked an overarching

conceptual framework. Interview questions for this study were modified from the original focus on experiential education and expanded to include nature-based learning as a co-occurring topic of inquiry. A unique feature to this interview of the present study included the option of attaching interviewee's names to their responses. This option was pursued because the experts targeted for this study were selected because they are well known in this field and I felt that their specific perspectives would provide useful information about the problem space. Additionally, given their specialization, concealing their identities may be difficult to achieve. The interview questions and waiver are included as Appendix B and C respectively. A survey questionnaire and consent form were created (Appendix D & F). The consent form indicated that respondent completion of the survey serves as consent to participate in the study. The survey was developed as a template, to be developed further based on findings generated from the interviews of experts. Approval to proceed with the research was gained on December 20, 2019 from the MSU Institutional Review Board.

Semi-Structured Interviews

Table 3.1 lists five different criteria with specific examples of each criterion that were identified for this project.

Table 3.1. Criteria for Interviewee Selection

Experience	Expertise	Impact	Scholarship	Novel Program Implementation
Academic	Research	Highly Cited	Primary focus of research agenda	Graduate education
Professional	Editorial	Wide Distribution	Social science focused	Teacher training
Practitioner	Journalistic	Bestselling	Establishing professional competencies	PreK-12 program administration
Educator	Educational policy	Governmental oversight	Multidisciplinary support	Resource base

Interviewees. The following experts were selected based on meeting criteria from Table 3.1.

Richard Louv**.** Louv wrote the book *Last Child in the Woods* (2005), which discusses the impact of children's alienation from nature on their wellbeing. Louv has since published several other books exploring the importance of nature on human welfare and he is widely referenced throughout the NBEE profession. Louv is co-founder of the Children and Nature Network (C&NN), which promotes creating equitable opportunities that connect children to nature and sharing evidence-based resources.

Cathy Jordan. Jordan is a neuropsychologist at University of Minnesota and is actively engaged in a research project comparing traditional and nature-based educational practices. She recently collaborated with Louise Chawla to define NBL and formally

propose its research agenda (Jordan & Chawla, 2019). Additionally, Jordan is Research Director for C&NN.

Jayson Seaman. Seaman, faculty at University of New Hampshire, possesses expertise in the foundations of experiential education, specifically the impacts of Dewey and Kolb. As Chief Editor for the Journal of Experimental Education, Seaman is well versed in EE literature.

David Sobel. Sobel is a widely referenced author in nature preschool and forest kindergarten literature (cf. Sobel, 2016) with expertise in place-based education (Sobel, 2004). He co-developed a program in nature-based education as faculty at Antioch University, New England.

Aliza Yair. Yair is Program Coordinator for the Outdoor Preschool Pilot Program through the Washington Department of Children, Youth and Families and is overseeing a pilot study providing licensure of full day nature preschools in Washington. Yair has expertise in international educational policy and taught at a forest preschool in New Zealand.

Jasper Hunt. Hunt is a foundations expert in experiential education and a Dewey scholar. He served as co-editor for the *Theory of Experiential Education* (Warren et al., 1995) and oversaw the Minnesota State University, Mankato graduate programs in experiential education. Hunt is also a former Outward Bound instructor, providing a unique perspective of combined expertise in EE field knowledge and academic study.

Additional Interviewees. The names of other potential interviewees emerged such as Kolb (referred to by Seaman and Sobel) and Larimore (referred to by Yair), but these leads were not pursued because the sampling protocol was purposeful (criterion) not snowball (Patton, 2002). I was not seeking recommendations from the experts I interviewed about prospective interviewees. Instead, the experts I selected were chosen purposefully based on the Criteria for Interviewee Selection. Modifying my sampling protocol from purposeful to snowball would have likely introduced selection bias.

Interview Protocol

Each expert was emailed and provided with a brief explanation of the study. After each of the experts replied and agreed to participate in the study, they were emailed the interview questions and interview waiver. Additionally, interview times were scheduled. Permission to participate in the interview was gained initially via their email response as well as by their signed interview waivers. Each expert agreed to include their responses with their identity by selecting that option on the interview waiver.

Interview call. The call initially consisted of thanking the expert for making time to speak. As part of that introduction I verbally requested a) permission to use the speaker phone and b) permission to record the interview. All experts agreed to these requests and the interviews commenced by explaining the purpose of the study and answering any of the interviewee's initial questions. Each interview was conducted using the semi-structured interview questions as a guide. On occasion the conversations deviated from the script. This typically occurred when the interviewee used stories or analogies to clarify a point or when I asked for clarification about unique information provided by the

interviewee. However, when the conversations digressed away from the central point of the study, I guided them back to the script. In some cases, the interviewee indicated that they had answered a question previously. Although, when this occurred, it also tended to be accompanied by the interviewee answering the question in a slightly different way.

At the end of the interview, I asked each interviewee the following questions: Are you interested in receiving the transcription of our conversation? Knowing I would provide you a copy of the text to check, modify (if needed), and confirm, are you comfortable with me attaching your name to your responses as part of my findings for this study? One of the interviewees requested (and was later provided) a copy of the transcripts. All interviewees agreed it was acceptable to attach their names to their responses provided they had adequate opportunity for member checking. In these ways, verbal agreements coincided with written agreement on the interview waiver. Each interview lasted approximately one hour.

Interview tools. Interviews were recorded using Voice Memo (computer application) and Otter Voice Meeting Notes (iPad application). Otter Voice Meeting Notes simultaneously recorded and transcribed the interviews. The Otter Voice Meeting Notes transcriptions were converted to a text file and uploaded to the computer. The computer text file was then converted to a Microsoft Word document and cleaned by reading through the entire transcription and distinguishing interviewer from interviewee responses prior to the auditory review of the transcription. An audio review of the interview and focused cleaning of the transcription occurred next. This step included

transcribing all dialogue verbatim (including interviewer dialogue) as preparation for coding.

Coding

Saldaña (2016) describes codes as words or phrases that symbolically capture the essence of qualitative data. Although coding is not synonymous with analysis, it provides a way of analyzing data as a heuristic, exploratory, problem solving technique. Saldaña (2016) indicates researchers code for patterns to consolidate meaning as a qualitative analytic process that is metaphorically equivalent to calculating the mean in quantitative research. I followed the following coding techniques: data layout, pre-coding, and preliminary codes as a initial way of coding and analyzing the data.

Data Layout. The interview transcripts were reviewed and cleaned a third time as preparation for coding following the recommendations described by Saldaña (2016). This step included: a) summarizing and abbreviating interviewer questions, b) removing filler words (e.g., like, right, um, you know, etc.), c) confirming logical integrity of each response, d) separating interviewee major topic areas by section, e) changing page margins by setting top, bottom, and left margins to 1" and the right margin to 4", f) paginating the document in the lower left corner, and g) listing each interviewee's initials in a left justified header. Hard copies of each interview were then printed for manual coding.

Pre-coding. I initially pre-coded the transcripts by underlying key phrases in pencil on the hard copies of each interview as recommended by Saldaña (2016). Those

phrases consisted of quotes and passages that stood out to me as being important to the research question. Often, the pre-coded phrases seeded preliminary codes.

Preliminary Codes. Preliminary codes were used to capture major ideas from each interview and develop that information. Depending on length and significance, the pre-coded, underlined phrases were summarized or copied verbatim on the left half of the widened right margin as preliminary codes (the residual space on the right side of the widened right margin was left blank). Preliminary codes served two purposes. The first was to capture and summarize major ideas, salient points, and useful direct quotes for a more fine-grained analysis. The second purpose of these preliminary codes was to use emerging concepts from the interviews to refine the survey.

I designed the research components of this study to occur sequentially (i.e., the interview findings were used to refine the survey). Morse and Niehaus (2009) describe the intersection of the research components as the point of interface. For this study, the first point of interface occurred when the preliminary codes from the interviews were used to refine the survey questions. Because the preliminary codes captured major ideas from the interviews, they served as a useful tool to refine the survey by incorporating expert insight into the instrument. Most of the survey questions also left space for respondents to specify their own answers in case the prescribed choices did not fit their experience. In addition to refining the survey, the preliminary codes also served as an important initial step in analyzing the interview transcripts.

Until this point, I was following an approach more or less prescribed by Saldaña (2016). However, the exploratory nature of my research became apparent and required a

more emergent, inductive analytic method. I found myself grappling with a problem: How do I best capture the essence of my interviews, ensure I have understood each of my interviewee's perspectives accurately through member checking, and analyze my findings? Although I have found Saldaña to be quite useful for prescribing ways to code data, it does not address this challenge. Consequently, I struggled with knowing how to methodologically summarize, member check, and code each interview. I considered a strategy of coding my interviews using a combination of the inductive methods described by Saldaña, based on two cycles of coding and composing strategic analytic memos throughout the process. I surmised that approach would set me up to consult with my interviewees when I wanted to quote them directly to ensure each quote was expressed as they intended. However, that strategy felt like it missed an important larger purpose, which was ensuring I understood the gestalt of each interview beyond specific, direct, quotable ideas. That challenge led me to pursue another option, which consisted of summarizing each interview into a comprehensive document to provide to my interviewees for member checking. This strategy enabled me to rephrase main ideas of the interview in my own words, supplemented with direct, contextualized interviewee quotes, thereby ensuring I thoroughly understood each interview. Verification and approval of each summary confirmed my understanding and summarization of each interviewee. Those verified summaries then became a primary source of (member checked) data for analysis.

To accomplish that task, I conducted a second round of preliminary coding in similar way to the first. I reread each transcript and summarized main ideas on right side

of the widened right transcript margin. I did this to ensure that I had not missed any vital information from the transcript. My second round of preliminary coding generated excerpts that were typically very similar to those generated from the first round of preliminary coding. In that process I also identified and distinguished important direct quotes from each transcript. From there I drafted a document summarizing each interview based on the preliminary codes and direct quotes. This strategy allowed me to link the conceptual ideas with the quotes into a single narrative for each interview. I then compared each narrative to its original, preliminarily coded, respective transcript to ensure that salient ideas were accurately captured and represented. Once achieved, I then provided each interviewee with their respective summary for review, asking them for feedback to ensure I accurately captured and represented their ideas. This process made me intimately familiar with the data by rephrasing each interview in my own words as well as providing an opportunity to ensure I had not misrepresented my interviewees' ideas with my interpretation. Feedback from each interviewee was incorporated into the final version of their interview summary, providing me with a member checked summary of each interview ready for coding and analysis.

Survey of Educators

According to Fowler (2009), surveys combine three methodologies including: sampling, designing questions, and data collection. Sampling includes the sample frame, which consists of those who were selected to participate in the study. Sample frames are influenced by sampling error (variations within the sample resulting in unrepresentativeness of the sample), and bias (systematic differences causing the sample

responses to differ from the population responses). Sampling also requires being able to adequately estimate the response rate of respondents in some sort of meaningful proportion. Fowler suggests that good questions are reliable (provide consistent measures) and valid (answers correspond to what they are measuring. Neuman (2000) suggests good questions a) avoid confusion and b) consider respondent's perspectives. Questions can be assessed for content validity (e.g., Lawshe test) and internal consistency (e.g., Cronbach's alpha). Survey data collection can occur through personal interviewing, telephone studies, self-administered survey, mail, and Internet surveys. For the purpose of this study, an Internet survey was selected as a method for data collection due to the breadth of the population (widespread), lack of telephone information, lack of physical address, lack of funding (available for more expensive models), and ease of connection to the Internet. Survey respondents were located through organizations (e.g., C&NN; Natural Start Alliance; AEE; Montana Association for Environmental Educators; North American Association for Environmental Education and networks, such as Museum of the Rockies educational and volunteer coordinators; Washington Department for Children Youth and Families; Outward Bound instructor Facebook page) promoting the survey via newsletters, group email, and social media (Twitter and Facebook).

Survey Development. Survey questions were initially developed to gain IRB approval exploring the following topics: respondent contextual-demographic information (type of classroom and length of teaching career), initial experience with NBEE, where educators go to learn more about NBEE, theoretical basis of NBEE knowledge, NBEE resources, self-report gauging how well the educators feel they have been served by the

NBEE knowledge base, and evaluating resources to support the educator's future practice. As I described previously, data from the first round of coding the interviews were used to refine and revise the survey (one way of mixing the method). The changes resulting from that process include the following: adding options to initial experiences of NBEE, adding options that have informed sources of NBEE knowledge, adding more options to the list of NBEE features, adding licensing standards as an option for sources of knowledge, and exploring which experts have contributed to the NBEE educator knowledge base.

As I was developing the survey, I was careful to honor the respondents' knowledge by being mindful of questions that could be misinterpreted as challenging respondents' knowledge and understanding. For example, an important aspect of this project is understanding how respondents know an NBEE approach impacts academic achievement. However, directly asking a teacher, "How do you know NBEE works?" puts respondents on the spot and risks causing respondents to feel as though they need to defend their conceptual understanding. Instead, I chose to ask them to identify the sources of information that inform their understanding about the effectiveness of NBEE. In this way, I navigated a careful balance between asking direct questions that could risk alienating respondents while still addressing questions central to the study.

Age, level of education, and gender are frequently asked survey questions used for establishing demographic information. I gave careful consideration to including questions related to those demographic features in my survey. Rather than ask for respondents to report their age, I chose instead to ask them to report the number of years

they have practiced NBEE, which was more directly relevant to my research question. I thought carefully about asking respondents to report their level of education and ultimately, I chose not to ask that question based on several reasons. First, I feared asking participants to report their level of education may potentially alienate respondents without extensive formal education by implicitly prioritizing educational status. Second, because there are no formal certifications or graduate-level programs related to NBEE in the U.S., establishing the level of education seemed like it could conflate general graduate-level education with specific NBEE training. Third, there is no equivalent way of assessing knowledge gained from personal experience. Therefore, I chose to not include that question, surmising that it would be shared in other ways if it was important to the respondents' perspectives. I also chose not to ask respondents to identify their gender. I made this decision because I am sensitive to gender fluidity and determining the appropriate categories to adequately capture my respondents' gender identification exceeded the relevance of the question. Additionally, I have not come across literature discussing the impact of educator gender on NBEE facilitation. Lastly, because social justice is an important feature to EE (AEE, 2020), I surmised that the most socially just thing I could do was forgo the question.

The survey was developed in an online survey program (Qualtrics) and was initially comprised of eight questions consisting of several matrix tables. This format provided an efficient and rapid way to complete the survey, but Qualtrics analytics indicated that matrix tables are incompatible with mobile devices and recommended selecting an alternative format (this finding was verified by accessing the survey with my

personal mobile device and finding it difficult to navigate). Moreover, Qualtrics (2020) indicated that 53% of survey respondents use mobile devices to complete surveys. Based on this information, the survey was modified to a) adequately address each of the previously established questions and b) be “mobile friendly”. Once the survey was modified it was reviewed by Drs. Carson, Lux, and Müller and their feedback was incorporated into the survey design. Next the survey was sent to five experts for review, using the Expert Review of Survey form (Appendix F) to provide feedback. Three of the reviewers had expertise in nature-based experiential education and two of the reviewers had extensive editorial expertise. Reponses were received from three experts, two with NBEE expertise and one with editorial expertise. In general, the feedback consisted of minor word changes with a few instances of all reviewers recommending similar changes and a few instances where the reviewers’ recommendations were discrepant. Feedback from the Expert Review of Survey forms was compiled, evaluated, and when appropriate, incorporated into the survey.

Although the survey was reviewed by experts, its content validity ratio (Lawshe, 1975) was not established. This decision was made because the review panel could not be established and provided with cohesive instructions for evaluating the instrument. The Expert Review of Survey form provided instructions for evaluation, however, given the reviewer’s expertise, those instructions were interpreted differently. For example, the NBEE subject experts suggested the initial demographic questions were not related to NBEE, but they did not consider the importance of establishing demographic information for the purpose of contextualizing the respondent answers. Because of this difference in

understanding, a content validity ratio would not likely capture the importance of those questions. Instead, I relied upon my holistic knowledge of the project and the comprehensive feedback I received from the six individuals who reviewed the survey to determine the overall appropriateness of each question.

An internal feature of Qualtrics (2020) evaluates survey error according to the following dimensions: Valid Display Logic, Valid Piped Text, End of Survey Scoring Set Up, Complete Translations, and Timing/Metadata Questions are Accompanied by Other Questions. The survey "passed" evaluations for each dimension according to internal (programmatic) measurement. I will discuss assessing reliability in the Findings and Discussion chapters.

Sample Frame. The NBEE population consists of educators who self-identify as employing some form of NBL or EE as part of their educational approach. However, due to the individualistic nature of instructional practices, there is no way of knowing everyone who fits into this population. Therefore, the sample frame was targeted through organizational affiliation. In particular, the following organizations were targeted due to their work with nature-based and experiential educators: AEE, C&NN, Montana Environmental Education Association, Natural Start Alliance, North American Association for Environmental Education and American Forest Kindergarten Association). When possible, known individuals affiliated with a specific organization were contacted, such as Cathy Jordan, C&NN Research Director. I also strategically incorporated organizational affiliation to leverage and promote my survey, such as asking

Richard Louv to "retweet" the C&NN Facebook and Twitter feeds about my survey. Below is the timeline of events for promoting the survey.

Feb 28	Natural Start Alliance shared the survey their monthly newsletter
Feb 29	I requested the Museum of the Rockies Director of Operations, Education Specialist, and Volunteer Coordinator to share the survey with docents and volunteers
March 2	Joe Loviska shared the survey with his environmental educator network
March 4	Aliza Yair shared the survey with nature-based educators associated with Washington DCYF
March 4	Rose Valor shared the survey throughout the Montana Environmental Education Association
March 9	I posted a summary about my research and included a link to the survey on my personal Facebook page. Two "friends" immediately forwarded it to educators in their network, one of which posted it to the Outward Bound Instructor Facebook page
March 9	C&NN Network promoted the survey via Facebook and Twitter
March 11	Richard Louv "retweeted" C&NN survey promotional material
March 11	AEE promoted survey via Facebook and Twitter
March 17	I requested members of the following NAAEE groups complete the survey: Connecting to Nature and K12 Environmental Education
March 19	I requested members of the following NAAEE groups complete the survey: Early Childhood Environmental Education and E-STEM Education
March 23	American Nature Kindergarten Association shared the survey with their members

In general, the survey has had a moderate response rate (103 completions as of 3/23/20).

The initial version of the survey included the disclosure and consent form at the beginning of the survey. Respondents had to scroll through that information to access the survey, which was cumbersome and time consuming on a mobile device. Upon consultation with committee members Drs. Carson, Ewbank, and Lux, the decision was made to shorten the survey introduction by briefly explaining the purpose of the survey and stating, "Completion of this survey will be considered your consent to participate." I then coupled a hyperlink to the full Disclosure and Consent form. This change

streamlined the survey significantly, making it easier to navigate and reducing the estimated completion time to less than seven minutes (Qualtrics, 2020).

Chapter Summary

I selected a Qual (semi-structured interview) – qual (survey) mixed method analysis for this study. The interviewees were identified by the Criteria for Interviewee Selection and targeted based on meeting those requirements. Six experts agreed to participate in the semi-structured interviews. The online survey targeted educators who self-identified as practicing some form of NBEE. Survey respondents were located through organizational affiliation, listserv, and social media. One hundred three respondents competed the survey. The semi-structured interview constitutes the core component and the survey constitutes the supplemental component of a qualitative mixed method approach, meeting Morse's (2010) methodological conditions for a Qual-qual mixed method study. The data generated from this approach are reported in Chapter 4.

CHAPTER FOUR

FINDINGS

The Qual (expert interview) qual (practitioner survey) mixed method approach produced two different types of data: interview transcripts and a survey report. After each interview was transcribed and preliminarily coded, the coded transcripts were then condensed into a narrative summarizing key points. Those summaries were then returned to the interviewees for member checking. Any changes, points of clarification, or feedback made by the interviewees was used to amend and finalize the interview summaries. Each of those summaries is presented in the Interview Findings section. Survey data was collated and, in some cases, analyzed with descriptive statistics in a survey report. The survey report was interpreted, and, in some cases, data was reanalyzed to provide a more useful interpretation. Survey findings are presented in the Nature-Based Experiential Education Practitioner Survey section. That section initially established respondent demographic information before exploring how their understanding of NBEE has been influenced by the current knowledge base.

Interview Findings

Six interviewees were selected based on their experience, expertise, impact, scholarship and novel program implementation as described in the Semi-structured interview section of the Methods chapter. The following interviewees were selected to participate in this study: Richard Louv, Cathy Jordan, Jayson Seaman, David Sobel, Aliza Yair, and Jasper Hunt. I gained permission from each interviewee to use their name in

this study. For each interviewee, I provide a brief explanation about their expertise as well as how their work relates to the project. I then provide the member-checked summary of each interview.

Although I exercised professionalism by following the semi-structured interview protocol proposed for my IRB application, the interviews tended to resolve rather quickly to a more collegial and authentic conservational tone. Participants regarded me as one of them, and so we ended up on a first name basis, reflecting the general cultural of informality characteristic of the profession. I have retained the tenor of those conversations in my summaries, including the use of first name rather than surnames.

Richard Louv

Nature writer, Richard Louv has spent much of his career exploring the importance of nature connection on human wellbeing. His 2005 bestselling book, *Last Child in the Woods*, is a widely referenced treatise discussing the negative impact of children's alienation from nature. He co-founded the Children and Nature Network (C&NN), which is an organization that promotes equitable nature-based opportunities for children and shares free evidence-based resources with caregivers, educators, and policy makers to support nature opportunities for children. I was initially introduced to Rich by a mutual friend. He was the first person I interviewed for this project.

Interview Summary: Richard Louv. When I spoke with Rich, he immediately complemented me on my background as a wilderness clinician. He seemed to have an understanding about and an appreciation for the wilderness therapy profession. (Interestingly, that seemed to validate/authorize my expertise more than any academic

pedigree I could provide.) My interview with Rich was less formal and structured than my other interviews, in part because he has shared personal/contextual information about his past in his books.

Rich began by describing the complexity of nature, suggesting it serves as a "go-between" for humans. "Nature is complex. It is beyond our understanding." We make things from nature, but holistically, it is beyond our understanding, mysterious, unknown. "Any attempt [to fully capture the essence of nature] is limited by human limitations." Any definitive way of understanding nature will be tainted by our measurement and can therefore undo nature. That said, he suggested it is okay to explore the mystery of nature…in fact doing so is a good thing. In some ways Rich seemed to possess a theistic reverence for nature…a metaphysical awe. He mentioned that he was surprised (mildly vexed, but mainly amused) to recently be described as being "New Agey" in a recent book review due to his deep appreciation of nature.

When asked about NBEE resources, Rich suggested that when he wrote *Last Child in the Woods* (2005), there were roughly 60 studies about nature's impact on children and families. Today, there are over 1000. Thus, nature's impact on humans has been largely ignored by academia. He proposed two reasons for this: 1) Disconnect between research and nature (e.g., the question, "What is nature?" has not been pursued as a research question; science has a blind spot, a reluctance to examine the impact of nature on development); and 2) Lack of funding (there are limited major commercial industries associated with nature; there is little to sell, at least not on the scale of say, computers; therefore little incentive to study nature's impact). He suggested that there is a

major problem in academic research where our understanding of the truth is based on the assumption that truth has been investigated, but that depends on what questions have been raised. If questions have not been raised, they are not being answered, and consequently we are not getting the whole truth. “Most of our decisions about our relationship with nature were based on a poverty of knowledge and because of the limitations of academic questions.”

Rich discussed the growth of C&NN research library, which recently surpassed 1000 abstracts. He indicated that those abstracts were “conservatively” written to capture the essence of research on the impact of nature on wellbeing. C&NN’s goal is to share information by making findings more accessible to the broader public with the hope of encouraging more research. Although 1000 studies is still inadequate, the research generally points to the beneficial impact of nature on wellbeing, similar to what was elucidated in *Last Child in the Woods.*

To the question of research, Rich added a caveat, “There is no ultimate truth”, in reference to nature. He suggested that although he is “pro-science”, he also recognized the ever-changing, ephemeral essence of things. “Even the scientific method is not static.” Science does not constitute ultimate truth and there are other ways of knowing beyond scientific knowledge. He suggested Indigenous knowledge and religious knowledge are examples of other knowledge systems, however, he cautioned me to not romanticize either. Any way of knowing can be challenged (including science)…and there are many different ways of knowing the world.

When I pondered whether it was problematic to romanticize nature, Rich indicated that one way of knowing is "to see the magic and even the kindness innate in nature, to see the healing qualities of it…to see how it elevates us…" but it is also important to remember that nature is complex and often brutal (to exemplify this point, he shared a story about catching a trophy bass, which appeared to have recently eaten a duckling). He briefly discussed the topic of his latest book, *Our Wild Calling* (2019), about primal communication with nature as "the oldest language." Things (Life, Nature) are never one way (all good or all bad) and things are always complex depending on how one examines them. To exemplify this, he shared a story about recently encountering a small herd of deer while he was on a walk. He described pausing to appreciate them and their elegance as they slowly moved away from him. During that encounter, he observed a dog attack a young deer that was unable to cross a fence. Fearing for its life, Rich intervened by scaring off the dog. Upon reflection, Rich realized that he had likely saved the deer's life, but he also realized that his presence likely created that incident by disrupting the herd's daily migration. Given that holistic understanding/recognition, he suggested it is hard to romanticize nature. Nature is complex. It changes depending on how you look at it and how you interfere with its habits. Thus, we will never be able to fully understand or comprehend nature.

I asked Rich if the C&NN research library was being used by educators/practitioners and he indicated that anecdotally he knew it was being used, but he also realized that he was not (empirically) certain. He encouraged me to contact Cathy Jordan to discuss that question with her. (It should be noted that this was not the only

time that one of my interviewees referenced another interviewee.) He also seemed to realize that C&NN could do a better job of collecting information about who uses its resource base. This led me to ask Rich about teachers' understanding of NBEE. He indicated that there seems to be a generalized apprehension of nature, but also a fear of taking kids outdoors. This is based on a lack of knowledge, fear of nature, fear of lawyers, and a generalized fear expressed by the schools. He suggested that teacher education programs need to emphasize connecting kids to nature, and that the lack of a nature connection in teachers' own lives had led to inadequately trained teachers who do not know how to facilitate a nature-connection with their students. He criticized education as tending to have a singular focus toward teaching specific (core) subjects. "To teach outside the context of the natural world is limiting…an inaccurate view of whatever the subject is." In this way, he suggested that nature is the backdrop of everything, and by not including nature in education, teaching is limited, and vital context is lost. Nature enables (and requires) a holistic sensory awareness, by contrast, a lack of nature contact limits our understanding. Humans perform better with a full sensory experience. We discussed the different ways education has become siloed by subject (content) area and explored the possibility that siloed subjects create their own esoteric code of understanding, which may be problematic for achieving a broader (holistic) understanding.

Toward the end of the conversation, I asked Rich if he had any thoughts or suggestions for my research and he simply encouraged me to keep going. He also explored some different directions for future research. How does helping others in nature

influence an educator's own experience with nature, such as losing and regaining self? For example, how do people recognize the thing they love is scary because of the students they are responsible for? In other words, hyper-vigilance both intensifies the senses, which is good, but it can also interfere with our awe of nature's enchantment. How does one adjust to that? How does an outdoor educator do their job without their (personal) negative experience becoming contagious, or encouraging the contagion of their own enthusiasm and awe? Next, how do different experiences in nature impact people from different cultures and backgrounds? And lastly, how do education schools prepare young teachers to take kids outdoors?

Our discussion concluded with Rich encouraging me and my work. He suggested that organized research is good and specifically he complemented me for asking good (appropriate and useful) questions. Lastly, he requested that I send him my dissertation once it is complete as well as write a guest blog for C&NN to share my findings with the broader public.

Cathy Jordan

University of Minnesota neuropsychologist, Cathy Jordan, initially spent the first part of her career exploring the negative impacts of environmental toxins on child development before transitioning to exploring how the environment can benefit children's wellbeing. She currently serves as Research Director for C&NN. Additionally, she and Louise Chawla recently cowrote an article defining and formally proposing a research agenda for NBL (Jordan & Chawla, 2019).

Interview Summary: Cathy Jordan. Cathy and I initially spoke about her background. She indicated that she completed a postdoctoral fellowship in pediatric neuropsychology focusing on environmental neuropsychological toxicology before transitioning to directing a center on children and family issues. Because she desired more specialization and she was inspired by watching her own children's nature-based learning experiences, she shifted her research focus to examine how the environment is beneficial to development (through nature-based experiences). She has approached this task by comprehensively employing the lenses of neuropsychology, mental health, and child development to nature-based learning. As C&NN Research Director, she wears many hats and is able to use her holistic knowledge about health, mental health, education, learning, environmental stewardship, environmental decision making, and environmental design to accomplish this multidisciplinary work.

When asked how she defines NBL, Cathy indicated, "The impact of nature-based learning likely has two routes. First, just the exposure to nature, regardless of the activity being undertaken, likely impacts learning through better attention, decreased stress, etc. Second, the pedagogy that is typical in NBL, which makes use of nature as a co-teacher rather than just the backdrop setting, has several characteristics of high impact teaching practices – hands on, active, meaningful, collaborative, etc." Cathy indicated that these definitions are not the same as environmental education because environmental education has a specific, intended conservation-related outcome. "Nature-based education is focused more broadly on learning across all skills and subject matter with a developmental goal at the forefront", more so than as an environmental goal.

Cathy suggests that interconnecting the emotional and cognitive aspects of the learning process are important. Educational models based on giving students information and assuming they will learn (i.e., change their behavior) are inadequate. Connection to the natural world creates an appreciation for the natural environment, which results in a pro-environmental attitude and leads to behavioral change. There is an important developmental window during childhood where opportunities to provide children with quality, nature-based experiences increase the likelihood they will develop pro-environment attitudes and the wherewithal to act.

When asked about the features that make nature-based learning distinct, she identifies the benefits of nature contact and the effectiveness of nature pedagogy. The benefits of nature contact include attention restoration and stress reduction as well as the broad benefits on cognitive development (leading to greater learning potential later in life). She also suggested that NBL creates a unique, effective pedagogy. NBL is "not abstractly talking about something in a classroom." The natural environment is conducive to the following: physical activity, social collaboration, inquiry-based learning, full sensory engagement (touching, feeling, smelling, seeing, hearing etc.), relevance, meaning making, interaction, metaphor, opportunities to absorb the information, and exercising the brain.

Cathy shared an example about her science learning study comparing NBL versus classroom-based learning (CBL) approaches. Her advisory board was comprised of two factions. The experimental faction wanted to isolate the effect of nature by moving desks into rows, outdoors and conducting a normal class outside. Cathy opted not to pursue that

option because she believed, “NBE isn’t just about being outdoors, it’s about pedagogy as well.” And the important research question explores, “When NBL and its pedagogy are done well, what is the impact compared to conventional education?” Her study ended up bringing more active, social, inquiry-based pedagogy indoors. It caused the researchers to examine what variables they were isolating and think carefully about what NBL pedagogy looks like in real life. She anticipates the results will be a “mixed bag” with some lessons taught more effectively outdoors and others more effectively taught indoors. As part of that experiment, they are attempting to identify the variables mediating NBL such as attention, stress, engagement, and impulse control on academic outcomes (e.g., science quiz). The experiment controlled for pedagogy by making traditional classrooms more pedagogically rich.

When I asked Cathy about where teachers would go to learn, she mentioned Dewey, Kolb and Sobel but also indicated that she was not sure she could properly direct teachers toward an educational canon. She did suggest that nature-based education (NBE) requires being able to think beyond educational theory and understand child development and that there is a strong need to contextualize (ground) NBE in developmental theory. Teachers need more systemic thinking, to be able to think holistically and complexly. Teachers need a holistic view of things that impact a child’s learning (a child’s mental health is critical to learning). There is a bi-directional relationship between health, learning, and outcomes. Therefore, a holistic understanding coupled with good pedagogy is important. Regarding the importance of brain-based approaches as part of this question, she suggested they can be helpful as long as they do not overreach or oversimply things.

When I asked Cathy about her perspective on my research trajectory, she indicated that praxis was useful as long as it was not overly prescriptive, (i.e., avoid a cookbook approach). She suggested that evidence should inform teachers' understanding of child development and nature-based learning to guide their teaching practice. She also indicated that understanding how kids benefit from nature (as the third teacher) requires flexibility and the ability to adapt. Thus, effective NBE is derived from broad knowledge, a holistic perspective, and pedagogical flexibility. She suggested "all education, regardless of whether it is nature-based or not, would benefit from a broader understanding of the complexity of what goes into the way kids learn." For example, research on affordances has shown that affordances are bidirectional, not just what the environment affords, but also what the child brings to the situation. That knowledge changes how teachers utilize the affordances of learning objects within their classroom environments.

Cathy hypothesized that NBE is probably not wholly beneficial in all situations. She recommended a more nuanced, contextualized, fine-grained research approach to understand how good teaching achieves the best outcomes in specific situations. Instead of dichotomizing NBL and CBL, she proposed considering how they can complement one another and create codependency within academic lessons. Schools of education need to do a better job teaching this integration. This is especially important when considering that the educative process varies by age and developmental ability, which needs to be better understood by the teacher. Teachers need a high degree of conceptual understanding to know how and when to incorporate each approach. Skillful teachers

have a broad and holistic understanding and constantly explore, “How can I create a developmental moment?”

When I asked Cathy about the adequacy of the knowledge base she replied, “We’re at a stage where we don’t know everything, but we know enough to act, and yet we don’t know enough to perfect our approach.” She suggested that research needs to do a better job describing the setting, engagement, curriculum etc. with design considerations, such as controlled studies, being important. From her perspective, there is substantial interest from a funding level in this work and she hopes it will continue.

Jayson Seaman

Jayson Seaman is Chief Editor of the Journal of Experiential Education (JEE) and Associate Professor at University of New Hampshire. He possesses expertise in the foundations of experiential education, specifically the impacts of Dewey and Kolb. Additionally, given his editorial expertise, he is well versed in EE literature.

Interview summary: Jayson Seaman. At the beginning of my interview with Jayson, he indicated that he would be curious to see how much overlap I find between experiential learning and the resources teachers are drawing upon to inform their practices in outdoor settings. He pondered that there may not be much overlap. He encouraged me to look up the work of Johan Hovelynck (2001) who did a similar type of study looking at Outward Bound style programs (he later sent me Hovelynck’s work).

Jayson indicated that he first got into experiential education working at a summer camp, then a college outdoor program, and later an alternative spring break experience. During his first post-college job teaching English, he started an outdoor club and later

took students on alternate spring break programs. He found those experiences to be personally rewarding and powerful learning experiences for the students. He was intrigued that the students who struggled academically prior to the programs "learned ambiently" through their experience, gained deep understanding, and really shined when they formally shared their experiences upon return. For him, those experiences created "both a pedagogical experience worth replicating, but also a theoretical puzzle to tease apart." He pursued graduate study (MS and PhD) in outdoor education and education, respectively, but also found that formal study did not fully address his underlying questions. Although he has remained in education, he has found psychology (e.g., Vygotskyan & socio-cultural theories) provides an important perspective.

Related to understanding experiential education, Jayson felt that Fenwick's (2001) monograph provided a useful foundation. In particular her description of Situated Learning Theory (Lave & Wenger, 1991) resonated with him. He later studied Dewey and found Dewey's perspective to also be foundationally useful as canon. Although as Editor of JEE, he finds that many journal contributors do not adequately understand Dewey. The theories that have supported his broader understanding of experiential education included: critical (Marxist) theories, Vygotskyan traditions, Situated Learning Theory, and Deweyan pedagogy.

When I asked him how he characterizes experiential education, he surprised me by stating that he seldom uses the word "experiential" because, although it is a technical

term, it is too general, it carries a lot of baggage (e.g., KELT[2] and t-groups[3]). It therefore tends to provide unhelpful connotations for people. Instead, he prefers asking basic questions such as, "What's good for kids in any given situation? What are the pedagogical aims (of a program)?" Addressing those questions requires a genealogical effort of understanding the underlying assumptions related to pedagogical aims. As Editor of JEE, he observes that the journal has competing priorities: a) being defined by conventional and traditional ideas yet b) needing to demonstrate relevance to diverse audiences and interest groups. He sees his role as exploring how to permeate the boundaries of EE. He accomplishes this, in part, by situating experiential learning within the human potential movement of the 1960s and 1970s and considering the origin of the ideas accompanying the word "experiential" at that moment in time. He used the analogy of "breaking apart the plane (he's) flying" to describe his work deconstructing the EE paradigm.

Jayson suggested that he has intellectual commitments around socio-cultural perspectives of learning and development and to the two lines of research he has been developing which include: a) historical foundations, and b) empirical work in non-traditional EE approaches. His work explores identity forming experiences in non-school environments…simply put, "I just want to understand learning" (rather than *experiential*

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[2] KELT = Kolb Experiential Learning Theory (1984; 2015)
[3] T-groups = training groups (as part of Lewinian human relations training)

learning). Considering the historical foundations of EE, such as t-groups and KELT, he wonders how the old models apply in present day. In particular he ponders, “Do we need different tools now?” From that perspective, he suggests that there are many possibilities for future research in EE.

I asked Jayson about his commitments to EE if he stops using the word “experiential.” He answered by stating that his initial foray into EE operated out of ignorance, yet it produced good results. His present commitments include, “education that gets kids in a hands-on way to do work that matters to them and to their communities. And where the affordances to learning that matters to them and matters to society, are more directly at hand…not in abstract (forms).” “How do you put kids in touch with the resources they need to make their way in the world (while upholding a commitment to support democracy)?” He suggested that an emphasis on democracy is especially important in this day and age.

As our conversation progressed, Jayson indicated that models like KELT can be troublesome when they are overly prescribed. He described an example of a 6th grade class on a ropes course that was stopped prematurely by the lead facilitator to ensure students could reflect upon their experience. Unfortunately, the intervention failed; stopping the group at a highly productive time irritated them, and consequently the students refused to participate in a meaningful reflection. From his perspective, Jayson feels that strict adherence to a model is akin to malpractice and future research should explore other ways of organizing practice.

When I asked Jayson how to make knowledge available to teachers without making it overly prescriptive, he indicated that he accepted his role as an academic researcher rather than a practitioner, which inherently distances him from actual teaching. However, he has found Dewey to be useful. In particular he regards Dewey's lab school as an important example of an educational environment that put "kids in direct touch with the instruments by which we created our civilization." As learners gain mastery of those tools, they create better appreciation for social organization. Jayson feels that the contemporary Expeditionary Learning model (which grew out of OB) provides a good example for what that practice looks like in today's world. He stressed the importance of macro-organizing principles (i.e., "kids' mastery of cultural resources that determine institutional relationships") for establishing cohesive logic from which to organize schooling. He encouraged me to consider whether NBL promotes that process.

I asked Jayson how we create opportunities to support the practice of good teaching and he suggested distinguishing EE as a set of practices and value commitments from EE as a theory of understanding. He cautioned against creating formal EE frameworks that prescribe EE because they can become too individualistic, too rote, and too formulaic. He indicated that there has been a problem with how people have approached and researched EE. Instead, he felt that learning sciences, specifically socio-cultural learning, provide a better model of understanding. He suggested that although KELT may provide some utility, it shouldn't be mistaken for an actual learning theory; Kolb's work may be better characterized as an industry for experiential learning styles.

When I asked Jayson about references to Kolb in JEE, he indicated that as Editor, it seemed as though prospective authors felt like including Kolb and Dewey was obligatory.

I asked Jayson if there seemed to be a fear in defining EE and he paraphrased Weber's idea that we eventually become disenchanted by disenchantment. He described an interesting process whereby experiential educators are initially fueled by passion which leads them to do the work with a specific agenda as well as search for resources to support their practice. However, that pursuit generates disenchantment because the resources are inadequate. Instead, he suggested encouraging educators to put their passion on hold and exercise broad reflection and consider what they are doing and how they can be most helpful with their learners. We spoke briefly about social justice and Jayson indicated, like Dewey, he felt a commitment to the principles of a pluralistic democracy, which should be supported by education. Experiential education has worked towards that goal, but that pursuit needs to remain relevant to society writ large.

When I asked him about canonical resources, he suggested Kolb (1984; 2015), Fenwick (2001), and Dewey were helpful, although he cautioned against conflating Dewey and Kolb. When I asked him about how to organize the landscape (i.e., knowledge base) of EE, he indicated that we are unable to make sense of everything because it is too vast. He criticized EE for being disorganized because it operated by a "cumulative approach" as a means of establishing legitimacy; that practice has led to randomness and eclecticism rather than good scholarship. Instead, he urged me to ground (i.e., limit, define) myself in one perspective and speak to that audience. Once

established, he suggested I could maintain a high standard of scholarship and focus on that specific tradition rather than worry about upsetting the EE field.

I asked Jayson if he felt that there was an adequate knowledge base supporting the practice of teachers and he indicated that he wasn't sure. In fact, he indicated that as his program transitions into the recreation management department at his university, he foresaw his research agenda as potentially "reaching out to practitioners who are doing the work (he respects)." He sees himself as "trying to understand foundations in the way that put (him) in touch with resources (he) thinks can help teachers".

David Sobel

David Sobel is teaching faculty of Antioch University New England and he has spent his career exploring the importance of place on the learning process. Not only is he a widely known author of nature-based and place-based education literature (e.g., Lloyd et al., 2018), but he was also referenced by several of the other experts I interviewed for this project.

Interview Summary: David Sobel. David indicated that he has worked in the nature-based experiential education profession for almost 50 years. While he was completing a teacher training internship at an environmental center, he was introduced to the book *Acclimatization* (Van Matre, 1972), which was foundational to his practice in environmental education. His teacher education program focused on developmental theory (e.g., Fröbel, Piaget). "The core of my commitment has been understanding child development and then trying to shape environmental education or approaches to NBE with a developmental lens." He indicated that he has been critical of environmental

education because it tends to lack a developmental lens. Specifically, he regards Piaget's stages of cognitive development as being quite important. He described a class he taught where he required his students to interview different-aged children about their beliefs in Santa, the Easter Bunny and the Tooth Fairy. He then used those findings to explore the developmental process of scientific thinking. He suggested that children possess "a naturalistic tendency for a certain kind of logical thinking… (which is) in contradiction to what some science curriculum tries to do." Good education is developmentally appropriate, and stages of development need to be aligned with similarly appropriate curriculum.

When asked about how he defines NBL, he referred me to Kuo's article articulating the diversity of NBL (e.g., learning in, learning about, and learning with nature). He summarized NBL as "using the natural world as either a context for learning or a content/subject matter for learning." Nature-based learning is a form of place-based education (PBL), which is a subset of experiential education (EE). More specifically, David suggested nature-based early childhood education is different from of NBL, which is a broader term that refers to pre-K through grade 12 approaches. He suggested that NBL tends to be too narrowly focused for an entire K12 education but that other forms of PBL were appropriate for older learners. PBL is EE with a focus on place and "EE is the bigger thing that we want to be doing." He described a project from his wife's social studies class where the students worked with a local NGO to make a movie about a local community center, which was later used as a primary fundraising tool.

When I asked about his formal and informal sources of professional development, he indicated his "free-range childhood" was a major early learning influence. Later, reflecting upon his high school graduation speech, he realized its theme was about experiential education. While in college he did a project mapping the territorial behavior of red winged blackbirds, which led him to realize that "knowledge potentially resided in place, rather than books." That realization was a turning point for him and led him to pursue that line of inquiry throughout his professional career.

In terms of specific features to an NBEE approach, David described appreciating Eleanor Duckworth's "hands-on, minds-on" motto. That concept suggests a strictly hands-on science education lacks formality; a better approach makes sense of the hands-on experience with scientific understanding. In this way, real world activity should be connected with conceptual understanding. (This reminds me of Dewey's primary and secondary experiences.) David suggested that teacher training programs needed to provide preservice teachers with actual opportunities for conducting experiential, nature-based, place-based practices themselves. He indicated that the (Antioch) In Bloom conferences required experiential (praxis) workshops. But problematically most other professional development (conferences) are theoretical and didactic.

When I asked David about canonical works, he provided a list of sources ranging from his book *Place- and Community-Based Education* (Smith & Sobel, 2010) to an earlier book on mapmaking (Sobel, 1998). His list also included: *Bringing School to Life* (Anderson, 2017); *Edutopia* videos such as Hood River Middle School or Crellin Elementary School (e.g., McCauley, 2015) and; *Schools to Change Communities* (video;

Gilner, n/d); *Natural Curiosity* (The Laboratory School at Dr. Eric Jackman Institute of Child Study n/d); *Place-Based Curriculum Design* (Demarest, 2014); *Out of the Classroom and Into the World* (Vascellaro, 2011); *Young Geographers* (Mitchell, 1991); *The Study of Place in the Primary School* (Inner London Education Authority, 1981).

When I asked David about whether he felt like teachers were adequately supported by the current knowledge base, he indicated that the theoretical framework has been well articulated. He also felt that there was adequate research showing the benefit of NBEE. However, he suggested that, "teachers need more examples of good scaffolding of classroom projects and curriculum." Additionally, "most teachers are not trained to be good experiential educators or good place-based project educators and so they need really algorithmic portraits of how to do it." He suggested that Antioch University, New England; College of the Atlantic, Warren Wilson, UVM, Evergreen, Lewis and Clark, Lesley, Bank St. College of Education, Hamline, UMN-Duluth, Teton Science School, Wolf Ridge, Royal Roads, SFU, and Ontario Institute for the Study of Education (OISE) at University Toronto have good formal programs in this work.

I asked him how he understood the overlap of progressive education and NBEE and he suggested that the central features of NBL, PBL, EE emerged from progressive education and the ideas of Montessori, Pestalozzi, Comenius, Dewey and Fröbel. Moreover, "place-based education is just good old-fashioned progressive education…with a bit more systems thinking, and ecological thinking thrown in. The basic underlying pedagogy is the same…learn in the real world." Moreover, connectedness to place and a better understanding of complex systems have since been

added to progressive education pedagogy. When I asked David how he understood this in light of progressive education's collapse, he indicated that the research connecting these approaches and academic achievement has been useful for administrators and legislators to understand the benefit. Although he also felt like teachers were more interested in the pragmatics of teaching than "substantial quantification" demonstrating the benefit of a particular approach.

When I asked David about his perspective on my research interests, he indicated that it might be useful to provide tangible examples (in the form of case studies specific to MT) to provide educators. He suggested that "the crux problem with any kind of place-based education is it's specific to a certain setting and context"…and a "curriculum guide that's going to help you understand the component parts of doing good place-based curriculum would be useful." He recommended modeling a publication in the vein of Clark's (2008) *Learning to Make Choices* manuscript, with specific examples of Montana-based PBL projects.

I was concerned about overly prescribing an educational approach and asked David about this. He indicated that a fallacy with progressive education was letting kids figure out what they want to learn without scaffolding. He suggested that I was illustrating the same fallacy with teachers. "Teachers want…and need a prescriptive curriculum." He described the Innovation Response Model and suggested that pioneers and early adopters will support an idea no matter what, but middle and late adopters "need much more prescriptive and algorithmic examples of what they're going to do to move in the direction of innovation." Therefore, one needs to change developmental

models from conceptual-heuristic to become more prescriptive and algorithmic to accommodate later-adopting individuals.

Aliza Yair

Washington was the first state to pass legislation pilot testing the licensure of full-day nature-based preschools through the Washington Department of Children, Youth and Families. Aliza Yair is Program Coordinator for the Outdoor Preschool Pilot Program implementing that initiative. In addition to her knowledge about that program, she also has expertise in international educational policy and experience teaching forest preschool in New Zealand.

Interview Summary: Aliza Yair. Aliza shared that she has worked with the Washington state outdoor preschool pilot program since 12/2017 (the program began in 08/2017). Prior to that, she worked in early childhood education (ECE) policy in NYC, completed an Ed.M. in international education policy at Harvard Graduate School of Education, and taught ECE in New Zealand (NZ) for 8 years, including 3 years of forest-kindergarten. While in NZ, she earned a teaching degree in ECE. During college she studied biology and environmental sciences.

Outdoor nature-based preschools began in WA under the influence of Erin Kenny who started Cedarsong (preschool) on Vashon Island (her book; *Forest Kindergartens: The Cedarsong Way*, 2013; describes her approach and philosophy). Another program called Fiddleheads Forest School which uses the UW arboretum to run programs, has also been influential (founded by Sarah Heller and Kit Harington). Presently there are many outdoor, nature-based, early childhood programs in WA. However, the exact number is

unknown because the regulatory context only applies to programs operating more than four hours per day. Outdoor programs have flourished in western WA, in part because WA has an "outdoorsy" culture, as well as due to its mild climate (there is less of a need for shelter than other climates). Given the overall interest and the opportunities within the regulatory context, nature-based programs have expanded. The Washington Nature Preschool Association (WaNPA) and the American Forest Kindergarten Association both have a strong presence in WA. Aliza's work establishes best practice (health and safety) licensing standards and she desires to make NBE available, safe, and equitable.

When I asked Aliza about how she defines a nature-based ECE approach, she referenced a conversation she recently had with Rachel Larimore (author and nature educator) regarding that question. More than being outside, this approach also requires a nature-based pedagogy, which could be Indigenous-based, environmentally based, emotionally based etc. She suggested that the Western world is beginning to gain a greater appreciation for the importance of being connected to nature; however, defining nature is difficult and constitutes more than time spent outdoors. Several philosophical questions emerge, such as: "What is nature? How much 'wildness' is needed? Can an effective nature-based educational experience occur in a cultivated outdoor setting like a city park?" Aliza suggested nature-based teaching practices include several general aspects: a) utilize natural resources, b) are place-based and experiential, and c) involve "noticing" the available resources as well as what the students are noticing. She also indicated the following specific features that make NBEE unique: pedagogy, awareness of place, time spent outdoors, direct contact with nature, access, programming, regularity,

and variability. The last component (variability) is significant because nature is constantly in change. An important and helpful aspect of ECE is that developmentally appropriate curriculum is not divided by subject area and therefore, teachers can teach more holistically and incorporate many goals of early childhood education into nature-based or nature-centered experiences.

Aliza stressed that NBEE needs to have a pedagogical component, which includes noticing what is available in the environment and direct contact with nature. To be outside in a parking lot or playground/jungle gym is not the same as a grassy field, garden, or park. Additionally, to define a nature-based program by the percentage of time a program spends in nature can be misleading as shorter length programs may promote a higher nature percentage than full-day programs but spend less time in nature over-all. Aliza indicated that dichotomizing experiential, naturalistic environments from cultivated and purpose-built environments may be problematic due to contextual opportunity and teacher preference.

When I asked Aliza where she sends new NBEE teachers, she indicated it depends on their location and financial situations. She strongly recommended NZ as a place to learn about NBL, since that is where she received her training, although she also suggested that Antioch University and Prescott College offer good graduate-level training programs. In WA, the Wilderness Awareness School, Island Wood (Bainbridge Island), and Cedarsong also provide good training specific to ECE, among others. She indicated that her work, as a state employee, emphasizes increasing more nature-based ECE professional development options as well as establishing teaching competencies for the

state's systems of support and oversight. Cultivate Washington (at UW) is developing a 10-hour professional development course on NBE for ECEs. Aliza has observed that low wages make it difficult for ECEs to afford quality professional development (ProD) or training. A lack of public funding makes establishing and maintaining quality ECE opportunities difficult (unlike other countries which support ECE more readily). She desires free, certified, quality, ProD training for ECEs that promotes safety. Yet she acknowledged it is difficult to balance preparing teachers to a high standard and navigating the financial reality of ECE. The mission of DCYF is "Healthy, Happy, Mobile Families", and it strives to achieve those ends.

Aliza indicated curriculum and pedagogy are the features that make NBEE preschools unique. She reiterated the necessity of nature pedagogy, indicating it tended to be individualistic although it could emphasize Indigenous, environmental, and/or cultural knowledge systems. When I asked her if that pedagogical flexibility was problematic, she suggested a better question to consider was, "What are the goals of a good education?" The ultimate goals of a good, nature-based ECE experience was giving children safe, authentic experiences with the earth to create a relationship. The means for achieving that overarching goal were less important. She advocated for providing educators with a big picture and allow them to chart their own course toward that goal. Some components would be universal, such as a holistic approach to education and others would be more individualistic. She distinguished formal educational contexts as being publicly funded from informal contexts as ones are not funded.

Aliza recommended the following resources: *Nature Preschools and Forest Kindergartens* (Sobel, 2016); *Forest Kindergartens: The Cedarsong Way* (Kenny, 2013); *Nature-Based Preschool Professional Practice* (Natural Start Alliance, 2019); *Sage Handbook for Outdoor Play and Learning* (Waller et al., 2017); and material by Rachel Larimore. She also recommended a two online Scottish government resources: *Out to Play* (Early Learning and Childcare Programme Directorate, 2020) and *Managing Risk in Play Provision,* (Play Scotland, n/d) as well as *Braiding Sweetgrass* (Kemmerer, 2013).

When I asked Aliza about the impact of NBEE on academic outcomes, she indicated, in general, the data suggest major long-term benefits from quality ECE programs and recommend increased (governmental) funding. She described a variety of studies demonstrating positive long-term benefits of quality ECE on adult functioning. In particular, she referred to two longitudinal studies, the Perry Preschool study (cf. Schweinhart et al. 1993) and the Heckmen Social Return on Investment studies (cf. Heckman 2020), plus a variety of studies from NZ showing the benefits of ECE. Although many other studies exist that also demonstrate the benefit of quality ECE on long-term outcomes, it has been a challenge demonstrating those benefits to policy makers in a way that motivates them to establish adequate funding.

When queried about my research, Aliza indicated that she desired to see more literature taking child development into consideration. She found it problematic that education methods did not align with developmental models (i.e., the current agenda pushes down on ECE by specializing the subject matter). She indicated an ideal system would make K5 education more holistic and experiential. She advocated for getting kids

outside and suggested quality ECE should strengthen and cultivate educational experiences with intentionality. She referenced studies showing that nature-based experiences provide a ripple effect by improving brain development, decreasing obesity, and benefitting health. She recommended establishing more partnerships between schools and outdoor education programs to provide longer-term opportunities for individual students to interact with their local environment over time.

Aliza indicated that she is working on training requirements specific to nature-based learning contexts to serve as a supplement for WA DCYF competencies. This has required her to work with a variety of stakeholders to develop research-based competencies for ECEs. She has also formed partnerships with teacher training colleges and is working to include those competencies as part of their programs. She concluded by reiterating an overarching goal to "make people active citizens who are more ecologically minded", by getting kids outside.

Jasper Hunt

Jasper Hunt has a 50+ year career in NBEE starting at a pre-Outward Bound summer camp. He studied the philosophy of experiential education throughout higher education and became faculty at Minnesota State University, Mankato, eventually overseeing the development of a graduate program in EE. He is a Dewey scholar and a foundations expert in experiential education. He also served as co-editor for the *Theory of Experiential Education* (Warren et al., 1995).

Interview Summary: Jasper Hunt. Jasper was first introduced to NBEE while he attended Camp Sequoia (summer camp) between the ages of 9-12. Many of the people

who worked at that camp later founded North Carolina Outward Bound School (NCOBS), including Jim (Pop) Hollandsworth. Jasper considers the American camping movement to be some of the best experiential education occurring in the world and he indicated that he may have learned more from Camp Sequoia than he did from his public schooling. After Camp Sequoia, Jasper got involved in NCOBS, first as a participant and later as staff. He attended The Evergreen State College, worked for Northwest OB, and later for a wilderness therapy program called Darrow Hall: Operation Breakout. His 50+ year career has been a lifelong operation for him. (Jasper was on the ground level of OB as it opened schools in NC and the Northwest.)

When I asked Jasper about how he characterizes NBEE, he indicated that he would be answering that question as a philosopher. Jasper studied philosophy at The Evergreen State College under the supervision of Willi Unsoeld (mountaineer who was on the first team of Americans to climb Everest). He suggested that American education is heavily influenced by Descartes, who was a philosopher of epistemology and explored the theory of knowledge. From that perspective, "to know something, one needs to have a cognitive experience…theory comes first." Once learned, theories can be applied to other things. Thus, from a Cartesian perspective, "knowledge equals a purely rationalistic cognitive experience in education." However, "experiential education reverses that priority." As described by Dewey and Whitehead, teaching theory isolated from the lived experience of the student is inadequate epistemology, and may result in a destructive, "miseducative" learning experience. "What distinguishes all EE from traditional education (TE) is that we don't assume theory comes first. We think that hands-on,

direct, what Dewey would call ‘primary experience,’ needs to precede theoretical experience, or what Dewey calls ‘secondary experience.’” Theory should not be taught in isolation. Given his camp and OB experiences, nature is an integral part of experiential learning. High consequences, due to impending natural challenges, provide an important feature to the learning context.

When asked about the difference between Cartesian and Lockean educational models, Jasper indicated everything goes back to Plato. He described a conflict in Western philosophy about empirical versus cognitive sources of knowledge. British empiricists believed knowledge was perceptually based, whereas Cartesians ascribed to cognitively based knowledge. Although that tension originated with Plato and Socrates, it continues to play out in contemporary education. Adequately informed experiential educators do both, promoting a hands-on empirical experience while also considering the cognitive component. For Dewey primary experience originated from hands-on, empirical learnings and secondary experience derived from conceptual, theoretical cognitions; disconnecting those experiences was a mistake. For experiential educators, primary experience comes first and secondary experience flows out of that. However, some circumstances call for initial learning by secondary experience to avoid danger (such as using reloading manuals to guide the practice of reloading ammunition).

Through Unsoeld’s influence, Jasper connected philosophy to EE by way of process philosophy. He later pursued graduate school at the Graduate Theological Union, Berkeley, California studying “process theology” and was introduced to the work of Dewey. He recognized that “Dewey is the philosopher of EE” because many of Dewey’s

ideas were consistent with OB. Although Dewey preceded the EE movement, given his influence on progressive education, his postulations provided consistency between those frameworks. One of the problems (failures) of progressive education was "know-nothingism", which resulted from the lack of disciplined inquiry (e.g., absence of serious study, academic content, reasoning, and logic). "In OB, if you're a "know-nothingism" person, you're going to kill somebody." Bad things happen in the absence of discipline due to the high consequences of the outdoor environment. Modern expressions of progressive education (e.g., charter schools, PBL) are working out well because "know-nothingism" has been remediated.

Jasper suggested nature makes NBEE distinct from EE and he referenced Louv (2005) as representing a resurgence of interest in the natural world. Jasper also referenced Plato's *Theaetetus* describing how Socrates compares education to midwifery. Jasper connected natural childbirth with a return to nature (women rebelled against anesthesia desiring to have the direct experience of natural childbirth). Jasper juxtaposed natural with artificial environments and suggested that direct experience grabs one's attention with nonnegotiable (high) consequences. Additionally, he alluded to the importance of having direct contact with the natural world that is unique (represented in the writings of Muir, Thoreau, & Sigurd Olson). Olson describes a "racial memory" connected to being human and experienced around a campfire. Thus, direct contact with nature is unique (which is different than an artificial environment like a shopping mall).

Jasper referred to James' (1914/2011) essay, *The Moral Equivalent of War* describing how combat and warfare provide a unique learning experience. James

explored how to pedagogically replicate the unique aspects of warfare (e.g., self-sacrifice, physical and moral courage, bonding etc.) without bloodshed. One of the ways James proposed accomplishing this feat is through "serious immersion into the natural world, where very quickly, you're dealing with life and death situations." Jasper indicated James' essay influenced his understanding of EE by providing another way to make sense of his experiences with OB and wilderness therapy.

Guides, teachers, and educators provide an important role in those situations by helping an individual interpret and navigate their experience. The teacher accompanies (and in some cases protects) the learner. Progressive education was problematic because it eliminated the role of the teacher from the educational context and made it completely student-directed. Jasper suggested, "There's always a tension between student-centered and teacher-centered (instruction). It's a delicate balance." Educators need to be wise in knowing when to let students direct their own learning and when to intervene. He considers "miseducative experiences" to be highly problematic because they promote ignorance and teach falsehood. Whitehead uses the phrase "soul murder" to describe "miseducative experiences" that block or impede learning.

Jasper suggested there is an impressive body of empirical work supporting the effectiveness of NBEE. He referenced the research on OB as well as Louv's work. However, he also cautioned me about the general problem of isolating independent variables in social science research. He pondered whether EE has been held to a higher standard than traditional education by being required to identify more supporting evidence than other educational approaches.

The literary works of Olson, Thoreau, Muir and Dillard are useful for explaining the essence of NBEE (though it is problematic that they are anecdotal). Socrates (*Meno*) helps explain NBEE from the perspective that good educators draw knowledge out of students rather than pour knowledge into their minds. When I asked about the influence of Aristotle, Jasper discussed the importance of virtue-based ethics. He suggested, "a unique feature of modern EE, whether it's nature-based or not, is the notion that you don't just teach facts, you also want to teach virtue…a teacher's role is to help create virtuous people." (This reminds me of the democratic ideal espoused by Dewey and mentioned by other interviewees.) Jasper also suggested, "religious background is very rich in NBEE," such as the Sinai Covenant and Jesus' sojourn into the wilderness; religious sources of knowledge are important examples of learning in nature-based settings.

Jasper indicated there is an adequate knowledge base and a well-articulated underlying conceptual framework for people entering a career in NBEE. He referenced the growing number of four-year degrees related to EE that are occurring around the country to support that position. When I asked him about the level of agreement related to the underlying constructs, he suggested intellectual debate was an important aspect of academia (academia stays sharp by arguing about intellectual ideas). Specifically, he used a disagreement he had with Jayson Seaman about Seaman's (2019) interpretation that Dewey abandoned the word "experience" late in his career, as an example of that kind of intellectual debate. In general, Jasper felt that arguments are a sign of a healthy, robust discipline.

Jasper indicated that many EE programs were moving out of Colleges of Education and into Recreation, Parks and Leisure Studies Departments. He seemed ambivalent about this trend but recommended that the field be expanded by greater specialization. He referenced Christine Lynn Norton and Mike Gass as exemplars in the nature-based psychotherapy realm (e.g., Gass, 1985). He also identified service learning, charter schools, project-based learning and corporate training as other successful areas of specialization. (Although he didn't say it directly, I got the sense that my work in NBEE would be viewed as "specialized" along those lines.)

Interview Conclusion

This concludes my summary of the six interviews conducted with six recognized experts in the field of NBEE. In the next section I present the findings of the NBEE Practitioner Survey.

Nature-Based Experiential Education Practitioner Survey

The NBEE practitioner survey went live March 1, 2020 and the findings presented here reflect responses collected through March 23, 2020. At that point in time 103 respondents had completed the survey. The survey consisted of 23 questions. The types of questions include the following: single answer questions, open-ended multiple-choice questions, questions asking respondents to rank order predetermined criteria, Likert scale questions, and open-ended fill-in-the-blank questions. Respondents were allowed to skip questions, resulting in some questions having fewer than 103 responses. The sample size was listed for each question based on the number of responses.

Respondent Demographics

Analysis of survey data was based on the participation of 103 respondents. The first set of questions established respondent demographic information by exploring the following: how long respondents have taught using an NBEE approach, the grade levels taught by the respondent that incorporate NBEE, and the academic teaching context in which respondents incorporate NBEE. Answers to the first question were restricted to a single entry and those data are represented in Table 4.1.

Table 4.1. Reported Time Teaching Using an NBEE Approach

Time Teaching NBEE	Count	Percentage
<1 year	3	2.91%
1-2 years	12	11.65%
3-5 years	30	29.13%
6-10 years	22	21.36%
>10 years	36	34.95%
Total	103	100%

Note. N = 103, M = 3.74, SD = 1.14

Based on 103 responses, frequency counts for the largest three categories are as follows: >10 years: 36 (34.95%), 3-5 years: 30 (29.13%), and 6-10 years: 22 (21.36%). As we move forward with analyzing and interpreting the survey findings, it is important to remember the considerable experience incorporating an NBEE approach as reported by sample respondents. I am also left wondering about the perspectives of teachers with less NBEE teaching experience. Broadly, this shows that 88 respondents (85%) indicated they

have taught for more than three years using an NBEE approach. By comparison, very few survey respondents (three) indicated they had taught for less than a year using an NBEE approach, representing 2.9% of the total.

The next two demographic questions explored the grade level(s) taught by respondents that incorporate(s) NBEE as well as the academic context(s) in which that occur(s). Both questions allowed the respondent to select multiple choices. This decision was made knowing that the individual categories within each question would probably not fit each respondent. That supposition proved to be accurate as many respondents selected multiple categories for both questions. Although that strategy provided a more holistic way of capturing the respondents' actual experiences, it involved a tradeoff of being unable to generate sample means and standard deviations in a useful way.

Grade Level Taught. The second question asked respondents to identify the grade level(s) they teach that incorporate(s) NBEE. This question yielded 235 responses, signifying that many of the survey respondents incorporate NBEE across multiple grade level ranges. The grade level categories are as follows: Pre-Kindergarten, K-5, 6-8, 9-12, and Higher Education. The largest count (63) occurred in the K-5 category, accounting for 61.2% of respondents. This was followed closely by the 6-8 category (56) accounting for 54.4% of the respondents. These findings indicate that many of the respondents reported teaching in multiple grade levels. They also show us that over half of the respondents reported incorporating NBEE in both K-5 and 6-8 grade levels. Pre-kindergarten and 9-12 were tied for the third largest count (each accounting for 41 responses and 39.8% of the respondents), followed by Higher Education, which had the

smallest count (34), accounting for 33% of respondents. These findings indicate that many of the respondents who have incorporated NBEE within their practice did so in the K-5 and 6-8 grade levels, although NBEE has been incorporated into all grade levels by different respondents within this sample.

Academic context. The third question explored the academic context in which the respondents incorporated NBEE. Because respondents were allowed to select multiple answers, they generated 194 responses. Question three consisted of the following categories: Public School, Private School, Out of School Time, Summer Program, Charter School, and Other. Based on initial findings, the most selected category was Other, consisting of 45 responses and generating 40 specific contexts (five were left blank). Upon review, I observed that many of the specific answers seemed to fit within previously established categories. For example, many specific responses were derivations of nature centers, which I considered to be Out of School Time. Additionally, several respondents listed "home school", which I considered to be Private School. Given this observation, I recoded[4] each specified Other item using the previously established categories (items that did not fit were coded "Other"). I consolidated like categories and added Did Not Specify for the five respondents who selected Other by did not specify the

[4] I contemplated requesting another reviewer recode these categories with me to estimate interrater reliability, but I chose to forgo that step because establishing demographic information was not crucial to my overall findings.

context. I then calculated categorical percentages based on the 103 respondents. Those findings are represented in Table 4.2.

Table 4.2. Respondent Academic Context Incorporating NBEE

Academic Context	Count	Percentage of Respondents
Out of School Time	56	54.4%
Public School	46	44.7%
Summer Program	44	42.7%
Private School	25	24.3%
Other	13	12.6%
Charter School	5	4.8%
Did not specify	5	4.8%

Note. $N = 103$

These findings show that Out of School Time, Public School, Summer Programs, and Private School are the academic contexts in which the respondents most reported incorporating NBEE within their practice. Correspondingly, Other and Charter School were the contexts in which the respondents least reported incorporating NBEE within their practice.

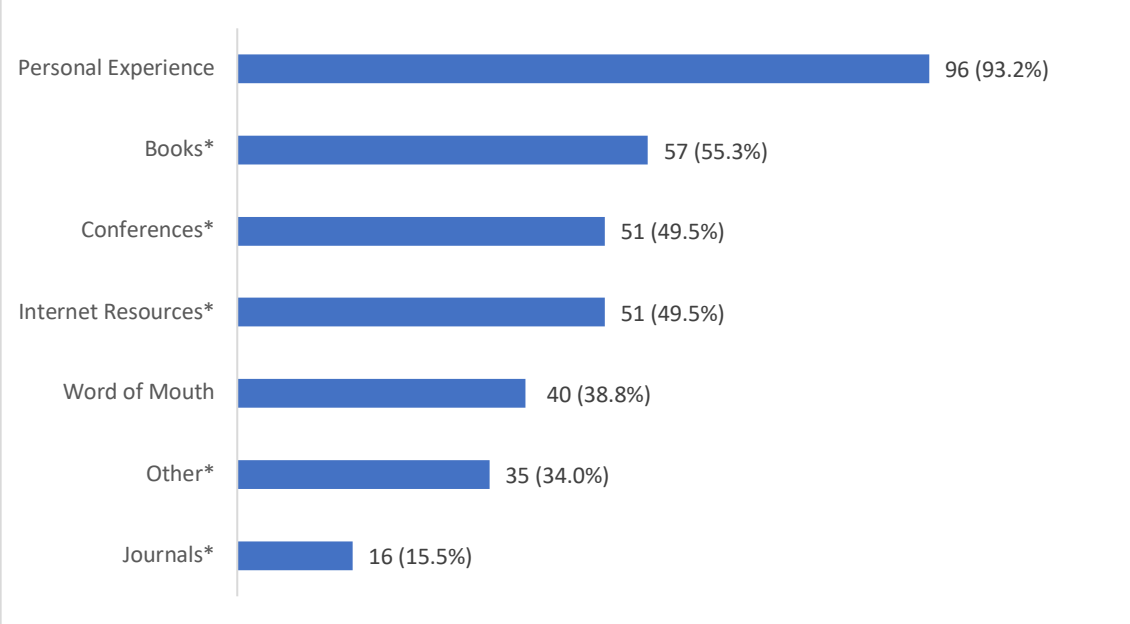
Incorporating information from these questions provides a way of understanding the demographic features of the survey respondents. In general, the survey respondents tended to have substantial teaching experience (typically more than three years) incorporating NBEE into their practice. Additionally, respondents from all grade levels reported incorporating NBEE within their practice, although the most respondents who

did taught K-5 and 6-8 grades. The academic contexts in which the respondents reported incorporating NBEE most frequently were Out of School Time, Public Schools, Summer Programs, and Private Schools.

Informational Resources

The next question asked respondents to identify the resources that best inform their understanding about NBEE. The following options were provided: Books, Personal Experience, Journals, Conferences, Internet Resources, Other, Word of Mouth, and None. Respondents were allowed to select all options that applied to their experience and they generated 346 responses. The frequencies of those responses are rank ordered in Figure 4.1.

Figure 4.1. Resources Informing Respondents' Understanding of NBEE



These findings show that Personal Experience was selected by 96 respondents (93.2% of total), making it the most identified resource for informing respondents'

understanding of NBEE. This finding indicates that almost every respondent considered Personal Experience to be an important resource for informing their understanding of NBEE. Books ranked second, selected by 57 respondents and constituting 55.3% of the total. Conferences and Internet Resources tied for third, each selected by 51 respondents (49.5% of the total). Word of mouth was selected 40 times (38.8% of respondents). Other was selected 35 times (34% of total) and Journals was the least selected category (16, 15.5%). No respondents selected None.

Respondents were asked to specify answers to the following categories*: Books, Journals, Conferences, Internet Resources, and Other. In some cases, respondents identified multiple items for each category. Per Saldaña's (2016) recommendation, I used a word cloud generator (Davis, n/d) to examine and represent each of specific, categorical items. The programmatic software used word frequency counts to create a randomized display of specific categorical items where more frequently used words/phrases are displayed in larger font. The following figures display these findings for each specific category.

* Denotes category asking respondents to fill-in-the-blank with information specific to them.

Figure 4.2. Specific Books (Authors) Informing Respondents' NBEE Understanding

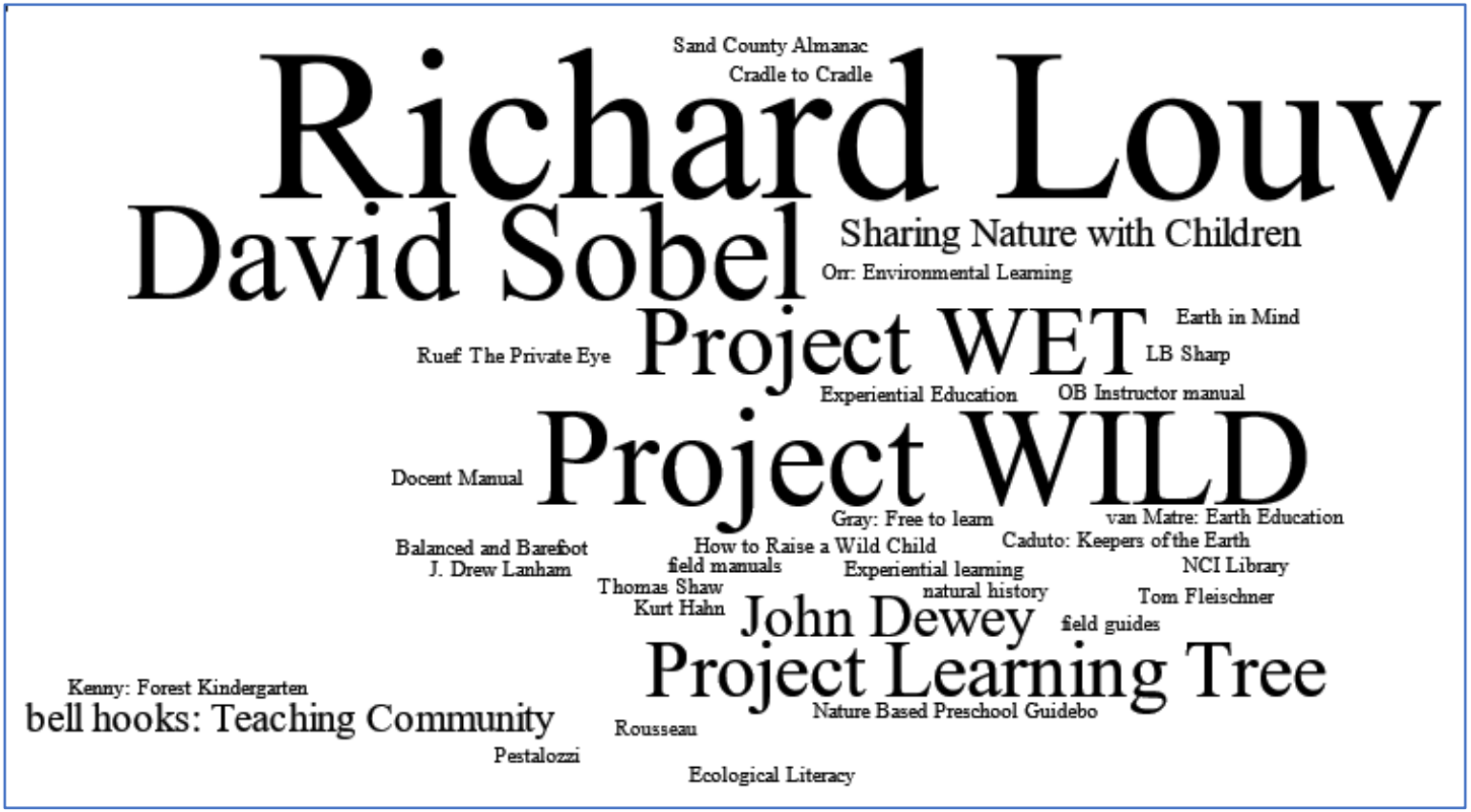


Figure 4.3. Specific Conferences[5] Informing Respondents' NBEE Understanding

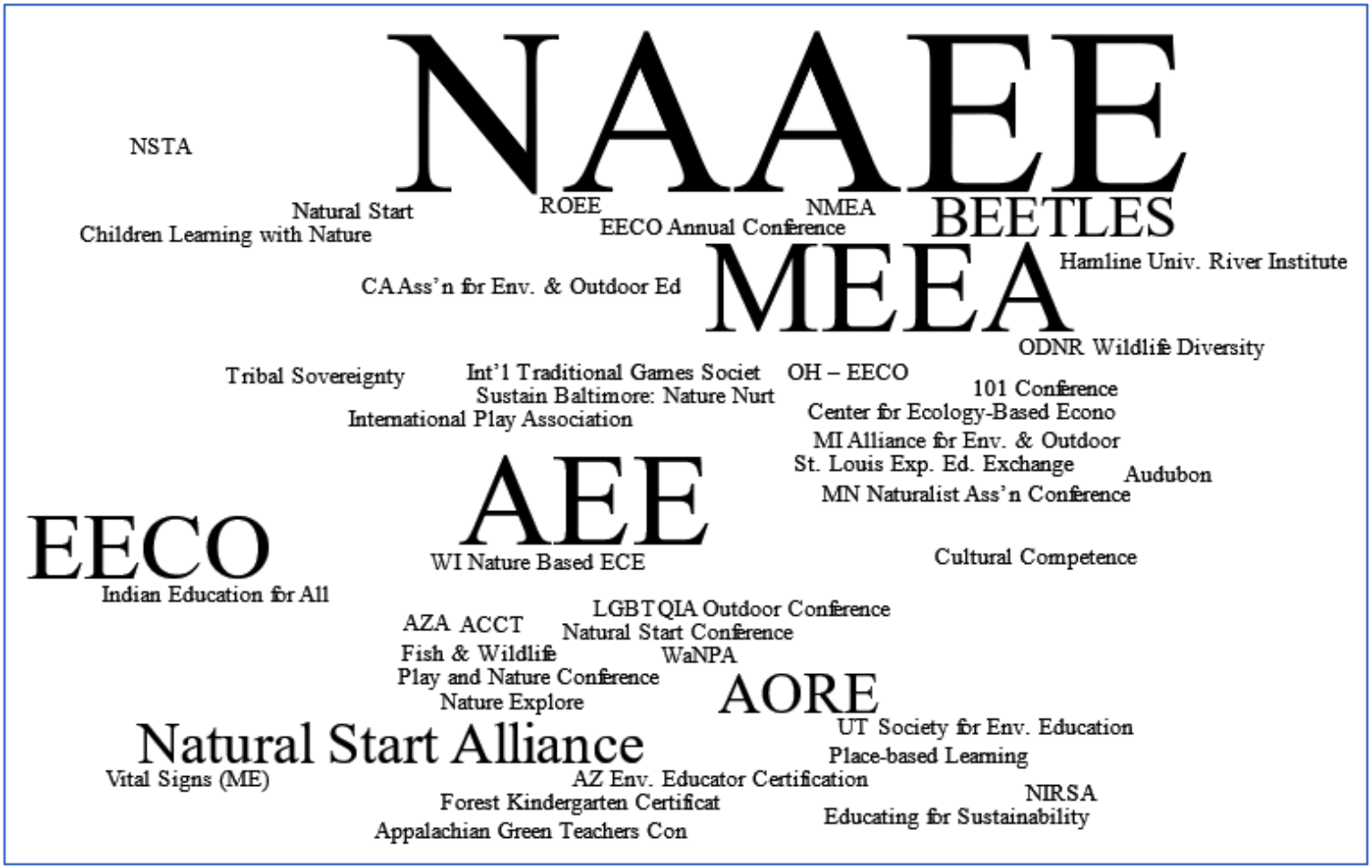


Figure 4.4. Specific Internet Resources Informing Respondents' NBEE Understanding

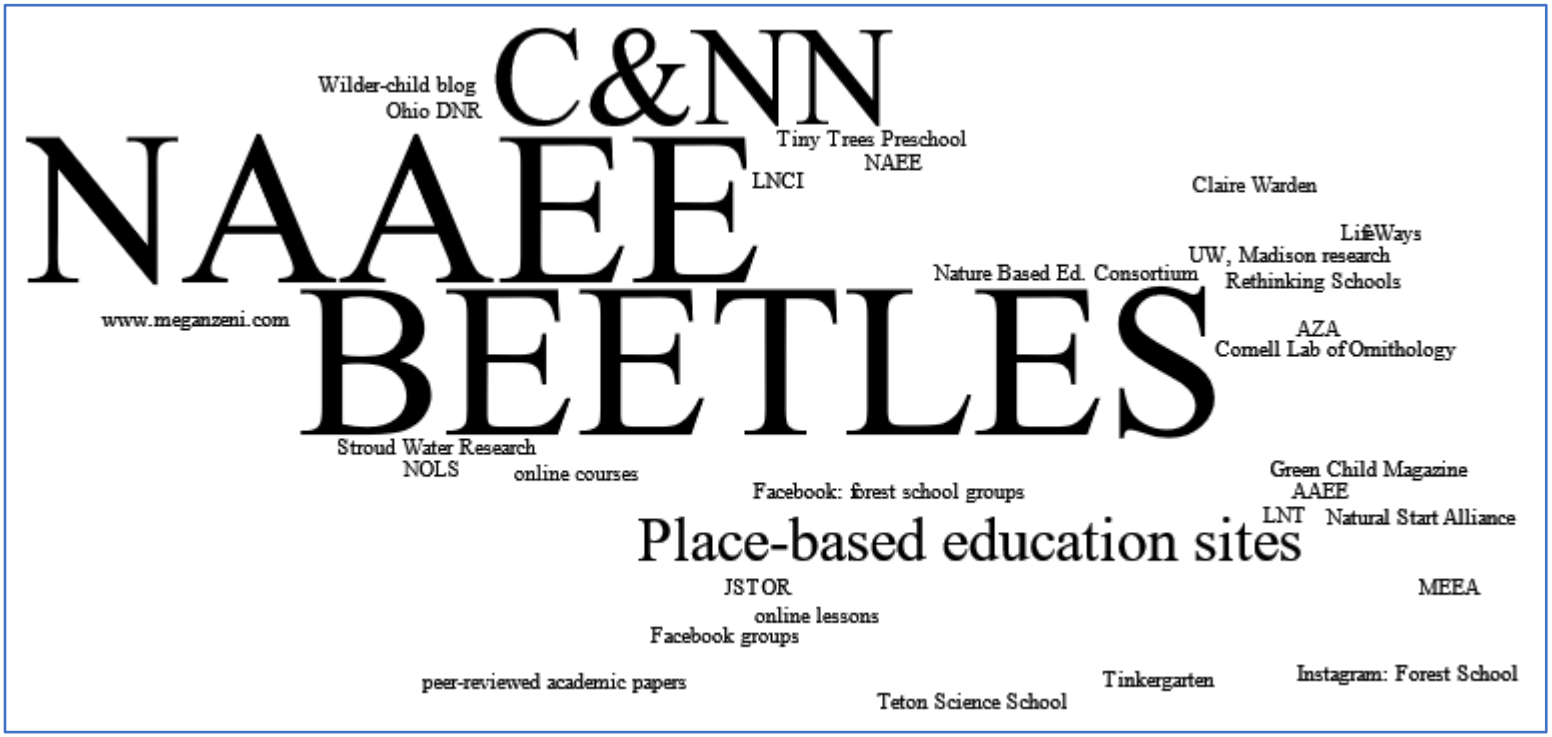
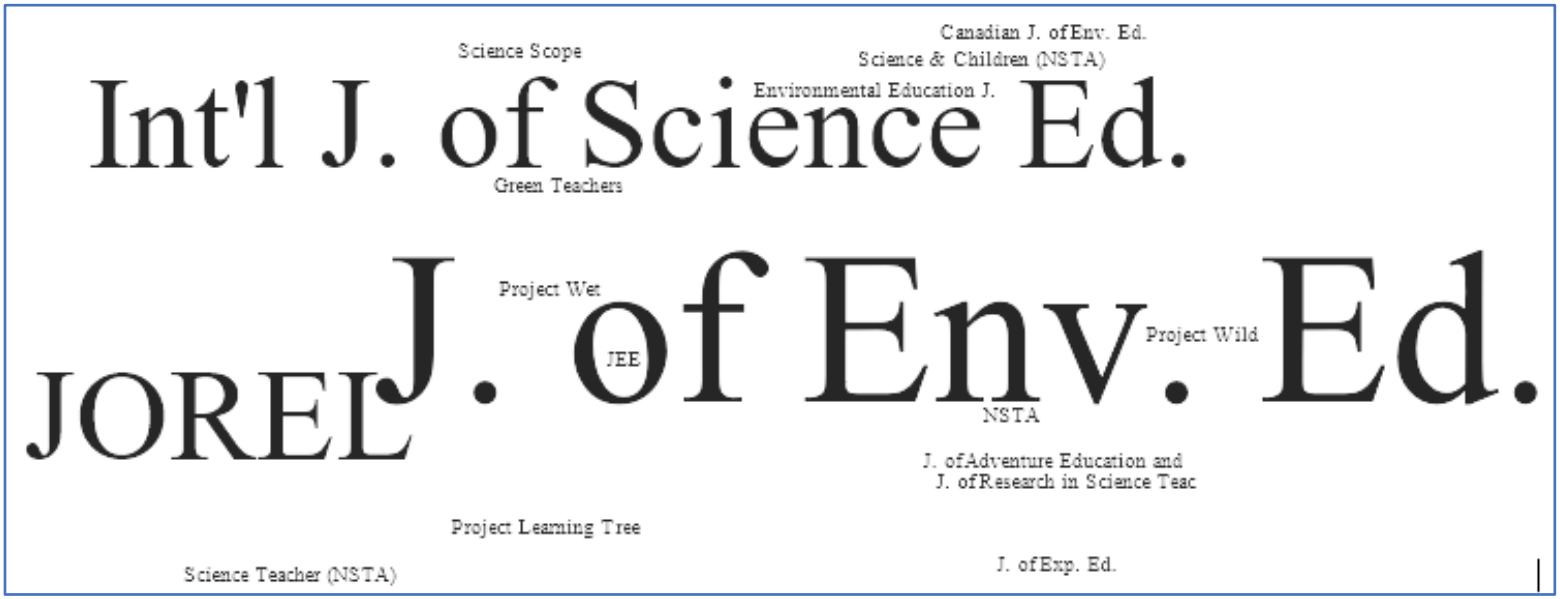


Figure 4.5. Specific Journals[6] Informing Respondents' NBEE Understanding



[6] Some names were abbreviated to fit within the parameters of the word cloud generator

Figure 4.6. Specific ‘Other’ (resources) that inform respondents’ understanding of NBEE

These findings show the breadth of resources that inform respondents understanding of NBEE. Returning to Figure 4.1, it is important to remember that Personal Experience was the most frequently selected resource, identified by 93% of respondents. Books were the next most frequently identified resource with works by Richard Louv, David Sobel, Project Wet, Project Wild, Project Learning Tree, and John Dewey identified by multiple respondents (and thus represented with larger font). However, a closer review of Figure 4.2 also shows the multitude of books and literary resources that inform respondents' understandings that were identified once. We observe a similar theme in each of the specified resource categories, with a few resources listed multiple times and many resources listed once. In general, these findings indicate that there are many different resources that inform respondents' understandings of NBEE but a few that have managed to achieve canonical or celebrity status in the field.

Knowledge About the Effectiveness of NBEE

The next question explores respondents' knowledge about the effectiveness of NBEE by asking them to rank order the following sources of information: My Own Personal Experience, My Class's Academic Success, My School's Rank Within the Larger Region, NBEE Research Findings, International Student Assessment Data, Other. Lower numbers reflect greater importance (i.e., Rank position 1 indicates the respondent's top choice). Ninety-four respondents completed this question. The rank-order format generated a variety of profiles depending on how respondents ranked each item. Table 4.3 summarizes those findings by showing the frequency of each category in each ranked position.

Table 4.3. Frequency of Ranked Sources about NBEE Effectiveness

Category	Ranked position					
	1	2	3	4	5	6
My own personal experiences	63	20	9	1	1	0
	(67%)	(21%)	(10%)	(1%)	(1%)	(0%)
M = 1.48; SD = .80						
My class's (program's) academic success	13	39	25	13	3	1
	(14%)	(41%)	(27%)	(14%)	(3%)	(1%)
M = 2.54; SD = 1.06						
My school's rank within the larger region	0	2	11	39	34	8
	(0%)	(2%)	(12%)	(41%)	(36%)	(9%)
M 4.37; SD = .87						
NBEE research findings	16	21	32	22	3	0
	(17%)	(22%)	(34%)	(23%)	(3%)	(0%)
M = 2.73; SD = 1.09						
International Student Assessment Data	0	1	4	17	51	21
	(0%)	(1%)	(4%)	(18%)	(54%)	(22%)
M = 4.93; SD = .82						
Other	2	11	13	2	2	64
M = 4.95; SD = 1.63	(2%)	(12%)	(14%)	(2%)	(2%)	(68%)

Similar to what we observed earlier, the majority of respondents identified their own personal experience as being their most important source of information (67% ranked it first). This observation that respondents reported that personal experience was their most important mechanism for informing their knowledge is corroborate by that item choice

having the lowest categorical mean (1.48) and least variability (SD = .8). My Class's (Program's) Academic Success (M = 2.54, SD = 1.06) and NBEE Research Findings (M = 2.73; SD = 1.09) ranked second and third respectively. My School's Rank Within the Larger Region averaged fourth (M = 4.37; SD = .87). International Student Assessment Data (M = 4.93, SD = 1.09) and Other (M = 4.95; SD = 1.63) were the lowest ranked categories. There was more variability in the Other than any other category.

Specific NBEE Features Ranked by Importance

Survey respondents were asked to rank order a list of features associated with NBEE that inform their understanding. Those features are as follows: Student-Centered/Directed, Experiential Learning, Hands-on, Inquiry Focused, Environmental Education, Nature-Based Pedagogy, Regular & Direct Nature Contact. Ninety-eight respondents completed this question. Lower numbers reflect greater importance (i.e., Rank position 1 indicates the respondent's top choice). Table 4.4 provides the frequency of each category at each rank.

Table 4.4. Frequency of Ranked Features Informing Respondents' Understanding

Category	Ranked position						
	1	2	3	4	5	6	7
Student-Centered/Directed	24	21	22	15	6	10	0
M = 2.88; SD = 1.58	(25%)	(21%)	(22%)	(15%)	(6%)	(10%)	(0%)
Experiential Learning	20	24	21	25	6	2	0
M = 2.79, SD = 1.30	(20%)	(24%)	(21%)	(26%)	(6%)	(2%)	(0%)
Hands-on & Inquiry Focused	14	33	31	8	11	1	0
M = 2.71; SD = 1.20	(14%)	(34%)	(32%)	(8%)	(11%)	(1%)	(0%)
Environmental Education	4	8	7	15	28	32	4
M = 4.70; SD = 1.49	(4%)	(8%)	(7%)	(15%)	(29%)	(33%)	(4%)
Nature-Based Pedagogy	5	3	4	11	31	39	5
M = 5.01; SD = 1.40	(5%)	(3%)	(4%)	(11%)	(32%)	(40%)	(5%)
Regular & Direct Nature Contact	29	7	13	20	15	12	2
M = 3.30; SD = 1.85	(30%)	(7%)	(13%)	(20%)	(15%)	(12%)	(2%)
Other	2	2	0	4	1	2	87
M = 6.61; SD = 1.23	(2%)	(2%)	(0%)	(4%)	(1%)	(2%)	(89%)

Note. N = 98

An initial glance at Table 4.4 reveals some interesting patterns. Student-Centered/Directed, Experiential Learning, and Hands-on & Inquiry Focused had similar

ranking patterns as well as similar means. Additionally, the high standard deviations for each category suggests respondents' answers were variable. This phenomenon is also apparent in the frequency counts for each ranked position. Using means and standard deviations as initial ranking criteria, Hands-on & Inquiry Focused is ranked first (Mean = 2.71, SD = 1.20). Experiential Learning occurs next (M = 2.79, SD = 1.30) followed by Student-centered/directed (M = 2.88, SD = 1.58. Regular & Direct Nature Contact ranked forth (M = 3.30) although it also received the highest count (29; 30%) for the top-ranked position. That discrepancy is also represented in the variability (SD = 1.85). Environmental Education (M = 4.70; SD = 1.49) ranks fifth, followed by Nature-Based Pedagogy (M = 5.01, SD = 1.40). Other ranks last (M = 6.61, SD = 1.23). There are other ways these findings can be interpreted, but perhaps the most important takeaway from this question is variability of responses. This variability indicates that respondents have differing ideas about the features that best inform their understanding about NBEE.

Specific Sources Influencing NBEE Knowledge

Five questions explored respondents' level-of-agreement related to how their knowledge about NBEE has been influenced using a five-item Likert scale. In particular, the following items were explored: Personal Experience, Experiential Learning Theories, Licensing Standards, Development Theories, and Theories associated with NBL. Unlike previous questions asking respondents to compare items with one another, these questions asked respondents to rate their level of agreement indicating how each specific item has influenced their knowledge about NBEE. Those findings are presented in Table 4.5.

Table 4.5. Respondent Level of Agreement about Specific Knowledge Sources

Category	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	M (SD)
Personal Experience	78 (76%)	23 (22%)	2 (2%)	0 (0%)	0 (0%)	1.28 (.56)
Experiential Learning Theories*	34 (33%)	45 (44%)	15 (15%)	8 (8%)	0 (0%)	1.97 (.89)
Licensing Standards*	3 (3%)	6 (6%)	28 (28%)	36 (35%)	29 (28%)	3.8 (1.01)
Development Theories	27 (26%)	53 (52%)	14 (14%)	8 (8%)	1 (1%)	2.06 (.89)
NBL Theories	15 (15%)	32 (31%)	35 (34%)	19 (19%)	2 (2%)	2.62 (1.0)

Note. $N = 103$; *N = 102

Similar to what we observed previously, the majority of respondents indicated Personal Experience was an important source for influencing their understanding of NBEE, with the majority of respondents (78; 75.7%) selecting *strongly agree*. The majority of respondents agreed that experiential learning theories influenced their understanding of NBEE with 45 (44%) indicating *agree* and 34 (33%) indicating *strongly agree.* Interestingly, the majority of respondents disagreed that licensing standards influence their understanding with 36 (35%) selecting *disagree*, 29 (28%) selecting *strongly disagree,* and 28 (27%) selecting *neither agree nor disagree*. The majority of respondents *agreed* 53 (52%) that development theories influenced their understanding of NBEE. Lastly, responses to Theories Associated with NBL were mostly *neither agree nor disagree* (35; 34%) and *agree* (32; 31%).

Influential Experts

The survey then explored experts that have informed respondents' understanding of NBEE. Respondents were enabled to select all that apply as well as specify other respondents who were not included on the list. Table 4.6 provides frequency counts for all the prescribed experts as well as open entry choices that were listed more than once.

Table 4.6. Experts Who have Influenced Respondent's Understanding of NBEE

Expert	Count	Percentage
Richard Louv	65	63%
Maria Montessori	57	55%
Jean Piaget	51	50%
David Sobel	50	49%
John Dewey	45	44%
Kurt Hahn	23	22%
Lev Vygotsky	23	22%
David Kolb	18	17%
Kurt Lewin	7	7%
Marina Ewald	5	5%
Paolo Freire*	3	3%
Rachel Carson*	2	2%
Erin Kenny*	2	2%
Robin Wall Kimmerer*	2	2%
Manulani Aluli Meyer*	2	2%
David Orr*	2	2%
Rudolf Steiner*	2	2%
Mitchell Thomashaw*	2	2%
Cathy Jordan	1	1%

Note. N = 103; *denotes open entry choice specified by respondents

The other specified respondents that were only reported once are as follows:

> Eleanor Duckworth * Jerome Bruner * Donella Meadows * Peter Gray * Claire Warden * Hungerford * Volk * Wilke * Marcinkowski * Fortner * Steve Irwin * Laura Kezer * David Green/Gruenewald * Megan Bang * Dorcas Miller * Marzano * Bronfenbrenner * LB Sharp * Einstein * Thoreau * Muir * Emerson * Django Paris * Mark Windschilt * Jessica Thompson * John Haskins * Deana Scipio * Paul Petzoldt * Ellen Sandseter * Mariana Brussoni * Csikszentmihalyi * Rusty Keeler * Niki Buchan * Carol Dweck * Jude Hirsch * bell hooks * Eve Tuck * Carrolyn Finney * Running Grass * Vandana Shiva * Johanna Macey * Thomas Fleischner * Loris Malaguzzi * David Elkind * Bev Boss * Ann Pelo * Louise Chawla * Jon Young

These data provide information about the breadth of expert knowledge that has influenced respondents' understanding of NBEE. Importantly, they also show the influence of Louv, Montessori, Piaget, Sobel and Dewey on influencing respondents' understanding of NBEE. (It is interesting to think about the idea of empiricism related to these "experts". Most may be best described as theorists rather than empiricists. Sobel has done some research, but the most positivistic researcher (Cathy Jordan) was only identified by one respondent as being important.)

Influential Resources

Previous questions asked respondents to rank and specify resources that have influenced their understanding about NBEE, however, given the open-ended nature of those questions, I was not able to gain a clear understanding about the usefulness specific

resources I had identified in my literature review and interviews. Thus, I developed a question with specific resources that I identified or were identified from the expert interviews. Respondents were allowed to select all that apply as well as specify Other resources with the option of an open entry choice. Table 4.7 summarizes those findings.

Table 4.7. Resources Supporting Respondents' Understanding of NBEE

Resource	n	Percentage
Richard Louv books	53	51%
Children and Nature Network	51	50%
David Sobel books	37	36%
Association for Experiential Education	31	30%
Other	31	30%
Case studies	28	27%
Natural Start Alliance	27	26%
Forest School Association	19	18%
None	15	15%
BEETLES~	4	4%
Project WILD ~	3	3%

Note. N = 103; ~denotes open entry choice specified by respondents

Similar to what has been noted in other questions, the respondents identified Richard Louv (53; 51%) and David Sobel (37; 30%) as making important contributions to their understanding of NBEE. Additionally, C&NN (51; 50%) and AEE (31; 30%) were also identified as being important sources for supporting respondents'

understanding of NBEE. Other was also frequently identified and many respondents specified specific sources. Items that were specified more than once by participants are listed in Table 4.7. The specified items that were only listed once are as follows:

> ERAFANS * Playworking * Ohio Environment Education certification * Ohio Department of Natural Resources * Soil and Water Conservation Districts * NAAEE * Megan Bang * Clifford Knapp * Pediatrician * Neuroscience research * children * Environmental Professionals of Color * Islandwood * Erin Kenny * NOLS field manuals * local professional learning community * Naturalist journaling resources * People's Curriculum for the Climate (Rethinking Schools resources) * Online academic journals (Environmental education research) * Lummi Nation and other nearby tribes * Tribal communities sharing TEK * AORE * NAI * National Association for Interpretation * AmeriCorps * Project WET * Project Learning Tree

An interesting finding to this question is the number of respondents who selected None (15; 15%). This question did not allow us to explore how those respondents' knowledge about NBEE is supported, although it would be interesting to look at the raw data and see if other patterns emerge for the respondents who selected None.

Assistance by the Current Resource Base

The survey explored, in general, how respondents felt they were assisted by the current knowledge base using a five-point Likert scale. Of the 103 respondents, 49 (48%) indicated they were adequately assisted by the current knowledge base. Thirty identified as being neutrally assisted (29%) and 16 (16%) identified as being well assisted. Five (5%) reported being poorly assisted and three (3%) reported being unassisted. The mean

(2.32) aligns with the adequately-assisted – neutrally-assisted selection by 79 respondents. The standard deviation (.89) also reflects the fairly low variance in respondent answers. In general, this question indicates the majority of respondents rate their level of assistance on the positive-neutral end of the spectrum rather than unassisted. To gain a more precise understanding about respondents feel they have been assisted, I explored specific features of the NBEE knowledge base.

Satisfaction with Specific Resources

Respondents were asked to evaluate their level of satisfaction related to the following specific resources for advancing their understanding of NBEE: Books, Professional Conferences, Internet Resources, Teacher Education Publication, Research Verifying What Works, and Professional Development Workshops. The five-point Likert scale counts for each category can be found in Table 4.8.

Table 4.8. Satisfaction with Specific Resources for Advancing Respondents' Understanding of NBEE

Resource	Very Satisfied	Satisfied	Neutral	Unsatisfied	Very Unsatisfied	M (SD)
Books	9 (9%)	39 (38%)	44 (43%)	9 (9%)	1 (1%)	2.55 (.81)
Professional Conferences	6 (6%)	29 (28%)	47 (46 %)	18 (18%)	2 (2%)	2.81(.86)
Internet Resources	12 (12%)	53 (52%)	24 (24%)	11 (11%)	2 (2%)	2.39 (.90)
Teacher Education Publications*	2 (2%)	21 (21%)	51 (51%)	24 (24%)	3 (3%)	3.0 (.80)
Research Verifying What Works	5 (5%)	32 (31%)	42 (41 %)	20 (20%)	3 (3%)	2.84 (.89)
Professional Development**	9 (9%)	24 (24%)	43 (43%)	23 (23%)	1 (1%)	2.8 (.92)

Note. $N = 102$; *N = 101, **N = 100

Unlike the previous question where the majority of respondents reported being adequately satisfied with the NBEE resources base, the responses for this series of questions tended to be more neutral. The largest count for each category was neutral, with the exception of Internet Resources which was satisfied. Few respondents selected extreme (very satisfied or very unsatisfied) responses. Using the value of three to represent complete neutrality, the means indicate there was a slight degree of satisfaction for most resources. Average responses were more satisfied for Internet Resources (M = 2.39, SD = .9) and Books (M = 2.55; SD = .8) than they were for the other categories. Teacher Education Publications (M = 3.05, SD = .8) was the only category where respondents were slightly less satisfied than they were satisfied.

Additional Questions

The survey asked two other questions that have not been discussed. The first question was open ended and asked respondents to identify how they first experienced NBEE. Those data are located in Appendix G. At the end of the survey I provided another open-ended opportunity for participants to share the names of any individuals, groups, or organizations that are making important contributions to NBEE. Those findings are listed in Appendix H. The first question generated useful background information about the participants but did not directly address the research questions. The latter question addressed the research question more directly, but the responses were largely redundant with information generated previously from other questions. I chose to include the responses to both questions to preserve all the data generated from the survey for possible future use.

Chapter Summary

This study's mixed method approach incorporated survey and interview data to explore the knowledge base and conceptual framework of NBEE. The knowledge base of the experts who were interviewed for this study seemed to derive from two distinct sources: their own personal experience and their specialized content area. The conceptual frameworks identified by experts that supported their understanding of NBEE include the following: The Biophilia Hypothesis, Stress Reduction Theory, Attention Restoration Theory, developmental theories, Experiential Learning Theory, Sociocultural Learning Theory, Social Return on Investment principles, process philosophy, and Deweyan philosophy. The most identified resource informing survey respondents' knowledge about NBEE was Personal Experience. Respondents also tended to rank Personal Experience as the most important source informing their knowledge about the effectiveness of NBEE. The respondents ranked Hands-on & Inquiry Focused, Experiential Learning, and Student-Centered/Directed as the features that most informed their understanding about NBEE. The top five experts who have influenced respondents' knowledge about NBEE include: Louv, Montessori, Piaget, Sobel and Dewey. In general, most of the respondents reported being adequately assisted by the current knowledge base, which was also reflected by a slightly above neutral level of satisfaction for books, professional conferences, internet resources, teacher education publication, research verifying what works, and professional development publications. These findings will be considered according to how they address the research questions in Chapter 5: Discussion.

CHAPTER FIVE

DISCUSSION

The purpose of this study has been to gain a better understanding about the knowledge base and the conceptual framework associated with NBEE. This task was approached by addressing the following research questions:

- What is the underlying knowledge base informing a nature-based, experiential educational approach?
- What is the conceptual framework informing a nature-based, experiential educational approach?
- Who are the influential contributors to the knowledge base of a nature-based, experiential educational approach and what are their contributions?
- What are the claims related to impacts on learner academic achievement resulting from NBEE approaches?

I pursued this investigation in three ways: conducting a strategic, critical review of NBEE-related literature; interviewing individuals with expertise in NBEE; and surveying self-identified NBEE practitioners.

I begin this discussion by summarizing the major findings from the literature review, the NBEE expert interviews, and NBEE practitioner survey responses. Next, I

explore how these sources of information address each research question[7] and interrelate with one another. I then discuss the limitations of the study impacting the validity of the findings and generalizability of the results before exploring recommendations for future research. Lastly, I discuss implications of these findings for educational practice.

Summary of Findings

NBEE Literature

Literature associated with NBEE is diverse, ranging from Plato to modern day. Throughout that time there have been several epistemological debates relevant to NBEE. These include the following: empirical versus conceptual ways of knowing, fear of nature versus romanticizing nature, juxtaposing societally developed versus naturalistic sources of knowledge, and purpose-built versus nature-based educational environments. Many of these debates have not been resolved.

Rousseau. This study's literature review began by exploring the impact of Rousseau (1762/1969) on the development of the modern educational system. In particular, I explored how Rousseau proposed an educational approach prioritizing a child's development, independent of societal influences, and occurring within a naturalistic context. Rousseau romanticized the benefits of nature and denigrated the

[7] The research questions will be addressed in the order that best suits the narrative of this discussion.

influence of society. His ideas were highly influential, adopted by Pestalozzi and Fröbel, who, in turn, developed their own forms of naturalistic, child-centered, and play-based educational approaches. Challenging prevailing educational approaches, Rousseau urged the use of pragmatic, developmentally sensitive, child-centered, and concrete educational approaches. These ideas paved the way for progressive education. John Dewey, sometimes referred to as the Father of Progressive Education, also challenged the prevailing forms of education based on didactic and rote learning of classical texts, promoting instead a more hands-on, child centered, experience-based approach.

Dewey. In *Democracy and* Education (1916/2007), Dewey promoted the potential for education to serve as an instrument for social change. He also explored the relationship between experience and learning. There has been long-standing debate related to theories of knowledge originally proposed by Plato and later polarized by Descartes and Locke. Descartes promoted the view that knowledge originates in the mind as a product of rational thinking, and consists of abstract concepts, with which humans rely upon to understand and interact with the world. Locke challenged that notion, proposing instead that knowledge originates from direct, empirical experiences. Despite the fact that both perspectives had relevance, formal Western education grew to favor conceptually based and abstract forms of pedagogy. Rousseau's child-centered, hands-on, and naturalistically focused educational approach challenged that prioritization of conceptual knowledge and promoted features that were later adopted by progressive education.

Dewey (1925/1958) attempted to resolve the rationalist vs empiricist dichotomy by proposing that experience derived from two, distinct sources. By his definition, primary experience occurs when individuals learn from their direct, lived, empirical experiences. Secondary experience occurs when an individual learns theoretically by abstractly conceptualizing information. Dewey (1938) also proposed that all knowledge comes from experience but not all experiences are educative. He designed the laboratory school as a way to provide learners with direct exposure to primary experience through hands-on activity as well as conceptually explore those lived experiences under the guidance of their teacher.

Experiential Education. Kurt Hahn and Kurt Lewin were also influential contributors to experiential pedagogy who explored different ways of learning through direct experience and in so doing influenced the development of EE. Hahn formed Outward Bound (OB) as an educational approach designed to teach self-sufficiency through participation in physically challenging, real-world, nature-based activities. As OB expanded throughout the U.S., a variety of initiatives sought to integrate key nature-based and experiential features into conventional education. In a different initiative, social psychologist, Kurt Lewin, employed the use of present process interactions within training groups to teach members about group relations. Participants and facilitators alike discovered the power of discussing the "here and now" as events played out and were analyzed within those groups, in real time. Lastly, passage of the GI Bill created a situation where educators began operationalizing ways to grant academic credit for life-experience. The modern notion of EE developed, in part, from these initiatives.

Nature-Based Learning. Concurrently, NBL was developing in Scandinavia during the 1950s as a cultural appreciation for nature-based, open-air lifestyles was integrated into mainstream educational practice. This approach expanded as udeskole in Denmark and Forest Schools in the U.K. Broadening further still, versions of NBL have been adopted around the world. In the U.S., Louv's (2005) publication of *Last Child in the Woods*, discussing the negative impacts of children's alienation from nature, sparked a movement to connect children with nature. Louv's findings echoed other findings about nature's benefit on wellbeing (e.g., Kaplan, 1995; Ulrich et al., 1991). In contemporary metanalyses, Chawla (2015) and Gill (2014) summarize beneficial impacts of nature on child development. Later, longitudinal studies demonstrated cognitive benefits of nature-based learning (e.g., Ulset et al., 2017).

Recently, the state of Washington passed legislation pilot testing full-day, licensed, nature-based preschools. And most recently, Jordan and Chawla (2019) provided a definition for NBL as well as established a research agenda. However, given this complex background, the knowledge base and conceptual framework for this educational approach has not been well established.

Integration. The expression of formal NBL as articulated by Jordan and Chawla (2019) incorporates aspects of NBL and EE. Using that as a foundation, this study has examined NBEE as a construct for understanding the important features of formal educational opportunities occurring in natural settings and prioritizing direct, hands-on experience-based learning. The empirical components of this qualitative mixed methods study included interviewing experts, and surveying practitioners to inductively explore

their understanding of the conceptual framework and knowledge base associated with NBEE. I will now review major findings from the interviews and surveys to explore how members of this profession understand its central features.

Interview Summaries

Six specialists with expertise in NBEE were identified and approached to participate in this study**.** All agreed to share their name with their interview responses. The interviewees are as follows: Richard Louv, Cathy Jordan, Jayson Seaman, David Sobel, Aliza Yair and Jasper Hunt. I will now provide a brief summary of major points from their interviews.

Louv. Louv acknowledges that nature is complex and beyond human understanding, yet he proposes that it is the backdrop for everything. Vital context is lost when nature is not incorporated within educational content. He desires to see teacher education programs emphasize more opportunities for connecting children with nature, in part, because he believes nature promotes the development of holistic sensory awareness. Additionally, he desires to see more empirical research exploring the impact of nature contact on child development.

Jordan. Jordan's research interests in NBL stem from exploring how the environment benefits children's wellbeing. She suggests NBL operates by two routes to holistically impact child development: direct exposure to nature has wide-ranging benefits on wellbeing and NBL is comprised of a unique pedagogy that utilizes nature as a co-teacher. She is currently conducting a study comparing nature-based to classroom-

based educational approaches, which she anticipates will support the need for a holistic, integrated pedagogical approach.

Seaman. Seaman has researched the etymology accompanying the word "experiential", which has led him to transition away from using that term due to its vagueness, the ideas it conjures, and the potential for it to be misapplied. Instead, he desires to understand learning more broadly by considering what is good for kids, in relation to pedagogical aims. Seaman indicated that he has found Vygotskyan and situated-learning lenses useful for guiding his thinking. He cautions against overly prescriptive educational approaches, advocating instead for approaches that get kids to do hands-on work that matters to them and their communities.

Sobel. Sobel has written extensively about PBL and NBL and he advocates for integrated, "hands-on, minds-on" educational approaches incorporating both empirical and conceptual knowledge. He also promotes using a developmental lens (e.g., Fröbel, Piaget) to conceptualize pedagogy. Lastly, Sobel backs prescribed teacher training approaches, such as case studies, detailing precisely how to conduct lessons using an NBL approach.

Yair. Yair suggests the two primary features of NBL include direct nature contact and a pedagogy that incorporates the utilization of natural resources, experiential learning, and heightened awareness to place and its impact on others. She cautions against dichotomizing NBL with classroom-based learning (CBL), advocating instead for the careful consideration of the goals and pedagogical features for a good education. She

strongly advocates for quality early childhood education (ECE) and recommends grounding NBL in developmental theory as well as establishing partnerships with outdoor programs so children can have ongoing interaction with the same piece of land.

Hunt. Hunt described the US educational system as tending to prioritize theoretical, abstract, conceptual knowledge (what Dewey calls secondary experience) over other ways of knowing. He suggests that EE is different because it prioritizes direct experience (what Dewey calls primary experience) over conceptual knowledge. Hunt proposed that, in general, students benefit more from learning initially via direct, personal (primary) experiences to develop conceptual knowledge (secondary experience), although he acknowledged that some situations require reversing that priority. NBEE provides unique and high consequence opportunities where 'know-nothingism' and inadequate epistemology is replaced with direct, concrete, tangible learning.

Survey Findings

The survey was completed by 103 respondents. The initial demographic questions indicated that the respondents had substantial experience (55% of the sample reported teaching >6 years). Additionally, respondents reported teaching NBEE in multiple grade levels and in multiple contexts. When asked to identify sources of knowledge that influence their understanding of NBEE, Personal Experience emerged as the overwhelming knowledge source, although respondents also identified Books, Conferences, and Internet Resources. Personal Experience also emerged as the most influential source influencing their understanding about the effectiveness of NBEE.

Respondents ranked Hands-on, Experiential, and Student Directed Learning along with Nature Contact as the most important features specific to NBEE.

The top five experts the respondents identified as influencing their understanding about NBEE included Louv, Montessori, Piaget, Sobel, and Dewey. When asked to identify a variety of theories influencing their understanding about NBEE, Personal Experience emerged as the most influential source, while the majority of respondents disagree that Licensing Standards influenced their understanding about NBEE. In general, the majority of respondents reported being adequately satisfied by the current knowledge base. More specifically, respondents reported similar mild levels of satisfaction about the following resources for advancing their understanding of NBEE: Internet Resources, Books, Professional Conferences, Professional Development, Research Verifying What Works, and Teacher Education Publications.

I will now discuss each research question to explore how these findings address the goals of this study and relate to one another.

Integration and Interpretation

NBEE Knowledge Base

The first research question explored the store of information (i.e., knowledge base) used to understand and explain NBEE. The literature review addressed this by examining the antecedent ideas influencing the development of EE and NBL. Despite remaining distinct, NBL and EE share a variety of important overlapping ideas, such as: hands-on, learner-directed, real-world, authentic, concrete, and direct learning

opportunities. Given that this material was covered extensively in the Literature Review as well as earlier in this chapter, I will focus on information gained from the experts and the survey.

Louv. As a journalist, Louv has built his career on collecting, analyzing, and interpreting literature. Since publication of *Last Child in the Woods* (2005), he has focused on the impact of nature contact on well-being. At the end of each book, he provides a list of suggested readings, often referencing empirical, primary source material. Thus, Louv's knowledge base is extensive. At the same time, as reflected in his interview, he felt strongly that the complexity of nature is beyond human understanding and it could never be adequately measured, yet he also asserted that nature provided a foundational context for learning. In general, Louv seemed to equally value knowledge acquired from personal experience involving direct nature contact and knowledge gained from empirical work exploring its impact.

Jordan. As Research Director for Children and Nature Network (C&NN), Jordan is well versed in NBL literature. As a neuropsychologist, she has expertise in neuroscience, cognitive science, and human development. She advocated for a holistic knowledge related to NBL, including a broad understanding about what works as well as a general understanding about developmental theory. Based on her knowledge and her current research, she cautioned against dichotomizing NBL and CBL, advocating instead for a more integrated approach based on what works best for the academic content being presented. Her knowledge base seemed to originate from a well-rounded understanding

of NBL and neuropsychological literature as well as directly from her own studies comparing NBL and CBL practices.

Seaman. As Journal of Experiential Education (JEE) Chief Editor, Seaman has extensive insight about the EE knowledge base. Interestingly, this has led him away from using the word "experiential" due to its historical connotations and a vague meaning. Although he studied experiential learning throughout graduate school, he has since found the knowledge base associated with Vygotskyan traditions and situated learning theory to be particularly useful for describing hands-on learning guided by student interests. Seaman's research has explored historical origins of EE literature to elucidate the themes, events, and contextual nuances related to the conceptual development of EE.

Sobel. Sobel indicated that he first realized that knowledge resides in place while completing a project mapping male blackbirds' territorial behavior. As he pursued this interest in higher education, he wrote about child map making, then PBL, and later NBL. His work has focused on making NBL and PBL accessible to teachers through manuals and case studies detailing how to facilitate those educational approaches. As a faculty member within a teacher preparation program, he has a good understanding of the professional educator knowledge base. He shared a variety of specific recommendations with me about resources that link PBL with teacher training, which are listed in his interview summary.

Yair. As Project Specialist for the Washington Outdoor Preschool Pilot study, Yair has expertise in international education policy, nature-based education, and state

ECE regulation. She identified a variety of different NBL resources ranging from regional guides to international handbooks. Additionally, Yair referenced longitudinal ECE studies that have shaped her understanding of nature-based education. Thus, her knowledge base is grounded in direct experience as a *forest school* teacher as well as her graduate school studies in international education policy.

Hunt. Hunt referenced his experiences at summer camp and Outward Bound as formatively developing his foundational knowledge about EE. Those experiences led him to study EE in college and graduate school where he was influenced by the works of Albert North Whitehead and John Dewey. He considers Dewey to be the philosopher of EE. In particular, Hunt appreciated Dewey's work integrating Lockean and Cartesian ways of knowing as primary and secondary experiences, respectively. Hunt broadly suggested Socrates, Plato, and Aristotle offer useful perspectives for understanding experiential sources of knowledge, especially when juxtaposed with conceptual sources of knowledge. Furthermore, he proposed that religious texts, such as the Bible provide another way of understanding how learning is depicted as occurring in wilderness settings.

Not surprisingly, each of these experts on experiential learning referenced some version of personal experience as being an important source for the development of their own foundational knowledge. The interviewees also acknowledged relying upon an extensive array of literature to support their knowledge base, although, in many ways, it seemed as though theory was supplemental to personal experiences.

Survey findings. Similarly, the survey revealed that the most frequently reported source of information drawn upon to understand NBEE by its practitioners was Personal Experience, which was identified by 93% of respondents. This finding suggests that the overwhelming majority of respondents relied upon Personal Experience as an important resource for informing their knowledge about NBEE. Approximately half of the respondents identified Books, Conferences, and Internet Resources as also informing their knowledge about NBEE. Follow up questions indicated Louv (2005) was the most widely identified author, followed by Montessori, Piaget, Sobel, and Dewey. Respondents identified Children and Nature Network, Association for Experiential Education, North American Association for Environmental Education, and Natural Start Alliance as useful NBEE-related organizations. Additionally, they identified Project WILD, Project WET, Project Learning Tree, and BEETLES as important Internet-based educational resources. Most of the respondents reported being adequately assisted by the current knowledge base and approximately 30% reported being neutrally assisted. Eight percent of the participants reported being inadequately assisted by the current resource base. Lastly, several questions explored the usefulness of specific resources for advancing respondents' understanding of NBEE. The most useful resource identified by respondents was Internet Resources and the least useful resource identified by respondents was Teacher Education Publications.

Synthesis. Taken together, what do these findings tell us? The literature review provides a wide-ranging picture with differing historical, philosophical, epistemological, ontological, and pedagogical implications. There seems to be a general appreciation for

learning in naturalistic environments through authentic, direct, and hand-on experiences. Yet, the ideas are widespread.

Curiously, the literature reviewed for this study seemed to differ by approach. The NBL literature tended to be empirical, identifying pedagogical features and/or assessing the impact on academic achievement. On the other hand, the literature associated with EE tended to be more theoretical and conceptual, exemplified by the postulations of Dewey, Kolb and multiple editions of *Theory and Practice of Experiential Education*. This is not to say that EE literature has not been empirically studied (e.g., Ives & Obenchain, 2006), but empirical literature associated with EE seemed to focus on specific variations of EE, such as service learning (e.g., Scales et al., 2006) or adventure education (e.g., Sibthorp & Arthur-Banning, 2004), rather than EE as a whole.

The interviews tended to follow a similar pattern. Seaman and Hunt, who were asked to participate due to their expertise in EE, primarily discussed broad themes and philosophical works associated with EE. They related EE to social trends and ways of knowing but tended not to emphasize empirical work to support their arguments. Correspondingly, Jordan and Sobel both spoke of their own research operationalizing and/or measuring the effect of NBL, often in comparison to CBL. Yair also reported relying upon empirical work to inform her understanding, such as longitudinal studies showing the impact of quality ECE on healthy adult functioning. And Louv stressed the importance of empirical findings to inform knowledge about the benefits of nature contact.

Reflecting on the project as a whole, I have found myself ruminating on Hunt's description of empirical and conceptual sources of knowledge; what Dewey described as primary and secondary experience. Hunt's suggestion that humans have long sought to dichotomize knowledge as acquired by direct experience or acquired by cognition intrigued me. Beyond the obvious connection to EE, those to sources of knowledge seemed to be a part of the metanarrative of this study. In particular, I observed that every interviewee described very distinct personal experiences related to their underlying entry into and knowledge about NBEE. Unprompted, there seemed to be a need to ground their story in some sort of lived, direct learning experience. Once established, each interviewee then sought to make sense of that experience by describing specialized theoretical and conceptual training related to their individual interests.

We can understand the survey responses in a similar way. Every time it was provided as an option, Personal Experience was selected most frequently as a source of knowledge. Beyond Personal Experience, the respondents identified a few authors (e.g., Louv, Montessori, Piaget, Sobel, Dewey) organizations (e.g., C&NN, AEE, NAAEE, NSA) and Internet-based educational resources (e.g., Project WILD, Project WET, Project Learning Tree, BEETLES) as informing their knowledge base. They also generated a broad list of additional works, often with little consistency across those resources. These findings indicate that there are some works that may be considered as canonical, but even those tend to be general in nature. These findings do not reflect this field as having a rich, well curated knowledge base. It lacks a clear taxonomic structure

and many of its popular sources are largely anecdotal. Put another way, there does not appear to be a clear roadmap one could follow to become an expert.

Returning to the research question, "What is the underlying knowledge base informing an NBEE approach?", the answer appears to be a combination of direct, personal experience coupled with a resource base specific to each professional's theoretical positionality. This may be problematic because anecdotal knowledge and folk craft does not really constitute what is generally recognized as an established knowledge base. This assertion is not intended to devalue the importance of anecdotal knowledge for informing the practice of a folk craft; instead, it alludes to the challenges associated with not formalizing or standardizing practices intended to achieve mainstream curricular goals. More generally, this finding suggests this profession is still in the early stages of its formation.

Influential Contributors

To address the question about influential contributors to the NBEE knowledge base, I start by considering the perspectives of survey respondents, which I explored directly and indirectly. Directly, I asked respondents to identify the experts who have influenced their understanding of NBEE. Louv was the most frequently identified expert, followed by Montessori, Piaget, Sobel, and Dewey. Respondents were also allowed to specify other influential contributors. They identified a wide variety of individuals ranging from Eleanor Duckworth to Rachel Carson to Erin Kenny to Mihaly Csikszentmihalyi. The full list of influential contributors identified by the survey respondents can be found in Appendix I.

In another question, respondents were asked to identify specific books that have influenced their understanding of NBEE. Of those specific, fill-in-the-blank answers, respondents identified Louv's influence most frequently, followed by Sobel. Respondents also identified literature associated with Project WILD, Project WET, and Project Learning Tree (Figure 4.2). The final survey question asked respondents to share any resources that have made valuable contributions to NBEE for their own understanding. Given the breadth and specificity of respondent's answers, those data are listed in Appendix H to maintain the integrity in which they were shared.

Because Louv and Sobel were frequently identified by respondents for making influential contributions to NBEE and they were interviewed for this study, it is important to revisit their work. Louv has authored ten books as well as written for a variety of periodicals. Since publication of *Last Child in the Woods* (2005), his writing has emphasized different ways that nature contact affects humans. Louv's work is written for the general public, rather than educators, and it consists of exploring different aspects of human-nature contact supported by empirical literature. Louv's work is not original research nor is it prescriptive, though it does raise concerns associated with inadequate nature contact. One particularly interesting aspect of Louv's (2005) influence is the introduction of the term *nature deficit disorder*, which he uses to describe a variety of specific detriments that occur to children when they are alienated from nature. Louv is not a psychologist, nor does he possess the requisite expertise to create a diagnostic term (for which he has been criticized) However, the concept of nature deficit disorder has resonated with a large group of like-minded people and it has provided a touchstone

articulating the detriments associated with inadequate nature contact. Louv co-founded C&NN as a forum to share ideas and from that the C&NN Research Library grew as an important initiative to share summaries of empirical findings with the general public. The accessibility and relatability of Louv's work provides a pragmatic way of understanding how nature contact impacts human wellbeing.

Unlike Louv, Sobel's work is targeted for educators by detailing how different forms of place-based learning occur. Sobel's early publications explored playful ways of facilitating place-based learning, such as map making and fort building. Later, he focused more prescriptively on providing educators with pedagogical resources to conduct PBL (Smith & Sobel, 2010). Most recently, he edited a handbook for nature preschool and forest kindergarten educators (Sobel, 2016). As we discussed in our interview, Sobel asserts that it is important to provide educators with prescribed instructions for program implementation. Thus, his books tend to provide pragmatic examples and case studies detailing how different versions of PBL are implemented. Given that emphasis, in consideration with his importance to survey respondents, it is apparent that he is filling an important niche.

The survey respondents also indicated that Montessori, Piaget, and Dewey were influential contributors to their understanding of NBEE. Unfortunately, the survey design did not enable respondents to identify specific sources associated with those experts, nor did it provide a way of assessing their depth of understanding (future research could explore with more detail the specific sources participants associate with those experts). However, for the purposes of this study, we can consider broad themes and unique

contributions associated with each. I have introduced these individuals in reverse order to highlight the uniqueness of Montessori's method last.

Dewey wrote prolifically about the different ways experience influences learning. In the EE profession, Dewey is most known for *Experience and Education* (1938) where he defines the central criteria of an educative experience and explores how experience can be incorporated into academic curriculum. Dewey did not engage in empirical research to determine the validity of his ideas; therefore, his works tend to be philosophical and abstract rather than concrete and prescribed.

Piaget self-identified as a genetic epistemologist due to his interests in understanding how children form knowledge. His ideas of assimilating and accommodating information have provided an invaluable framework for educators to conceptualize the learning process. Additionally, his stage-based model of development has also provided a useful construct with which to consider learning and development.

That Montessori was identified as the second most influential expert informing respondents' knowledge about NBEE is significant. Unlike Dewey, who philosophized about abstract aspects of experience and promoted democratic ideals as part of his idealized educational process, or Piaget who was more concerned with the cognitive basis of misconceptions over the correctness of a learner's response, Montessori was pragmatic and exacting. Her method was prescribed yet highly experiential while also consisting of a strategic blend of teacher directed instruction that transitioned to student directed learning (much as Vygotsky would later describe as the notion of scaffolding). Furthermore, her method taught learners to pursue a lesson until they achieved mastery,

which learners determined, thereby supporting learners' internal locus of control. Montessori designed very specific instructional materials to embody the concepts students were learning, which helped to focus learner activity to a fairly precise relationship between the manipulative and the concept. Given the number of respondents who indicated Montessori had informed their understanding of NBEE, it would be interesting to know more about how they integrated her approach. Although the Montessori approach is uniquely different from an NBEE approach, her pedagogical method provides an important example of a clearly developed pedagogical framework that incorporates abundant opportunities for students to learn through a direct, and hands-on experience.

Amongst the experts, it was interesting to observe who they identified. In general, Louv's knowledge base was vast yet he seemed to value direct nature experiences as being primarily responsible for influencing his conceptual understanding. Jordan identified Dewey, Kolb, and Sobel, as well as unspecified developmental theory. Seaman referenced Kolb and Dewey but seemed more intent on deconstructing their theories than relying upon them to guide his thinking. Sobel spoke of his own personal experiences as well as a variety of recent empirical studies. Yair identified Erin Kenny, Rachel Larimore, and Sobel as influential NBL early childhood educators. She also stressed the importance of social return on investment studies for informing her understanding about ECE. Hunt indicated Whitehead and Dewey had provided an influential framework for his pedagogical understanding of lived nature-based experiences.

Synthesis. The findings addressing this question reveal a variety of influential contributors. These can be understood by considering the accessibility of each contributor's work and their expertise. From a stylistic perspective, both Louv and Sobel are quite accessible to read and offer pragmatic insight. Dewey's *Experience and Education* (1938) is also quite accessible, especially compared to his other works. Although Piaget's work can be complex, many of his conceptual ideas are commonly taught in teacher preparation programs or emphasized in professional development workshops. *The Montessori Method* (1912/2012) details Montessori's scientific pedagogy, but the survey responses do not provide information about respondents' familiarity with that text. It seems likely the Montessori education movement within the U.S., which typically focuses on ECE, has had an impact on practitioner understanding of Montessori's approach applied to nature-based education, but the survey did not capture that information.

The influential contributors can also be characterized by expertise. Louv's work reflects a broad expertise about the general role of nature on wellbeing and development. Piaget's work is also widely applicable. On the other hand, Dewey's expertise is educationally focused, although he does not prescribe how to incorporate his philosophy into practice. Sobel's expertise is also specific to educational contexts and prescriptive in its recommendations for incorporating his ideas in a teaching practice. Montessori also provides an educationally focused and prescriptive method. One way of understanding these differences is recognizing that educators may desire general information related to

wellbeing and development as well as more specific, prescriptive instructions for incorporating that information into practice.

Returning to the research question, "Who are the influential contributors to the knowledge base of NBEE and what are their contributions?", we find that Louv, Montessori, Piaget, Sobel and Dewey were the most influential contributors identified by the respondents and interviewees. Of those, only Louv and Sobel are alive today and both participated in this study. Reflecting on their contributions, we observe that they both shared an appreciation for a knowledge base generated from personal experience and theoretical insight. Louv's work discusses general aspects of nature-contact on human development and wellbeing rather than nature-based education. Sobel's work focuses on place- and nature-based education. Sobel indicated that he has written with the purpose of providing case studies and prescriptive instructions detailing how to conduct these educational approaches. This is a start, and Sobel, in particular, has played an important role in moving this profession forward with his work. Yet, this information again suggests that this profession is still in the early stages of its development.

Claims Related to Academic Achievement

The majority of respondents ranked personal experience and classroom/academic performance as highly influential, followed by NBEE research. In general, the literature indicates NBEE has beneficial impacts on academic achievement. Perhaps most compelling is a longitudinal study by Ulset et al. (2017) examining the long-term impact of NBL on attention. They found beneficial impacts on the development of attention skills and a reduction in inattention behaviors for children who attended daycares that

emphasized spending more time outdoors. Given Jordan's ongoing research comparing NBL and CBL practices on science learning, it will be interesting to learn what she finds and see how those findings compare to other studies. It is significant that she anticipates the findings will show an integrated approach is better than a purely NBL or CBL approach, as integration has not always been emphasized. Reflecting on Dewey's influence, Urban and Wagoner (2014) indicate that his publication of *Experience and Education* (1938) advocated for a more moderately integrated child-centered and teacher-directed approach. However, EE literature tends to use Dewey (1938) to support prioritizing learner-centered over teacher directed approaches. Seaman alluded to this pattern, indicating that as Chief Editor of JEE, he sees an inordinate number of references to Dewey in his initial review of article submissions. Furthermore, he asserted that those submissions often misunderstand and misapply Dewey's ideas. This conceptual confusion makes empirically supported claims all the more important.

When asked to rank order sources informing their knowledge about the effectiveness of NBEE, the survey respondents selected Personal Experience most frequently, followed by My Class's/Program's Academic Success. This finding suggests that the majority of respondents rely upon personal and anecdotal experience as the primary sources of data to guide their pedagogical decision making. While it makes sense that an educator's knowledge about NBEE may be substantially informed by Personal Experience, it seems problematic that Personal Experience and other anecdotal evidence serve as the primary sources informing educators' knowledge about NBEE's effectiveness, especially when other resources are available.

NBEE Research Findings was the third ranked source informing respondent's understanding about NBEE. Unfortunately, the survey format did not allow the respondents to specify the resources they were drawing upon to support their understanding. However, as became apparent in all the interviews, especially those with Sobel and Jordan, there are many important empirical studies exploring the benefits of NBL which would enhance educators' knowledge base. Future research could explore the distribution, accessibility, and usefulness of those studies for informing practitioners' knowledge base.

Louv discussed a problem related to the accessibility of research findings. He complained that public funds are used to support research, but findings from that research are not made freely available to the public. He became acutely aware of this problem through the difficulty he experienced locating and accessing empirical studies to support his books. As a way of remediating that problem, he pushed for the development of C&NN's Research Library to make empirical findings available and freely accessible. Knowing this when I designed the survey, I attempted to set it up in such a way that respondents would be able to specify the C&NN Research Center if it had been useful to them. Unfortunately, that strategy did not generate useful information and I have been unable to definitively determine the extent to which respondents have utilized that resource. Although Louv felt that it was being used, the way respondents referenced C&NN leads me to believe that the Research Library is not widely known or used to the extent that it could be. In light of this findings, C&NN might wish to increase awareness about the Research Library and consider collaborating with other similarly focused

organizations to share and promote one another's resources, and develop a way of gaining generic demographic information about the users to establish a better understanding of who is utilizing that resource.

Empirical literature shows benefits from nature on children's wellbeing. In separate meta-analyses, Chawla (2015) and Gill (2014) found positive impact of nature interactions on children's physical health, cognitive functioning, psychological functioning, creativity, and development. More recently in a review of literature about nature's impact on academic functioning, Kuo et al. (2019) found a positive association between nature contact and academic achievement. And in an effort to advance the NBL profession, Jordan and Chawla (2019) formally defined NBL and established an NBL research agenda.

To summarize, the empirical literature shows the benefits of NBL on academic achievement. However, when asked about the sources that inform their knowledge about the effectiveness of NBEE, the majority of respondents ranked their reliance on personal experience and classroom/program performance over NBEE research. Exploring why respondents prioritized personal experience over research findings to inform their knowledge about the effectiveness about NBEE was beyond the scope of this study, but it would be worth exploring in future research. It may be useful to provide educators with better access to valid and reliable empirical findings related to the effectiveness of NBEE. Children and Nature Network has worked to improve access to the relevant literature through the C&NN Research Center. It houses a Research Library providing freely

available summaries of research findings. The extent to which that resource is utilized by practitioners is unknown and is an important direction for future study.

NBEE Conceptual Framework

The short answer to this question is that NBEE does not yet appear to have a fully developed conceptual framework. The term, as used in the K-12 profession, implies the existence of an established and extensive both of canonical theory and research, sufficient to determine 'what every teacher should know and be able to do' as a result of professional preparation. It also implies that practice is "research based' that we know how to articulate clearly defined goals and objectives, and that learner performance can conceivably be evaluated based on those criteria. It is a 'framework' in the sense that there are coherent lines of connection between the profession's guiding theories, its identification and definition of 'best practice' with respect to various knowledge and skills required of practitioners, the assessments used to evaluate (student and teacher) competencies, and the likely direction of future research agendas. A coherent and well-articulated conceptual framework can provide clarity, order, and coherence to a profession. Dissenters might reasonably argue that such coherence diminishes individuality and bureaucratizes the profession. This study takes no normative stance on the desirability of a conceptual framework for NBEE. The purpose is simply to investigate the extent to which such a framework currently exists.

Several theories and areas of consideration were identified in the literature review related to NBEE. These include: Attention Restoration Theory (Kaplan, 1995), Stress Reduction Theory (Ulrich, 1991), Biophilia hypothesis (Wilson, 1984), Experiential

Learning Theory (Kolb, 1984; 2015), Piagetian developmental theory, Vygotskyan sociocultural learning theory, and Deweyan philosophy. While useful for specific purposes, there is not a single, overarching theoretical framework available to organize and distinguish ideas related to NBEE. Instead, amalgamations of these theories are used to make sense of different aspects of this approach. For example, Attention Restoration Theory, Stress Reduction Theory, and the Biophilia Hypothesis have been used to help explain human connection to nature as well as the benefits of nature contact on human wellbeing. Experiential Learning Theory has been used to conceptualize the pedagogical process of learning by direct experience. Piaget's developmental theory has been used to explain how learners organize new information. It has also provided a way of understanding how a learner's developmental stage impacts their capacity to learn. Vygotsky provides a model for understanding the social nature of the learning process via teacher scaffolding and the learner's zone of proximal development. Lastly, Dewey provides a philosophical way of conceptualizing the pedagogically distinct ways experience can be incorporated within an educational setting. Although none of these theories provides a grand model for understanding NBEE, each provides a useful reference point for understanding an important dynamic.

The interviewees referenced a variety of theories about the learning process. Louv felt strongly about the complexity of nature. Moreover, he also seemed to feel that theoretical models conceptualizing nature altered it in an unnatural way. This is not to say that Louv is not familiar with conceptual theories, in fact, he draws upon Attention Restoration theory and the Biophilia hypothesis to support his work. Instead, it appears

that the process by which he assimilated learnings from his personal and conceptual experiences led him to his current, integrated perspective.

As I have discussed related to her knowledge base, Jordan possesses a background in neuropsychology and developmental theory. As an NBL researcher, she has made use of Attention Restoration Theory and Stress Reduction Theory as models for understanding nature's impact on wellbeing. She also reflected her strong feelings about the need to include developmental theory within teacher preparation programs as a way of understanding NBL. Although her expertise was not in pedagogy, her experience as a researcher seemed to help her maintain a more neutral perspective of NBL and CBL by recognizing the importance of pedagogical aims over adherence to a particular pedagogical framework. Jordan also offered an important theoretical postulation about NBL impacting learning by two routes.

Seaman offered perhaps the most surprising perspective by actively deconstructing the notion of EE. Not only did he interrogate Kolb's Experiential Learning Theory, but more foundationally, he also critically examined how the word *experiential* has been applied to various educational initiatives. Seaman identified Vygotskyan perspectives and situated learning theory as analytic frameworks that inform his understanding about EE better than experiential learning theories such as KELT.

Sobel has written extensively on NBL and PBL, specifically for educators. Given his expertise in NBL and PBL, I was somewhat surprised when he informed me that he considered NBL to be a specialized form of PBL, and PBL to be a form of EE. Curiously, Sobel did not offer a theoretical basis for EE beyond describing it as "learning in the real

world". Sobel also felt strongly about the importance of incorporating developmental theory and systems thinking to guide pedagogy. Although not related to the conceptual framework of NBEE, Sobel informed me that Innovation Response Models provide an important rationale for developing prescriptive tools for prospective nature-based educators due to the need to provide scaffolding for middle and late adapters of innovative approaches.

The underlying conceptual framework that seemed to guide Yair's perspective was rooted in longitudinal studies of quality ECE based on social return on investment modeling. While she acknowledged that could occur by a variety of approaches, she found NBL in the form of outdoor preschools and nature kindergartens to be uniquely beneficial. Her perspective on NBL was influenced by developmental theory as well as literature showing the beneficial impact of nature contact on development. Yair indicated nature-based pedagogy was unique to NBL, although she acknowledged the pedagogy could emphasize any number of individualistic, environmental, Indigenous, or cultural ways of knowing.

Hunt employed a philosophical perspective to address the interview questions and he felt Dewey's perspective on primary and secondary experience provided a useful way for conceptualizing learning. Hunt suggested that EE theory is rooted in the belief that primary, direct experience needs to precede secondary, conceptual experience; although he indicated there are some situations where initial learning via secondary experience is preferable. High consequences provide an interesting and unique feature to NBL. 'Miseducative' experiences resulting in 'know-nothingism', which can occur without

ramification in conventional educational settings, become more problematic in nature-based settings. The high consequence implications of decision making within nature-based contexts provides an important underlying feature to the learning process.

Survey Respondents. I found it a little more challenging to explore NBEE practitioners' conceptual framework directly in the surveys. This occurred in part because the survey format made open-ended questions more cumbersome. However, more importantly, in the design, I wanted to avoid questions that could be perceived as disparaging respondents' knowledge and expertise; such as 'testing' their knowledge about specific educational theories or questioning their underlying pedagogical rationale. I addressed this dilemma by asking respondents to rate their level of agreement about a variety of theoretical positions for influencing their knowledge about NBEE. I also asked respondents to identify resources that influenced their understanding about NBEE from a prepared list. Those questions helped me to gain a better understanding about respondents' conceptual framework.

Once again, the respondents rated Personal Experience as being the most important source for influencing their understanding about NBEE. This was followed by Experiential Learning Theories, Developmental Theories, and NBL Theories with moderate agreement. The respondents overwhelmingly disagreed that Licensing Standards influenced their knowledge about NBEE. I have mixed thoughts on this last item. In many ways licensing standards are seen as a burden to which educators must adhere rather than a source of knowledge. However, my interview with Yair caused me to

reconsider licensing standards as having instructional potential, which is why I included that item as an option within the survey.

When asked about the resources supporting their understanding about NBEE, Louv's books generated the highest frequency, followed closely by the C&NN. Sobel's books were next followed by AEE. Given Louv's association with C&NN, it makes me wonder about the potential for multicollinearity, however, the content is entirely different and because of that, each offers a different contribution to the overarching conceptual framework.

Synthesis. How do these findings help us to understand the analytic features used to organize and make sense of NBEE? As is apparent in the literature review, the theoretical and conceptual ideas associated with NBEE are diverse but not systematic. Similarly, the sources drawn upon by the interviewees to support their theoretical commitments vary widely. Lastly, the survey findings indicate that respondents' conceptual knowledge tend to derive first from Personal Experience and second from a variety of other theoretical perspectives. I begin by revisiting major theoretical ideas related to NBL and EE.

Nature-based learning does not have an overarching conceptual framework, although there are several theories that help to explain the importance of the human-nature connection. The term *biophilia* was originally coined by Fromm (1964) referring to an appreciation for life. Wilson (1984) adopted and expanded upon the term as a way of describing his connection to the natural world. Because the term resonated with others, Kellert and Wilson (1993) developed *The Biophilia Hypothesis* to explore the alleged

benefits of nature contact on humans through the perspectives of diverse researchers and thinkers. In a different study, Ulrich et al. (1991) developed the Stress Reduction Theory based on their studies demonstrating ways nature contact reduces stress. And, as we have discussed, Kaplan (1995) developed Attention Restoration Theory based on his research exploring how nature contact promotes restorative attention ameliorating the effects of effortful attention. Although not comprehensive, these empirically supported theories help to explain the benefits of direct nature contact.

Experiential education has a more established conceptual framework. Perhaps the best-known theory is associated with Kolb's (1984; 2015) Experiential Learning Cycle comprised of concrete experience, reflective observation, abstract conceptualization, and active experimentation. But even within the EE community, Kolb's postulations do not appear to have been understood or holistically adopted (as we observed in the limited references to Kolb's work by survey respondents).

John Dewey offers philosophical perspective into EE by promoting an educational approach based on student interests yet connected to the subject matter through real-life (i.e., experiential) activities. Dewey's perspective is widely acknowledged as being foundational to contemporary understandings of EE, but his influence is not without debate. For example, Seaman suggests Dewey abandoned the concept of experience late in his career, indicating instead that it would be aptly replaced it with the word *culture*. Hunt adamantly disagrees with Seaman, referencing several titles of Dewey's books connecting experience to the learning process. As experts in the foundations of education specializing in experiential education, their differing perspectives are significant.

This raises the question of exactly how the NBEE community perceives the role and nature of experiential learning and teaching within that community. Experiential education was originally considered to be an instructional approach, but in the 1990s it was understood more as a way of knowing and eventually as a philosophy (Itin, 1999). We will not take time to revisit that argument. For purposes of this study, we will adhere to the education profession's perspective that EE is an instructional and curricular approach. This makes sense within the broader conceptual framework of NBEE.

To summarize, NBL and EE both have substantial histories but neither appears to have established a well agreed upon conceptual framework. There have been some theories developed to explain benefits of human-nature contact, but none adequately address the process of learning. Similarly, there are several theories related to the learning process of EE, but those have been used in various ways, resulting in a general lack of agreement. Thus, NBEE-related literature does not provide a coherent conceptual framework. The survey responses also reflect this trend. Respondents indicated that they relied upon personal experience and classroom performance over NBEE research findings for informing their knowledge about the effectiveness of NBEE. Lastly, the theoretical foundations drawn upon by the interviewees vary widely, further indicating the lack of a common conceptual framework. Returning to the research question, "What is the conceptual framework informing an NBE approach?", we find it generally underdeveloped at this point. Despite arriving at this conclusion, the findings from this study might be used to provide direction for future research and could help to stimulate important discussions among members of the NBEE community.

The Professional Development of NBEE

Returning to the central research question about the professional development of NBEE, this study provides answers along four lines of inquiry. The NBEE knowledge base appears eclectic and widespread. Although many attribute the influences of Louv, Montessori, Piaget, Dewey, Sobel, and Kolb to their understanding, it appears as though the more ubiquitous source of knowledge is personal experience. This, in turn, has created a conceptual framework that is neither well understood nor well agreed upon. NBEE practitioners seem more inclined to base their conceptual understanding on personal experience and anecdotal evidence than an established framework detailing what NBEE educators should know and be able to do in their practice. The key sources of knowledge are eclectic and claims about academic achievement are based more frequently on personal experience and individual program success than NBEE research findings. Together these findings suggest that NBEE has not undergone extensive professional development. This aligns, in part, with an affinity toward individualism found throughout the NBEE profession and it is exacerbated by the individualistic nature of teaching practices accommodating differing natural environments.

Recommendations for Future Research

This study has generated a variety of directions for possible future research. Educators who are committed to the incorporation of the natural world both as a context for teaching and learning, and as a kind of ‘co-teacher’, uniformly favor various forms of direct, hands-on experience as the medium of instruction. While lacking the crisp lines of

delineation characteristic of standard K-12 education in purpose-built classrooms, NBEE has a discernable 'culture of practice' that is implicit in the community of practitioners surveyed and interviewed in this study. There were numerous hints, suggestions, and statements to the effect that this community of practitioners could indeed benefit from the cultivation of a more explicit, more systematic, and better researched conceptual framework and literature base. Other fields of expertise have undergone processes of 'professionalization.' The medical profession, for example, and later, the profession of public K-12 teachers. So, if this is a desirable thing to consider, the question stands: How would the NBEE community approach such a task?

The findings generated from the survey indicate the works of Louv, Montessori, Piaget, Sobel, and Dewey were influential to respondents' knowledge about NBEE, but the findings did not provide an explanation about why those authors were considered important. It would be useful to learn more about which of those specific works respondents found particularly influential as well as what it was about each of those works that benefitted the respondents' knowledge base. This is important because those works emphasize different ideas and represent different levels of pedagogical prescription. For example, Louv speaks generally to nature's impact on wellbeing and Dewey speaks philosophically about the balance between teacher-directed and student led educational approaches; however, neither discusses how to implement their ideas into a classroom. Both Montessori and Sobel tend to prescribe how to teach using their approaches, while Piaget does not (because he was a scientist, not an educator). A clearer understanding about what it was that made each of those authors significant would be

useful for knowing how to capitalize on those features to further develop the resource base for educators.

The interviews also generated a variety of areas for further exploration such as the following. How does developmental theory impact the practice of an NBEE educator? What does an appropriate integration with developmental theory look like within an NBEE approach? K-12 education incorporates this into teacher preparation programs and emphasizes the need for 'developmentally appropriate' curriculum and instruction. By a similar token, what does a well-integrated and balanced NBL-CBL approach look like? Sobel and Yair mentioned the names of a variety of teacher preparation programs that specialize in NBEE-type approaches. It would be useful to learn more about those programs to see how they work and what they are doing to prepare teachers for NBEE contexts.

Because this study was designed to broadly explore the NBEE profession, I did not conduct fine grained analytic procedures. Consequently, the interviews were summarized to highlight major ideas and I simply used descriptive statistics to summarize the survey findings. That strategy allowed me to gain a general understanding about the way NBEE has been professionalized. Yet, because this initial analysis of the data was general, there are many opportunities to continue this inquiry. It may be fruitful to reanalyze the interview summaries. For example, it would be interesting to recode the interview summaries related to knowledge gained by personal experience compared to knowledge gained from conceptual experience and external sources. Another possibility would be to conduct an inferential analysis of the survey findings to explore the

significance of some of the differences we observed, such as Personal Experience and Louv's influence. Additionally, one could conduct an exploratory factor analysis to determine internal consistency of the survey followed by confirmatory factor analysis or SEM to lay the groundwork for validating the survey. And, no doubt, further analysis of the data and reflection on the findings would likely suggest additional questions for subsequent interviews and surveys.

The interviews revealed a curious, discrepant finding. Most of the interviewees recommended developing teacher preparation resources for the incorporation of NBEE in standard educational setting; however, teacher autonomy was viewed as vitally important for teaching in an NBEE context; some of them did not want to see those resources becoming prescriptive. There were exceptions, though. Sobel for example felt that prescribed approaches were necessary. He further indicated that innovation response models suggest that middle and late adapters of an innovative idea tend to have reticence toward that idea and therefore need more support. Because both of these perspectives have merit, it would be helpful to know more about the ideal balance between prescribed versus open-ended approaches so resources can be developed to meet the diverse needs of the NBEE professionals.

Developmental theory was stressed throughout the interviews as being an important component to an NBEE education. However, standard teacher education programs have entire courses devoted to human growth and development as well as modules within other courses on cognitive, moral, and social development. So, this is no small matter. Many of the interviewees, including Sobel who comes from a teacher

preparation program, indicated that greater emphasis on developmental theory is needed for effective NBEE teacher preparation. At present, we have an incomplete understanding about the extent of developmental theory needed to properly support NBEE educators. Given that virtually every interviewee alluded to the importance of developmental theory for NBEE instruction, more research is needed to understand what this may entail.

Lastly, future research could explore the relationship between personal experience and an agreed upon literature base (including NBEE research findings) for informing educators' understanding of NBEE. Personal experience is a foundational feature of NBEE for learners, but an important finding from this study reflects the survey respondents' (i.e., educators') preference for personal experience as a major source of knowledge informing their educational practice. It would be interesting to know more about why respondents prioritized personal experience so highly. Furthermore, it would also be interesting to know more about how they regard some of the more established literature designed to support educators' understandings. Are there certain types of NBEE literature that are more useful to educators? Are there types of literature that have been unhelpful? Are NBEE research findings expressed in a way that is beneficial for NBEE practitioners? How might NBEE literature complement knowledge acquired by personal experience? Answers to questions such as these would provide useful insight for developing resources that incorporate personal experience with information from the NBEE knowledge base.

Limitations

There are some limitations to this study that impact the transferability and confirmability of the results. The data sources for this study derived from NBEE-related literature, interviews of professionals with expertise in NBEE, and survey findings from self-reported NBEE practitioners. I now examine the limitations associated with each of those data sources.

NBEE is a construct used in this study to distinguish the independent processes of nature-based and experiential learning occurring in conventional educational contexts, resembling what Jordan and Chawla (2019) refer to as *formal NBL*. I characterize the learning processes occurring in outdoor preschools, nature kindergartens, and forest schools as incorporating an NBEE approach. I developed the construct of NBEE because I judged that, by itself, NBL did not encapsulate my phenomena of interest. And, given the different ways NBL is used (e.g., formal, non-normal, informal), I wanted to have greater clarity relative to my research interests. Because NBEE is a hybrid construct incorporating NBL and EE, it does not have a well-defined literature base. Therefore, I drew upon literature related to NBL and that related to EE to explore the knowledge base and conceptual frameworks used within this approach. However, because there is not a clearly defined literature base specific to this particular subset, results of a literature review were necessarily inferential in nature. The suspected lack of a coherent literature review was part of what was being investigated. Thus, this study is limited by the literature reviewed to explain and define NBEE.

Given my findings from the literature review, I identified individuals to interview whom I gauged as having expertise in NBEE, based on selection criteria (Table 3.1). I interviewed six individuals who provided unique and valuable insight into my research questions about the conceptual framework and knowledge base related to NBEE. I gauged reaching saturation (Morse, 2015) in several ways: a) unprompted, the experts referred one another's work, b) no new experts emerged (who met the selection criteria), and c) redundant patterns emerged from the interviews (e.g., parallel theoretical perspectives about NBL, repeated emphasis on personal experience as a primary source of knowledge). However, it is possible I did not fully capture all the unique expertise related to NBEE and other perspectives may have emerged had I broadened my sample. That said, for the purpose of this study, the participating experts provided a deep yet highly relevant perspective for this study. Considering Morse's (2010) criteria about the completeness of a research method, despite the possibility that I may have uncovered new findings with other interviewees, I assert that this method is complete, and thereby credible and confirmable.

My survey findings are limited in several ways. Despite many attempts to reach a broad sample of survey respondents (detailed in Chapter 3), my sample was adequate, but limited. I gauge this, in part, due to the extensive teaching experience reported by the majority of the respondents, which did not capture very many beginning practitioners – those with limited teaching experience. A more representative sample, thereby enabling me to enhance the credibility of my findings, would have included a broader and more evenly distributed range of teaching experience. It is possible that the ways I targeted

respondents (organizational affiliation, listserve affiliation, social media, and active Internet users) artificially constricted my sample. It is also possible that NBEE educators with limited experience were not comfortable being surveyed. Thus, if I were able to test it, I suspect I would find sampling error. This leads me to wonder about the dependability of my survey findings. I pursued every option I could identify to recruit participants given the resources I had at my disposal, but I suspect I was unable to alleviate sampling error.

As I mentioned in Chapter 3, I was unable to establish content validity (i.e., dependability) for the survey due to the breadth of the questions and the different ways those were understood by the experts who reviewed my survey. I was also unable to determine credibility via internal consistency of the survey responses due to the multidisciplinarity of the survey; the questions were simply too wide-ranging. However, the survey provided a good foundation for future research and it did generate useful findings to this study. Although I am not comfortable generalizing the survey findings to the larger population of NBEE practitioner, because I was unable to establish confirmability, the findings provide some insight about how NBEE practitioners are served by the knowledge base and conceptual framework. I have discussed different ways I would modify some of the questions to be more nuanced and I intend to explore this in future studies.

Returning to Morse's (2010) criteria about the completeness of a research method, I assert that the survey is best characterized as an incomplete method due to the limitations I have described. However, for the purposes of this methodology, based on

Morse's framework, that is acceptable for this project. Together, the primary component (expert interviews) and the secondary component (practitioner survey) satisfy her criteria for a qualitative mixed method approach.

Implications for Educational Practice

The findings from this study reflect a somewhat eclectic literature base that practitioners have drawn upon to inform their knowledge about NBEE. As we have seen, there is not a well-established, comprehensive knowledge base of canonical works, or an agreed upon conceptual framework to guide the NBEE profession. Because of this, the NBEE profession does not have a clear approach to determining what NBEE teachers should know and be able to do in their practice. This has resulted in NBEE being defined more as a folk craft than as a clearly developed profession. We observed this in the diverse resources listed by the respondents that have supported their professional understanding. The survey responses suggest that there are pockets of like-minded practitioners who share resources based on a similar world view and similar ideological and social commitments, but those ideas have not been standardized and adopted by the profession as a whole.

Professionalization is occurring, evidenced by Jordan and Chawla's (2019) call for establishing an NBL research agenda and initiatives like the Outdoor Preschool Pilot Program in Washington state. Additionally, efforts like C&NN's Research Library are actively working to make empirical research available to the general public, providing teachers with access to a 'research digest' of empirical evidence.

The broad implication for educational practice suggests that teachers entering into the NBEE practice need to be aware that this profession is still in the early stages of development. Professionalism is occurring, but the establishment of a well-developed knowledge base and an agreed upon conceptual framework needs more work. This provides an exciting opportunity for teachers entering into this practice because there will be many ways to contribute to the knowledge base, especially if they choose to engage in empirical study.

Implications of Research on Positionality

I began exploring the research questions hoping to uncover key features of the NBEE process, and I have learned NBEE is considerably more complex than I had initially anticipated. I now recognize that there is not some magic, unidentified formula of pedagogical operations that underlie this approach. More accurately, NBEE approaches seem to work holistically and will likely be best understood through multifaceted research lines. I have realized that understanding NBEE needs to occur through a coordinated research effort, rather than individual efforts alone. I also recognize that that process is ongoing, and the findings from this study provide a piece of the larger puzzle. Reflecting on this study specifically, I am mindful of a few specific, interesting points that emerged including the following: benefits of nature contact, importance of personal experience, nature pedagogy, rugged individualism of the NBEE field, and romanticizing nature.

There is clear evidence that direct contact with and exposure to nature has important benefits on psychological and physical well-being. The research findings suggest this effect is widespread, which helps to explain part of the NBEE process. I am intrigued by Jordan and Yair's assertions that direct nature contact plays a major part of the NBEE process. Given the diverse nature of NBEE enterprises, the research agendas are wide ranging, consequently there may be benefit to a more coordinated research effort to holistically understand the specific benefits of nature contact. Furthermore, understanding the benefits of nature contact provides an interesting way to conceptualize future research if these benefits can be understood and quantified in such a way that they could be 'factored out' to elucidate the compositional features of nature pedagogy as part of a more fine-grained quantitative analysis.

Personal experience led me to pursue this work and it is an undeniably central feature to NBEE. Yet, I began this research because I sensed the inadequacy of the professional literature to advance my understanding and my skills. On a similar front, I surmise that teachers can do more to critically synthesize their own personal experience with NBEE-related literature. Additionally, the literature could potentially do a better job exploring and discussing the importance of personal experience in informing practitioners' knowledge base and conceptual framework.

There seems to be an important process referred to as 'nature pedagogy' for employing an experiential educational approach in nature-based settings. Yet, the specific aspects of this process have not been well-established. Nature pedagogy may be the specific point of convergence for EE and NBL. I acknowledge the complexity of nature

pedagogy and I am interested in learning more about it specifically. I recognize that pedagogy is based on the specific talents, interests, and expertise of the teachers – within specific environmental contexts, but I also surmise that nature pedagogy can be better understood through future inductive study. I am still uncertain how to better understand nature pedagogy, yet I look forward to that being a topic of inquiry central to my future research agenda.

Rugged individualism is an aspect found throughout this work. We first observed it in Rousseau's distain for society as well as aspects of it in pedagogical reform as part of the educational progressivism movement. In many ways, rugged individualism led to the creation of EE through Lewin's experimentation with action research and t-groups, as well as the development of Outward Bound. Interestingly, the Forest School Association has reduced individualistic practices through greater formalization of practices. But individualism still seems to impact NBEE teaching practices in the U.S., exemplified by the diverse knowledge base, rooted in personal experience found in this study. As a former practitioner, I understand and appreciate this perspective, yet as an academic, I recognize the importance of providing a more professional structure. I perceive the need for more specific literature to support NBEE teaching practice, while honoring the important individualistic, diverse ways teachers engage in their practice.

Romanticization is an important theme I observed and one which I have yet to fully reconcile. Nature has been a crucial feature to my wellbeing throughout my life, and it is the first place I go when I need 'refuge.' Consequently, I appreciate the different ways nature has been shown to be beneficial for our wellbeing. While I appreciate the

many ways nature has been romanticized, idealized, and deified, I also recognize that systematic inquiry – objective science – has a role in helping us understand this profound connective relationship between humanity and its natural environment. My pragmatic side recognizes that there are many who are likely off put by ardor for nature, and I find myself wondering how we should proceed. I have deep respect for various nature writers, such as Louv (2005) and Ferguson (2019), whose writings have inspired me about the beneficial qualities of nature, yet, as a researcher, I find myself wanting to promote and rely upon empirical findings to ground my internal, affective appreciation. Indeed, this is an area which I am continuing to grow professionally as I seek to employ scientific understanding to explore areas where nature has been romanticized.

Conclusion

The purpose of this study was to determine the status of the conceptual and theoretical foundations of NBEE. I addressed this task by critically reviewing NBEE-related literature, surveying individuals with expertise in NBEE, and surveying practitioners. The critical historical review of NBEE-related literature revealed a diverse literature base in both NBL and EE. Meta-analyses of NBL literature show broad-ranging benefits of nature contact on wellbeing (Chawla, 2015; Gill, 2014), and specific benefits of NBL on academic achievement (Kuo et al., 2019). A variety of theories support the direct benefits of nature contact including the Biophilia Hypothesis, Stress Reduction Theory and Attention Restoration Theory. Experiential education has received considerable philosophical and theoretical exploration. In particular, the source of

knowledge as emerging from direct, personal experience versus conceptual-theoretical understanding has been debated. Additionally, EE itself is understood by some as being a philosophy of education and by others as being an instructional approach. Kolb (1984; 2015) developed Experiential Learning Theory as a way of describing the experiential learning process, but its usefulness in this context has been debated. Thus, the literature shows diverse understandings about what constitutes the knowledge base of NBEE.

The mixed method approach used for this study consisted of interviewing individuals with expertise in NBEE and surveying self-identified NBEE practitioners to understand what they know about the knowledge base and conceptual framework informing the practice of NBEE. The interviewees seemed to agree on a few important works, such as Dewey, Piaget, Louv, Sobel, and Kolb. There were also a variety of specific works, such as those as identified by Sobel, specifically addressing the practice and implementation of NBEE, although they were not identified by the others. The survey respondents identified Louv, Montessori, Piaget, Sobel and Dewey as being influential, and they also identified a diverse range of specific resources that have informed their own, personal understanding. These findings indicate that a knowledge base specific to NBEE has not been well-established.

Similarly, the exploration into the conceptual framework of NBEE revealed a variety of supporting theories (e.g., Biophilia Hypothesis, Stress Reduction Theory, Attention Restoration Theory, Experiential Learning Theory) but the lack of a fully developed conceptual framework capable of organizing the relevant literature, identifying

relevant research finding, or promoting a coherent research agenda specific to the current and future needs of the NBEE profession.

These findings tell us that the profession is in a preliminary stage of professionalization, if indeed that is a goal. Defining NBL and establishing a coherent and coordinated research agenda are important steps in this process. While valuable in many ways, the reliance on personal experience as a sole or even a primary means for understanding how NBEE impacts academic achievement does not adequately serve teachers entering this profession. That will be especially true if publicly supported schools continue to embrace the use of NBEE, since schools are held accountable to results. Interestingly, Seaman commented on an observation that many educators are initially captured by the allure of experiential education based on an intuition that it provides a uniquely important means of instruction, but those educators later become disenchanted when they find that the conceptual framework supporting the practice is inadequate. Thus, there are various reasons urging the development of NBEE's knowledge base and theoretical foundations.

Teachers entering this profession need to be aware that it is early in its development. This provides many exciting opportunities for contribution to the field through research and the establishment of an agreed upon knowledge base. Educators who are interested in this approach should be proactive in developing their own knowledge base through empirical literature and active engagement in professional organizations.

As it stands there is considerable flexibility to current expressions of NBEE approach because it has not been professionalized. It is likely that there will be some resistance to a confederation of practitioners formalizing the profession by developing an agreed-up conceptual framework because that process requires giving up some autonomy in the interest of professionalization. But doing so leads to improvement of the craft. This study has allowed us to capture a snapshot of the profession in its current state and thereby provide direction about how to advance that process meaningfully.

REFERENCES CITED

Anderson, S. K. (2017). *Bringing school to life: Place-based education across the curriculum.* Lanham, MD: Rowman & Littlefield.

Änggård, E. (2010). Making use of "nature" in an outdoor preschool: Classroom, home and fairyland. *Children, Youth and Environments, 20*(1), 4-25.

Association for Experiential Education. (2020, February 7). Association for Experiential Education (AEE). https://www.aee.org/about

Austin, J., Funnell, A., Hirsch, J., Lindsey, M., Nordquist, J., Pace, S., & Wolf, P. (Eds.). 2019. *Manual of accreditation standards for adventure programs* (7th ed.). Denver, CO: Association for Experiential Education.

Bakir-Demir, T., Berument, S. K., & Sahin-Acar, B. (2019). The relationship between greenery and self-regulation of children: The mediation role of nature connectedness. *Journal of Environmental Psychology, 65* (101327). https://doi.org/10.1016/j.jenvp.2019.101327

Barab, S. (2018, September). *Supporting conceptual growth and life change: From digital games to empowered ecosystems to connected individuals.* Keynote speech presented at the meeting of 2018 International Mind Brain and Education Society Conference, Los Angeles, CA.

Bentsen, P. & Jensen, F. J. (2012) The nature of udeskole: outdoor learning theory and practice in Danish schools, *Journal of Adventure Education & Outdoor Learning, 12*(3), 199-219, DOI: 10.1080/14729679.2012.699806

Bentsen, P., Mygrind, E., Randrup, T. B. (2009). Toward an understanding of *udeskole*: education outside the classroom in a Danish context. *Education, 37*(1), 29-44. doi: 10.1080/03004270802291780

Bratman, G. N., Hamilton, J. P., Hahn, K. S., Daily, G. C., & Gross, J. J. (2015). Nature experience reduces rumination and subgenual prefrontal cortex activation. *PNAS, 112*, 8567-8572. www.pnas.org/cgi/doi/10.1073/pnas.1510459112

Caelli, K., Ray, L., & Mill, J. (2003). 'Clear as mud': Toward greater clarity in generic qualitative research. *International Journal of Qualitative Methods, 2*, 1–13.

Chapman, S., McPhee, P., & Proudman, B. (1992). What is experiential education? *Journal of Experiential Education, 15*(2), 16-23.

Charles, C., Louv, R., Bodner, L., & Guns, B. (2008). *Children and nature 2008: A report on the movement to reconnect children to the natural world*. https://www.childrenandnature.org/uploads/CNMovement.pdf

Chawla, L. (2015) Benefits of nature contact for children. *Journal of Planning Literature, 30*(4), 433-452. DOI: 10.1177/0885412215595441

Clark, D. (2008). *Learning to make choices: Connecting public lands, schools, and communities through place-based learning and civic engagement*. The Center for Place-Based Learning and Community Engagement; A forest for every classroom. https://www.nps.gov/civic/resources/Learning%20to%20Make%20Choices.pdf

Cooper, S., & Endacott, R. (2007). Generic qualitative research: A design for qualitative research in emergency care? *Emergency Medicine Journal, 24*, 816–819.

Council of Chief State School Officers. (2013, April). Interstate Teacher Assessment and Support Consortium InTASC *Model Core Teaching Standards and Learning Progressions for Teachers 1.0: A Resource for Ongoing Teacher Development*. Washington, DC: Author.

Cree, J., & McCree, M. (2013). A brief history of the roots of forest school in the UK – Part 2. *Horizons, 62*, 32-35.

Cremin, L. A. (1961). *Transformation of the school: Progressivism in American education, 1876-1957*. New York, NY: Alfred A. Knopf, Inc.

Davis. J. (n/d/). Word cloud generator. https://www.jasondavies.com/wordcloud/

Davies, M. M. (1996). Outdoors: An important context for young children's development. *Early Child Development and Care, 115*, 37-49.

Demarest, A. D. (2014). *Place-based curriculum design: Exceeding standards through local investigations.* New York, NY: Routledge.

Department for Education and Skills. (2006). *Learning outside the classroom manifesto*. Nottingham, UK: DfES Publications. ISBN: 978-1-84478-861-3

Dewey, J. (1897). My pedagogic creed. *The School Journal LIV* (3), 77-30.

Dewey, J. (2007). *Democracy and education.* Middlesex: Echo Library (Original work published 1916)

Dewey, J. (1958). *Experience and nature*. New York: Dover Publications, Inc. (Original work published 1925)

Dewey, J. (1934). *Art as experience*. New York, NY: Berkley Publishing Group.

Dewey, J. (1938). *Experience and education*. New York, NY: Simon and Schuster.

Dopko, R. L., Capaldi, C. A., Zelenski, J. A. (2019). The psychological and social benefits of a nature experience for children: A preliminary investigation. *Journal of Environmental Psychology, 63,* 134-138. https://doi.org/10.1016/j.jenvp.2019.05.002

Dyment, J. E., & Bell, A. C. (2008). Grounds for movement: Green school grounds as sites for promoting physical activity. *Health Education Research, 23*(6), 952-962. doi:10.1093/her/cym059

Early Learning and Childcare Programme Directorate. (2020, Feb 10). Out to play – creating outdoor play experiences for children: Practical guidance. https://www.gov.scot/publications/out-play-practical-guidance-creating-outdoor-play-experiences-children/

Egan, K. (2002). *Getting it wrong from the beginning: Our Progressivist inheritance from Herbert Spencer, John Dewey, and Jean Piaget.* New Haven, CT: Yale University Press.

Elliot, E., Ten Eycke, K., Chan, S., & Müller, U. (2014). Taking children outdoors: Documenting their explorations and assessing impact on their ecological awareness. *Children, Youth and Environments, 24*(2), 102-122.

Fenwick, T. J. (2001). *Experiential Learning: A Theoretical Critique from Five Perspectives* (Information Series No. 385). Columbus: ERIC Clearinghouse on Adult, Career and Vocational Education, The Ohio State University.

Ferguson, G. (2019). *The eight master lessons of nature: What nature teaches us about living well in the world*. New York, NY: Dutton.

Fjørtoft, I. (2001). The natural environment as a playground for children: The impact of outdoor play activities in pre-primary school children. *Early Childhood Education Journal, 29(2)*, 111-117.

Forest School Association (2018). *What is Forest School?* Retrieved from https://www.forestschoolassociation.org/what-is-forest-school/

Forest School Canada (2014). Forest and nature schools in Canada: A head, heart, hands approach to outdoor learning. Retrieved from http://childnature.ca/wp-content/uploads/2017/10/FSC-Guide-1.pdf

Fowler, F. J. (2009). *Survey research methods*. (4th ed.). Los Angeles, CA: SAGE Publications.

Freeman, S., Eddy, S. L., McDonough, M., Smith, M. K., Okoroafor, N., Jordt, H., & Wenderoth, M. P. (2014). Active learning increases student performance in science, engineering, and mathematics. *PNAS Proceedings of the National Academy of Sciences of the United States of America, 111*, 8410–8415. http://dx.doi.org.proxybz.lib.montana.edu/10.1073/pnas.1319030111

Fromm, E. (1964). *The heart of man: Its genius for good and evil*. New York: Harper Row.

Garvey, D. (1995). A history of AEE. In K. Warren, M. Sakofs, & J. Hunt (Eds.), *The theory of experiential education* (pp. 80–88). Boulder, CO: Association for Experiential Education.

Gass, M. A. (1985). Programming the transfer of learning in adventure education. *Journal of Experiential Education, 8(*3), 18-24.

Gill, T. (2014). The benefits of children's engagement with nature: A systematic literature review. *Children, Youth and Environments, 24* (2), 10-34. https://www.jstor.org/stable/10.7721/chilyoutenvi.24.2.0010

Ginsburg, K. R. (2007). The importance of play in promoting healthy child development and maintaining strong parent-child bonds. *Pediatrics, 119*(1), 182-191.

Gliner, B. (n/d). *Schools that change communities*. http://www.docmakeronline.com/schoolsthatchangecommunities.html

Heckman, J. (2020). *The Heckman equation*. https://heckmanequation.org/the-heckman-equation/

Hirsch, E. D. (1996). *The schools we need and why we don't have them*. New York, NY: Doubleday.

Hovelynck, J. (2001). Practice-theories of facilitating experiential learning in Outward Bound: A research report. *Journal of Adventure Education and Outdoor Learning, 1*(2), 53-57. doi: 10.1080/14729670185200081

Inner London Education Authority (1981). *The study of place in the primary school*. London: Routledge.

Itin, C. M. (1999). Reasserting the philosophy of experiential education as a vehicle for change in the 21st century. *Journal of Experiential Education, 22*, 91–98.

Ives, B., & Obenchain, K. (2006). Experiential education in the classroom and academic outcomes: For those who want it all. *Journal of Experiential Education*, *29*(1), 61–77. https://doi.org/10.1177/105382590602900106

James, T. (2000). *Kurt Hahn and the aims of education.* http://www.kurthahn.org/wp-content/uploads/2016/04/james_final.pdf

James, W. (2011). *The moral equivalent of war.* Reddich, Worchestershire: Read Books Ltd. (Original work published 1914)

Johnson, D. W., & Johnson, F. P. (1991). *Joining together: Group theory and group skills* (4th ed.). Englewood Cliffs, NJ: Prentice-Hall, Inc.

Johnston, N., McRae, N., & Maclean, C. (2016). *The development of a comparative matrix of forms of work-integrated learning and work-integrated education (WIL/WIE) within the Province of BC, Canada*. Paper presented at the 2nd WACE International Research Symposium on Cooperative and Work-Integrated Education, Victoria, BC, Canada. https://waceinc.org/uvictoria2016/assets/WACE_IRS_2016_Refereed_Conference%20Proceedings.pdf#page=79

Joplin, L. (1981). On defining experiential education. *Journal of Experiential Education, 4*(1), 17-20.

Jordan, C., & Chawla, L. (2019). Coordinated research agenda for nature-based learning. *Frontiers in Psychology, 10*(766), 1-10. http://dx.doi.org.proxybz.lib.montana.edu/10.3389/fpsyg.2019.00766

Kaplan, S. (1995). The restorative benefits of nature: Toward an integrative framework. *Journal of Environmental Psychology, 15*, 169-182.

Karier, C. J. (1986). *The individual, society, and education* (2nd ed.). Urbana: University of Illinois Press.

Kellert, S. R., & Wilson, E. O. (1993). *The Biophilia Hypothesis*. Washington, D.C.: Island.

Kemmerer, R. W. (2013). *Braiding sweetgrass: Indigenous wisdom, scientific knowledge and the teaching of plants.* Canada: Milkweed Editions.

Kenny, E. (2013). *Forest kindergartens: The Cedarsong way*. Vashon, WA: Cedarsong Nature School.

Kirschner, P. A., Sweller, J., & Clark, R. E. (2006). Why minimal guidance during instruction does not work: An analysis of the failure of constructivist, discover, problem-based, experiential, and inquiry-based teaching. *Educational Psychologist, 41*, 75-86. http://dx.doi.org.proxybz.lib.montana.edu/10.1207/s15326985ep4102_1

Kliebard, H. M. (1995). *The struggle for the American curriculum 1893-1958* (2nd ed.). New York, NY: Routledge.

Kolb, D. (1984). Experiential learning: Experience as the source of learning and development. Prentice Hall.

Kolb, D. (2015). Experiential learning: Experience as the source of learning and development (2nd ed.). Pearson Education Inc.

Kolb, D. A., & Fry, R. H. (1975). Towards an applied theory of experiential learning. In C. Cooper (ed.), *Theories of Group Processes*. NY: John Wiley & Sons.

Kuo, M., Barnes, M., & Jordan, C. (2019). Do experiences with nature promote learning? Converging evidence of a cause-and-effect relationship. *Frontiers in Psychology, 10*. http://dx.doi.org.proxybz.lib.montana.edu/10.3389/fpsyg.2019.00305

Kuo, M., Browning, M. H. E., M., Penner, M. L. (2017). Do lessons in nature boost subsequent classroom engagement? Refueling students in flight. *Frontiers in Psychology, 8*:2253. doi: 10.3389/fpsyg.2017.02253

Labaree, D. F. (2005) Progressivism, schools and schools of education: An American romance. *Paedagogicia Historica, 41*(1&2), 275-288. doi: 10.1080/0030923042000335583

Lang, I. "A Comparative Study of the Philosophies of John Amos Comenius and Maria Montessori on the Education of Children" (1965). Dissertations. Paper 775. http://ecommons.luc.edu/luc_diss/775

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. New York: Cambridge Press.

Lawshe, C. H. (1975). A quantitative approach to content validity. *Personnel Psychology, 28*, 563-575.

Lindsay, A., & Ewert, A. (1999). Learning at the edge: Can experiential education contribute to educational reform? *Journal of Experiential Education, 22*(1), 12-19.

Linnemanstons, K. A., & Jordan, C. M. (2012, February). Learning through place: Evaluation of a professional development program for understanding the impact of place-based education and teacher continuing education needs. *Journal of Sustainability Education, 12*, http://www.susted.com/wordpress/content/learning-through-place-evaluation-of-a-professional-development-program-for-understanding-the-impact-of-place-based-education-and-teacher-continuing-education-needs_2017_02/

Lloyd, A., Truong, S., Gray, T., (2018). Place-based outdoor learning: More than a drag and drop approach. *Journal of Outdoor and Environmental Education, 21*, 45-60.

Louv, R. (2005). *Last child in the woods*. Chapel Hill, NC: Algonquin Books.

Louv, R. (2019). *Our wild calling*. Chapel Hill, NC: Algonquin Books.

MacEachren, Z. (2013). The Canadian forest school movement. *LEARNing Landscapes, 7*(1), 219-233.

Massey, S. (2005). The benefits of a forest school experience for children in their early years. *National Foundation for Educational Research: Action Research, 33*(April), 27-35.

Maynard T. (2007). Forest schools in Great Britain: an initial exploration. *Contemporary Issues in Early Childhood, 8*(4), 320-331.

McCauley, D. (2015, November 15). *Aligning the projects with the standards.* https://www.edutopia.org/blog/aligning-projects-with-standards-dana-mccauley

McCree, M. & Cree, J. (2017). Forest school: Core principles in changing times. In S. Waite (Ed.), *Children learning outside the classroom from birth to eleven.* (2nd ed., pp. 222-232). SAGE.

McRae, N., & Johnston, N. (2016). The development of a proposed global work-integrated learning framework. *Asia-Pacific Journal of Cooperative Education, 17*, 337-348.

Meyer, J. (2016). *Nature-based learning literature review*. Unpublished manuscript.

Meyer, J. (2018). *The foundations of nature-based learning*. Unpublished manuscript.

Meyer, J., Ewbank, A. D., Ellsworth, A. (2020). Pre-service teachers in Finland: Comparative education through short-terms faculty-led study abroad. *Current Issues in Comparative Education, 21*(1), 93-103. https://www.tc.columbia.edu/cice/current-issue/6_Joshua-Meyer-,-Ann-Dutton-Ewbank,-and-Ann-Ellsworth.pdf

Meyer, J., Müller, U. & Macoun, S. (2017). Comparing classroom context and physical activity in nature and traditional kindergartens, *Children, Youth and Environments, 27*(3), 56-77. http://www.jstor.org/action/showPublication?journalCode=chilyoutenvi

Miner, J., & Boldt, J. (2002). *Outward Bound, USA: Crew not passengers*. (2nd ed.). The Mountaineer Books.

Mitchell, L. S. (1991). *Young geographers: How they explore the world and how they map the world.* New York: Bank Street College of Education.

Montessori, M., & George, A. E. (Trans.). (1912). *The Montessori method: Scientific pedagogy as applied child education in "The Children's Houses", with additions and revisions by the author*. New York, NY: Frederick A Stokes Company. http://dx.doi.org.proxybz.lib.montana.edu/10.1037/13054-000

Moore, R. C., & Marcus, C. C. (2008). Healthy planet, healthy children: Designing nature into the daily place of childhood. In S. R. Kellert, J. H. Heerwagen, & M. L. Mador (Eds.), *Biophilic design: The theory, science and practice of bringing buildings to life*. John Wiley & Sons.

Morris, T. H. (2019). Experiential learning – A systematic review of Kolb's model. *Interactive Learning Environments*, https://doi.org/10.1080/10494820.2019.1570279

Morse, J. M. (2015). Data were saturated. *Qualitative Health Research, 25*(5), 587-588 https://doi.org/10.1177/1049732315576699

Morse, J. M. (1999). The armchair walkthrough. *Qualitative Health Research, 9*, 435-436.

Morse, J. M. (2010). Simultaneous and sequential qualitative mixed method designs. *Qualitative Inquiry, 16*, 483–491.

Morse, J. M., & Niehaus, L. (2009). *Principles and procedures of mixed method design.* Walnut Creek, CA: Left Coast Press.

Müller, U., & Liben, L. S. (2017). Introduction: Natural spaces and development. *Children, Youth and Environments, 27*(2), 1-6. http://www.jstor.org/action/showPublication?journalCode=chilyoutenvi

Müller, U., Temple, V. A., Smith, B., Kerns, K., Ten Eyke, K., Crane, J., & Sheehan, J. (2017). Effects of nature kindergarten on children's functioning. *Children, Youth and Environments, 27*(2), 47-69. doi: 10.7721/chilyoutenvi.27.2.0047

Murray, R., & O'Brien, E. (2005). Such enthusiasm – a joy to see: An evaluation of Forest School in England. Report to the Forest Commission. http://forestry.gov.uk/pdf/ForestSchoolEnglandReport.pdf/$FILE/ForestSchoolEnglandReport.pdf

National Center for Education Statistics. (2015). *Program for international student assessment (PISA).* https://nces.ed.gov/surveys/pisa/pisa2015/index.asp#

Natural Start Alliance, (2019). *Nature-based preschool professional practice guidebook: Teaching, environments, safety administration*. Washington DC: North American Association for Environmental Education.

Neuman, W. L. (2000). *Social research methods: Qualitative and quantitative approaches*. (4th ed.). Boston, MA: Allyn & Bacon.

North American Association for Environmental Education. (2016). *Connecting children to nature: Executive summary of findings from a survey of environmental educators*. https://naaee.org/eepro/resources/connecting-children-nature-executive

North American Association for Environmental Education. (n.d.). Science of nature-based learning collaborative research network. Retrieved from https://naaee.org/our-work/programs/research-network

Norwood, M. F., Lakhani, A., Maujean, A., Zeeman, H., Creux, O., & Kendall, E. (2019). Brain activity, underlying mood and the environment: A systematic review. *Journal of Environmental Psychology, 65* (101321). https://doi.org/10.1016/j.jenvp.2019.101321

O'Brien, L. (2009). Learning outdoors: The Forest School approach. *Education, 37*(1), 45-60. doi: 10.1080/03004270802291798

O'Brien, L. & Murray, R. (2007). Forest School and its impact on young children: Case studies in Britain. *Urban Forestry and Urban Greening, 6*, 249-265. doi: 10.1016/j.ufug.2007.03.006

Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks, CA: SAGE Publications.

Pikus, A., Larimore, R., Skibbe, L., & Sobel, D. (2019, August). Comparing literacy and math skills development in nature K/1st and traditional K/1st classrooms in a Michigan public school district: A quantitative analysis of Aimsweb Plus Assessment Scores in nature and traditional K/1st classrooms. A report developed for the George B. Storer Foundation.

Play Scotland. (n/d). Managing risk in play provision. https://www.playscotland.org/playful-learning/managing-risk-play-provision/

Project Adventure. (2016). About Project Adventure. https://pa.org/about.html

Qualtrics. (2020, March). ExpertReview. https://www.qualtrics.com/iq/expertreview/

Quay, J. (2003). Experience and participation: Relating theories of learning. *Journal of Experiential Education, 26*(2), 105-116.

Ritter, D. P. (2014). Comparative historical analysis. In D. Della Porta (Ed.), *Methodological practices in social movement research* (pp. 97–116). Oxford, UK: Oxford University Press.

Rohnke, K. (1984). *Silver bullets: A guide to initiative problems, adventure games and trust activities*. Dubuque, IA: Kendall/Hunt Publishing.

Roe, J., & Aspinall, P. (2011). The restorative outcomes of forest school and conventional school in young people with good and poor behavior. *Urban Forestry & Urban Greening, 10*, 205-212.

Rousseau, J. J. (1969). *The Emile of Jean Jacques Rousseau*. (W. Boyd Trans.). New York, NY: Teachers College Press. (Original work published in 1762)

Rury, J. L. (2006). Historical research in education. In J. L. Green, G. Camilli, & P. B. Elmore (Eds.), *Handbook of complementary methods in education research* (pp. 323–332). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.

Saldaña, J. (2016). *The coding manual for qualitative research* (3rd ed.). Los Angeles, CA: SAGE Publications.

Savin-Baden, M., & Major, C. H. (2013). *Qualitative research: The essential guide to theory and* practice. New York, NY: Routledge.

Scales, P. C., Roehlkepartain, E. C., Neal, M., Kielsmeier, J. C., & Benson, P. L. (2006). Reducing Academic Achievement Gaps: The Role of Community Service and Service-Learning. *Journal of Experiential Education*, *29*(1), 38–60. https://doi.org/10.1177/105382590602900105

Schoel, J., Prouty, D., & Radcliffe, P. (1988). *Islands of healing: A guide to adventure based counseling*. Hamilton, MA: Project Adventure, Inc.

Schweinhart, L. J., Barnes, H. V., Weikart, D. P., Barnett, W., & Epstein, A. (1993). *Significant benefits: The High/Scope Perry Preschool Study through age 27. Monographs of the High/Scope Educational Research Foundation, No. Ten*. High/Scope Educational Research Foundation, 600 North River Street, Ypsilanti, MI 48198-2898.

Seaman, J. (2008). Experience, reflect, critique: The end of the "Learning Cycles" era. *Journal of Experiential Education, 31*(1), 3-18.

Seaman, J., Brown, M., & Quay, J. (2017). The evolution of experiential learning theory. *Journal of Experiential Education, 40*, NP1–NP21. http://dx.doi.org.proxybz.lib.montana.edu/10.1177/1053825916689268

Seaman, J. (2019). Restoring culture and history in outdoor education research: Dewey's theory of experience as a methodology. *Journal of Outdoor Education, Recreation and Leadership, 11*, 335-351. https://doi.org/10.18666/JOREL-2019-V11-I4-9582

Sibthorp, J., & Arthur-Banning, S. (2004). Developing Life Effectiveness through Adventure Education: The Roles of Participant Expectations, Perceptions of Empowerment, and Learning Relevance. *Journal of Experiential Education*, *27*(1), 32–50. https://doi.org/10.1177/105382590402700104

Shields, P. (2010). Forest school: reclaiming it from Scandinavia. *Forum, 52*(1), 53-59.

Sigel, H., Phillips, D. C., & Callan, E. (2018, Winter Edition). Philosophy of education. In E. N. Zalta (Ed.) The Stanford Encyclopedia of Philosophy. https://plato.stanford.edu/archives/win2018/entries/education-philosophy/

Smith, G. A., & Sobel, D. (2010). *Place- and community-based education*. New York: NY: Routledge.

Smith, T. E., & Knapp, C. E. (Eds.). (2011). *Sourcebook of experiential education: Key thinkers and their contributions*. New York, NY: Routledge.

Smith, T. E., Knapp, C. E., Seaman, J., & Pace, S. (2011). Experiential education and learning by experience. In. T. E. Smith & C. E. Knapp (Eds.) *Sourcebook of experiential education*. (pp. 1-11). Routledge.

Sobel, D. (1998). *Mapmaking with children: Sense of place education for the elementary years.* Brattleboro, VT: Green Writers Press.

Sobel, D. (2004). *Place-based education: Connecting classrooms and communities*. Great Barrrington, MA: The Orion Society.

Sobel, D. (2016). *Nature preschools and forest kindergartens: The handbook for outdoor learning*. St. Paul, MN: Redleaf Press.

Stehno, J. J. (1986). *The application and integration of experiential education in higher education.* ERIC Document Reproduction Service No. ED285465. https://eric.ed.gov/?id=ED285465

Stonehouse, P., Allison, P., & Carr, D. (2011). Aristotle, Plato, and Socrates: Ancient Greek perspectives on experiential learning. In T. E. Smith & C. E. Knapp (Eds.), *Sourcebook of experiential education* (pp. 18–25). New York, NY: Routledge.

Swarbrick, N., Eastwood, G., & Tutton, K. (2004). Self-esteem and successful interaction as part of the forest school project. *Support for Learning, 19*(3), 142-146.

The Laboratory School at Dr. Eric Jackman Institute of Child Study. (n/d). *Natural curiosity*. https://wordpress.oise.utoronto.ca/naturalcuriosity/jics/

The Outward Bound Trust. (2020, February 7). *Kurt Hahn: Five Pillars.* https://www.outwardbound.org.uk/blog/kurt-hahn-five-pillars

Torquati, J., Schutte, A., & Kiat. J. (2017). Attentional demands on executive function tasks in indoor and outdoor settings: Behavioral and neuroelectrical evidence. *Children, Youth and Environments, 27*(2), 70-92.

Ulrich, R. S., Simons, R. F., Losito, B. D., Fiorito, E., Miles, M. A., & Zelson, M. (1991). Stress recovery during exposure to natural and urban environments. *Journal of Environmental Psychology, 11*, 201-230. https://doi.org/10.1016/S0272-4944(05)80184-7

Ulset, V., Vitaro, F., Brendgen, M., Bekkhus, M., & Borge, A. I. H. (2017). Time spent during outdoor preschool: Links with children's cognitive and behavioral development. *Journal of Environmental Psychology, 52*, 69-80. http://dx.doi.org/10.1016/j.jenvp.2017.05.007

Urban, W. J., & Wagoner, J. L. (2014). *American education: A history* (5th ed.). New York, NY: Routledge.

Van Matre, S. (1972). *Acclimatization: A sensory and conceptual approach to ecological involvement*. MI: Towering Pines.

Vascellaro, S. (2011). *Out of the classroom and into the world*. New York, NY: The New Press.

Vygotsky, L. S. (1978). *Mind in society*. Cambridge, MA: Harvard University Press.

Waite, S. (Ed.). (2017). *Children learning outside the classroom: From birth to eleven* (2nd ed.). Los Angeles, CA: SAGE Publications.

Waite, S., Bølling, M, & Bentsen, P. (2016). Comparing apples and pears?: A conceptual framework for understanding forms of outdoor learning through comparison of English Forest Schools and Danish udeskole. *Environmental Education Research, 22*(6), 868-892.

Waller, T., Arlemalm-Hagser, E., Sandseter, E. B. H., Lee-Hammond, L. Lekies, K., & Wyver, S. (Eds.). (2017). *The SAGE handbook of outdoor play and learning*. London, Sage Publications.

Warren, K., Mitten, D., & Loeffler, T. A. (Eds.). (2008). *Theory and Practice of Experiential Education*. Boulder, CO: Association for Experiential Education.

Warren, K., Sakofs, M., & Hunt, J. S. (Eds.). (1995). *The theory of experiential education: A collection of articles addressing the historical, philosophical, social, and psychological foundations of experiential education.* (3rd ed.). Dubuque, IA: Kendall/Hunt Publishing.

WA SB 5357 (2017). Establishing a pilot project to license outdoor early learning and child care programs. https://app.leg.wa.gov/billsummary?BillNumber=5357&Year=2017

Weeland, J., Moens, M. A., Beute, F., Assink, M., Staaks, J. P. C., & Overbeek, G. (2019). A dose of nature: Two three-level meta-analyses of the beneficial effects of exposure to nature on children's self-regulation. *Journal of Environmental Psychology, 65*, (101326). https://doi.org/10.1016/j.jenvp.2019.101326

Wilson, E. O. (1984). *Biophilia*. Cambridge, MA: Harvard University Press.

APPENDICES

APPENDIX A

DEFINITIONS OF NBL FOUND WITHIN EMPIRICAL LITERATURE

"Forest school is an inspirational process that offers all ages regular opportunities to achieve and develop confidence through hands-on learning in woodland environment" (Murray and O'Brien, 2005, p. 11)

"Udeskole…is characterized by the fact that compulsory educational activities take place outside the walls/building of the school and are done on a regular basis" (Bentsen et al., 2009, p. 32)

"A forest school is an area of woodland which school children visit on a regular basis (usually weekly)…to build participants' confidence through mastering small achievable tasks in a woodland setting…it nurtures, supports and develops the self-esteem of the participating children" (Shields, 2010, p. 53)

"…place-based education increase students' sense of stewardship and environmental consciousness and add to their sense of attachment to place" (Louv, 2005, p. 218)

"Forest School, a U.K. outdoor education programme providing opportunities for both structured and unstructured woodland activities" (Roe & Aspinall, 2011, p. 207)

"Learning outside the classroom is about raising achievement through an organized, powerful approach to learning in which direct experience is of prime importance. This is not only about what we learn but importantly how and where we learn" (Department for Education and Skills, 2006, p. 5)

"Forest kindergartens are governed by four principles: 1) create opportunities for creativity and curiosity; 2) direct sensorial contact with nature; 3) build self-confidence and trust through risk-taking; and 4) provide unstructured play for development of sociality and conflict resolution (Moore & Marcus, 2008, p. 164)" (Latomme & Rosenblatt-Naderi, 2012, p. 2)

"…emphasis on creative use of the outdoors with the child being at the center of the learning process, making the learning explicit through extensive observation and documentation. Nature play emphasizes creative playing with the loose parts of the outdoor/natural world…What makes FS unique within the context of outdoor learning is its combination of long-term, regular learner-centered, play-based processes" (Cree & McCree, 2012, p. 62)

The Sooke School District NK program followed "five pedagogical principles of a) connecting deeply with nature through play, b) emphasizing local ways of knowing and understanding, c) promoting physical and mental health; d) learning collaboratively as part of an empathetic community, and e) the environment serves as a co-teacher" (Müller et al. 2017, p. 48)

Summary: a learning program occurring within a safe woodland environment that allows children to explore, pursue interests, build on skills over time and at their own pace which embedded in a routine established within the program (Massey, 2005)

Summary: an education approach and program of delivery that "adhere to the following: regular and repeated access to the same natural space, as well as emergent, experimental, inquiry-based, play-based, and place-based learning" (MacEachren, 2013)

"…school isn't supposed to be a polite form of incarceration, but a portal to a wilder world" (Louv, 2005, p. 222)

Summary: an approach that provides: regular contact with nature, place for (fantasy) play, differences in structure, engagement with natural materials, hands-on and student-directed learning to develop a sense of mastery (Änggård, 2010)

Summary: Educational environments which provide space and freedom, engagement with natural materials, opportunities for motor development, healthy psychological wellbeing; opportunity to direct own learning, and ability to find solitude (Davies, 1996)

Summary: children attend half/whole day year-round regardless of weather (to experience outdoor environment in all seasons), emphasize play; programs operate with basic understanding of safety rules, high adult-child ratio. Aim: develop children's self-confidence (self-esteem) & independence skills, learn to appreciate, care for & respect natural environment; Approach: children play freely in natural, outdoor environment, children provided with small, achievable and progressively more challenging tasks at which they are likely to succeed, appropriate risk taking, practical activity (Maynard, 2007)

Summary: woodland facility should be 15 min walk or bus from school, children attend regularly and spend the majority of their time engaged in woodland activities (not long journeys), location is private from public access, so children are safe to explore area in varying kinds of locations with opportunities for risk-taking activities (Swarbrick et al. 2004, p. 142)

APPENDIX B

INTERVIEW QUESTIONS

You have been asked to participate in this interview because you have been identified as an expert in a form of education that involves learning through direct, authentic, hands-on experiences occurring within naturalistic settings (i.e., nature-based, experiential education). The purpose of this interview is to gather information about the knowledge base and conceptual framework of this approach. We will begin with a few demographic questions and will then address questions pertaining to the available theoretical resources that inform and influence the knowledge base of this field.

Interview Questions

- Please describe how long and in what capacity you have worked in the field of nature-based, experiential education.
- There are many different approaches to 'education', how do you define or characterize one that prioritizes nature-based learning with experiential education? What are its key features?
- How did you learn about this approach? What were your formal and/or informal sources of professional development?
- Probing a little further, what are the specific features that make nature-based, experiential education distinct from ordinary education?
- In your experience, does nature-based, experiential education produce a better or more effective experience for learners? If so, please describe specifically how the learner benefits from these unique features.
- How do you know that nature-based, experiential education is more effective, or otherwise better, than other approaches to education? What kinds of evidence or data would you be able to draw upon to make such a claim?
- Based on your perspective, what theories or specific research best explain the essence of nature-based, experiential education, its value and the specific features that lead to better learning?
- I am curious to know more about the existing nature-based, experiential education knowledge base, specifically what are its canonical works?

- In your view, is there an adequate knowledge base that supports the efforts of people entering into a career in nature-based, experiential education to understand its underlying conceptual framework? How would you recommend that this body of research and literature be expanded to meet the needs of professional educators in the nature-based, experiential education learning community?

APPENDIX C

INTERVIEW WAIVER

Date: _____

Dear _____:

I am a Ph.D. Candidate at Montana State University and I am conducting a research study investigating the knowledge base and conceptual framework of nature-based, experiential education. My supervisor for this project is Dr. Nicholas Lux, Associate Professor, Montana State University. My study is partly based on interviews of experts in nature-based and experiential learning to explore the knowledge base supporting this field. I am inviting your participation in a 30-50-minute interview to gain your perspective about what nature-based, experiential education knows about itself. You have the right not to answer any question and to stop the interview at any time. Your participation in this study is voluntary. You can choose not to participate or to withdraw from the study at any time. You must be 18 years-old or older to participate.

There are no foreseeable risks or discomforts to your participation. Given your role as an expert, it may be useful to include your name and/or institutional affiliation with your interview responses, however, depending on your wishes I am also happy to keep your responses anonymous if you prefer (i.e., your name and/or your institutional affiliation will be included in or omitted from the final writeup based on your wishes). After I have had a chance to analyze my findings, I will check with you to validate that I have accurately understood and represented your perspective. The results of this study may be used in reports, presentations, or publications. It is my hope that this interview will be useful to you by articulating your conceptual understanding of nature-based, experiential education; however, you may not immediately benefit. More broadly, this research will contribute to the development of a stronger conceptual understanding of nature-based, experiential education.

I would like to audio-record our interview; however, the interview will not be recorded without your permission. Please let me know if you do not want the interview to be recorded; you can also change your mind after the interview starts. The audio files will be kept in a password-protected area on my computer until they are transcribed after which the audio files will be deleted. If you wish at any time for the audio or transcript to be deleted, I will comply with your request.

If you have any questions concerning the research study, please contact me at (406) 581-8230, joshua.meyer@montana.edu or my project supervisor, Dr. Nicholas Lux, (406) 994-6581, nicholas.lux@montana.edu. If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact Dr. Mark Quinn, Chair of the Montana State University Human Subjects Institutional Review Board, at (406) 994-4707, mquinn@montana.edu.

Thank you,

Joshua Meyer, PhD Candidate
Curriculum and Instruction, Education
Montana State University

By signing below, you are agreeing to participate in the study.

_____ _____
Signature Date

By signing below, you are agreeing to be audio-recorded.

_____ _____
Signature Date

Please initial your preference for maintaining anonymity in your responses*:

____ I prefer my responses be anonymous

____ I am comfortable including my name and institutional affiliation with my responses

*Regardless of your preference for maintaining anonymity, all responses will be checked with each interviewee to ensure the interviewee's perspectives are accurately represented.

APPENDIX D

SURVEY QUESTIONS

You have been asked to participate in this survey because you have been identified as an educator who practices a form of education that involves learning through direct, authentic, hands-on experiences occurring within naturalistic settings (what we will refer to as nature-based, experiential education). Most professions have an established knowledge base and conceptual framework that organize and explain their understanding of what works and why; the purpose of this survey is to find out how well your profession has done in providing you with knowledge about what works. This survey begins with a few demographic questions before exploring your insight about the resources that support your foundational understanding of this approach. The results from this survey will be compared to interview findings from experts who study nature-based, experiential education. This research is part of my doctoral work and the findings will be used to develop additional resources to support the practice of nature-based, experiential educators as well as generate directions for further study.

- How long have you taught using a nature-based, experiential educational approach?
    - <1 year
    - 1-2 years
    - 3-5 years
    - 6-10 years
    - >10 years

- Which of the following best describes your school?
    - Pre-kindergarten
    - Public K12
    - Charter K12
    - Private K12
    - Montessori
    - Waldorf
    - Other (please list)

In the following two questions I have provided space for you to list specific, outstanding examples – if any come to mind, it would be helpful for to know.

- How did you first learn how to use this approach? (Please rank order those that apply.)
    - I learn from my own experiences
    - Professional conferences (please list)
    - Continuing education workshops (please list)

  - Books (please list)
  - Academic journals (please list)
  - Popular press articles (please list)
  - Other (please list)

- Where do you go to learn more about this approach? (Please rank order those that apply.)
  - I learn from my own experiences
  - Professional conferences (please list)
  - Continuing education workshops (please list)
  - Books (please list)
  - Teacher education journals (please list)
  - Academic journals (please list)
  - Popular press articles (please list)
  - Online, web-based sites (please list)
  - Other (please list)

- Which of the following theories have been most helpful in advancing your knowledge with this approach?
  - Learning by doing (personal experience)
  - Association for Experiential Education's institutional definition
  - Kolb's Experiential Learning Theory
  - Laura Joplin's model of experiential education
  - Other (please describe)

- What resources best support your ongoing practice in nature-based, experiential education?
  - Children and Nature Network publications
  - Natural Start Alliance resources
  - Richard Louv (2005) *Last Child in the Woods*
  - David Sobel (2016) *Forest Preschools and Nature Kindergartens*
  - Association for Experiential Education
  - Forest School Association
  - Other (please describe)

- How well do you feel you have been served by the current knowledge base of this field?
  - Unserved
  - Poorly served

  - Adequately served
  - Well served
  - Tremendously served

- Please rank order the following resources that would best support your practice.
  - Specific books about nature-based, experiential education
  - Research about what works (verifying successful strategies) in this field
  - Research and practitioner conferences
  - Workshops in nature-based, experiential education in accessible urban centers
  - Workshops in nature-based, experiential education in exemplary outdoor settings
  - Specific articles in teacher education journals
  - Online trainings

- Additional comments:
  _____
  _____

- If you would like to share your name, location, and/or institutional affiliation, please do so here:
  _____

APPENDIX E

SURVEY CONSENT FORM

Dear Nature-Based, Experiential Educator,

Most professions have an established knowledge base and conceptual framework that organize and explain their understanding of what works and why; the purpose of this survey is to find out how well your profession has done in providing you with knowledge about what works.

We are collecting data and information from you, educators, who directly employ the use of nature-based excursions that include learning through hands-on, authentic experiences within your educational approach. With this information, we will develop additional resources to better support your practice as well as determine direction for future study.

With this in mind, we ask that you please complete the following survey. It deals with three main issues: 1) how you have learned about a nature-based, experiential educational approach, 2) how you have been served by the field of nature-based experiential education regarding what works, how it works, and why it works, and 3) how your ongoing practice in nature-based, experiential education can be best supported.

There are no foreseeable risks or discomforts to your participation, although you may be inconvenienced by the time it takes to complete the survey. There are no known benefits to you participating in the study.

Your participation in this study is voluntary. You can skip questions if you wish. You may choose not to participate or to withdraw from the study at any time. You are encouraged to ask questions about the study. You must be 18-years old or older to participate in the study.

Your responses are completely anonymous (no personally identifiable information will be collected), unless you choose to disclose your name, location, or institutional affiliation at the end of the survey. Your responses may be used in reports that may be made public. Completion of the survey will be considered your consent to participate.

If you have any questions concerning the research study, please contact me, Joshua Meyer, at (406) 581-8230, joshua.meyer@montana.edu or my project supervisor, Dr. Nicholas Lux, (406) 994-6581, nicholas.lux@montana.edu. If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact Dr. Mark Quinn, Chair of the Montana State University Human Subjects Institutional Review Board, at (406) 994-4707, mquinn@montana.edu.

Thank you,

Joshua Meyer, PhD Candidate
Curriculum and Instruction, Education

Montana State University

APPENDIX F

EXPERT REVIEW OF SURVEY FORM

Thank you for taking time to complete the survey and share your thoughts

Reviewer Name: _____

Instructions:

Please read each item carefully, addressing the following points:

- *Rate the understandability of each item*
- *Rate the clarity of each item*
- *Rate the relevance of each item to NBEE*
- *Rate the conciseness of each item*
- *Provide any additional comments regarding the item*

And rate each item using the following scale:

1	2	3	4
Very Weak	Weak	Strong	Very Strong

1. How long have you taught using a nature-based experiential educational approach? <1 year 1-2 years 3-5 years 6-10 years >10 years	Understandable _____ Clarity _____ Relevance to NBEE _____ Conciseness _____	Comments:
2. What grade level do you teach?	Understandable _____	Comments:

Pre-Kindergarten K-5 6-8 9-12 Higher Education	Clarity _____ Relevance to NBEE _____ Conciseness _____	
3. What best describes the academic context in which you teach? (Select all that apply) Public School Charter School Private School After School Program Summer Program Other (please list)	Understandable _____ Clarity _____ Relevance to NBEE _____ Conciseness _____	Comments:
4. How did you first learn about, or first experience, NBEE (e.g., college outdoor program, free-range" childhood, summer camp, "etc.)?	Understandable _____ Clarity _____	Comments:

	Relevance to NBEE _____ Conciseness _____	
This survey now focuses specifically on educational practices that involve learning through direct, authentic, hands-on experiences occurring within naturalistic settings, which I refer to as nature-based experiential education (NBEE).	Understandable _____ Clarity _____ Relevance to NBEE _____ Conciseness _____	Comments:
5. What resources best inform your understanding about this approach? (Select all that apply.) Books (please specify) Conferences (please specify) Personal Experience Professional Development (please specify) Research Journals (please specify)	Understandable _____ Clarity _____ Relevance to NBEE _____ Conciseness _____	Comments:

Web-based resources (please specify) Other (please specify)		
6. Please reorder the following list of sources that may inform your knowledge about the effectiveness of NBEE. Move the most important sources so they appear highest on the list. My own personal experiences Comparisons between my class and others across my school My school's rank within the larger region Nature-based experiential education research findings International student assessment data Other (please specify)	Understandable _____ Clarity _____ Relevance to NBEE _____ Conciseness _____	Comments:
7. Please reorder the list of features so they best align with your understanding of NBEE. Move the most important sources so they appear highest on the list. Student-centered/directed Experiential learning	Understandable _____ Clarity _____ Relevance to NBEE _____	Comments:

Hands-on, sensory, inquiry focused Environmental education Nature-based pedagogy Students have regular, direct contact with nature Other (please describe)	Conciseness _____	
For the next five questions, please rate your agreement with the following statements.	Understandable _____ Clarity _____ Relevance to NBEE _____ Conciseness _____	Comments:
8. Knowledge about NBEE is highly influenced by Personal Experiences. Strongly Agree Agree Neither Agree nor Disagree Disagree Strongly Disagree	Understandable _____ Clarity _____ Relevance to NBEE _____	Comments:

	Conciseness _____	
9. Knowledge about NBEE is highly influenced by Experiential Learning Theories. Strongly Agree Agree Neither Agree nor Disagree Disagree Strongly Disagree	Understandable _____ Clarity _____ Relevance to NBEE _____ Conciseness _____	Comments:
10. Knowledge about NBEE is highly influenced by Licensing Standards Strongly Agree Agree Neither Agree nor Disagree Disagree Strongly Disagree	Understandable _____ Clarity _____ Relevance to NBEE _____ Conciseness _____	Comments:
11. Knowledge about NBEE is highly influenced	Understandable _____	Comments:

by Development Theories (e.g., Human, Cognitive). Strongly Agree Agree Neither Agree nor Disagree Disagree Strongly Disagree	Clarity _____ Relevance to NBEE _____ Conciseness _____	
12. Knowledge about NBEE is highly influenced by theories associated with Nature-Based Learning (e.g., Attention Restoration Theory, Theory of Affordances, Stress Reduction Theory). Strongly Agree Agree Neither Agree nor Disagree Disagree Strongly Disagree	Understandable _____ Clarity _____ Relevance to NBEE _____ Conciseness _____	Comments:
13. Which of the following theorists, authors, scholars, or researchers have contributed to your understanding of this approach? Cathy Jordan David Kolb	Understandable _____ Clarity _____	Comments:

David Sobel Jean Piaget John Dewey Kurt Hahn Kurt Lewin Lev Vygotsky Maria Montessori Marina Ewald Richard Louv Other (please specify)	Relevance to NBEE _____ Conciseness _____	
14. Which of the following resources best support your understanding of NBEE? (Select all that apply.) Association for Experiential Education Case studies Children and Nature Network David Sobel books (e.g., *Forest Preschools & Nature Kindergartens*) Forest School Association Natural Start Alliance Richard Louv books: (e.g., *Last Child in the Woods*) Other (please specify)	Understandable _____ Clarity _____ Relevance to NBEE _____ Conciseness _____	Comments:

15. How well do you feel you have been served by the current knowledge base of this field? Underserved Poorly served Neutrally served Adequately served Well served	Understandable _____ Clarity _____ Relevance to NBEE _____ Conciseness _____	Comments:
The following six questions ask you to rate the usefulness of various currently available resources for supporting your understanding of NBEE.	Understandable _____ Clarity _____ Relevance to NBEE _____ Conciseness _____	Comments:
16. How satisfied are you with the usefulness of currently available NBEE-related **Books** for advancing your understanding about the practice?	Understandable _____ Clarity _____	Comments:

Very Satisfied Satisfied Neither Satisfied nor Dissatisfied Dissatisfied Very Dissatisfied	Relevance to NBEE _____ Conciseness _____	
17. How satisfied are you with the usefulness of currently available NBEE-related **Online Trainings** for advancing your understanding about the practice? Very Satisfied Satisfied Neither Satisfied nor Dissatisfied Dissatisfied Very Dissatisfied	Understandable _____ Clarity _____ Relevance to NBEE _____ Conciseness _____	Comments:
18. How satisfied are you with the usefulness of currently available NBEE-related **Professional Conferences** for advancing your understanding about the practice? Very Satisfied Satisfied Neither Satisfied nor Dissatisfied	Understandable _____ Clarity _____ Relevance to NBEE _____	Comments:

Dissatisfied Very Dissatisfied	Conciseness _____	
19. How satisfied are you with the usefulness of currently available NBEE-related **Professional Development Workshops** for advancing your understanding about the practice? Very Satisfied Satisfied Neither Satisfied nor Dissatisfied Dissatisfied Very Dissatisfied	Understandable _____ Clarity _____ Relevance to NBEE _____ Conciseness _____	Comments:
20. How satisfied are you with the usefulness of currently available NBEE-related **Research Verifying What Works** for advancing your understanding about the practice? Very Satisfied Satisfied Neither Satisfied nor Dissatisfied Dissatisfied Very Dissatisfied	Understandable _____ Clarity _____ Relevance to NBEE _____ Conciseness _____	Comments:

21. How satisfied are you with the usefulness of currently available NBEE-related **Teacher Education Publications** for advancing your understanding about the practice? Very Satisfied Satisfied Neither Satisfied nor Dissatisfied Dissatisfied Very Dissatisfied	Understandable _____ Clarity _____ Relevance to NBEE _____ Conciseness _____	Comments:
22. What individuals, groups, or organizations are making valuable contributions to this area of study for you?	Understandable _____ Clarity _____ Relevance to NBEE _____ Conciseness _____	Comments:
23. If you are interested in sharing your name, email, and/or institutional affiliation, please do so here:	Understandable _____ Clarity _____	Comments:

	Relevance to NBEE _____ Conciseness _____	
24. Additional comments:	Understandable _____ Clarity _____ Relevance to NBEE _____ Conciseness _____	Comments:

APPENDIX G

FIRST NBEE EXPERIENCE

nature centers as a child * growing up outside with woods all around; when I was 24 I went back to school for an associate's degree so I could take a NOLS course * free range childhood * work as an outdoor educator: trained as a field naturalist and educator through the Canyonlands Field Institute, then North Cascades Institute and Mount St. Helens Institute * Master's coursework; graduate research * Children Learning with Nature Conference in Santa Cruz, CA * college, self-learning * Girl Scouts and OhioEECO * Reading articles & google searches around Nature * Environmental Education degree * free-range childhood * Wild Ohio Professional Development; Teacher PD -SWCD; STEAM through BGSU & Ohio EPA * summer camps, free range childhood * on the job * college internships * workshops & conferences * college outdoor program * free range childhood; mother that ran education department for a public aquarium * "free-range" childhood & school field trips * living it * sixth grade student at a residential NBEE program outside Portland, Oregon (MESD Outdoor School) * free-range childhood and adulthood * Environmental education centers * childhood, high school student on a weeklong, hands-on wetlands immersive where I realized learning is exciting, I remembered how to learn * Graduate school * NBEE incorporated into my public school in Alaska * My son's experience in outdoor ed * college experiential mathematics professor * Graduate program in Environmental Education * Teacher professional development * My undergrad * college internship program * Girl Scouts * Outdoor education major * 6th grade class attended Outdoor School * childhood (my dad) * college outdoor program * free range childhood * outdoor school * post college internship * free range childhood * rural upbringing * college courses in PA * Free Range Childhood, Outdoor Programs, Summer Camp * "free-range" childhood * college educator * college program * research studies * I created my own program * Prescott College (undergrad) * job in experiential education * NOLS course * Fellowship with an environmental learning center * my own childhood * exploring when young * working at a place-based elementary school that had a heavy outdoor focus (geology, biology, anthropology) * summer camp * a course and high school * college outdoor program * Outward Bound course * NCOBS * NOLS * summer camp and high school leadership courses * free range childhood * It's how I grew up as a kid; formally Outward Bound * Outward Bound course when I was 14 years old * Teaching at Montana Outdoor Science School * NOLS/OB * college outdoor program * college program * childhood and expeditionary learning schooling * Playing outdoors as a kid * volunteer trail leader * summer camp * MOSS * graduate program in environmental education * summer camp in the San Juan Islands * North Cascades Institute (ELC) * YCMA Summer Camp in Minnesota * free range childhood * preschool and professional with College outdoor program * Girl Scouts * summer job * college outdoor program * childhood friends & Girl Scout troop * after school program in elementary school and outdoor college program * Outdoor School in 6th grade in Portland, OR * childhood experiences & college outdoor program * Junior Naturalist Camp * yearly children's weekend program through Ducks Unlimited * My daughter taught at a forest school in Santa Cruz, CA * Docent training at museum * personal practices, public knowledge, working at a nature-based childcare center * Facebook pages/groups * Free range childhood in rural Montana * "free-range" childhood to some extent, and also observing at a forest kindergarten * summer camp NBEE internship through my university * free range childhood on a farm, continued professional work in NYC informal science education/cultural institutions * AmeriCorps * college outdoor/rec programming and a FIPSE grant in the late 1990s

APPENDIX H

IMPORTANT CONTRIBUTIONS TO NBEE

C&NN * NOLS * SCA * Outward Bound * David Sobel * John Dewey, Lev Vygotsky * David Orr * Eleanor Duckworth * Jerome Bruner * Donella Meadows * The Private Eye (Ruef) * Earth Education (van Matre) * Nature Journaling (Laws) * Environmental Learning (Orr) * NAAEE * Journal of Environmental Education * Environmental Education Journal * Journal of Research in Science Teaching * Science Education * Phenomenological studies of children engaged in NBEE * personal responses to natural systems * personal responses to NBEE field trips * NAAEE * C&NN * EECO * ODNR * Montessori * Scouts * Conservation Club * Sea Grant * Great Lakes Stewardship Initiative * NOAA entities (ex: marine sanctuaries, estuarian research reserves) * metro parks * national parks * Earth Child Institute * Hamline University * EECO * ODNR * Stroud Water Research * Journey North * Center for Global Environmental Education * NAAEE * EECO * MEES * Antioch/Inside-Out * North American Reggio Emila Alliance * ERAFANS * Natural Start Alliance * NAAEE * Soil & Water Conservation Districts * Project WILD * Project WET * Project Learning Tree * 4-H * Boy/Girl Scouts * Environmental Education Council of Ohio * Shelburne Farms * Center for an Ecology Based Economy * Seal Rossignol * Master Gardeners * Master Naturalists * Solid Waste District * Soil & Water District * curious classroom teachers * STEMteachingtools.org * Megan Bang's research group * Indigenous leaders in NBEE * critical place-based pedagogy * NAI * Marc Stern * David Sobel * Maine Master Naturalist Program * Lakes Environmental Association * Greater Lovell Land Trust * Center for an Ecology-Based Economy * Lakes Environmental Association * Montana Audubon Center * Little Big Horn College * Big Horn Conservation District * National Park Trust * Other nature based preschool programs * Queer Nature * Wild Diversity * Project Wild * Project Learning Tree * Audubon * Florida Geographic Alliance * Project WET * Project WILD * Zander * Project Learning Tree * Michigan Alliance of Environmental and Outdoor Educators * National Association of Interpreters * MEEA * California's AEOE * BEETLES Project * Teton Science School's Place Based Education initiative * International Traditional Games Society * AEE * ROEE * TOEE * C&NN * Eastern Region Association of Forest and Nature Schools * all forest schools * Islandwood Graduate Program: University of Washington * NYSOEA * C&NN * Project Learning Tree * C&NN * PNC Grow up Great Grants * Children’s Gardening * Fish & Wildlife Associations * Richard Louv * Prescott College * Center for Nature & Place Based Early Childhood Education *, Natural Start Alliance * NAAEE * WaNPA * The Cedarsong Way * NOLS * LNT * BEETLES Project * Outdoor Play Canada * Child & Nature Alliance Canada * The Classroom Gardener* Cedarsong * Eastern Region Association of Forest & Nature Schools * Butterfly Hill Nature Preschool * Niki Buchan and all of Australia's bush kindies * Outward Bound * Carpe Diem Education * Camp Manito-wish * New Vision Wilderness Therapy * Outward Bound * Outward Bound * Outward Bound * Outward Bound * NOLS * The American Adventure Service Corps (TAASC) * Outward Bound * Inward Bound Mindfulness Education * Andragogy * systems thinking lit * neuroscience * cognitive science * MEAA * IEFA * North Cascades Institute * YF * Nature Bridge * MWA * National Audubon * Conservation Northwest * Rethinking schools * Carrolyn Finney * Doris Duke Scholars program * Antioch Urban Environmental Education program * Center for Diversity and the Environment * LGBTQ Outdoor Summit * BEETLES Project * Reciprocal Healing Conference * Rethinking schools * public school reps * community partners * collaborative projects with other community based orgs * student questions * North Cascades Institute * Nature Bridge * North Cascades Institute * Outward Bound * NOLS * Naturalists At Large * North Cascades Institute * Outward Bound * NAI * National Parks * C&NN * North Cascades Institute, Cornell, Audubon, LGBTQ Outdoor Summit, Natural Start Alliance, Wild Rockies Field Institute * National Association for Interpretation * Museum of the Rockies * Natural Start Alliance * Facebook connections * Tinkergarten * Antioch College New England *

others in the field * AmeriCorps * Rural Action * NAAEE * C&NN * Forest Preschools (e.g., NYC) * doctoral students in relevant contexts * My students

APPENDIX I

INFLUENTIAL CONTRIBUTORS TO NBEE

David Orr * Eleanor Duckworth * Jerome Bruner * Donella Meadows * Peter Gray * Claire Warden * Hungerford * Volk * Wilke, Marcinkowski * Fortner * Rachel Carson * Steve Irwin * Laura Kezer * David Green/Gruenewald * Paulo Friere * Megan Bang * Dorcas Miller * Marzano * Bronfenbrenner * LB Sharp * Einstein * Thoreau * Muir, Emerson * Rachel Carson * Erin Kenny * Django Paris * Mark Windschilt * Jessica Thompson * John Haskins * Deana Scipio * Robin Wall Kimmerer * Erin Kenny * Paul Petzoldt * Ellen Sandseter * Mariana Brussoni * Csikszentmihalyi * Rusty Keeler * Niki Buchan * Carol Dweck * Jude Hirsch * Paulo Freire * David Orr * bell hooks * Manulani Aluli Meyer * Eve Tuck * Robin Wall Kimmerer * Rudolf Steiner * Carrolyn Finney * Paolo Freire * Running Grass * Vandana Shiva * Johanna Macey * Mitchell Thomashow * Manulani Aluli Meyer * Thomas Fleischner * Mitchell Thomashaw * Loris Malaguzzi * David Elkind * Bev Boss * Rudolf Steiner * Ann Pelo * Louise Chawla * Jon Young