

Exploring Rural Alaskan Children's Spatial Autonomy and Environmental Competency through a Draw-Write-and-Tell Method

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Abstract

Early childhood education for sustainability (ECEfS) scholarship has expanded around the globe, recognizing diverse historical, political, economic, ecological, and social-cultural contexts. This participatory research furthers ECEfS research by focusing on rural Alaska Native kindergarten children's perspectives and experiences of their outdoor environment, expressed through a draw-write-and-tell method. The study collected drawings and descriptions from rural Alaskan children, ages 5-6-years, and analyzed them using a phenomenographic framework. The analysis categorized the children's activities based on the context in which they took place. Children's village-based activities included riding bikes, going to the park, and walking, indicating children's spatial autonomy. Nature-focused activities (e.g., picking berries and wild flowers) and water-based activities (e.g., swimming in natural pools and fishing) revealed how their community's unique ecology and socio-cultural values shaped the children's environmental competency and identity, as well as their development of subsistence skills to live sustainably in place. Findings also revealed how these young children experienced their outdoor environment with family members, primarily their mother, as well as siblings and peers.

Keywords: early childhood education for sustainability; environmental competency; spatial autonomy; environmental identity development; Alaska Native children

Introduction

Children's "survival and development rights" are a foundational part of early childhood education for sustainability (ECEfS) (Davis, 2014, p. 25). "These comprise rights to the resources, skills and contributions necessary for survival including rights to adequate food, shelter, [and] clean water... and cultural activities" (Davis, 2014, p. 25). While research in ECEfS has certainly expanded since Davis (2009) first articulated this research "hole," most of the published works in this area have been situated in urban settings and/or in non-Indigenous contexts. No ECEfS studies have occurred in isolated Arctic settings and only a few have included young children from Indigenous backgrounds (Ritchie, 2014; 2017). Furthermore, most of the current ECEfS literature focuses on theoretical frameworks, field reports, and studies involving practitioner practices and curriculum initiatives (Ärlemalm-Hagsér & Elliott, 2017). Although children's agency is recognized as a core attribute of ECEfS (Davis & Elliott, 2014), few studies have focused on children's own views and perspectives of their environments as a base for developing science and sustainability-focused educational approaches (Gambino, Davis, & Rowntree, 2009; Green, 2017a).

The aim of this research was to learn about rural Alaskan kindergarten children's experiences of their outdoor environment. The study utilized children's drawings and descriptions as a mode of communication and meaning-making to explore what rural Alaskan children like to do outdoors and with whom they spend their time outdoors. The study also considered how rural Alaskan children's early outdoor experiences shape their sense of spatial autonomy and environmental competency, their environmental and cultural identity development, and how such experiences can inform ECEfS.

Early Childhood Education for Sustainability

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their needs" (United Nations, 2018). In considering "needs," it is recognized that sustainability has both local and global implications. In the context of this research, the global warming trend in the Arctic and its related social, cultural, and economical implications have warranted the need for increased international collaboration, including sustaining the livelihood of Arctic Indigenous communities and heightening the focus on education (European Polar Board, 2018). This paper extends this argument into ECEfS in arguing that children, particularly our youngest, play a significant role in constructing a "safe, sustainable, prosperous, and peaceful place for generations to come" (European Polar Board, 2018, p. 9).

While global initiatives towards sustainable development span across five decades, until recently little attention has been given to how early childhood education might and should be involved in education for sustainability (Hägglund & Samuelsson, 2009). Early Childhood Education for Sustainability (ECEfS) integrates multiple disciplines—including the arts and the sciences (Davis & Elliott, 2014). Specifically, Sundberg and Ottander (2014) argue that science inquiry in the preschool should be shaped around "the interplay between knowledge, values, and the ways in which humans build and make use of new knowledge" to engage with sustainability (p.

280). In other words, science within ECEfS should include more than just teaching rote facts; it should also emphasize active inquiry and children's perspectives (Sundberg & Ottander, 2014). Additionally, "integration of the arts and education for sustainability can provide expanded opportunities for seeing, understanding, and responding to the sustainability imperative" (O'Gorman, 2014, p. 267). Art is not only a developmentally appropriate method for engaging young children in expressing their ideas (Kalvaitis & Monhardt, 2012), artwork might also be considered a "universal language" as images can convey messages that transcend spoken languages (Avriel-Avni, Spektor-Levy, Zion, & Levi, 2010).

Furthermore, ECEfS theories, research, and practices are grounded in the tenets of the United Nations Convention on the Rights of the Child (UNCRC, 2005), recognizing the importance of promoting children's agency in acting for a sustainable future. The research presented in this article honors young children's agency by highlighting their views of their outdoor environment. By learning about what is important to children, educators can further engage children in sustainability issues and questions that are relevant to them (Davis & Elliott, 2014).

Through exercising spatial autonomy children develop a sense of belonging, which influences their concern about others—human and non-human beings in a living world (Hägglund & Johansson, 2014). Children achieve spatial autonomy through discovering their own sense of place independently or with others. "These are claimed places, independent or shared places that children discover and attribute meaning. Such meaning is created, handcrafted, and as unique as the children to which these belong" (Green, 2018, p. 46). Children's spatial autonomy is informed by the sociocultural and geographical contexts in which children are positioned (Punch, 2002). Similarly, Ritchie (2014) challenges us to consider belonging through an Indigenous framework in which belonging entails a "sensory, storied entanglement within the inter-relational agency of other animals, plants, insects, and the rest of the [more-than-human] world around us" (p. 50). In this way, belonging is understood as humans being part of, not separate, from their environment. This sense of belonging, or connectedness with other human and the non-human natural world, provides the legitimacy for children to act with others in constructing a sustainable future (Davis & Elliot, 2014). Thus, promoting a sense of belonging has been and continues to be one of the primary goals of ECEfS, and should be considered within the context of a child's culture and the activities that make up their daily lives.

Along with spatial autonomy, children's development of environmental competency also plays an important role in their environmental and cultural identity formation (Green, 2018; Lunda & Green, 2020). Environmental competency not only refers to the knowledge children acquire about the flora and fauna in their local ecology, but includes the dispositions and skills that children gain as they relate with and interact with other living beings in their environment (Green, 2018). The competencies that children develop regarding their environments are informed by the values taught to them through their culture, peers, family, and other adults with whom they interact in their community (Lunda & Green, 2020).

Indeed, ECEfS should emphasize localized understanding, including cultural and Indigenous perspectives and ways of living in place (Ritchie, 2014), and the role of families in the care and stewardship of the environment and in the development of skills to live sustainably (Alaska Native Knowledge Network, 2001; Chawla & Derr, 2012). Thus, this study sought to understand the ecological and social dimension of children's experiences in their environment. Specifically, through a draw, write, and tell method, this study looked at what children liked to do outdoors and with whom they shared their experiences.

This study is part of a larger ongoing research project focusing on children's environmental identity development in Alaskan rural and non-rural contexts (Green, 2017a). Children's drawings and descriptions were just one form of data collected during a project conducted in 2016. The research also included qualitative video data collected with wearable cameras (Green, 2016); findings from this method are reported elsewhere (Green, 2017a). The following research questions are addressed in this study: How do kindergarten children living in a rural Alaska Native village experience their outdoor environment? What kinds of activities do they like to do (subsistence or recreational), with whom do they do them, and how do these activities inform their sense of spatial autonomy and environmental competency and subsequently, their environmental identity development? The aim of this paper is to advance considerations for ECEfS research and practice by exploring rural Alaskan children's activities and interests.

Methodology

Study Context

Across rural Alaska, there are 229 federally recognized Alaska Native villages (U.S. Bureau of Indian Affairs, 2016). The majority of these rural villages, including the one in this study, are isolated, "off the road," hundreds of miles from modern-day conveniences, and only accessible by plane, boat, dog sled, or snowmobile. It is not uncommon for travel in and out of villages, including shipments of food and supplies, to be cut off for days and even months at a time during inclement weather. Prices for food and other basic commodities are very high. Thus, many rural Alaskan village families continue to harvest foods from the land to sustain themselves through every season (Kawagley, 2006). In rural Alaska, subsistence is recognized as an essential part of sustainability.

The population of the village where the study took place is around 700 people (U.S. Census Bureau, 2016). Approximately 74 percent of the village inhabitants are Alaska Native, predominantly Iñupiat descent. This statistic was mirrored in the kindergarten children who participated in the project, as most were Indigenous and only one or two were non-Indigenous. The village is situated in a sound adjacent to the Bering Sea where salmon and king crab are harvested. Freshwater rivers, sloughs, and lakes are also within close proximity of the village. Inland from the sea, the village is surrounded by tundra filled with berries and boreal forests with moose, bear, grouse, and other creatures.

Twelve, 5-6-year-old children (nine girls and three boys) in one kindergarten class participated in this study. The limited number of participants is representative of the kindergarten class size in the village. The Institutional Review Board at the University in which the researcher and her research assistant are affiliated approved the study. The researchers partnered with teachers from the village as well as local families to facilitate the project. Informed consent was obtained from children's parents or guardians. A child-friendly assent form was used inviting children to circle a happy face if they were okay with the researcher sharing their drawings with other people and to circle a sad face if they were not. All of the drawings depicted in this paper were produced by the children who gave their assent.

Research Approach and Methods

The research was informed by a participatory approach, highlighting children's views and perspectives (Clark, 2005). The study also employed phenomenography to explore the qualitatively different ways in which the young children experienced and perceived their environment (Marton & Booth, 1997). The object of study is not the phenomenon itself; rather, the focus is how people understand or experience the phenomenon (Larsson & Holmström, 2007). Phenomenography has been used in other studies using children's drawings to explore their relations with the environment (Kalvaitis & Monhardt, 2012).

This study adapted the "draw and write" method (Kalvaitis & Monhardt, 2012) by using a "draw, write and tell" method—more appropriate for younger children with limited writing skills (Green, 2012; Green, 2017b). Children drew their experiences outdoors and verbally described their drawings. Focus was not placed on the quality of children's artwork; rather, attention was given to the meaning children attributed to their drawings through verbal descriptions.

The study used two prompts. First, children were asked to "draw your favorite thing to do in nature." Afterwards, they were invited to describe what they drew. Children's verbal descriptions were video recorded on an iPad. Additionally, children were invited to verbally share their drawings during a classroom discussion. These oral descriptions were also video recorded and transcribed.

The second prompt was given to the children by their teacher a week later. Children were asked to "draw yourself on an outdoor adventure with someone." Students then completed the following writing prompt: "I like to go on outdoor adventures with _____. We like to _____." The researchers took digital photographs of both sets of children's drawings and writings.

Data Analysis

The goal of phenomenographic analysis is to generate "categories of description" to demonstrate the various ways in which people in a group experience a phenomenon (Åkerlind, 2005). Data is then presented in an "outcome space" aimed at showing the "full range of possible ways of experiencing the phenomenon" (Åkerlind, 2005, p. 323). Phenomenography aims to show how different categories of description, or experiences, are "logically related to one another" (Åkerlind, 2005, pp. 322-

323). Categories are presented and related from the most-common to the least-common experiences (Marton & Booth, 1997).

Twenty-four drawings, two created by each child, were analyzed by the researcher and her undergraduate research assistant who is Alaska Native. First, the data was examined inductively, with "an open mind" (Åkerlind, 2005, p. 323), considering the overarching research focus on children's experiences of their outdoor environment. In examining and reexamining, and comparing and contrasting the different drawings, the researcher observed that children's experiences of the phenomenon (the outdoor environment) could be categorized into three contexts associated with certain activities: village-based, water-based, and nature-focused. Within these three categories of descriptions, we identified a range of children's activities that could be distinguished and compared, and related and ordered to show a range of experiences (Marton & Booth, 1997). In a second cycle of analysis, the researchers examined the social relations depicted in the children's drawings and descriptions.

The drawings are presented in a descriptive manner below so that the reader might gain a visual sense of the full range of children's experiences. Children's quotes are included to highlight their voices and perspectives.

Findings

Table 1 lists the activities and companions mentioned by each child in response to the two drawing prompts, which were analyzed together. Because data were collected in late August, children's drawings predominately depicted-warm weather activities.

Table 1. Rural Alaska children's expressed outdoor activities

Child	Favorite Nature Drawing		Outdoor Adventure Drawing	
	Activity	Companions	Activity	Companions
Lisa	"I like to go for a walk"	sister and mom	"berry picking"	mom
Jamie	"I like to pick flowers for my mom"	sister	"go to the beach"	mom
Brayden	"I like to walk to grandma's house and play with Alex and Cassie Poo" [dog]	Lisa [friend] and dog	Bike	Kayla [friend]
Casey	"I like to take a walk with my puppy Ana"	dog and adult	"go the beach"	mom
Isaiah	"I like to draw outside"	none	"look for little brother" [hide and seek]	mom, dad, and little brother
Curtis	"I like to run around with Indiana Jones [dog]"	dog	"go boating"	dad
Emily	"I like to go berry picking when it's sunny"	none	"play barbies"	Lisa [friend]

Kayla	"I like to slide"	sister and mom	"go fishing"	family
Liann	"I like to go swimming" "picking for flowers"	none	"play tag"	"papa and gram"
Kathy	"I like to go see baby turtles on the beach"	mother and puppy	"walk"	mother
Kione	"I like to walk with my sister, outside in the summer" "playing in a box"	sister	"swim"	Trinity [friend]
Marta	"I like to play outside in the grass with my mom"	mother	"pick leaves"	Jamie [friend]
Alma	"I like to go swimming"	adult	"look at squirrels"	Kione [friend]

Village-Based Activities

Ten of the children's drawings represented outdoor play activities that occurred in the village. These activities encouraged children's spatial autonomy. One child mentioned riding bikes, while another talked about playing tag, and another shared about playing hide and seek with his little brother.

Playground

Both Isaiah and Kayla talked about going to the village playground (Figure 1). There is only one playground in the village, located next to the school, and during warm weather it is the center of activity. Isaiah went to the park with his "mom and dad" to "look for little brother." Kayla shared that she enjoyed going down the slide at the playground, along with "sunshine and sister Sally and my mom."

Figure 1. Isaiah looking for his brother (left); Kayla sliding at the playground (right)



Walking

Walking was the most common outdoor activity across the two sets of drawings, mentioned by six children: Kathy, Lisa, Kione, Braydon, Casey, and Curtis. This finding is not surprising, since most people living in the small village walk as a means of transportation. Kathy (drawing not included) and Lisa drew walking with their mothers. Lisa included her sister in her drawing as well as a butterfly, flower, grass, and the sun. In this sense, walking not only provided a means of transportation but it also seemed to invoke enjoyment of nature with her family. In her drawing, Kione discussed "walking with her sister; in the summer." During the class discussion, she also talked about playing in a box outdoors. Her drawing includes many colorful elements to depict the outdoor environment (Figure 2).

Figure 2. Lisa walking with her sister and mom (left); Kione walking and playing in a box with her sister (right)



Casey and Curtis mentioned "walking" and "running" with their puppies. Casey shared that she liked "walking with her puppy, Ana." She drew herself and one other person walking on the red, uneven ground. Curtis discussed running around with his puppy. He stated, "I like playing outside and running around with Indie. His name is Indiana Jones." Curtis' drawing included the sky (in blue) and the sun, as well as buildings in the village (Figure 3).

Figure 3. Casey walking with her puppy (left); Curtis' drawing with his puppy "Indy" (right)



The children's activities in the village included modes of getting around and play activities. Their activities were shared by both family and friends and are similar to those found in other studies of children living in northern nations (Gundersen, Skår, O'Brien, Wold, & Follo, 2016).

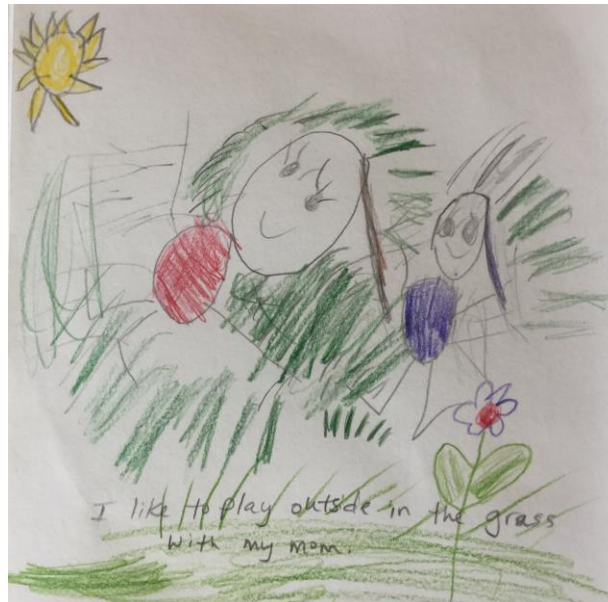
Nature-Focused Activities

Five activities depicted by the children were classified by the researcher as nature-focused. The nature-focused activities show how the children in this study were developing a sense of spatial autonomy and environmental competency through sensory-rich encounters, direct observations, and harvesting activities (Green, 2017a).

Sensory-Rich Encounters

Marta drew a picture of herself with her mother lying on the grass. She mentioned that she liked to roll around in the grass with her mother and look up at the sun. Marta also drew a flower and the sun in her picture (Figure 4).

Figure 4. Marta's drawing of rolling around in the grass with her mother



Observing

Marta and Alma both included trees in their drawings. Although Marta did not include any people in her drawing, she explained, "I like to go on outdoor adventures with Kione. We like to pick leaves." Alma also drew a tree. In describing her picture, Alma stated, "I like to go on outdoor adventures with Kione. We like to look at squirrels."

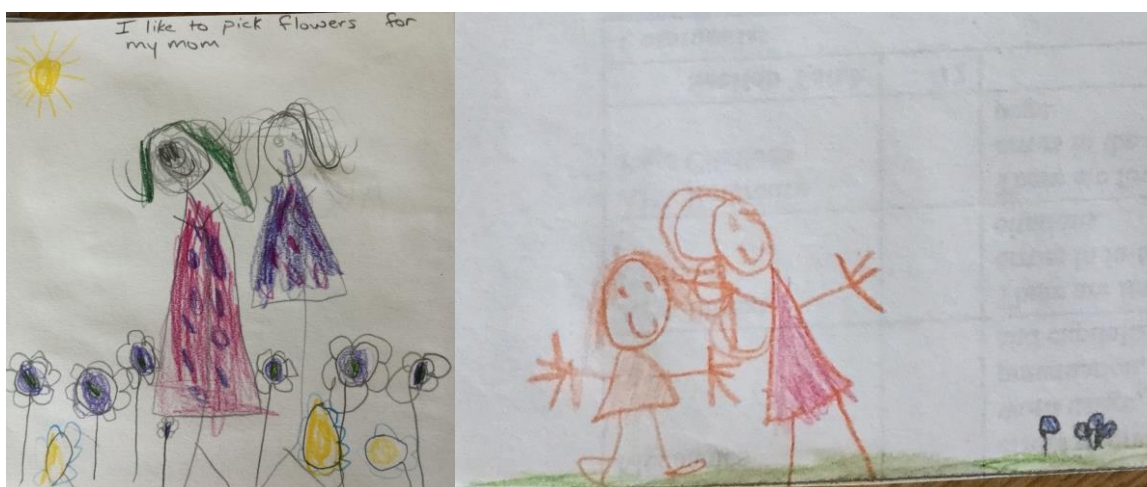
Figure 5. Marta's drawing of picking leaves (left); Alma looking for squirrels (right)



Harvesting

Jamie drew herself "picking flowers" for her mother. Jamie indicated that she was with her sister in the drawing. The picture shows a variety of wild yellow and purple flowers that grow abundantly across the Alaska tundra. Similarly, Lisa drew herself "berry picking" with her mother. The drawing shows a grassy knoll, depicting the tundra surrounding the village. Berry picking is a common subsistence tradition in Alaska. Families pick, freeze, and/or can and dry berries to sustain themselves throughout the year.

Figure 6. Jamie picking flowers with her sister (left); Lisa picking berries with her mother (right)



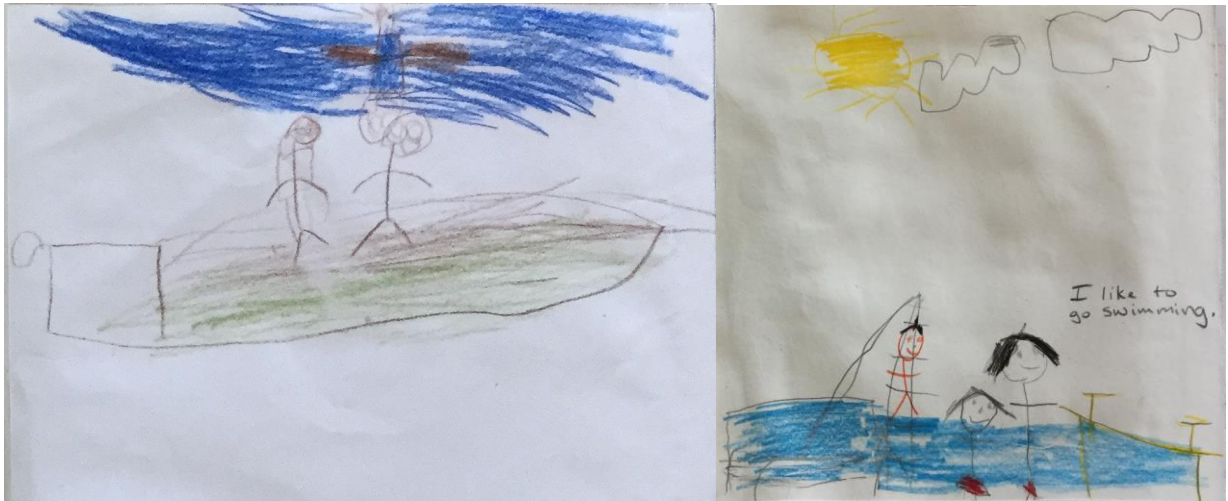
Water-Based Activities

Eight out of 12 children drew water-based activities. This finding is not surprising given that the village is located next to the Bering Sea. Of the eight drawings, two depicted fishing—one explicitly and the other implicitly as an element of the drawing. The other drawings depicted recreation-based activities: going to the beach, swimming, and boating.

Boating and Fishing

Curtis drew himself boating with his dad. Along with a motorboat on the water, Curtis drew a bald eagle above him in the sky. Both of Curtis' drawings included an animal, revealing that he was cognizant of the other living creatures that inhabited his environment. Although one, his dog, was domestic, the other, an eagle, represents a native animal in his place. Kayla also indicated that she liked to go fishing with her family. Her drawing (not depicted here) included three people. There were no features to represent the setting; thus, it was difficult to interpret if her family fished from the boat or from the shore. Alma also drew a picture of fishing in the water. She described that she liked to go "swimming." The drawing shows Alma swimming outside, beside someone much bigger than her. On the left side of the drawing, it appears that there is a fish caught on the fishing line. The drawing suggests that Alma swims while her family is participating in water subsistence.

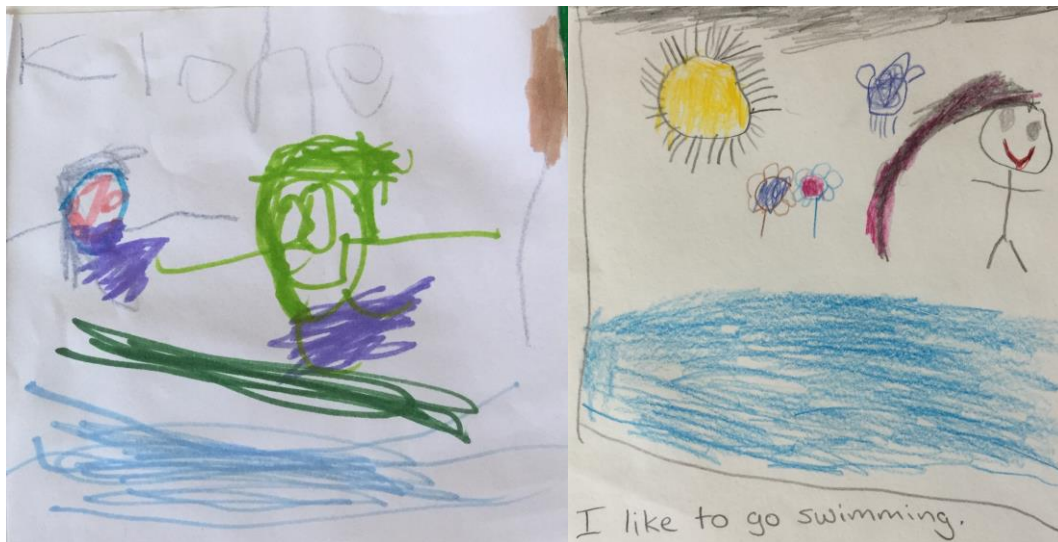
Figure 7. Curtis boating with his father (left); Alma fishing and swimming with family (right)



Swimming

Swimming was also a commonly shared interest; three children drew themselves swimming. In comparison to urban locations where swimming occurs in concrete pools or indoor locations, the children in this study swam in natural settings. Besides Alma, two other children drew pictures of swimming with friends and family. Kione depicted swimming in her outdoor adventure drawing. She described, "I like to go on outside adventures with Trinity. We like to swim in a pool with grass and tall trees." Liann described two activities in her drawing. She explained, pointing to the flowers, "picking for flowers—like these." Additionally, she mentioned that she was "swimming in the water."

Figure 8. Kione (left) and Liann's (right) drawings of swimming



Going to the Beach

Going to the beach was also a common activity, drawn by three children. All three included their mother in their artwork. Two of the three pictures included the sun, suggesting that these children liked to visit the beach on a sunny day. Jamie described her preference for the beach in her outdoor adventure picture, explaining, "I like to go on outdoor adventures with my mom. We like to go to the beach." Jamie and her mother were smiling in the picture; next to them was a heart, indicating that this was a special memory.

Similarly, Casey also shared that she liked to go on outdoor adventures with her mother to the beach: "My mom was sitting on the water. I was on the water too. It did not go all the way to my face." The drawing includes a third small creature. In her other drawing, Casey talked about her dog, so perhaps the third object in her picture was her dog.

Kathy (not pictured) also talked about going to the beach, saying "I was playing with my mommy and puppy, and we found a baby turtle on the beach." When I asked Kathy if she found a turtle at the beach in her village or if this occurred in another location, she shrugged her shoulders indicating that she did not know.

Figure 9. Jamie's (left) and Casey's (right) drawings of being at the beach with their mothers



Social Aspect

All in all, the children's drawings revealed that their formative experiences in nature occurred among family members more than with their friends. This is not surprising given the young age of the children involved in this study.

Discussion

Children's Environmental Identity Development in an Alaskan Village Context

The diversity of the children's drawings reveals a unique pathway in each child's outdoor activities based both on children's own personal preferences and their familial experiences. While differences exist, there are also several common features that reveal the rich cultural and geographical context in which their identity is formed. Particularly, the fact that eight of the children depicted water-based activities is significant. These water-based activities occurred in natural settings rather than human-made concrete places. In wilderness settings, children experienced the rich ecological diversity of their place and through such exposure they are developing environmental competencies, not only to swim and stay afloat in the water but also to identify the birds, trees, and animals with which they share the environment. By including other features in addition to the water, children showed how they are observant of their surroundings, an important disposition in developing competencies and sensitivities towards their environment (Lunda & Green, 2020).

While village play activities were the most commonly depicted, these activities were not confined to a fenced in backyard or a paved courtyard of an apartment complex. Rather, the activities depicted by the children (e.g., riding bikes, playing tag, and walking) involved a high degree of mobility and spatial autonomy, an important disposition in developing agency with place (Green, 2018).

In terms of "survival and developmental rights," which are considered to be a foundational part of ECEfS (Davis, 2014), three children either mentioned or drew pictures depicting their engagement in subsistence-based activities (e.g., picking berries and fishing). Through engaging in cultural subsistence, children are drawing upon "long-standing local Indigenous knowledges," which "offer a life-serving counter-narrative" (Ritchie, 2017, p. 293). Specifically, through participation in hunting and gathering children are learning from their parents and community *Iñupiat Ilitqusi*, their traditional values of respect for nature, hard work, and cooperation, and other values that have been passed down from generation to generation (Topkok & Green, 2016). The children in this study engaged in these activities with their parents and other family members, demonstrating the important role that families play in teaching children how to sustain themselves in their environment. "Parents are the first teachers of their children and provide the foundation on which the social, emotional, intellectual, and spiritual well-being of future generations rest" (Alaska Native Knowledge Network, 2001, p. 6). Whether it was going for a walk, going to the beach, or rolling around on the grass, children drew upon happy moments in nature with family members. Through these activities, families are nurturing their children's healthy dispositions towards other living beings and developing their sense of belonging in their place.

Implications for ECEfS

Findings from this study can be applied to ECEfS both in a local and an international context. ECEfS initiatives should be aimed at building upon children's existing

environmental competencies and interests in order to support children in becoming more familiar with the environment around them and in gaining the skills necessary to sustain themselves in the communities in which they live (Sundberg & Ottander, 2014). Specifically, findings from this study show that some of the children have developed an interest in various aspects of their natural ecology. Through play, observation, and harvesting activities, children's interests and activities can be further enhanced in an educational setting.

By building upon children's existing competencies and environmental preferences, teachers can establish healthy links between what interests' children and concepts for teaching sustainability (Samuelsson & Park, 2017). For instance, one kindergarten child expressed an interest in sea turtles. Thus, a teacher could develop a lesson to teach about what sea turtles eat, their migration patterns, and the ecological conditions in which they thrive. The lesson might also include how human-induced climatic change has altered migration patterns of sea mammals, and what humans are doing and can do to conserve the habitat of aquatic beings.

Additionally, a teacher might focus a lesson on bicycles as a sustainable mode of transportation. The lesson could focus on how bikes are used in the local community but also how bikes are used by various peoples and cultures around the world. The teacher could also generally touch upon reduction of carbon emissions as a positive benefit of riding bicycles. Further, the teacher could help children understand other ecologically friendly forms of transportation (e.g. paddle boats, skijoring, dog sleds), and how these can be used as an alternative to oil-dependent vehicles.

A teacher could also invite local Elders into the learning context to teach children stories about local traditional ecological knowledge (Barnhardt, 2005). These narratives have stood the test of time, being drawn from deeply attuned observation over many generations, of the interactive patterns of weather, climate, seasons, oceans, mountains, wetlands, rivers, soils, flora and fauna, by humans who saw their role as serving to respect and protect these more-than-human kin (Ritchie, 2017, p. 292).

By emphasizing traditional knowledges pertaining to sustaining ecologies, children will develop a sense of belonging in their place and within their community. This rootedness will, in turn, support them in engaging in sustainable actions for their place in the present and in the future.

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