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Envisioning the Content for an Environmental Education Website for the Garrison School:

A Prospectus of Research and Resources to Support Place-Based, Environmental,
and Outdoor Instruction in the Garrison School Forest

I walked along a trail in the Garrison School Forest with first grade students from two classes, their teachers, and the Garrison School's Superintendent Laura Mitchell. Our steps created loud, percussive crunch, crunch, crunch sounds as we walked through fallen leaves on a fine, warm day in early November. I joined the group on a Forest Friday outing. When we reached our site within the School Forest, the teachers asked the children to find a place to sit, open their journals, draw something they saw in the forest, then label the drawings. Some of the children saw a green frog poke its head out of the water of the creek. They were very excited about this find, and sat on the bank of the creek to draw the frog. I sat on a rock next to two girls and drew a fern frond in my own journal. I couldn't see the fern frond well enough to draw it in detail, so I picked a portion of one frond. I examined it closely. I was surprised when those children told me that one shouldn't touch or harm nature. This sentiment didn't jibe with what I know of teacher and writer Laurie Rubin's work with school children in Ithaca, New York. Over year-long stream study projects, Rubin encouraged her second-grade students to collect crayfish, water bugs, caterpillars, and other creatures to study them in their classroom. Later, in a meeting of the Garrison School's Environmental Education Committee, a teacher said that she is tired of

the fairy house-building activity that children engage in during School Forest Day. This sentiment struck me as a lack of understanding of the importance of fairy house and fort-making in middle childhood, and its connection to the way children make sense of themselves through world-making. During my fieldwork in the School Forest with the first graders, I watched groups of children make fairy houses together using sticks, bark, and moss. They initiated this activity themselves, and began to create narratives about each fairy house. One group of children even made little dinner tables and set them with acorn cap bowls. Fortunately, those particular children did feel that they could touch nature.

The Relevance of Forest Fridays to All of Us

There is a new focus on incorporating the School Forest in the way education is delivered at the Garrison School. Forest Fridays is one of a series of current initiatives involving the School Forest. The superintendent and the School Board are considering hiring a forester to create a stewardship plan to guide the short- and long-term visions for the School Forest. To learn about what resources teachers need to help them teach more effectively in the School Forest, Principal John Griffiths created a survey based on a teacher assessment developed by the University of Wisconsin Stevens Point (“School Forest Needs Assessment”). He sent the survey to the Garrison School’s teachers on December 11. Additionally, Hudson Highlands Land Trust has proposed to purchase a conservation agreement from the school district to preserve the School Forest in perpetuity. This proposal includes a 100-acre gift of adjoining land that will afford better access to the School Forest and its six trails (Chmar).

I know of three private schools in New York State that own school forests: the Harvey School and the Hackley School in Westchester County, and the North Country School in Lake Placid. The Millbrook School, an independent coeducational high school in Millbrook, New

York has operated the Trevor Zoo since 1936. Both public and private schools are members of the Black Rock Forest Consortium, a 3,838-acre forest and scientific field station in Cornwall, across the Hudson River from Garrison. But, I do not know of any other public school that owns and teaches in a forest adjacent to its school property. This significant asset gives the Garrison School the capacity to teach many disciplines outdoors, and to provide an optimal supplementary learning environment for children.

The Garrison School Board asked Griffiths to provide a report at its October 7 meeting on instructional activities in School Forest. Griffiths reported that teachers were not using the School Forest much at all, other than each May for the annual School Forest Day and for the Revolutionary War re-enactment by a middle school class. School Forest Day is a six-year-old event that involves an excursion to and activities in the School Forest for all Garrison School students. Art teacher Coulter Young told Griffiths about a Forest Fridays program at his daughter's school near Danbury, Connecticut. Griffiths liked the idea, and pitched it to the Environmental Education Committee, the School Board, and the teachers. Everyone supported the initiative. So, Griffiths launched the nine-week pilot Forest Fridays initiative during the week of October 5, 2015. A Garrison School bus has picked up students and teachers at 1:00 p.m. on Fridays and has taken them to a School Forest access point adjacent to Snake Hill Road. All teachers had the opportunity to sign up to take their students to the School Forest on a Forest Friday. The Forest Fridays program has been suspended after Friday, December 11, 2015. It will resume in the spring. Griffiths hopes to make School Forest Day less important over time due to a regular schedule of engagement in the School Forest on Forest Fridays throughout the school year. He also hopes to re-brand the name "School Forest Day" with the help of students. A seventh annual School Forest Day is planned for May 2016.

After Griffiths launched Forest Fridays, I recognized that the initiative could be informed by research on place-based, outdoor, and environmental education; by research on how best to teach outdoors; and by research on outdoor activities that are developmentally appropriate for children at various ages. I also recognized the importance of learning about and sharing the impact of experiences in nature on children's health, creativity, and resiliency. I saw the benefit of collecting resources on how to read a forest, citizen science projects, local history, local conservation history, applicable lesson plans, grant opportunities, and information on plants, animals, and weather. I posited that the Garrison School's teachers would benefit from an Environmental Education website. I envisioned an online resource to house local, regional, national, and international resources to support instruction in the Garrison School Forest. In a meeting on November 6, Griffiths and Mitchell confirmed that an Environmental Education website would be very useful to the Garrison School community.

Through this paper, I am sharing resources that support the Forest Fridays program, and are relevant to teachers, school administrators, School Board members, students, parents, and members of the community. The resources discussed in this paper will provide the content for an Environmental Education website that I will build for the Garrison School in December 2015 and January 2016. This paper serves as a prospectus for the website. I have outlined the website plan in Appendix A. The Garrison School's principal and superintendent have approved of this plan. While the website plan includes other Environmental Education activities at the Garrison School, such as the native plant garden, the partnership with the Hudson Valley Seed Library, and the River of Words project with Hudson Highlands Land Trust, this prospectus focuses on resources that support Forest Fridays.

I've chosen to include information about *Nature's Benefits for Children*, because this research explains the rationale for engaging in Forest Fridays. *Place-Based Education*, *Outdoor Education*, and *Environmental Education* are three types of instructional experiences that can be offered in the Garrison School Forest through the Forest Fridays initiative. Various disciplines may be explored through each of these three categories of education. Further, I have included a selection of *Teacher Resources*, which provide information to assist teachers in planning and leading lessons on Forest Fridays concerning a variety of subjects. As this is a prospectus, I will conserve space and time by discussing some resources in depth, and by “pointing to” other resources. This paper has five additional sections. They are: *Rationale for My Engagement*, *Benefits of Forest Fridays & Essential Definitions*, *Resources for Teachers*, *Research to Inform the Design of an Environmental Education Website*, and *Reflection on the Process & Future Plans*.

Rationale for My Engagement

First, my interest stems from my sons, who are Garrison School students. One of my sons is in Kindergarten. The other is in fourth grade. I view the Forest Fridays outings within the School Forest as critically important opportunities for students to interact with and observe nature, to learn about the natural world, and to engage in learning outdoors instead of in the traditional classroom environment. Further, forest outings provide movement, muscular engagement, a change of scene, and relief from the largely sedentary environment of the classroom. In their book *Raising Cain: Protecting the Emotional Life of Boys*, Dan Kindlon and Michael Thompson recommend that we “[r]ecognize and accept the high activity level of boys and give them safe boy places to express it” (245). The Garrison School Forest provides boys –

and girls – with a safe “space for their jumping, their energy, their exuberance” (Kindlon and Thompson 245).

Second, I feel a strong connection to this ruggedly beautiful and historic place where I live. My daily commute includes stunningly beautiful drives on three dirt roads in Garrison, including Old Albany Post Road, which dates to the mid-17th century. I’ve lived in congested and poorly planned cities and suburbs in other areas of the United States. By comparison, I see how unique Garrison is. It’s different in appearance – more rural and much less developed -- than the nearby Hudson Highlands towns of Beacon, Peekskill, and Newburgh. This is no accident. In fact, private landowners, the Open Space Institute, the New York State Park system, and Hudson Highlands Land Trust have preserved large parcels of land in Garrison over the years. The Osborn, Sloan, and Gunther families gave the School Forest land to the Garrison School, because they wanted to preserve the land as an educational laboratory for children. In addition to residential property, Garrison contains farmland, New York State park land, a portion of the Appalachian Trail, the Indian Brook waterfall and swimming hole, two golf courses, and significant intellectual, spiritual, and cultural institutions. “Today the Highlands have what most places have lost: a sense of place and identity,” writes Frances Dunwell (231).

Third, I participate actively as a member of the Garrison School’s Environmental Education Committee. I am not trained as a forester, an ecologist, or a teacher. But, I am an engaged citizen of my community. I became involved in the Environmental Education Committee because I wanted to encourage the school to teach in the School Forest more often. This goal stemmed from my knowledge of the importance of nature – what Richard Louv calls Vitamin N – for children’s development and inner lives. I found that my fellow committee members share my desire. I assisted with blazing the School Forest’s trails. I wrote a public

document that explains to the Garrison community the Hudson Highlands Land Trust proposal to purchase a conservation agreement for the Garrison School Forest land (“Garrison School Forest Conservation”). I led a communication campaign to educate the public about the Hudson Highlands Land Trust proposal. I researched information about forest stewardship plans and created a presentation for School Board in August 2015 (“Proposal to Create Stewardship Plan”). Then, I talked with foresters throughout New York and prepared a second presentation for the Environmental Education Committee, the principal, and the superintendent about creating a School Forest stewardship plan (“Clearing a Path”). I spoke about the importance of School Forest as an educational laboratory at several School Board meetings. And, Paula Doan of *The Paper* interviewed me regarding the School Forest by (Doan).

Fourth, I see this as a generative mission for me. By collecting the research in this paper and sharing it with teachers, students, and the Garrison community through a website, I will help to promote the development and well-being of children in the near term and in the future. Dan P. McAdams of Northwestern University notes the connection in older adulthood between generativity and eudaimonic satisfaction with life (McAdams). I feel that I have joined and am continuing the tradition of caretaking of the natural environment of the Hudson Highlands. This project provides me with important feelings of purpose and satisfaction. Also, it may signal my approach to a shift in my career.

Benefits of Forest Fridays & Essential Definitions

Forest Fridays presumes that teaching outdoors is important to the education of children. Learning outdoors complements and supports education that occurs in classrooms. In this section of this prospectus, I will first share information about the critical importance of time in nature for children’s well-being. Second, I’ll define place-based, environmental, and outdoor education,

which are three types of instructional experiences that may be offered in the Garrison School Forest through the Forest Fridays initiative. Various disciplines may be explored through each of these three categories of education. It's important to note that the Garrison School already offers "project-based, active learning opportunities across grades, curricula, communities and cultures" (Board of Education Goals). Project-based learning can be incorporated into place-based, outdoor, and environmental education within the Garrison School Forest.

Nature's Benefits for Children. In his 2005 book, *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder*, Richard Louv defined and gave a name to an increasing problem affecting children in our society. "Nature-deficit disorder describes the human costs of alienation from nature, among them: diminished use of the senses, attention difficulties, and high rates of physical and emotional illnesses" (34). Forest Fridays combats nature-deficit disorder and can help to make us "become more aware of how blessed our children can be – biologically, cognitively and spiritually – through positive physical connection to nature," Louv writes (34). Louv and others have discussed a reduction in the amount of time children spend outdoors, and the increased time children spend engaged with screen-based media. Since the early 1980s, children have engaged in less outdoor play due to urbanization, parental fears, liability worries, over-scheduled childhoods, and plugged-in play (Finch and Loza 5). The Kaiser Family Foundation has engaged in a series of three studies of media in the lives of 8- to 18-year-olds. The 2009 study, called *Generation M²*, involved 2,002 respondents in grades 3 through 12. The study assessed use of TV content, music/audio, computers, video games, print, and movies. It found that young people engage with a variety of media for 7 hours and 38 minutes per day – and that by multitasking and "using more than one medium at a time, today's youth pack a total

of 10 hours and 45 minutes worth of media content into those daily 7½ hours” (Rideout, Foehr, and Roberts 2).

After writing *Last Child in the Woods*, Louv and others founded the Children & Nature Network. The organization provides training for educators and connects grassroots environmental education groups throughout the world. It also publishes articles and collects and distributes others’ research on how immersion in nature improves children’s health, body weight, ADHD symptoms, confidence, creativity, resilience, and critical thinking skills. It is not possible in this prospectus to discuss research regarding each of these topics. I will request permission from the Children & Nature Network and individual researchers to provide links on the Environmental Education website to specific articles that describe how time in nature benefits children (“Health Benefits to Children”).

Nature can be best introduced to children through age-appropriate outdoor activities. David Sobel, author of *Children's Special Places: Exploring the Role of Forts, Dens, and Bush Houses in Middle Childhood* says that we must focus on teaching empathy for nature to children who are 4 and 5 – our Kindergarteners. He says it’s important for these young children to play like animals, learn about animals, move like deer, and slither like snakes (Pica). Sobel, Edith Cobb, and Rachel Carson point to middle childhood – defined as ages 5-6 to 11-12 – as a time when children commune with the natural world. This includes almost the complete age group of students who attend the Garrison School. In *The Ecology of Imagination in Childhood*, Edith Cobb wrote:

My position is based upon the fact that the study of the child in nature, culture and society reveals that there is a special period, the little understood, prepubertal, halcyon, middle age of childhood, approximately from five or six to eleven or

twelve, between the strivings of animal infancy and the storms of adolescence — when the natural world is experienced in some highly evocative way, producing in the child a sense of some profound continuity with natural processes. (qtd. in Sobel 78)

It's crucial that the Garrison School's teachers come to understand that building fairy houses and forts is a natural and necessary activity of middle childhood. Sobel notes that children build fairy houses and forts to create private worlds and explore their own senses of self.

Children need the opportunity to create, within prescribed limits, small worlds. The creation of these worlds from shapeable, open-ended materials such as sand, wood, clay, and Legos, gives children the opportunity to organize a world and then find places in which they can become themselves. (Sobel 81)

Sobel notes that outdoor place-making in middle childhood leads to engagement with the world as an adult. "If we allow children to shape their own small worlds in childhood, then they will grow up knowing and feeling that they can participate in shaping the big world tomorrow" (Sobel 161). Journalist Starre Vartan became a steward of the natural world after being immersed in nature as a child. Vartan is editor and publisher of eco-chick.com and author of *The Eco Chick Guide to Life: How to be Fabulously Green*. Vartan grew up in Garrison and spent a lot of time in the School Forest. "Having such a comprehensive science- and nature-education program in school (including hikes to the top of Anthony's Nose, and programs at Manitoga, where I later worked) absolutely informed my dual major in college (Geology and English Literature at Syracuse) and was the basis for my thesis later for my MFA at Columbia," Vartan wrote (Vartan).

Definition of Place-Based Education. The Center for Place-Based Education at Antioch University New England provides the following definition of place-based education:

Place-based education focuses learning within the local community of a student. It provides learners with a path for becoming active citizens and stewards of the environment and place where they live. The resources of the community are brought into the learning process in a way that makes education exciting. The approach emphasizes hands-on, real world learning experiences that challenge students to learn and solve problems. It increases academic achievement, helps students develop stronger ties to their community, enhances student's appreciation for the natural world, and creates a heightened commitment for serving as contributing citizens. Community vitality and environmental quality are enhanced as local citizens, organizations and environmental resources are woven into the process of educating its citizens. (Center for Place-Based Education)

Place-based education will help Garrison School students to understand the unique history of the place where their school is situated, and why their community looks the way it does now.

Teaching the Hudson Valley is an excellent example of an organization that provides place-based lesson plans and other resources to help teachers teach English, history, math and other disciplines using the Hudson Valley region as a focal point.

Definition of Outdoor Education. Experiential educator Simon Priest offered the following definition of outdoor education: “[O]utdoor education is an experiential process of learning by doing, which takes place primarily through exposure to the out-of-doors. In outdoor education the emphasis for the subject of learning is placed on RELATIONSHIPS, relationships concerning people and natural resources” (Priest 13-14). Charles Saylan and Daniel Blumstein

discussed the importance of outdoor education for children in their book *The Failure of Environmental Education (And What We Can Do About It)*:

Throughout the entirety of K–12 education, we believe, significant time must be devoted to the exploration of natural places. These natural encounters ought not be approached as isolated field trips; rather, they should be fully integrated into standard curricula. This can involve introducing students to different natural habitats; but to some extent, where students go is of less importance than making sure they are guided by educators who are comfortable working outside and using nature as a teacher. (182)

Definition of Environmental Education. The North American Association for Environmental Education defines environmental education (EE) as an endeavor that:

...teaches children and adults how to learn about and investigate their environment, and to make intelligent, informed decisions about how they can take care of it.

EE is taught in traditional classrooms, in communities, and in settings like nature centers, museums, parks, and zoos. Learning about the environment involves many subjects—earth science, biology, chemistry, social studies, even math and language arts—because understanding how the environment works, and keeping it healthy, involves knowledge and skills from many disciplines.

EE works best when it is taught in an organized sequence. In schools, EE often reflects state and national learning standards. "Done right," EE not only leads to

environmentally literate people, but also helps increase student academic achievement. (“What is Environmental Education”)

President Obama signed the Every Student Succeeds Act on December 10, 2015. The Act “includes new provisions that support student learning about the environment, conservation and field studies” (Grant).

Resources for Teachers

This section presents highlights of resources I’ve gathered that will inform instruction in the School Forest on Forest Fridays. Not all of the categories listed within the *Teacher Resources* section of my website plan (Appendix A) are covered in this section, due to space limitations. It’s useful to begin with a discussion of the Common Core State Standards, which the Garrison School follows. The Common Core is a set of standards and expected learning outcomes for students. It does not prescribe a specific curriculum for each grade level – and it doesn’t say that lessons have to be delivered only in an indoor classroom (Frequently Asked Questions). Teacher Laurie Rubin speaks eloquently about the role of nature study in our current educational environment.

Today my belief in an integrated learning experience for my students remains resolute,” she writes. “I am confident that such an experience can be developed within the context of the ever-shifting state and federal learning standards. I am convinced that nature study is *the* child-centered program that can integrate critical thinking skills in science, mathematics, and language arts. (Rubin 5)

How to Teach Outdoors. Teachers will enjoy using Joseph Cornell's *Sharing Nature: Nature Awareness Activities for All Ages* as a guide to teaching about nature outdoors. The book is engaging, beautifully-designed, and small enough to fit into a backpack. Cornell advocates the

"Flow Learning Sequence" (p. 27). Stage one involves activities that awaken enthusiasm, with the goal of fostering playfulness and alertness. Stage two involves activities that focus attention. Receptivity is the goal of these activities. Stage three offers direct experience to participants, with activities that promote communing with nature. And, in stage four, participants share inspiration by engaging in activities that promote idealism. Cornell provides the age level for each of his activities. The "Sound Map" activity, for instance, is for children (and adults) 5 and older (Cornell 106). The Minnesota Department of Natural Resources provides many resources to help teachers teach outside ("Resources: How to Teach Outside"). Rubin, author of *To Look Closely: Science and Literacy in the Natural World*, presents ten tips for teachers who are getting started on nature study. I have listed them in Appendix B (Rubin 9-30). Additionally, Rubin provides guidelines on how to prepare parent volunteers who will work outdoors with students (99). The Lawrence Hall of Science at the University of California, Berkeley developed the Full Option Science System (FOSS), a research-based science curriculum for grades K-8. A guide to taking FOSS outdoors covers management of time, space, and students; teaching strategies; flow of lessons; and elementary-level environmental education ("Taking FOSS Outdoors"). The FOSS website provides detailed information for teachers regarding using science notebooks with students in grades K-2, grades 3-6, and middle school ("Science Notebooks"). The Children & Nature Network offers a teacher toolkit called "Thriving Through Nature: Fostering Children's Executive Function Skills," which presents nature-based activities for various age levels that build children's executive function (D'Amore, Charles, and Louv). "Journey North" offers a teacher guide to assist with teaching critical thinking and inquiry related to the observation of bird and animal migration ("Teacher Guide"). Additionally, the Guardian Teacher Network provides a treasure trove of resources to help teachers learn to teach outdoors (Drabble). Ken

Finch and Adam Loza note the value of unstructured outdoor play for children (9). Even in school-sponsored excursions into the School Forest, “we need to identify structured ways to recreate frequent, *unstructured* nature play for children” (Finch and Loza 9).

Lesson Plans. Teaching the Hudson Valley offers free place-based lesson plans for grades K-12 related to sites in Putnam County and other Hudson Valley counties. Lesson plans are organized by grade level and subject area, including the arts, English/Language Arts, environmental education, math, science, and social studies (“Browse Lessons By”). The New York State Department of Environmental Conservation offers environmental education lesson plans for grades Pre-K – 3, grades 3 – 6, and grades 6 – 12 (“Environmental Education Lesson Plans”). Project WILD offers a free *Project WILD K-12 Curriculum and Activity Guide* to teachers who attend a Project WILD workshop.

Each Project WILD activity contains all the information needed to conduct that activity including objectives, method, background information, a list of materials needed, procedures, evaluation suggestions, recommended grade levels, subject areas, duration, group size, setting, and key terms. A glossary is provided as well as an index cross-referenced by topics and skills. (“Project WILD K-12 Curriculum”)

Teachers Eliza Minnucci and Meghan Teachout of the Ottauqueechee School in Queechee, Vermont began a Forest Fridays program with their Kindergarten class in the Fall of 2013. They teach outdoors for at least three hours every Friday (Hanson). Through their website, they share with other teachers the standards-based planning and recording documents that they developed for grades K-2 (“Resources”). Additionally, Minnucci and Teachout offer to collaborate with other public school teachers throughout the country who teach in school forests. Rubin’s entire

book, *To Look Closely: Science and Literacy in the Natural World*, shares her lesson plans and reflections on teaching second grade math, science, and English/Language Arts outdoors (Rubin).

Now, I'll share teacher resources for specific subject areas that may be explored in the School Forest.

Reading the Forest. Tom Wessels' book *Reading the Forested Landscape: A Natural History of New England* is an essential resource for teachers. It will help teachers to use the School Forest to teach students how to read a forest ecosystem by observing changes, seeing patterns, and deciphering disturbance histories (Wessels).

Trees. Wessels also provides fascinating information about trees, such as why they have basal scars (Wessels 26). The "Key to Leaves of Virginia Trees" website helps students identify trees by matching a leaf to pictures of leaves on the website (Kirwan and Ward). Additionally, Virginia Tech's Department of Forest Resources Environmental Conservation offers a North American tree database and vTree, the Virginia Tech Tree ID app for iPhone and Android that contains fact sheets for 969 woody plants from all over North America ("Forest Biology and Dendrology").

Birds. Cornell University's Ornithology Lab offers "All About Birds" a wonderful online bird guide for teachers and students ("All About Birds"). The U.S. Fish and Wildlife Service offers the "Feather Atlas," a website that will help students identify North American birds' large flight feathers ("The Feather Atlas"). Teachers and students may track the migration of hummingbirds, bald eagles, American robins, and whooping cranes through the "Journey North" website operated by Annenberg Learner. They may also engage in citizen science and report their observations by using the Journey North app for iPhone and Android ("Journey North").

Journey North offers instructional activities, content area reading strategies, and vocabulary activities for teachers.

Hudson Highlands Folklore. Master storyteller Jonathan Kruk is a resource for teachers who want to share the folklore of the Hudson Highlands with students in the School Forest. Kruk is known for telling folktales of the Hudson Highlands, and for his portrayals of "The Legend of Sleepy Hollow" and "A Christmas Carol." He wrote *Legends and Lore of Sleepy Hollow & the Hudson Valley*, and is now writing a book called *The Lore of the Hudson Highlands*, which he expects to be released in the fall of 2016 (Kruk). In his new book, Kruk will tell local fairy tales, such as "The Culprit Fay," a Hudson River tale by Joseph Rodman Drake about a fairy who falls in love with a human girl (Brackett 319). He'll also tell the story of the bull jumping off of Bull Hill and breaking its neck on Breakneck Ridge; the story of mountain peak Anthony's Nose; and the creation story of Mahicanituck, the Hudson River. "All of these stories, whether they're the local history or the folklore and fairy tales, they reflect what happened here and they give us a map for where to go next in the future – what to preserve, what's to cherish here," Kruk said. Kruk is interested in applying for a New York State grant in 2016 to support a future storytelling residency in the Garrison School Forest.

The Revolutionary War. The South Redoubt, located in the School Forest, is a great place to explore the Revolutionary War history of the Hudson Highlands. In *The Hudson River Highlands*, Frances Dunwell provides an informative chapter on "General [George] Washington's Stronghold" in the Highlands during the Revolutionary War (13). Kruk told me that Robert Culp, Vice President of the Board of Trustees of the Desmond-Fish Library in Garrison, is building an archive of materials on local Revolutionary War history (Kruk). This will complement the existing Livingston-Svirsky archive of local history. "Lost Camps of the

Hudson Highlands,” a *New York Times* story from 1920 that is part of the Livingston-Svirsky archive, will help teachers describe the Revolutionary War hut camp built around the South Redoubt (Thomas). “The Military Geography of Fortress West Point” provides a thorough history of the fortifications, including the South Redoubt, that comprised Fortress West Point (Palka and Galgano). Additionally, Fort Wiki contains useful information about Fortress West Point, including maps of the South and North Redoubts located in Garrison (“Fortress West Point”).

Local Conservation History. Middle school teachers may share with students the environmental conservation history of Garrison and its residents. Alexander "Ander" Saunders, owner of Saunders Farm in Garrison, was at the center of Scenic Hudson’s fight against ConEd's proposal to build a power plant on Storm King Mountain. Saunders and his wife Risi were also instrumental in creating the Clearwater organization with Pete Seeger (United States). The Scenic Hudson website provides a timeline of its history of conservation efforts, which is a great resource for teachers and students (“Our History”). Frances Dunwell chronicles the Storm King fight in chapter 12 of *The Hudson River Highlands* (202). And, Albert K. Butzel shares the history of the “Birth of the Environmental Movement in the Hudson River Valley” in *Environmental History of the Hudson River* (Butzel 279). In recent years, the Open Space Institute has conserved a great deal of land in Garrison, including the North Redoubt, another Revolutionary War fortification on land that adjoins the Garrison School Forest, and Arden Point State Park, the site of Benedict Arnold's flight on foot from the Garrison Landing in 1780. Hudson Highlands Land Trust has also conserved land in the Garrison area.

Research to Inform the Design of an Environmental Education Website

In this section I'll share my research to learn about how best to create and design a website with cost, ease, and user satisfaction in mind. Because the Environmental Education website will be used by a public school with budget constraints, cost is a consideration. I wanted to find out what free website builders are considered the easiest to use in terms of their design interface. And, I wanted to choose a website builder that offers visually pleasing website templates with intuitive navigation for end users. Brandon Widder of Digital Trends recommended seven of the top free and paid website builders (Widder). Of his choices, I felt that I would most enjoy using either Wix.com or Weebly.com to create the Garrison School's Environmental Education website. I mocked up home pages using both platforms before meeting with Griffiths and Mitchell on November 6. Griffiths and Mitchell asked me to use Weebly.com as a website builder, because the school is creating other websites with Weebly. Additionally, Griffiths and Mitchell asked that I give them rights to the site so that they may review it. Griffiths and Mitchell will review all photographs on the site to ensure that we publish only photographs of children whose parents have approved release of photographs of their children. We agreed that I will not publish the future site until they have approved it. Initially, I will use Weebly's free platform to design and host the website. I will talk with the Environmental Education Committee about the benefits of Weebly Pro, and ask if the committee's fund can pay for the annual Weebly Pro fee. For \$12 per month, Weebly Pro offers phone support, a search window for the website, HD video and audio players, and registration of a unique domain name for one year ("Pricing").

I researched optimal fonts and font colors for web and mobile. From designer Hannah Alvarez, I learned that black is difficult for people with dyslexia to read, and it causes eye fatigue. "Many designers opt for a very dark grey or 'real' (as opposed to 'pure') black, like

#0D0D0D, #0F0F0F, or #141414” (Alvarez). As I want to create a website that is easy to read online and on mobile phones, I am concerned about optimal font size and the optimal number of characters per line. Alvarez says that “for desktop, 50-75 characters per line at 16 pt font or higher is a good rule of thumb for body text” (Alvarez). She recommends making one’s site friendlier to smartphone users by limiting characters to 30-40 characters per line for mobile.

When designing the Environmental Education website, I plan to link to information on several different websites, such as Teaching the Hudson Valley, Project Wild, and the Children & Nature Network. I will need to request permission to link to their content. I will also contact the publishers of Cornell’s, Louv’s, Rubin’s, and Sobel’s books to ask if I may publish specific quotes and portions of their books. The FindLaw website provides good advice regarding requesting permission to publish content from other websites. The key takeaway is that a website designer and manager should always assume that content on other websites is copyrighted or trademarked. If one wants to link to or quote content on another website, it is best to request permission from the organization that owns and operates the website (“How to Get Permission”). FindLaw recommends keeping permission requests narrow. “Only ask permission for the specific use you are intending and nothing more” (“How to Get Permission). The Children & Nature Network website permits other websites to reprint its blog posts. Children & Nature Network provides instructions on how to provide proper attribution and links back to the Children & Nature Network site.

I’ve also considered what types of maps should be included on the website. I realized that it will be important on the website to provide visuals to show the proximity of the trails within the School Forest to the current access points and the possible new access point on land that has been offered to the school district. When I joined a Forest Friday outing on November 6,

I learned that teachers will need a smartphone-accessible School Forest map that shows specific teaching sites on each trail – and how far those points are from each current access point and the possible new access point. Mitchell told me that such a map may be incorporated into the school’s app, as well as on the Environmental Education website.

Reflection on the Process and Future Plans

In the process of researching this paper, I learned about place-based education. With this new knowledge, I see that it makes sense to encourage teachers to use Forest Fridays to teach broadly and deeply about the School Forest, Garrison, and the Hudson Highlands. I was struck by the importance of fort-building and its effect on understanding the self for children in middle childhood. Storyteller Jonathan Kruk taught me that the Hudson Highlands is the birthplace of the modern environmental movement. My interview with Kruk led me to expand the scope of teacher resources I will include on the Environmental Education website, to include local conservation history and Hudson Highlands folklore. I see now that an optimal Forest Friday may begin with a focusing activity such as the “Camouflage Trail” game from Cornell’s *Sharing Nature* (108). Then, the group can engage in discipline-related work in the School Forest. Finally, they can end the Forest Friday experience by enjoying some unstructured time.

I see that the definitions of place-based education, outdoor education, and environmental education serve to start a conversation by the members of the Environmental Education committee, the principal, and the superintendent regarding environmental education and fieldwork guidelines for the Garrison School. While reading *The Handbook of Environmental Education*, I realized that the Garrison School has not created guidelines that express the Garrison School’s approach to environmental, outdoor and place-based education. I have shared guidelines adopted by the town of Wolverhampton in the Midlands of England in Appendix C

(Neal 101-102). They will provide a good starting point for discussion regarding a place-based environmental education policy for the school.

My work program for building the Environmental Education website involves both solitary and collaborative work. I will use information from this prospectus to build out the site, including the list of local organizations in Appendix D. I will reach out to teachers and administrators to gather photographs. I will contact other websites and book publishers to request permission to link to content, or to quote passages from books. I will also invite teachers to write blog posts about their Forest Fridays experiences. Creating an updated School Forest map will involve members of the Environmental Education Committee and Matt Decker of Hudson Highlands Land Trust. We will need to coordinate with cartographer Jeremy Apgar of the New York-New Jersey Trail Council to have the School Forest map updated with correct GIS waypoints for each of the six trails. I will develop a style guide for the site, defining the font color and font sizes to be used, along with acceptable column width and number of characters per line.

Once the site has been reviewed and approved by the school's administration, I will launch it. I'll then discuss it with teachers at a faculty meeting. I will also share it with members of the School Board. I will promote the site by sending a press release to the local newspapers, Starre Vartan of eco-chick.com, ForestKinder, the Children & Nature Network, the New York State Outdoor Education Association, the New York State Department of Environmental Conservation's Bureau of Environmental Education, and Teaching the Hudson Valley. I will develop a plan with the principal, superintendent, teachers, and Environmental Education Committee members to manage the site on an ongoing basis. These efforts will serve to help teachers learn how to use the School Forest as an outdoor classroom. In turn, their efforts will

enrich the lives of Garrison School students. I will close with a statement by Stephen R. Kellert of the Yale University School of Forestry and Environmental Sciences, who has written eloquently about the many gifts nature provides to children:

The direct experience of nature also extends to the child the possibilities of uncertainty, risk, and failure. These realities necessitate adaptation and problem solving as well as the need to construct solutions and to think critically, all of which are essential to lasting learning and maturation. These conditions rarely arise when children passively watch television, visit a zoo, manipulate a computer screen, or even in most classrooms. (Kellert 86)

Appendix A

Environmental Education Website Plan

For The Garrison School

The Garrison School Forest

Map

Guidelines for Visitors

History

HHLT Proposal

 Offer by Chris Davis

 Site Map

 Current Access

 Possible New Access

 ADA Accessibility

 Talking Points about Conservation Agreement Option

Forest Fridays

Teacher Blog and Photos

Resources for Teachers

Lesson Plans Organized by Discipline and Grade Level

Subject Areas

 Reading the Forest

 Trees

 Birds

 Migration

 Mapping

 Water

 Weather

 Hudson Highlands Folklore

 Creek and Swamp Habitats

Insects
Migration
Invasive Species
The Revolutionary War
Commerce
Local Conservation History
Citizen Science

How to Teach Outdoors
Health & Safety
People
Organizations
Books
Movies
Podcasts/Articles
Grants

About

Committee Members
Meeting Dates
Mission
Definition of Place-Based Education
Definition of Environmental Education
Definition of Outdoor Education

Programs

Forest Fridays
School Forest Day
Hudson Valley Seed Library
Native Garden
River of Words, HHLT
Constitution Marsh

Children in Nature

Nature's Benefits for Children
Creating Stewards of the Natural World

Join Us

Explore the School Forest

Map

History

Guidelines for Visitors

Volunteer

Call for Research Proposals

Give

Blog

School Forest Map

Appendix B

Ten Tips for Getting Started on Nature Study

Laurie Rubin

1. Become a naturalist yourself
2. Fit nature study into your weekly schedule
3. Pick a secret sit spot for the class to visit throughout the year
4. Address safety considerations
5. Recruit and organize volunteers
6. Use community resources
7. Gather equipment and tools
8. Find children's literature about the natural world
9. Teach your students how to use nature journals
10. Prime your students for a year of nature study (Rubin 9-30)

Appendix C

Guidelines for Local Environmental Education

Adopted by the Town of Wolverton, United Kingdom

1. The Study (Topic or Theme) should be based on the immediate school surroundings, the local neighborhood or town.
2. The Study should focus on particular features and areas and on local issues and problems that affect the quality of life of the community.
3. The Study should be directly related to the basic aims of Environmental Education.
4. When possible, the Study should be a local educational experience that may be related to a national or international environmental problem or issue.
5. Pupils should be involved in direct personal exploration of their locality and town and be required to make first hand observations.
6. The work should improve the pupils' understanding of the processes and people that plan, manage and change our surroundings.
7. The Study should involve local agencies such as Environmental and Technical Services, Parks and Gardens, Architects, Planners and Safety Officers.
8. The Study should encourage pupils' appreciation of the importance of involvement in maintaining and improving the quality of the built environment.
9. The Study should teach specific skills, techniques and concepts and encourage the operational use of basic skills, especially in language.
10. The work should reflect the overall Environmental policy of the school. (Neal 101-102)

Appendix D

Organizations

Black Rock Forest Consortium

<http://blackrockforest.org/>

Clearwater

<http://www.clearwater.org/>

Cornell Cooperative Extension Putnam County

<http://putnam.cce.cornell.edu/>

Friends of the Fishkill Supply Depot

<http://www.fishkillsupplydepot.org/>

Hudson Highlands Land Trust

www.hhlt.org

Hudson Highlands Nature Museum

<http://www.hhnaturemuseum.org/>

Hudson Valley Seed Library

<http://www.seedlibrary.org/>

Hudsonia. A nonprofit environmental research institute.

<http://hudsonia.org/education/>

Mount Gulian Historic Site

<http://www.mountgulian.org/education.html>

Open Space Institute

<http://www.osiny.org/site/PageServer>

Putnam History Museum

<http://www.putnamhistorymuseum.com/home/>

Scenic Hudson

<http://www.scenichudson.org/>

Teaching the Hudson Valley

<http://www.teachingthehudsonvalley.org/>

Van Wyck Homestead Museum

<http://www.hudsonrivervalley.com/Details.aspx?sid=17b30e7e-fa91-425b-9691-da14b6ce5561>

Years of Living Dangerously

<http://climateclassroom.org/>

Young Voices for the Planet Organization

<http://www.youngvoicesonclimatechange.com/>

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