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A BETTER UNDERSTANDING THROUGH THE USE OF
THE NATURE JOURNAL

By

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

Hamline University

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ABSTRACT

This paper examines the positive impact that spending time in the natural world has on students. In reviewing the history of environmental education in the United States, the importance of nature on human development, and the impact that journaling and reflective thought processes have in education, this capstone sought to expand upon the research and encourage *using nature journals to affect children's perceptions of the natural world and their place within it*. While journaling can facilitate communication, self-expression and personal development, it is also a way to enhance learning by connecting background knowledge to new information, analyzing and synthesizing ideas and experiences before and after instruction occurs, and improving deductive and inductive reasoning skills. Using this technique to improve learning in an outdoor setting also produces the desired outcome of building connections between students and the natural world. This in turn empowers students to become good stewards of the planet and to know that they have a part to play in alleviating the harmful effects of our current climate crisis.

DEDICATION

To my family and friends for their continuous support and encouragement, I thank you. Thank you to my Capstone Committee for your patience and guidance in helping me along what seemed a monumental undertaking at this point in my life. I have learned a great deal from you and about myself throughout this process.

TABLE OF CONTENTS

Chapter 1: Introduction	7
Context.....	9
Summary.....	13
Chapter 2: Literature Review.....	15
Introduction.....	15
History of Environmental Education.....	15
The Impact of Nature on Human Development.....	20
Journaling and Interactive Reflection in Education.....	27
The Bigger Picture.....	30
Conclusions.....	33
Chapter 3: Methods.....	34
Introduction.....	34
Understanding by Design.....	35
Identify Desired Results.....	36
Determine Acceptable Evidence.....	37
Plan Learning Experiences and Instruction Accordingly.....	37
Target Population and Setting.....	39

Conclusion.....41

Chapter 4: Conclusions.....42

 Introduction.....42

 Research and Project Creation.....43

 Project Limitations.....44

 Project Implications.....47

 Conclusion.....47

References

TABLE OF FIGURES

Figure 1: Overhead Map of Lehigh Parkway Elementary School41

Chapter 1

Introduction

There is anthropological evidence concluding that, from the days when humans were hunter-gatherers, children learned what they needed to learn to become productive adults through their own play and exploration. They could acquire a vast knowledge of the plants and animals within their environment that were necessary and useful to this type of lifestyle. As time passed, lifestyles changed from agrarian and rural to industrial and urban, and people moved away from the daily interaction with the natural world. What was needed to become effective adults had changed; schools became more institutionalized, and classrooms became desks and tables, papers and pencils.

People such as John Muir, Rachel Carson, Henry David Thoreau, Jane Goodall, Aldo Leopold, and Theodore Roosevelt are well-known for their photography and literature with nature as the subject. They also went on to form the movements that were responsible for preservation and conservation of the natural world based largely upon their interactions within the natural world and the importance they saw in the continuation of this practice.

John Muir (1913), in his autobiography entitled *The Story of My Boyhood and Youth*, describes, in a series of essays, the nature that was always around him, adding

sketches of Muir Lake and Meadow, as well as his boyhood home, Hickory Hall House. He talks of coming home from school and immediately getting acquainted with the animals around him which was a “never-failing source of wonder and delight” (p. 74).

Theodore Roosevelt, the 26th president of the United States, is widely known and accepted as having done more to protect the natural environment than any other American president. Many believe his environmental policies were among his most valuable contributions of his presidency (Fishman, 2011, p. 173). Not only was he a life-long hunter and sportsman, and many of his writings tell of these excursions, but he was also concerned with the loss of habitat and species, especially with the American bison. While he is known to some as a preservationist, and to others as a conservationist, the difference between the two is not necessarily prudent in my conversation. In Roosevelt’s own words:

If there is any one duty which more than another we owe it to our children and our children’s children to perform, it is to save the forests of the country, for they constitute the first and most important element in the conservation of the natural resources of the country...Any really civilized nation will so use all of these three great natural assets [the soil, the rivers, and the forests] that the nation will have their benefit in the future. (Roosevelt, as quoted in Fishman, 2011, p. 179)

I cannot help but speculate that both Muir and Roosevelt, as well as many other environmentalists who have shaped our thinking on conservation and preservation, would not have had the same vision if not for the exposure they had to Nature from an early age.

Today, we can thank history's naturalists for creating our parks, art, music, literature, and the records documenting the beauty of nature before it was forever changed by human habitation. But do we fully take advantage of these spaces? What about those who cannot access these spaces directly? What of the young children who live in an urban area without the ability to interact daily with the natural world around them? How do we teach them to be good stewards of the planet if they do not relate to nature in the same way as those of us who grew up interacting with nature daily? In this paper, I chose the topic of: *Using nature journals to affect children's perceptions of the natural world and their place within it*. My project was to create a K-5 teacher's guide that focuses on the use of a simple tool, the nature journal. With it, I hoped to give teachers in my building a rationale for using this simple tool as often as possible to supplement their existing curriculum. Research suggests that journaling can provide benefits to education and learning, and by focusing on a nature journal, I hope to instill a sense of curiosity and inquiry about nature in our school's own backyard. The intent of the project is to encourage that curiosity and inquiry to transfer into other realms of our students' lives, and promote a life-long desire to see our green spaces, our natural world, preserved in its infinite importance to life on this planet.

Context

I grew up in a rural community with my parents and three sisters, on a 72-acre plot of land my family called "the farm." My parents were both teachers, and there was

only a small percentage of time when we were not all together. When we were in school, they were in school. We enjoyed summers off together. My grandmothers taught my sisters and me how to forage for mushrooms, and my parents taught us how to garden. We raised chickens for eggs and meat, and we consumed the majority of the food that we grew and gathered from our gardens, from our fruit trees, and from hunting and fishing on our property. My father taught us how to hunt and fish, as well as how to identify animals by their footprints and calls, and trees by their bark patterns and leaf formations. We planted hundreds of trees in our early years, and worked closely with the Penn State Extension office to maintain the land against erosion and maintain the health of our pond. Springs and summers were spent working in the yard and gardens during long days and relaxing on the porch under the stars at night. Falls and winters were spent harvesting and hunting, enjoying fun winter activities like sledding and ice skating, hiking on our mountain, and cooking our mid-day meal over an open fire. We were taught not to waste food, to turn down the thermostat, to turn off lights, and to turn off the water while we brushed our teeth. Environmentalism or naturalism was a way of life. It was the BEST way to grow up! Because of the rural community I lived in, many of my friends had similar experiences, though perhaps not to the degree that I had. Still, they had all seen a deer in the wild more than once by the time they made it to grade school. I carried on this way of living when I had my own children, and tried to teach them the same things I had been taught about the value of nature.

Circumstances changed when we had to move an hour and a half away, to an urban area, to the third-largest city in Pennsylvania, Allentown. This is where I secured a

teaching job, in a district with nearly 17,000 students, many of whom had lived in a city their whole lives, and had literally never seen a deer in the wild before. For instance, we took our first grade students on a field trip, and while on the bus, passed a very large field full of hay. This inspired many excited comments from almost all students on the bus; they were absolutely amazed. They had never seen a field of grass that big! After that attraction, interacting with live butterflies in a room that was full of them was a magical experience for us all. I began to realize that the natural world that had been such an integral part of my own upbringing was not a guaranteed experience for some.

An example of the lack of familiarity that some of my students have with regard to the concept of conservation is seen in a practice I implement each school year. To supplement our reading program, I give each of my students a notebook to use to record responses to prompts, or to complete short “do now” assignments as a way to engage and help them get focused. They are often unsure what to think at first, because the notebook they receive is usually used. It may be tattered and torn, adorned with little flowers, smiley faces, or doodles of Pokémon characters, lovingly put there by the students who used these notebooks in previous years. When they ask me why, I tell them that I always recycle and reuse when I can, that I simply tear out the used pages, put a new name tag sticker on the front, and that is how I help save another tree. Often this leads to a teachable moment about conservation and production, and how every little thing we do impacts something or someone else, and that this is our only planet so we must do what we can to help preserve and protect it. It always surprised me that this was brand new information to some of them. I began to wonder if, perhaps, their lack of experience in

nature led to their inability to see where they had an opportunity to help “save the planet,” even in small ways, like reusing a barely used notebook.

The idea of a nature journal appeals to me for many reasons. I have written in journals and diaries for many years now, starting when I was young and reading the books by Laura Ingalls Wilder, the *Little House on the Prairie* series. Documenting my insignificant daily happenings became a way of relaxing and reflection for me. I began to imitate the style of the author, even drawing little illustrations of the things that stood out as significant in the day-to-day.

Journaling is also a strategy I have used with my students to get them to put forth their ideas into words on paper, a task that is difficult for many students, but nearly impossible for some of my students with learning disabilities. I love that the rules of conventions do not count for these journals. I often find that by encouraging students to write freely or journal without the stress of making everything perfect really enhances literacy skills. The idea is to hear what your mind is thinking and write it down. If your mind asks a question, you would write that down, reflecting on your answers or further questions that are generated. In this way, the thought process is recorded, and can be referred to in the next steps of inquiry.

In essence, a nature journal allows the participant the same benefits, resulting in a more complete experience of the time spent in the natural setting. In *Keeping a Nature Journal: Discovering a whole new way to see the world*, Leslie and Roth (2003) explain that nature journaling “is your path into the exploration of the natural world around you, and into your personal connection with it” (p.3). They clarify that it “is the regular

recording of observations, perceptions and feelings about the natural world around you” (p. 5) “whereas a diary or personal journal records your feelings toward yourself and others, a nature journal primarily records your responses to and reflections about the world of nature around you” (retrieved from Retrieved from <https://learninglab.si.edu/collections/introduction-to-the-nature-journal/EjowRt15apdbLjz> 1).

Summary

And so with the belief in the importance of interacting with the natural environment and the suspicion that most children may be curious about nature if given the chance to interact with it, a teacher guide focused on the use of the nature journal for grades K-5 learners, with templates, suggestions, and tips for K-5 teachers on how to implement this tool in their daily science lessons was created.. It is a hope that those who implement this practice will be able to address: *Using nature journals to affect children’s perceptions of the natural world and their place within it.*

Chapter Two will review the history of environmental education in the United States and discuss the latest research regarding the benefits of using the natural world as a setting for experiential learning and inquiry and how this relates to the development of human beings. It will also review the research behind journaling in education, and how combining the use of a journal in the natural world will provide students many immediate and long-term benefits.

Chapters Three and Four will discuss the methods used to create a teacher guide that can be utilized to increase the opportunities to engage in the practice of nature

journaling in outdoor, experience-based learning activities. The limitations and implications of implementing this practice are also highlighted.

Chapter Two

Literature Review

Introduction

Chapter Two provides a review of the history of environmental education in the United States of America and reviews the literature on the importance of nature on human development. It delves into the literature surrounding the use of journaling within the natural science curriculum and its effectiveness in the learning process of humans. It shows that the research suggests a correlation between spending time in nature as children and developing positive attitudes toward the idea of stewardship of the planet.

History of Environmental Education

From early times, much of what humans knew about the natural environment was learned from interacting with it on a daily basis. Gray (2008) stated:

I have summarized the evidence from anthropology that children in hunter-gatherer cultures learned what they needed to know to become effective adults through their own play and exploration. The strong drives in children to play and explore presumably came about, during our evolution as hunter-gatherers, to serve the needs of education. Adults in hunter-gatherer cultures allowed children almost unlimited freedom to play and explore on their

own because they recognized that those activities are children's natural ways of learning. (Gray, 2008, p. 1)

And because of this hunter-gatherer lifestyle, the skills and knowledge required to live and become effective adults were vastly different than they are today. Knowledge of plants, animals and the landscapes in which they hunted and gathered was key to survival. The ability to create tools with which to accomplish their work was critical as well. Gray further states that "anthropologists have reported that the hunter-gatherer groups they studied did not distinguish between work and play -- essentially all of life was understood as play" (p. 2).

With the emergence of agrarian culture, and later an industrial culture, children became laborers, working in fields and in factories, with little time for play and exploration. Children were often forced to work by harsh or cruel means (Gray, 2008). A migration away from rural areas and an outdoor way of life to a more urban lifestyle allowed for less time for exploration. The exploration of nature became very difficult because children were no longer immersed in natural surroundings.

Education as a formal discipline is relatively new in our history, coming about in the mid 17th century in our country, with Massachusetts becoming the first colony to mandate schooling. However, formal schooling was only offered to boys, and at this point, an emphasis on reading, writing, and arithmetic prevailed. Later, in the 1800s, schooling was offered to all children, regardless of religion or social class, and referred to as "common schools." But again, the emphasis on learning was placed on basic literacy and arithmetic skills. (Levin, n.d.). This is when classrooms replaced being in completely

experiential-based learning environments in all areas, including the outdoors. Gray goes on to say:

With the rise of schooling, people began to think of learning as children's work.

The same power-assertive methods that had been used to make children work in the fields and factories were quite naturally transferred to the classroom. (p. 3)

With this way of thinking, learning was no longer associated with play as it used to be. And certainly, today, with high-stakes testing and standards, it is even more difficult for some teachers to justify the importance of play, especially in younger students.

Modern environmental education in the United States began with the environmental movement of the 1960s-1970s, but there were earlier influences from the late 1700s. Some of the early influences in the era between 1762 and 1920 were writers and thinkers such as Jean-Jacques Rousseau and Louis Agassiz maintained that education should include a focus on the environment and that students should learn directly from nature. Author Wilbur Jackman writes *Nature Study for the Common School*, which defined the nature study movement (Jackman, 1891, as cited in McCrea, 2006). The American Nature Study Society is established. In the 1920s, ecology begins to develop as a scientific field (McCrea, 2006).

In the Conservation Education Era of the 1930s to 1954, the "Dust Bowl" of the American Midwest brought rise to the conservation education movement which was supported by state and federal natural resource agencies. John Dewey promoted a more student-centered and holistic approach to education, emphasizing learning by doing,

lifelong learning, and integrated and interdisciplinary efforts. The National Education Association assumed a leadership role for conservation education in schools (McCrea, 2006).

The Foundation for Modern Environmental Education, 1969 to 1989, began with its formal declaration being in 1969, with the passing of the National Environmental Policy Act of 1969. This act states:

The purposes of this Act are: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality. (P. L. 91-190)

This was followed closely by Congress passing the National Environmental Education Act of 1970, which established an Office of Environmental Education in the U.S. Department of Health, Education, and Welfare, established a National Advisory Council for environmental education, and created a domestic grants program. In 1971, the National Association for Environmental Education (now the North American Association for Environmental Education, or NAAEE) was founded. The Western Regional Environmental Education Council and the American Forest Institute developed Project Learning Tree in 1976, which “helps students gain awareness and knowledge of the natural and built environment, their place within it, as well as their responsibility for it.” (McCrea, 2006, p. 5). In 1980, The Journal of Environmental Education publishes Goals

for Curriculum Development in Environmental Education. In 1987, the World Commission on Environment and Development publishes the Brundtland Report, also known as *Our Common Future*, which introduced the idea of sustainable development in which environmental protection and economic growth are viewed as interdependent concepts (McCrea, 2006).

The 1990s to present define the years of building for the future in environmental education. In 1990, the U.S. Congress passed the National Environmental Education Act of 1990 which authorizes an Office of Environmental Education in the U. S. Environmental Protection Agency; the development of environmental education and training program; the availability of environmental education grants and student fellowships; provides for President's Environmental Youth Awards; develops the Federal Task Force and National Advisory Council; and authorizes the development of the National Environmental Education and Training Foundation (NEETF). In 1992, the U. S. Environmental Protection Agency establishes the Office of Environmental Justice (McCrea, 2006).

In an article published in the *Early Childhood Education Journal*, Basile and White (2000) examined environmental education for young children and contend that a “major objective of environmental education is to establish a sense of respect for all living and nonliving elements of the natural world” (Wilson, 1994 as cited in Basile & White, 2000, p. 57). According to Basile and White, there are three important components of teaching environmental science to any age. These are: “Context,

connections, and communication. These three vital components provide the scaffolding necessary for lifelong environmental learning, appreciation, and action.”(p. 57).

One area of the current educational system in the United States that was not discussed to this point, but has a major impact on environmental science education overall is the era of high-stakes test-based accountability. James and Williams (2017) reveal that “during the past 20 years, the negative consequences attached to low standardized test scores have influenced schools and teachers to narrow the curriculum so their efforts can be focused on test preparation” (Berliner, 2011; Blazer, 2011; Cawbasileelti, 2006; Erskine, 2014; Faulner, 2006, as cited in James & Williams, 2017, p. 59). James and Williams (2017) continue with, “...untested curriculum and time-intensive, student-centered, experiential learning that integrates subject matter in meaningful ways have been de-emphasized or eliminated” (Amrein & Berliner, 2003; Erskine, 2014; Faulner, 2006; Ives & Obenchain, 2006; Mora, 2001, as cited in James & Williams, 2017, p. 59). One of the biggest areas that have been de-emphasized or eliminated from the curriculum in schools is that of outdoor, experiential education. It can be assumed, then, that this may also lead to problems in students’ understanding of the natural world.

The Importance of Nature on Human Development

Research has shown that exposure to and time spent in the natural world is important to human development. Mayer and McPherson Frantz (2009) claim that environmentalists such as Berry, Leopold, and Orr, as well as nature writers such as Louv, Muir, and Thoreau have long maintained that humans derive physical and

psychological benefits from spending time in the natural world. Mayer and McPherson Frantz (2009) also contended that researchers have shown that exposure to the natural world decreases negative behaviors and states such as aggression, anxiety, depression, illness, and increases positive states such as affect, health, and cognitive capacity. Mayer and McPherson Frantz (2009) cited the Health Council of the Netherlands and Dutch Council for Research on Spatial Planning (2004), van den Berg (2005), and Frumkin (2001) for that information. It should be noted, however, that Mayer and McPherson Frantz (2009) also conceded that there had not been a lot of studies expressly looking at why that is the case. Consequently, in their studies, they used a Connectedness to Nature Scale (CNS) which measured participants' sense of oneness with the natural world, their sense of kinship with animals and plants, and their sense of equality between the self and nature (Mayer and McPherson Frantz, 2009?). Furthermore, their research indicated that being in nature helped people feel more connected to nature and they could spend more time reflecting on life issues. (Mayer and McPherson Frantz, 2009).

Studies have also been done in the area of physical activity in the outdoor setting versus physical activity indoors. Beyer et al. (2015) restated that:

Barton and Pretty found...that acute short-term (5 min) exposure to green exercise (activity in the presence of nature) improved both self-esteem and mood for a variety of green environments, with a higher effect size observed for activities in the presence of surface water. (p. 4)

Beyer et al. (2015) further note that: “Mitchell found in a population-based survey study in Scotland that the odds of poor mental health were reduced among those regularly using natural settings for physical activity, compared to non-users of these settings” (p.4).

In their findings, there was evidence of significant reductions in blood pressure and improvements in mood even among participants who were merely exposed to scenes of greenery while exercising on a treadmill (Beyer et al., 2015).

Ruth Wilson (2014), who writes for *Education Digest*, condensed an article from *Teaching Tolerance* (2014) and states that childhood experiences in nature that excited the sense of wonder helps shape people’s personalities and worldviews. Wilson contends that while these experiences are necessary, many children today grow up without these opportunities, especially those students who live in highly populated areas such as our big cities. Wilson (2014) cites a 2012 study by the Archives of Pediatrics & Adolescent Medicine that found only about half of the preschoolers in the United States have daily parent-supervised outdoor play. Wilson (2014, p. 45) also refers to Richard Louv, author of *Last Child in the Woods: Saving Our Children From Nature-Deficit Disorder* (2008), who believes that children who grow up without close connections to nature can often experience “nature-deficit-disorder,” a condition that causes diminished use of the senses, attention difficulties, and higher rates of physical and emotional problems. Wilson (2014) also refers to Edward O. Wilson (1992) who warned in an interview on the PBS series *Nova* that children separated from nature are “not fully developing...their propensities to develop and seek on their own” (p. 45). Furthermore, Wilson (2014) describes the benefits of nature learning as giving “students agency in their learning and providing a

testing ground for social-emotional skills.” (p. 45). These benefits, however, are not confined to social-emotional development, but can also be seen in the areas of mathematics, early science learning, literacy, attending to sound and learning auditory patterns, as well as higher-level scientific thinking skills: asking questions, observing with all the senses, making and testing hypotheses, recording data, and drawing conclusions; a full range of learning and development (Wilson, 2014).

Attention Deficit Hyperactivity Disorder (ADHD) is a growing concern among school-aged children, which seems to interfere with their social-emotional development as well as their academic progress. Beyer et al. (2015) cite studies involving children with ADHD that found mental health benefits of outdoor walks in a natural setting, as compared to a downtown or neighborhood setting, with improvements in concentration comparable to improvements gained by commonly prescribed pharmaceuticals for ADHD. Similarly, Beyer et al. cite a Faber-Taylor and Kuo study that noted “children’s ADHD symptoms were milder if they played regularly in green settings, providing additional support for the mental health benefits of outdoor play and physical activity among children” (p. 5).

Martha Driessnack (2009) from the *Journal for Specialists in Pediatric Nursing* presented a column in their “Ask the Expert” section where she discussed children and nature-deficit-disorder. She emphasized that the term nature-deficit-disorder is not an official diagnosis, rather a term credited to Richard Louv, discussed prior, which is “used to address the increasing cost to children as they are increasingly deprived of direct contact with nature and the experience of unstructured free play in the out-of-doors” (p.

73). Roberts, Foehr, & Rideout, 2005; Roberts & Foehr, 2008 (as cited in Driessnack, 2009), say that children between the ages of 8 and 18 years spend an average of 6.5 hours a day with electronic media. Balmford, Clegg, Coulson, and Taylor (2002) found that eight-year-old children were better able to identify characters from a card-trading game than common neighborhood flora and fauna, and others had no idea what plants grow in their own backyards (as cited in Driessnack, 2009). Reed (1996) said that “children are losing their ability to experience the world directly, which in turn contributes to a growing inability of children to relate to others’ life experience as well”(as cited in Driessnack, 2009, p. 73).

Driessnack (2009) cites a study by Wells (2000), and others reporting that direct exposure to nature and natural settings not only seemed to improve children’s cognitive abilities, but also their ability to attend to and stay focused on tasks. Furthermore, they appeared to show benefits in other areas such as increases in problem-solving skills, self-discipline and self-regulation, and a reduction in symptoms of stress and those of attention deficit hyperactivity disorder. In contrast, indoor activities such as watching TV, or outdoor play on paved, “non-green” areas appeared to increase ADHD symptoms (Louv, 2008).

Louise Chawla (2013) explores this connection between the natural world and childhood development in a paper discussing the findings of a study done at the University of Illinois at Urbana-Champaign, Chawla discusses the findings of a study done at the University of Illinois at Urbana-Champaign. Researchers (Taylor, Wiley, Kuo, and Sullivan, 1998) found that “people gather in green spaces more than other

areas, and that children in these green spaces play more creatively and interact with adults more frequently and more positively” (as cited in Chawla, 2013, p. 44).

Chawla also comments upon research done in Sweden with preschool children who attended programs that maintained outdoor activities all year round, regardless of the weather. The philosophy of these programs was to get children outdoors often and regularly in green or completely natural spaces. The amount of time children spent in these outdoor play activities was not regulated, but rather it was mandated that *some* outdoor time be part of the curriculum. Researchers there (Grahn, Martensson, Lindblad, Nilsson, & Ekaman, 1997) found that students in these types of programs had

...fewer absences and a greater capacity for concentration. They played more imaginative and elaborated games. They invented stories that would go on from day to day in their play, whereas the play in the built area was more broken up and didn't have these sagas, so to speak, that the children developed. Physically, the all-weather children showed better balance and agility on fitness tests.”

(Grahn, Martensson, Lindblad, Nilsson, & Ekaman, 1997, as cited in Chawla, 2013, p. 45)

Chawla also refers to some of the same researchers in Chicago (Taylor, Kuo and Sullivan, 2001) who have also conducted a study in which the parents of a group of students diagnosed with ADHD kept logs of their child's symptoms of the disorder, as well as time logs of what they were doing, when they were playing, and where. This study found that “the more time children played outside in green areas, and the greener the areas were, the more likely it was that their parents' logbooks recorded lower levels

of ADHD symptoms following play.” (Taylor Kuo & Sullivan, 2001, as cited by Chawla, 2013, p. 45)

Perhaps the most compelling argument on the role that nature plays in human development comes from Richard Louv (2008), author of *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder* and chairman of the Children & Nature Network (www.cnaturenet.org). In 2007, Louv testified before the Interior and Environmental Subcommittee of the United States House of Representatives. The following is a summary of that testimony, entitled *Leave No Child Inside* (2007).

Louv (2007) cited studies by the National Sporting Goods Association and American Sports Data, a research firm, showing a dramatic decline in the past decade in outdoor activities such as swimming and fishing, and that even bike riding is down 31 percent since 1995. Louv goes on to say that in San Diego, California, according to a survey by non-profit Aquatic Adventures, 90 percent of inner-city schools do not know how to swim, and 34 percent have never been to the beach. The reasons behind the decline in outdoor activities included disappearing access to natural areas, competition from television and computers, dangerous traffic, more homework and other obligations, and an overall fear of danger (Louv, 2007).

What are the consequences of this decline in outdoor activity in natural environments? Louv believes there are many. He feels the problems with childhood obesity, depression and symptoms of Attention Deficit Hyperactivity Disorder, are all on the rise today, and that ensuring children get out in green or natural settings more often may lower the occurrences of these (Louv, 2007).

From an educational standpoint, Louv noted that studies in California show that schools that used outdoor classrooms and other forms of experiential education produced significant student gains in social studies, science, language arts, and math. One particular 2005 study by the California Department of Education found that students in outdoor science programs improved their science testing scores by 27 percent. (Louv, 2007)

Another study measured change in students' knowledge before and after an experiential field trip to the local delta area. Although many of the students had prior knowledge of the delta region, and could draw isolated configurations of both land and water features of the delta prior to participating in the field trip, after the experience, their ability to experience this region while on the field trip did cause an overall statistically significant change in their knowledge of this delta environment (Jose, Patrick, and Moseley, 2017).

Journaling and Interactive Reflection in Education

There is much evidence that journaling is an effective way to learn. Journals are a written record of thoughts and ideas that an individual has processed and clarified for themselves through the act of writing (Killion, 1999) as cited in King & LaRocco (2006, p. 1) The key component of journaling in education is the reflection piece. Reflection allows the individual to make connections and meaning from what they have witnessed and recorded. Therefore, nature journaling provides an excellent tool for the recording of natural discoveries and insights gained from the experience of being in the natural world.

Studies done in the field of psychology to look at the impact of journaling on students' self-efficacy have shown increases in students' beliefs about their own effectiveness, as well as increases in their own perception of their skills in problem-solving, the way they speak and the way they think (Fritson, 2008). Killian (1999) has said the following, "the process of transferring an idea into language forces the mind to process and clarify the idea. When a learner is required to apply language to an idea the idea takes shape and form" (p. 36).

Some researchers have described journaling as a way to see what students are thinking, as a valuable tool for processing new information to integrate and transfer it into terms of what a student already knows to create new meaning, helping them synthesize new information (Duerden, et al, n.d.; Heimstra, 2001; Kelly, 2004; Kerka, 2002; Killion, 1999 as cited in King & LaRocco, 2006, p. 2). Some additional benefits attributed to journaling in the classroom stated by King and LaRocco (2006) include, but are not limited to:

- explicating connections between new knowledge and previous knowledge
- examining relationships between what is being learned and the rest of the world
- reflecting on personal goals
- sorting out experiences
- solving problems
- enhancing reflective thinking
- enhancing metacognition
- improving problem-solving and critical thinking

facilitating self-expression, personal growth, and values clarification

- synthesizing ideas, experiences, and opinions after instruction

The use of a nature journal should then provide the same inspiration and benefits as described in the research on journaling in education. However, with a focus on spending time in an outdoor space, the nature journal “allows us to pause or dwell in spaces for more than a fleeting moment, and, therefore, encourages us to attach and receive meaning from that place” (Payne & Wattchow, 2009, as cited in Warkentin, 2011, p. 227). A nature journal would incorporate the same benefits of reflection on outdoor classrooms and educational settings.

In an article published in the *International Journal of Early Childhood Environmental Education*, Johnson (2014) states that:

Young children have an inherent sense of wonder and connection to their natural world which can be preserved and enhanced through the cultivation of observation and documentation.the young child can begin to consciously explore the nearby nature of their world. The addition of a journal practice to regular outdoor environment exploration allows the child to assimilate their observations and experiences while laying a foundation for literacy education. (Johnson, 2014, p. 126)

Furthermore, the practice of journaling while experiencing the natural world facilitates the child’s growing bonds with nature, allows for increased outdoor time, encourages deeper connections with nature and helps solidify these connections, provides an outlet

for motor and language development, and allows for data collection and developing insights about his or her place in the natural world (Johnson, 2014).

Gisel (2002) describes a nature journal as, "...a place to grow your thoughts, feelings, ideas, activities, observations, and relationship with the natural world. And it is an opportunity to interpret your inner thoughts out into the natural world and space where the natural world can flow into you and leave a permanent mark" (p.1). Gisel referenced the fact that John Muir, a well-known naturalist, founder and first president of the Sierra Club, an environmental organization started in 1892, used a nature journal as a means to record his own personal experiences in nature, and from there, used his journals to compose the many articles and books he had published in his lifetime. Muir used his personal nature journals in his professional life, that of a naturalist. Muir's writings and philosophies about the importance of nature and of protecting this planet have had a huge influence on all fields of environmental studies.

The Bigger Picture

In reviewing the literature surrounding the history of education in the United States, the history of environmental education, the role nature plays in the development of human beings, and the benefits of using journaling show how this type of reflective thinking can be an invaluable tool in ensuring a student's understanding of the natural world. Knowing the benefits of the journal alone should give cause to implement its use in the classroom and across curricula. But can this tool have a bigger impact or scope? Can it promote a sense of responsibility or stewardship in students so that they feel empowered to effect change in a world that is experiencing a climate crisis previously

unseen by humans? The studies examined in the following paragraphs suggest the answer to that question is an inspiring, “Yes!”

Humans have “a nature-given intellectual culture and ability we all have in order to survive as human beings” (Hyun, 2000b, p. 130). It is the idea that this is a type of survival mechanism and that “...those with strength in the area of the naturalist intelligence not only experience love of nature or interrelated systems separately but connect the two and apply them to problem solving in many areas. Therefore, the experiences accumulated in childhood can be said to define our ecological literacy and ability to think globally and act locally” (Hyun, 2000b, as cited in Johnsobasilen, 2014, p. 130).

To achieve that purpose, Hyun (2000b) suggests guidelines and considerations for the development of early childhood environmental education curriculum that would cultivate the naturalist intelligence. “These guidelines suggest a balance of direct nature experience as well as activities for reflection and assimilation of those experiences. The nature journal is the perfect outlet for these reflection activities” (Hyun, n.d., as cited in Johnson, 2014, p. 131).

According to Basile and White (2000), the three components necessary for successful and meaningful environmental science education include context, connections, and communication. Students must be allowed to make connections to the content being taught in ways meaningful to them as individual learners. Teachers should not supply the conversation or dialogue around a given topic for students, but should permit students to experience the topic or content to make meaning. Then, teachers must allow students to

communicate that meaning back to the teacher to ensure understanding. A student nature journal is a tool specifically designed to do just that (Basile & White, 2000).

Furthermore, “Facilitating processes through the investigation of the environment and related social issues by integrating ‘powerful’ approaches provide children with knowledge, skills, and values necessary for a lifetime of learning and civic action” (p. 58).

Lorsbach and Jinks (2013) offered a look at what early 20th century nature study can teach us, referring to the works and writings of Louis Agassiz to show that there was a philosophy even back in the early 1900s that saw the value in nature study, and that learning about nature should come from direct observation of nature and not from writings in textbooks. This way of learning, in and of itself, leads to an increase in an individual’s perception of their role in environmental citizenship (Lorsbach and Jinks, 2013).

An article by Honig (2019), poses the question: “How can we more specifically help young children relish the outdoors, awaken their sense of wonder, delight in nature, and instill a life-long desire to preserve and protect the environment?” Honig studied different outdoor activities and play, noting subsequent benefits following play in areas such as learning new concepts (big/small, same/different, shapes, change time); developing an appreciation for beauty and aesthetics; learning a tolerance and lack of fearfulness about creatures; learning relaxation techniques in the outdoors; developing experimentation, creativity, imagination and sense awareness skills; building enhanced motor skills; building vocabulary; developing self-actualization and feelings of being

capable; and learning to become caring and compassionate toward creatures and other people. Honig concludes:

Invigorating and delighting experiences in nature increase the chances that children will have enough sturdy ‘joy pipes’ to last a lifetime and ensure that children will continue to care for the Earth’s well-being and keep their love of nature as they mature. (Honig, 2019, p. 669)

Conclusion

Throughout this chapter, the history of both education and environmental education, and how changes within society and culture of the United States have impacted the focus of education have been examined, as well as the importance of nature on the development of human beings, highlighting the benefits shown by the simple practice of journaling. While nature journaling has shown increased benefits within the science curriculum as it relates to nature and human development, it may have a farther-reaching impact on the bigger picture, in that connecting with nature through the use of a nature journal may, in fact, create a life-long love of nature in the individuals who use a nature journal, and instill a sense of connectedness to the natural world that results in a greater sense of Earth stewardship.

Chapter 3 will discuss the methods used to create a teacher guide that can be used to increase the opportunities to engage in the practice of nature journaling in outdoor, experience-based learning activities.

CHAPTER 3

Methods

Introduction

Various research revealing the many benefits of using the simple tool of journaling in education have been discussed. While journaling is intended to be an informal piece of writing, much can be learned from the process, both for students and teachers. When a student uses a journal to reflect, not only do they gain a better understanding of their experiences, their teachers can acquire a better understanding of the process and the way a student thinks. This is extremely useful information when teachers begin to differentiate instruction to meet the needs of all learners in diverse classroom settings. Students can make connections between the experience they are writing about and past experiences they have had, as well as generate questions as to what this experience can imply for the future. Synthesizing those ideas and expressing them in the written language, or a drawn picture, adds another dimension as well, enabling a student to think about the experience at a higher level, to make it their own. This is when true learning takes place.

As teachers provide the conditions for students to experience the outdoors, the nature journal provides the space for the learner to process, reflect, connect and create. In an era of increased screen-time and technology, disappearing green spaces, and an overall

reduction in free-play time in the outdoors, the use of the outdoor classroom and a nature journal may be a rare opportunity for many children today to find connection with the natural world.

The term “nature-deficit disorder” describes the human costs of this alienation from nature. Louv (2005) believes some of these costs include an increase in childhood obesity, depression, and symptoms of Attention Deficit Hyperactivity Disorder.

This chapter presents the rationale and methodology involved in the creation of a teacher’s guide, lessons, and activities highlighting the nature journal using the Wiggins and McTighe (2011) method of curriculum design. In keeping the research topic of *Using nature journals to affect children’s perceptions of the natural world and their place in it* in mind, a series of lessons and activities will be developed that allow for children to be in nature and keep a nature journal as part of the experience. The hope is to impact the way students see themselves as learners within the realm of environmental science and consequently promote a life-long interest and connectedness with the natural world. In doing so, students will gain confidence in their abilities to make small changes today that may have a far-reaching, positive impact on their futures.

Understanding by Design

In an age where there is a heavy emphasis on standardized testing results, teachers often feel pressured to teach only the material that will be tested. While many would not choose such a practice, understanding that long-term results of learning cannot be guaranteed from memorizing facts alone, they often cannot risk straying from this type of teaching, as the stakes are too high when teacher effectiveness evaluations and district

funding may rely on those same results. Wiggins and McTighe (2011) state that “experiential learning that stimulates multiple senses in students, such as hands-on science activities, is not only the most engaging but also the most likely to be stored as long-term memories” (p. 6). With that in mind, the Understanding by Design model lists three steps to curriculum design that educators should follow: Identify Desired Results, Determine Acceptable Evidence, and Plan Learning Experiences and Instruction Accordingly. The teacher’s guide, titled *A Better Understanding: A Teacher’s Guide to the Use of the Nature Journal in Daily Activities* suggests activities and provides templates to implement these steps.

Identify Desired Results This ‘backward design’ method focuses first on identifying the desired results. It drives the teacher to think about what the essential questions are that students will have to consider, what ideas or skills will have to be acquired, what long-term goals and/or standards will be targeted (Wiggins & McTighe, 2011) With a focus on the use of the nature journal, the desired result of this teacher guide and unit is two-fold. The first is to provide teachers the rationale behind the importance of offering students experiential, hands-on activities outdoors while providing a guide on how to implement the nature journal on a daily basis within their own science curriculum. The second is to promote and ensure that students have opportunities to experience meaningful, life-long interaction within the natural environment. While specific state and local standards were considered, and are listed within the teacher’s guide, the general science curriculum will be left to address those standards. The intent of this project is to supplement that curriculum with a powerful tool, the nature journal.

Determine Acceptable Evidence In determining what acceptable evidence is, teachers must consider by what criteria performance will be assessed, what products will reveal evidence of meaning-making and transfer, and what evidence will be collected (Wiggins & McTighe, 2011). In this project, teachers and students will have a general understanding of the nature journal, and participate in outdoor activities that give ample opportunity to use one. Reflection and self-evaluation are key to these activities and students will be encouraged to use their own art and writing to complete entries. King and LaRocco (2006) have determined, there are benefits obtained by the act of journaling that have positively impacted students' academic skill sets that make them better students overall. Success, for the purpose of this project, is defined as any time a student or teacher observes an increase of understanding that may be linked to the use of the nature journal activities. Furthermore, lessons, suggestions, and tips will expose children to the outdoors, hopefully building their understanding of their place in Nature.

Plan Learning Experiences and Instruction Accordingly Wiggins and McTighe (2011) remind educators of two important aspects of unit planning. First, while engaging and kid-friendly lessons are important, these types of lessons should emphasize minds-on work, rather than hands-on work, and the activities should produce coherent, focused and generative learning. Second, while teaching content, educators should prioritize, make interesting and useful, and “uncover” content, not merely “cover” content (p. 9). Activities should be selected that will lead to the achievement of the desired results, will ensure students achieve transfer and meaning and acquisition with

increasing independence, and will be sequenced and differentiated to optimize achievement for all learners (Wiggins & McTighe, 2011).

With that in mind, and with the intent of the nature journal in its informal writing format, there are only two required activities within this unit: the opportunity to be in a natural environment to create a journal entry, and a reflection piece that goes along with each entry. A student self-evaluation component will be incorporated as part of the student's journaling activities after completing a series of journal entries to ensure that students are connecting their nature experiences to the bigger picture.

Because a nature journal is meant to reflect what inspires an individual while in nature, the format of the nature journal itself is rather free form. Knowing that the desired results are to promote and ensure that students have opportunities to experience meaningful, life-long interaction within the natural environment, however, there will be scaffolding that will be necessary in rolling out the journal activity. This will take the form of prompting and examples on beginning journal pages, as well as differentiating between all levels of learners; for example, young students who cannot read or write will be asked to draw pictures and dictate to staff if words are needed. Teachers will have the opportunity to tailor the journal entry prompts to their science curriculum, to ensure that students can react and reflect in ways that tie into the desired outcomes of the required state standards.

A key component of this research is the student self-evaluation piece. This will consist of reflection writing about the experience in the natural world using the nature journal, and how that experience has impacted the way students see themselves as

learners. In keeping with the idea of a free form piece of writing, the suggestion is to not formally evaluate any part of this journal, even spelling and grammar. If a teacher is not certain a student is making connections while using this tool, conferring with a student, encouraging, and prompting self-reflection can be used as a means to scaffold and practice this skill until a student becomes adept at self-reflection independently.

It should also be noted that while some of the research recognized in the literature review of this project referenced journaling using technology such as applications for tablets or email, for the purpose of my project, none of this type of technology will be used. It was my desire to eliminate screens completely for these learning activities so as to give students a complete, “unplugged” outdoor experience. Students will use a paper journal with a pen, pencil or some other form of writing utensil. I did not want technology to play a role in the actual student experience within nature. It should be noted, however, that technology can play an important role in today’s classrooms, and an e-journal may be listed in the teacher’s guide as a possible tip to journaling if a teacher chooses to implement the journal in that way.

Target Population and Setting

The teacher’s guide, lessons, and activities will be implemented in an elementary school comprised of about 350-375 students each year, with a teaching staff of 14 regular education classroom teachers, two learning support teachers, and several support staff teachers, such as speech and language and occupational therapy teachers. A part-time staff of specialists (library, art, gym, and music teachers) also belong to this school. Students have a range of skills and abilities which include a large population of English

as a Second Language (ESL) learners as well as students who have special education Individualized Education Plans (IEP), and some students have also experienced childhood trauma, which directly impacts the types of differentiation of learning activities that should be done.

Teachers will be supplied with a teacher's guide containing templates for creating a primary grades (K-2) and a secondary grades (3-5) nature journal. Also included in the guide is the rationale for keeping a nature journal along with tips and suggestions for implementing the use of the journal within the teacher's regular science curriculum, the rules of journaling (in that it is a free write, with limited opportunity to prompt students), and a suggested schedule for completion of journal entries.

Our school grounds are quite large for an urban school setting; however, this area does not contain any playground equipment. (See Figure 1) While most of the area is an open, grassy field, there are a few different species of trees on the grounds and surrounding the perimeter of the school grounds. There is a small area designated as a bird habitat, in which small flower gardens were planted, and birdbaths and feeders installed in various locations. These feeders attract several kinds of small animals that reside in the area, along with several species of birds. There is also a group of container gardens for planting vegetables along one outside wall, where the third grade students planted vegetable gardens in the spring. The school grounds are also within walking distance to one of the city parks. The teacher's guide will contain suggestions for using this nature journal activity on field trips, where applicable in nature, as well as at home activities.



Figure 1

Conclusion

With ample evidence from research indicating that the use of journaling in education can have many benefits to overall student success, in addition to the research indicating that a connection to the natural world plays an extremely important role in human development, it is my hope that by making outdoor activities available to our students on a regular basis, they can become intrinsically motivated to spend more time in nature as a choice when they have free time anywhere they happen to be, and be able to reap the wide range of benefits that the use of the nature journal can offer.

CHAPTER FOUR

CONCLUSIONS

Introduction

I spent the majority of my life in a small country town, surrounded by nature and wide-open spaces, and grew up “connected” to the natural world by the daily activities of hiking, gardening, fishing, camping, raising animals such as ducks and chickens, working on a neighbor’s dairy farm, and doing outdoor chores. I have felt strongly that this connectedness has made me the person I am today, and that without that feeling and those experiences, I would neither be an advocate for environmentalism, nor an activist for the conservation of the natural resources on this Earth. This led to my understanding and belief that an important part of childhood development that all children should experience is that connectedness to the natural world. Some of the literature discussed in Chapter Two has also justified this belief.

In contrast, many of the students I teach in my large, urban school district have not had those experiences; they show no evidence of this connection to the natural world in the way they speak or act. An increase in the availability and use of may have led to movement away from outdoor play in schools and at home. The emphasis on standardized testing, in the hope of increasing basic reading and math skills, may have also contributed to a shift away from outdoor, free play in “free time” during the school

day. The climate crisis, which may be the biggest global concern of our time, is prevalent in the media and a point of contention in politics. This prompted me to wonder about the impact that this loss of connection to the natural world has on learners, given the fact that many adults may have fear, anxiety, and feel helpless about the climate crisis.

Believing that some of the concerns I see in my daily interaction with students stem from their lack of free time involving outdoor play and interaction with the natural world, I created a project that could help teachers address this deficiency by *using nature journals to affect children's perceptions of the natural world and their place within it.*

Research and Project Creation

Concerned about the lack of connectedness to nature in many young children, I became motivated to review the history of education and environmental education in the United States. For many years, humans existed within the natural world, having to hunt and gather for their daily sustenance and life. At that time, education was not a formal institution. All of what was learned was learned through experience. Gradually as humans became more agrarian, and then industrial, there was a movement away from rural areas, and into more densely populated cities and towns. This led to less exposure to the natural world on a daily basis for many. Education became more formal, and learning moved from the natural world setting to the classrooms. Today, with an emphasis on standardized testing, many states have shifted their focus solely to academics, and with that, came a decrease in the amount of time teachers are able to expose their students to outdoor lessons and activities, including recess and free play.

The literature surrounding the use of journaling in education shed further light on the positive impacts of this tool. The fact that the reflective part of the journaling process allows for deeper understanding of material, and allows for the transference of knowledge across disciplines and curricula indicates that it is an important part of the learning process. Furthermore, the literature states that spending time in an outdoor setting, experiencing the natural world, positively impacts childhood development. When you pair that experience with the reflective thought process afforded by the nature journal, it is very possible to influence students to become more interested and engaged students. It is possible to encourage students to become people who value nature and the environment and become conservationists and preservationists. It may even be possible to enable them to develop a belief in themselves that their contributions can actually help.

In the early stages of research, I had difficulty finding studies involving this topic, specifically using the nature journal to increase student understanding of the natural world. Plus, it seemed very hard to quantify the impact that this type of journaling would have on one student, let alone the diverse learners of today's classroom. But when examining the bigger picture, and generalizing the journal as a tool, it was easier to see the connections between the deficits in our current educational systems, the impact of outdoor experiences, or the lack thereof, and the positive correlation between journaling and growth in individuals.

I do not have a traditional classroom of my own. Within the special education realm, I fill roles of specialist and co-teacher for subjects where standardized testing dictates curriculum: reading and mathematics. I do not have the opportunity to plan

outdoor experiences on a regular basis for my small groups, nor for the larger classrooms where I co-teach. And most teachers appreciate the difficulty with providing supplemental learning experiences within the constraints of pacing guides and standardized testing expectations. Consequently, it became important for me to create a tool to be shared with the professional staff in my school so that they could easily incorporate outdoor activities without compromising their existing curriculum;s pacing guides, while still meeting state standards that would be assessed through standardized testing. More importantly, in my opinion, was that with the implementation of the suggestions in this easy-to-follow guide, students would, once again, have access to the natural world in an informal, engaging way.

Once the research was complete, creating the teacher's guide was the next step in the process. Examining the Wiggins & McTighe (2011) model for curriculum-planning, it became clear that the Understanding by Design (UbD) framework, discussed in Chapter Three of this paper, with its three stages of backward design, would lend itself well to this type of project. Knowing that the desired results of my project, indicative of Stage One, were to enable more students to experience the natural world more often, and that their scaffolded reflection pieces would ultimately lead to a deeper understanding of the natural world and their place within it, the template pages of the journal were created to serve as a place to document their reflection without the stressful implications of formal assessments. The guide itself lists the state standards that may be addressed with the use of this project. Stage Two, determining acceptable evidence, is also addressed in the guide, assuring teachers that this form of assessment, although informal, can provide

a wealth of insight into our student's thinking processes and the way they make connections between relevant cross-curricular information. With minimal effort, a teacher who follows this guide would also be able to plan learning experiences according to grade level expectancies, addressing the state standards, which satisfies Stage Three of UbD.

Project Limitations

At first glance, the limitations of this project may simply be that teachers do not feel comfortable taking time away from the high stakes testing subjects of reading and mathematics in order to spend time outdoors, journaling. Many schools have taken the approach that they need to fill all blocks of time during the school day with traditional classroom activities adding to reading and math curricula, and teachers may feel compelled to do only that. For example, my school does not discourage recess, but there is a definite culture of pushing the students to cover material that will be seen on their high stakes tests, the Pennsylvania System of School Assessment (PSSA), which usually occur in April of each school year. With that pressure to cover the material before the school year even ends, many teachers do not take their classes out for recess. They may also view time outdoors with a nature journal as more of a supplemental component of the curriculum, rather than a necessity.

A personal limitation regarding this project was that I did not get to use the teacher's guide that was created, nor complete any of these activities due to my current assignment as a special education teacher and the expectations placed on my role. I believe, however, that many of my students would not only enjoy this type of activity, but

that it would help them develop their writing skills without the pressure that is often placed on them to publish writing that is at grade level expectancies.

It is my hope that my colleagues will not only see the guide as an easy to use supplement to their curriculum, providing many academic benefits, but that they will also see the value in providing a recurring opportunity for our students to spend quality time outdoors.

Project Implications

Ultimately, the intent of this project is far more reaching than teaching content and students scoring proficient on a standardized test. It out-reaches the requirement of daily lesson planning and assessing student knowledge. While research shows students will learn more if they reflect on their learning, utilizing active metacognition through journaling, will increase student knowledge. But the intent is to reach even deeper than just learning about the natural world. If a sense of connectedness and passion for an idea, concept, skill, or even an object, is what is needed to engage a human being, to enroll them in the nurturing and expanding of that same idea, concept, skill, or object, then that connectedness to the natural world is what I hope is created in our students through the use of the nature journal.

Conclusion

It has been my belief that my interaction and experiences in nature throughout my childhood had a profound impact on the person I am today, even before I read the research that substantiates that belief. I continue to use nature as a means to reset, rejuvenate, to get my thoughts and ideas clear, and for recreation and relaxation. I also

have a passion for teaching others about nature and spreading knowledge that may help save our planet. I doubt any of this would be a part of me had it not been for my early experiences involving the natural world. That is what I hope this project can inspire in our students.

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