

A photograph of a forest with large tree trunks and a ground covered in brown pine needles and fallen branches. A white rectangular box with a thin black border is centered over the image, containing text.

Symonds Elementary School
Kindergarten Forest Days
Evaluation Report

TRACKS

**FOREST SCHOOL &
OUTDOOR LEARNING**

Completed by Caylin Gans & Landere Naisbitt

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EXECUTIVE SUMMARY: Kindergarten Forest Days Evaluation

Purpose:

This report is an evaluation of the Symonds Elementary School Kindergarten Forest Days project, which took place between January and May 2019. The intention is to (1) determine how the Forest Days program supports Next Generations Science Standards (NGSS)¹ and social emotional learning standards (as outlined by the Vermont Early Learning Standards²) in order to help teachers better understand how the program fits in with their overall curriculum, (2) describe how the capacity-building portion of the project impacted teachers' confidence and skills with regards to taking their classes outdoors on a frequent and regular basis, and (3) inform future decision making about program improvement.

What is Kindergarten Forest Days?

Kindergarten Forest Days is a program in which public school kindergarten teachers take their classes outside into the school grounds and an adjacent city park for unstructured play time at least one morning per week (approximately 1.5 hrs), in all seasons, throughout the school year. Environmental educators contributed to the project from January to May 2019.

Data collection methods

Data was collected through observations recorded during and after each Forest Days session, two teacher surveys (one completed before implementing the project and one after its completion), and teacher reflections recorded throughout the duration of the project.

Evaluation questions

1. *How does the Forest Days approach help meet science curriculum standards?*
2. *How does the Forest Days approach help meet social and emotional learning standards?*
3. *How has the project impacted the kindergarten teachers' perspectives about taking their classes outdoors in a natural environment on a frequent and regular basis in all weathers/seasons?*
4. *How has the project contributed to the kindergarten teachers' abilities to take their classes outdoors in a natural environment on a frequent and regular basis in all weathers/seasons?*



¹ <https://www.nextgenscience.org/sites/default/files/K%20combined%20DCI%20standardsf.pdf>

² <https://education.vermont.gov/sites/aoe/files/documents/edu-early-education-early-learning-standards.pdf>

What did we learn?

1. Forest Days help meet science curriculum standards by providing children with opportunities to: (1) plan for and experience a variety of weathers and seasonal changes, (2) have direct encounters and interactions with plants and animals, (3) construct and build things with sticks and other natural materials, and (4) learn about friction fire-lighting and cooking.
2. Forest Days help meet social and emotional learning standards by providing children with opportunities for: (1) imaginative play, (2) group collaborations, (3) exploration, experimentation, and creativity, (4) communication with peers and adults, (5) experiencing risks, and (6) overcoming challenges.
3. The teachers perceived tangible benefits for their students and for themselves while implementing the program, including providing equitable opportunities for children to spend time outdoors.
4. The project helped change the teachers perspectives and improved their skills and confidence in: (1) understanding the benefits and management of risks in the outdoors, (2) facilitating in an outdoor environment, (3) linking play-based, outdoor experiences to curriculum standards, and (4) supporting students with special needs.
5. Observation and mentorship were key components for improving teachers' confidence and skills to deliver a Forest Days program independently.
6. Continued flexibility, creativity, and administrative support will be crucial to the ongoing success of the Forest Days program.



Recommendations

- Consider incorporating sketches, drawings, diagrams in an outdoor environment to meet more standards.
- Continue to link outdoor experiences to the classroom to enhance the curriculum.
- Continue to support children's imaginative play, exploration, and risk-taking outdoors to encourage social and emotional development.
- Continue to refine methods of observation and documentation to communicate how and what the children are learning through play to others.
- Continue seeking out support to overcome the barriers and challenges that present themselves in this work.
- Continue seeking out professional learning opportunities to further increase confidence and abilities.

Program Context

The Kindergarten Forest Days project at Symonds Elementary School in Keene, New Hampshire was inspired by three motivated public school kindergarten teachers Jessica Arrow, Tracy Thompson, and Amy Strong, who all understand the benefits of incorporating nature-based learning into the curriculum for students' learning, development, and connection to nature. As a means to do this, they decided to implement Forest Days by taking their classes outside into the school grounds and an adjacent city park for unstructured play time at least one morning per week (approximately 1.5 hrs), in all seasons, throughout the school year. The objectives of the program are to:

- Promote healthy development in a stimulating learning environment
- Enhance opportunities for play-based learning, such as access to 'loose parts' that inspire creativity
- Encourage children to take appropriate risks to learn risk assessment and self-regulation
- Foster social skills and peer-group relations
- Nurture a connection to the natural world and an understanding of environmental stewardship

In late 2018 the teachers connected with two passionate and experienced environmental educators, Landere Naisbitt and Caylin Gans of *Tracks Forest School and Outdoor Learning*, who assisted them in undertaking a capacity building project to guide them in starting Forest Days and build a foundation for the teachers to continue taking their classes outside on a regular basis in the future independently. Landere and Caylin supported the teachers by helping to develop a plan and curriculum framework, providing initial resources and materials, and mentoring on outdoor lesson design and delivery.

Each of the 3 kindergarten classes went outdoors with 1 teacher, 1 environmental educator, and additional support staff/parent volunteers on a semi-regular basis (dependent on weather and staff availability) one morning per week from January 23rd to May 3rd, 2019. Sessions followed established routines (e.g. starting with circle time, then exploration and play time, and ending with another brief circle time for reflections). Sometimes stories, songs, and materials were provided by the educators and most of the session time was dedicated to open, unstructured play. The educators and teachers incorporated the children's interests and feedback to plan for subsequent sessions based on what inspired and motivated the children most. This evaluation report provides an analysis of data collected between January and May 2019, which spanned the months of Landere's and Caylin's involvement in program delivery.

Why did we do this evaluation?

1. To determine how the Forest Days program supports Next Generations Science Standards (NGSS)³ and social emotional learning standards (as outlined by the Vermont Early Learning Standards⁴) in order to help teachers better understand how the program fits in with their overall curriculum.
2. To describe how the capacity-building portion of the project impacted teachers' confidence and skills with regards to taking their classes outdoors on a frequent and regular basis.
3. To inform future decision making about program improvement.

What were we trying to learn?

The following questions were developed through conversations with the teachers and the environmental educators involved in this project.

1. How does the Forest Days approach help meet science curriculum standards?
2. How does the Forest Days approach help meet social and emotional learning* standards?
3. How has the project impacted the kindergarten teachers' perspectives about taking their classes outdoors in a natural environment on a frequent and regular basis in all weathers/seasons?
4. How has the project contributed to the kindergarten teachers' abilities to take their classes outdoors in a natural environment on a frequent and regular basis in all weathers/seasons?

*For the purposes of this evaluation, social and emotional learning is being defined as “the process through which children and adults acquire and effectively apply the knowledge, attitudes, and skills necessary to understand and manage emotions, set and achieve positive goals, feel and show empathy for others, establish and maintain positive relationships, and make responsible decisions”.⁵

³ <https://www.nextgenscience.org/sites/default/files/K%20combined%20DCI%20standardsf.pdf>

⁴ <https://education.vermont.gov/sites/aoe/files/documents/edu-early-education-early-learning-standards.pdf>

⁵ CASEL. (n.d.). What is SEL? Retrieved December 3, 2018, from <https://casel.org/what-is-sel/>

What data did we collect?

Observations: Educators and teachers took photographs, videos, and notes throughout each session. After each session educators recorded their observations of the children's play behaviors and dialogues and how they related to the NGSS and social and emotional learning standards.

Teacher Surveys: Surveys were conducted prior to the first outdoor session in January 2019 and at the conclusion of the project's collaboration with the environmental educators in May 2019. Questions included a mix of closed and open questions to gather qualitative and quantitative data about the teacher's perceptions of the project as a whole and with regards to changes in their own ability to facilitate regular outdoor learning opportunities for their classes.

Teacher Reflections: Teachers reflected on any changes to their perspectives/abilities with regards to facilitating outdoor learning in a natural environment in all weathers/seasons throughout the duration of the project. Written reflections were recorded alongside session observations.



What did we learn?

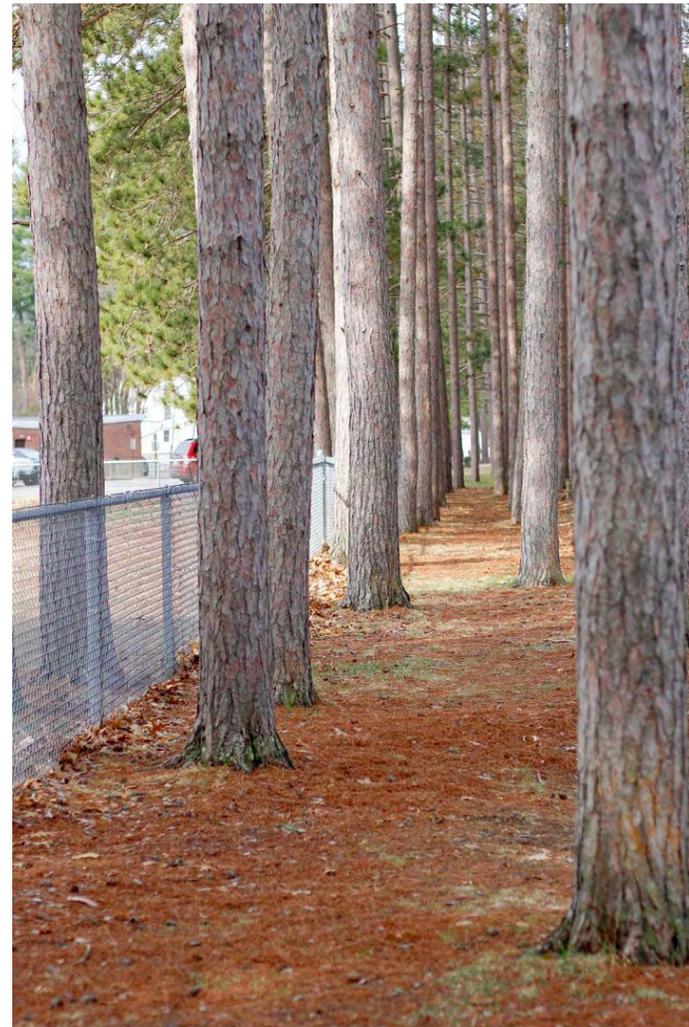
This section of the evaluation report discusses themes that emerged through analysis of the data in relation to the four evaluation questions stated above.

To answer questions 1 and 2, 210 written observations were recorded between January 23rd and May 3rd 2019 (138 related to NGSS & 72 related to social and emotional learning standards). These observations were analyzed to determine the number of links to the Next Generation Science Standards for kindergarten and the Social and Emotional Development Standards as outlined in the Vermont Early Learning Standards. During analysis, observations were grouped into overarching themes relating to the described activity or experience to determine the means through which the standards were met.

1. *How does the Forest Days approach help meet science curriculum standards?*

1.1. *Forest Days help meet science curriculum standards by providing children with opportunities to:*

- *plan for and experience a variety of weathers and seasonal changes*
- *have direct encounters and interactions with plants and animals*
- *construct and build things with sticks and other natural materials*
- *learn about friction fire-lighting and cooking*



Plan for and experience a variety of weathers and seasonal changes

Observations:

Experiencing it snowing. Observing and discussing the snow on the ground and how it covered “the puddles from last week” up.

Noticing the effect of sunlight from the day before on snow and how there were puddles in some places.

Noticing that the sun feels warmer on our faces and buds are growing bigger on shrubs.

Discussion about how a site can change over time and as seasons change. Noticed HUGE ice patch in flooded area of woods. Talked about freeze and thaw cycle in spring. Also discussed the first day of spring lining up with full Worm Moon or Full Crust Moon and relating this back to our observations about how the site is changing.



Links to NGSS Standards:

K-ESS2-1. Use and share observations of local weather conditions to describe patterns over time

K-ESS3-2. Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to severe weather

K-PS3-1. Make observations to determine the effect of sunlight on Earth's surface

Have direct encounters and interactions with plants and animals

Observations:

Finding slugs, worms, and centipedes under a wet stick pile. Having a discussion about handling the worm (“Is it alive or dead?” “It looks dried up!” “Does it need moisture?”). Thinking about putting it back where it was found so it could survive since handling it seemed to be harming it.

Observing a sample nest brought in by the educator and inquiring about who built it: “Was it a raven?” “No, too small.” “Another bird?” “Something other than a bird?” “A frog?” “Would frogs build a nest in a tree?” “A squirrel?”

Recording observations about puffball mushrooms for further research and noticing they are giving off more “smoke” (spores) on warmer days.

Observing the raven in its nest. We think the eggs have hatched! We watched the parents collecting food (children guessed insects) and then fly back to the nest. We listened for the hatchlings.



Links to NGSS Standards

K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive

K-ESS3-1. Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live

K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change their environments to meet their needs

K-ESS3-3. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment

Construct and build things with sticks and other natural materials



Observations:

The children wanted to build a bridge to get over a dip in the snow. They moved a large branch over and added further sticks to construct a bridge.

Several children were trying to carry a log at the same time. They figured out that when someone stands on the other end, they can't pick it up. Also that all need to move in the same direction to move it because it didn't work when it was pulled in various directions.

"Making wind monitors" by tying pine needles and cones to string and hanging them from the branches of a tree.

Links to NGSS Standards:

K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool

K-2-ETS1-3. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs

K-ESS2-1. Use and share observations of local weather conditions to describe patterns over time

K-PS2-1. Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object

K-PS2-2. Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or pull



Learn about friction fire-lighting and cooking

Observations:

When practicing fire lighting, the children tried to use an alternative rock to the flint, noticing how it didn't work the same way even though they were both rocks. They described how the other rock was breaking more easily and was rougher whereas the flint was smooth and strong.

We were clearing pine needles for a fire and placed the kelly kettle on an upturned pie tin. We had a discussion about the reasons for this to prevent the fire from spreading. One child says, "So we don't hurt the trees."



Links to NGSS Standards:

K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool

K-2-ETS1-3. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs

K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive

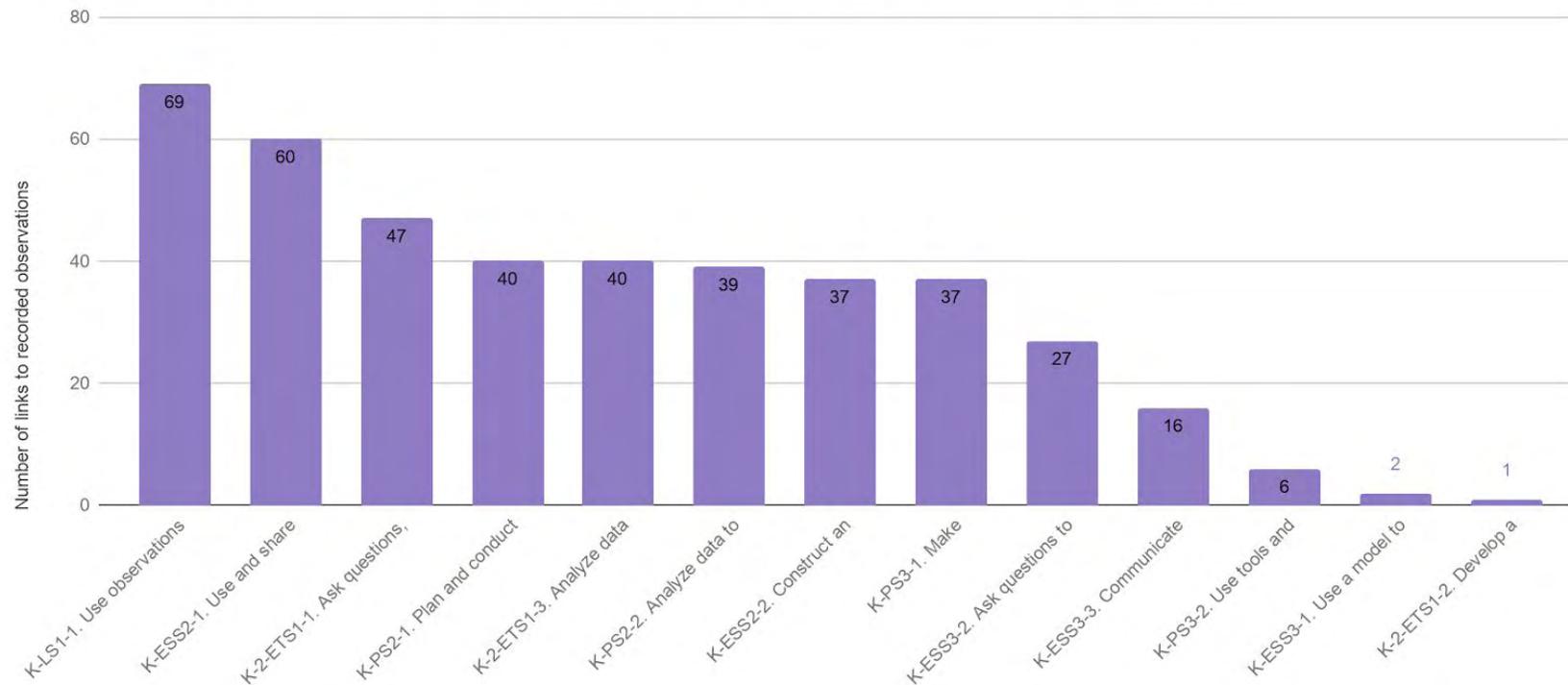
K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change their environments to meet their needs

K-ESS3-3. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment

NGSS Standard	# of Links to Standards ⁶
K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive	69
K-ESS2-1. Use and share observations of local weather conditions to describe patterns over time	60
K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool	47
K-PS2-1. Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object	40
K-2-ETS1-3. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs	40
K-PS2-2. Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or pull	39
K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change their environments to meet their needs	37
K-PS3-1. Make observations to determine the effect of sunlight on Earth's surface	37
K-ESS3-2. Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to severe weather	27
K-ESS3-3. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment	16
K-PS3-2. Use tools and materials provided to design and build a structure that will reduce the warming effect of sunlight on Earth's surface	6
K-ESS3-1. Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live	2
K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps its function as needed to solve a given problem	1

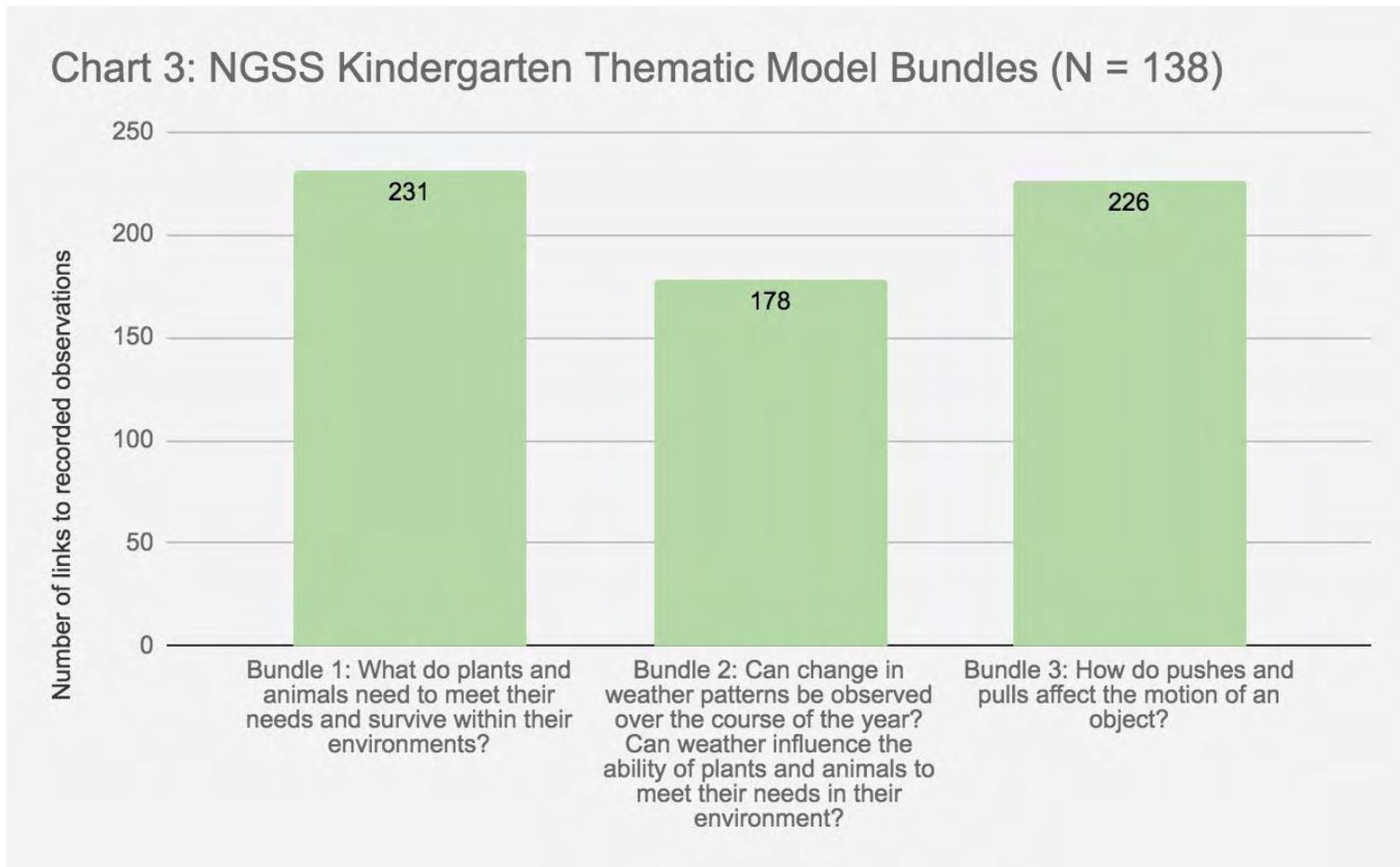
⁶ Note that some observations were linked to multiple standards, so the total numbers of observations linked to standards is greater than 138.

Chart 1: Observation links to Next Generation Science Standards (Kindergarten) (N = 138)



Note: The Standards most linked to the recorded observations from the outdoor portion of the program involved observation, asking questions, gathering information, analyzing data, and constructing arguments from evidence. The Standards least linked while outdoors involved using models and developing sketches or drawings. However, the teachers utilized indoor classroom time to reflect with the children on their Forest Days experiences. These drawings were not analyzed for the purposes of this report, but provide evidence that making models, sketches, and drawings could easily be incorporated into the Forest Days program, either in the classroom or with additional time and resources outdoors.

Observations were also analyzed in relation to the NGSS Kindergarten Thematic Model⁷ which identifies three “bundles” to “focus on the observation of patterns in the natural and designed world(s)” (p. 1). See the Appendix on page 35 for a list of Standards within each Bundle and the corresponding number of recorded links to observations.



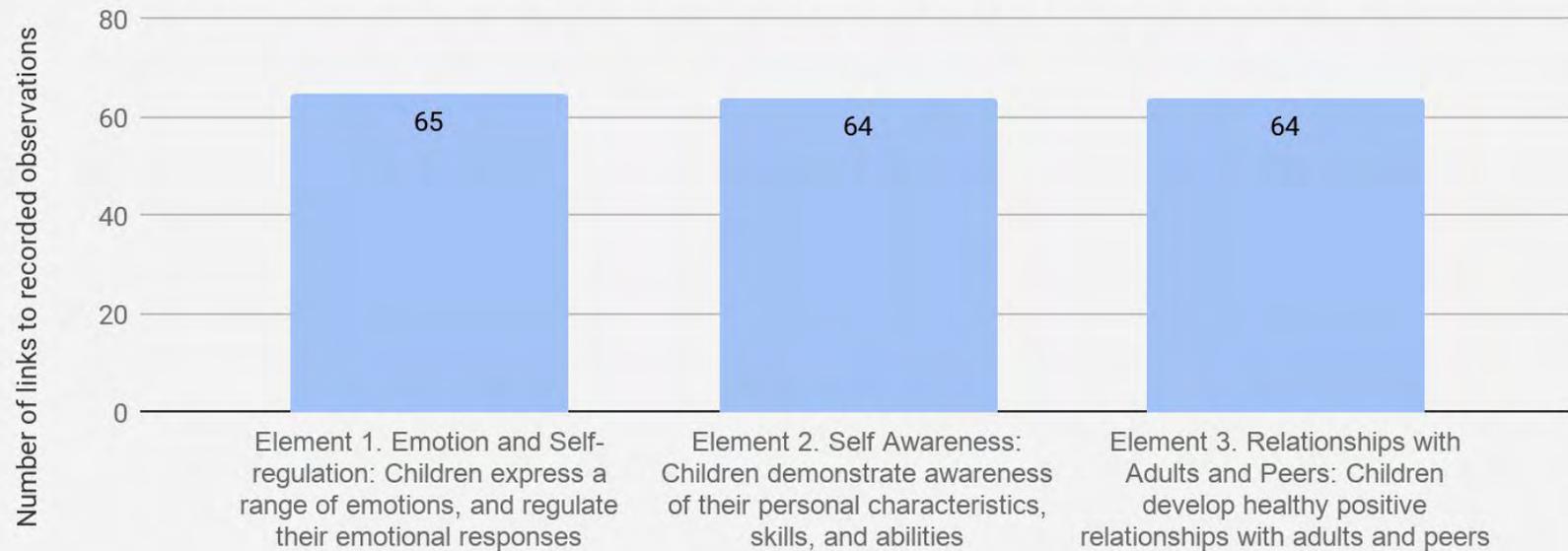
⁷ <https://www.nextgenscience.org/sites/default/files/K%20Thematic%20Model%20Summary%20and%20Flowchart.pdf>

2. How does the Forest Days approach help meet social and emotional learning standards?

2.1. Forest Days help meet social and emotional learning standards by providing children with opportunities for:

- *imaginative play*
- *group collaborations*
- *exploration, experimentation, and creativity*
- *communication with peers and adults*
- *experiencing risks*
- *overcoming challenges*

Chart 3: Observation links to Social and Emotional Development Standards (N = 72)



Theme: Imaginative Play

Observations:

The children were working together playing house with kitchen supplies, making soups etc. and communicating what ingredients were needed and who would get what.

Lots of group imaginary play about aliens and in the snow kitchen. Working together to tell/act out the story and including adults in the play.



Theme: Group Collaborations

Observations:

Negotiation and problem solving around how to carry a person sitting on a log so that they don't fall off. So much perseverance! And strength building. Also, growing awareness of body in space and how much weight can be carried by one or two individuals.

Working together to lift heavy sticks/logs to create structures. Teamwork building a fort. Negotiating different agendas for what they wanted to build and how.



Theme: Exploration, Experimentation, and Creativity

Observations:

Noticing how splashing in puddles where there are lots of people can upset those who don't want to get wet. Moving to play in puddles away from others/changing direction of splashes so it doesn't impact others negatively.

*Looking underneath logs, bark and sticks.
Expressing a lot of excitement over discovering worms, centipedes, and a slug.*



Theme: Communication with Peers and Adults

Observations:

Expressing feeling "angry" at getting hit in the face with a snowball, talking to friends about it, the friends then apologizing and all moving on with playing together.

Many children wanted to try the fire strikers, but we only had two. We problem solved how to make things feel fair. We asked, "Who goes first?" Some decided to let others go before them. Together we decided to give everyone 3 minute long turns. After 3 minutes a person would give someone else a chance even if they didn't actually light the cotton ball yet.



Theme: Experiencing Risks

Observations:

Carrying sticks, showing concern for it hitting someone and finding alternative ways to hold it (upright instead of horizontal).

Keeping awareness of the safety area around the fire. Most children needed few reminders and self-regulated, noticing when they stepped into the safety circle and self-corrected.

Communicating with each other when tree climbing. Asking, "How many can be in the tree at once?" "Two!" "What happens when someone wants to get down and others are in the way?" "Politely ask them to move."



Theme: Overcoming Challenges

Observations:

A child in one class who has a 1 to 1 support aide is shining in the outdoors. He is showing peers how to use the fire striker, inventing catapults and teaching peers to use them. In the beginning he would have a meltdown when we were going out. Now he is the first one ready and always wants to hold my hand!

Tree climbing brought up the question of "Can I do this alone?" testing physical ability and self awareness.

Several children were really persistent with trying to light a cotton ball with fire strikers, not giving up (even right up to the very end when we absolutely had to stop because we had to go back to school!). One child who was the first to light one expressed how happy he was about it. His 1 to 1 support aide said, "That is huge for him!" He then stayed focused on the activity for almost all of the session and even helped others and shared with them too.



Discussion around the third and fourth evaluation questions has been combined for ease of understanding due to the nature of “perspectives” and “abilities” being closely entwined. To answer questions 3 and 4, teacher surveys and written reflections were analyzed to determine overarching themes in relation to any changes in the teachers’ perspectives and abilities.

3. How has the project impacted the kindergarten teachers’ perspectives about taking their classes outdoors in a natural environment on a frequent and regular basis in all weathers/seasons?

&

4. How has the project contributed to the kindergarten teachers’ abilities to take their classes outdoors in a natural environment on a frequent and regular basis in all weathers/seasons?

4.1. The teachers perceived tangible benefits for their students and for themselves while implementing the program.

All three teachers anticipated the program would benefit the children before the project began. In the pre-project survey, they suggested the program would help children build confidence, take reasonable risks, improve physical and mental health, and gain a connection to place and an understanding of environmental stewardship. Despite these perceived benefits there were some hesitations about such a program being within the remit of a public school teacher’s role,

“I’ve struggled with the appropriateness of it being included as part of a public school-day... We have so many responsibilities placed on us in terms of curriculum - so I see my greatest benefit as actually experiencing and buying in to meeting curriculum standards being met in this setting.”

At the end of the project one teacher reflected on how their perception of the value of the outdoor time and free play had changed,

“I’ve never felt like I could “afford” to set aside that length of time to commit to simply allowing students to play/make their own choices. When physically in the classroom it is so easy to get drawn into other more directed activities. By being physically removed from the space for that predetermined amount of time (which at first seemed like an excessive amount of time) is freeing for both myself and my students.”

The teachers also described the benefits associated with children engaging in “fantasy” and “imaginary” play in which they created complex storylines. One teacher reflected on how the experiences had “empowered” their students,

“I am the most struck by how empowered the children are out there. It was so much fun to watch them play and see where their urges took them. They were given a place where they can take their imagination and creativity anywhere it wants to go. I am moved by how much learning is taking place outside and how observation and documentation are such a powerful tool to capture all that magic. It was so special to watch the ideas, connections, conversations, innovations, and discoveries ripple throughout the forest. So much fun to watch them teach, encourage, and inspire each other.”



The teachers noted how the children had particularly benefited from learning about preparing themselves for the weather. They also described how the benefits of the program were noticeable both outdoors and in the classroom too,

“The work happening indoors has been so enriched by our experiences outdoors. The science center is filled with artifacts from the woods. Conversations ripple throughout the day. Having them reflect in writing has been powerful... Our conversations are richer. Our writing is more connected and integrated. Our relationships are stronger!”

One teacher highlighted that offering a Forest Days program in a public school helps create equitable experiences for children in nature. They described how factors such as socioeconomic status can impact children’s abilities to spend time outdoors and that, as a teacher, striving for equity is a driving force for them within the program,

“We often have students who do not have backyards or chances to play outside except when at school. We also have children who spend most of their time outside of school in front of tvs or tablets. So providing these enriching and real-world (rather than tech-world) experiences within public schools is, to me, one of the greatest benefits of Forest Days for addressing equity and opportunity.”

Teachers also perceived advantages for themselves as a result of the program including learning how the benefits can outweigh the risks, how to trust students to self-direct their own learning and manage their own risk, and how to utilize methods of documenting and reflecting on the learning.

One teacher noted how the project had strengthened their own connection to nature in addition to their students,

“Through my work with you I have felt my connection deepening each week. What a gift to be able to observe my children deepen their connection too!”

Overall, the teachers expressed how participating in the project had helped to change their teaching practice and enhance the learning of their students.



4.2. The project helped change the teachers perspectives and improved their skills and confidence in

- *understanding the benefits and management of risks in the outdoors*
- *facilitating in an outdoor environment*
- *linking play-based, outdoor experiences to curriculum standards*
- *supporting students with special needs*

Understanding the benefits and management of risks in the outdoors

In the surveys completed before the start of the project teachers described wanting more understanding and confidence in managing risk outside and a desire to take guidance from experienced educators and observe how others manage risk. One teacher wrote,

“I have a lot of room to grow in this area. I am looking forward to learning more so I can manage my own worry around risk. For me it is the fear of broken bones and any liability that comes along with that... tree climbing, heights, ice, etc.”

One teacher who had indicated feeling “not confident” about managing risk before the project, indicated they felt “confident” after the project due to acquiring knowledge and skills in risk benefit assessment, language to use in risky play, and knowledge about the importance of risky play. They indicated that one of the benefits of the program was empowering children by providing a “democratic process” for involving children in decision making around risk and play. They reflected on this shift in their perspective around risk partway through the project,



“I am learning that I really need to arm myself with good language around risky play... Many times I found myself fighting the urge to say... ‘Our rule is,’ ‘Stop,’ ‘Don’t _____,’ ‘Be safe,’ ‘Be careful.’ It is going to take some practice to reframe how I guide children as they negotiate risk...”

A few weeks later, they again noticed how their perspective and ability to navigate risky play were shifting,

“I am noticing how my inner voice is changing when assessing risk. The large patch of ice was my new challenge today. Somehow my brain became very conditioned to micro manage risk. When the children first joyfully made their way to the ice, I had to take a deep breath and say, ‘They’ve got this.’ As they started to hammer the ice and pieces began to fly in the air, I resisted the urge to tell them to stop or be

careful and instead helped them notice and problem solve. There was no need to stop the hammering, just find a spot where you are not next to someone's face. Haha! Then once I got over that initial hump of worry I was able to sit back and relax and watch the joy unfold on the ice... I have learned so much about reframing my language and making the kids an integral part of the risk assessment process."

Another teacher stated that the project allowed them to understand how a reasonable amount of risk can benefit children,

"As a classroom teacher we feel the need to manage everything. Watching the children facilitate practically their entire learning experience in the woods has helped me to see that it's not only okay, but necessary for development."

One teacher observed that their confidence levels were dependent on different types of risk. They indicated a slight decrease from feeling "confident" to "somewhat confident" around managing risky play due to the individuals in their class engaging in more risky behavior than in classes they'd had in previous years. In relation to managing other risks, such as the weather and being in an outdoor environment, they indicated an increase in confidence around navigating weather risks, establishing safety protocols and routines, and communicating those protocols to families.

Facilitating in an outdoor environment

Prior to the start of the program, the teachers expressed a desire to gain more confidence around facilitating outdoors and an eagerness to observe and learn from someone more experienced.

Partway through the project, one teacher described their shift in perspective around going outdoors with their class in the rain,



“It was good for me to observe my discomfort with rain when it became a real possibility that we would be going outside in it. After finally pushing myself to a place of going for it, I was completely disappointed that it had stopped raining before we got outside!”

After the completion of the project, all three teachers indicated they felt “confident” or “very confident” about facilitating in an outdoor environment. One teacher expressed they had gained, “a repertoire of rituals, stories and provocations to encourage making connections to the natural world.”

Linking play-based, outdoor experiences to curriculum standards

All three teachers anticipated that Forest Days would support curriculum standards before the project started, but indicated they wanted more understanding about how.

Partway through the project one teacher noted how the children played differently outdoors than they did indoors and how this related to social and emotional learning,

“There continues to be a lot of complexity within this play where it is dependent on communication and collaboration among a number of children in order for the play scenario to play out. It’s great to observe, as the classroom teacher, their ability to negotiate and cooperate with one another. They’re much more willing to go with someone else’s plan in the wide open outdoor space than they seem to be in the classroom.”



After the completion of the project, all three teachers indicated they felt “confident” or “very confident” about linking play-based, outdoor experiences to curriculum standards. One teacher expressed,

“I was skeptical about the children’s engagement in the activities and about the value of the experience in terms of making the most of every educational moment in our day. I’ve never been so happy to be wrong. Carefully recording their experiences both with photography, notes and recording their favorites and hopes has shown me that they can and have met many objectives, both academic and social/emotional.”

Another teacher described how the outdoor experiences linked particularly well with science standards and provided opportunities for students to experience changes in the environment. Additionally, the teachers provided time for children to reflect on their Forest Days experiences in the classroom and one teacher commented on how well this connected with literacy,

“Our writing time during quiet time [indoors] was so RICH! I am learning so much about them as writers and about their perception of their experiences outdoors. It is so wonderful to have this writing focus after our time in the woods!”

Supporting students with special needs

Before the project started there were some trepidations about how the program could support some students who had experienced challenges in the classroom.

At the end of the project, one teacher acknowledged the substantial benefits the program had on children with special needs,



“I have been really intrigued by the concept of the environment itself becoming the third teacher... It was really powerful to watch my special education students thrive outdoors. You can read all the research you want, but it was most moving to watch it before my very eyes and feel the joy of watching them feel proud and confident. So many children who struggle indoors were absolutely shining and thriving outdoors. Children were so inspired by their surroundings and each other.”

4.3. Observation and mentorship were key components for improving teachers' confidence and skills to deliver a Forest Days program independently.

Prior to the start of the program all three teachers indicated they wanted opportunities to observe in order to build their confidence in delivering programs outside. Two expressed particular desires to observe techniques for risk assessments and procedures, what language to use in relation to fire skills and safety, and strategies for taking children out in winter. At the end of the project all three teachers expressed how valuable observation had been for their learning. One teacher stated,

“[Observation] has allowed me to see what it can look like to encourage children to interact with their environment in a way that honors both fun for the sake of fun, as well as fostering a love of the natural world, a wonder for everything they observe, a level of care for their friends as they share the experience.”

The teachers all acknowledged how the involvement of the environmental educators was exceptionally helpful to implementing Forest Days. The environmental educators were able to provide assistance with tangible project pieces, like creating a program handbook, helping with parent communication and consent forms, and designing session planning documents. These contributions during the the early planning stages were deemed crucial for the project's success.



They also assisted with more nuanced parts like providing mentorship in fire safety and risk benefit assessments as well as giving teachers the chance to observe the rituals, invitations to play, provocations and oral storytelling outdoors and listen to the language used with the children. One teacher also noted the benefits of having someone to reflect with in order to process thoughts and concerns. Another teacher indicated that the assistance from the environmental educators was beneficial for providing enough support and consistency for all three classes to initiate Forest Days and maintain common language, goals, and routines.

One teacher summarized how the involvement of the environmental educators was crucial to the success of the project,

“Having the program consultants enhanced the experience for both the teachers and students. Having the opportunity to sit back and observe... without any pressure to perform/co-lead until I felt comfortable in the situation was one of the best professional development experiences I’ve had as a teacher... Observing how [they] set out provocations for the children in the forest, seeing how open-ended those provocations could be and watching the children make their choices was fascinating to me...

Allowing for more student risk-taking than I had been comfortable in the past is a direct result of having the opportunity to watch as [they] guided children in their risks. Having [their] language in my toolbox will be a gift that goes on and on. Additionally, all of the work that [the environmental educators] both put into developing the Forest Handbook set the groundwork for this experience to get off the ground in our public school setting. On our own we would NEVER have had the time or background knowledge to put together the handbook, which was a necessary tool in establishing the program.”



4.4. Continued flexibility, creativity, and administrative support will be crucial to the ongoing success of the Forest Days program.

There were many challenges and barriers that arose prior to and throughout the implementation of the Forest Days program. One issue that concerned teachers was having enough qualified staff to supervise in an outdoor environment. Adult to child ratios were increased with the involvement of the environmental educators, but this was only a temporary solution. Two teachers expressed having a minimum of 3 adults as necessary. One strategy to overcome this barrier was involving a student teacher from the local state college.

It was also a challenge to provide the children with the right clothing and gear to go out in all weather, particularly when it rained. This resulted in a few sessions being cancelled due to heavy rain. It will be beneficial to address the lack of appropriate clothing for the future of the program, though teachers feel optimistic this will happen over time.

Finding time in the schedule was another challenge that required creativity. One teacher described how they worked through this,

“Allowing myself to be flexible about carving out time. Once the project got going, it felt easier to be flexible about missing some indoor learning time because once you witness how valuable time is outdoors, it no longer feels like you are sacrificing something. If anything it is enriching what is happening in the classroom.”

However, there are still some concerns about finding enough time to prepare for and deliver Forest Days independently, including being restricted by the whole school schedule. There were also some challenges in getting others “on board” with the project to support it but as one teacher noticed,





“The children’s enthusiasm has had an amazing ripple effect on the school. One teacher [who was not involved in the project] commented... ‘I’m so jealous, I can smell the fresh air and joy coming off your kids as they walked through the door after forest day.’ I’m learning that getting others to understand why this work is important is a slow, gradual process and you have to patient and gently persistent. It truly is a ripple effect! I am excited to watch it grow!”

One teacher indicated that lots of communication between all those involved in the project had proven helpful in overcoming some of these barriers. They indicated the importance of having support from other staff and parents and described how this had contributed to their confidence.

What does it mean?

1. Forest Days have been an effective means of supporting Next Generation Science Standards and Social and Emotional Learning Standards for kindergarten. The program particularly enhanced the play-based curriculum by providing opportunities for creativity, innovation, experimentation, teamwork, and risk-taking through hands-on experiences with the natural world.

2. Teachers have perceived benefits for the children and for themselves, in addition to meeting curriculum standards, such as feeling empowered and connected to the natural world. Forest Days have also been beneficial in supporting students with special needs and have allowed children to learn and build confidence in ways that aren't as easily supported in the classroom. Additionally, providing this type of program within a public school helps to work towards creating equitable opportunities for children to experience and connect with the outdoors.



3. Teachers feel more confident and able to deliver Forest Days program independently as a result of observing and learning directly from the environmental educators, indicating the capacity-building portion of the the project was successful.

4. There are challenges and barriers that come with delivering Forest Days programs in a public school setting, such as having enough qualified staff, obtaining appropriate outdoor clothing for all children, making time in the school schedule, and getting others “on board” to see the benefits to students as well as how it supports curriculum standards. Teachers will need to maintain flexibility to overcome these challenges in creative ways, with support from school administrators and staff.

What do we recommend?

1. Consider ways to incorporate more opportunities for working with and developing models (sketches, drawings, diagrams) in an outdoor environment to better integrate more of the Next Generation Science Standards. This could be done by extending or finding additional time outdoors to engage the children in reflections and by using natural materials in addition to or instead of paper and pens. Creating natural art and taking photographs to document it could be one method.
2. Continue to link outdoor experiences to activities and discussion in the classroom to enhance the curriculum. For example, keeping track of the weather experienced each Forest Day on a classroom calendar with notations about discoveries or experiences that happened that day could help children notice patterns over the course of the year. Or asking the children what questions came up for them during a Forest Day and using classroom time to introduce resources to help them answer those questions.
3. Continue to support children's imaginative play, exploration, and risk-taking outdoors to encourage social and emotional development. Keep engaging children in guided dialogue about their emotions, behaviors, and actions to help them gain skills in self-awareness, self-regulation, and risk-management and empower them to make healthy choices on their own. Encourage unstructured play, which often naturally facilitates opportunities for group collaboration and enhances communication and social skills between peers and with adults. Keep supporting opportunities for children to experience risks and overcome challenges to build confidence and self-esteem.
4. Continue to utilize and refine methods of observation and documentation to communicate how and what the children are learning through play to others, including



their caregivers and families. Pictures/videos with captions are simple and wonderful ways of sharing stories and there are various platforms that can help support this in a confidential way, such as Shutterfly and Storypark. Get creative with alternative methods of documentation and sharing too!

5. Seek out support and funding opportunities to overcome the barriers and challenges that present themselves in this work, specifically within a public school setting. To ensure sustainability of the program, we'd encourage school administrators to work together with teachers to plan for appropriate staff ratios. A minimum of 3 adults per 1 kindergarten class is recommended for safety reasons. Working with student teachers, either through Keene State College or Antioch University New England could be one means to achieve this. Another option is to collaborate with "experts" from the community to have them assist on days when you're introducing activities with extra risk, such as fire lighting. We also recommend applying for funding or seeking donations to obtain rain gear so the children and staff can be comfortable outdoors in all weathers.
6. We encourage teachers to continue to seek out professional learning opportunities to keep increasing their confidence and abilities in this work and to stay current and up-to-date on first-aid qualifications, risk-management, play-based curriculum, and other related topics such as nature connection. Review the Risk Benefit Assessments, Policies & Procedures, and Ecological Impact Assessment in the Program Handbook regularly and update as needed.



Limitations

Every evaluation or research study has limitations. The limitations discussed here do not diminish the importance of the evaluation findings, but rather are presented to help readers of this report to better understand how the findings should be interpreted. Limitations of this evaluation include:

- Potential bias since the evaluation was conducted internally by the environmental educators involved in the project. This could influence both the responses and interpretation of the data.
- Observations were mostly recorded by the environmental educators and do not provide a complete picture since the teachers would have observed different things. There are many experiences that occurred during Forest Days that were not directly recorded so the evaluation provides a bare minimum of what standards were met rather than a comprehensive understanding.
- The evaluation mostly reported on experiences that occurred outdoors and did not encompass how the project impacted experiences in the classroom. Understanding how the “outdoors” was linked to the “indoors” and vice versa would have provided a more holistic perspective of the project’s impact, particularly in regards to meeting curriculum standards.
- The project spanned approximately 4 months and 2 seasons (winter to spring). Every season provides different affordances and opportunities for outdoor play. Experiences and subsequent standards met through this Forest Days project directly correspond to the context (physical and cultural) in which it took place. Therefore it should not be expected that other Forest Days programs would necessarily produce the same results.



Thank you!



Tracks Forest School & Outdoor Learning would like to extend a tremendous thank you to all who made this project happen! From the amazing teachers, dedicated school staff and administrators, gracious Parks and Recreation staff, supportive Keene Fire Department, wonderful parents, incredible children, and the inspiring natural world, it would not have been possible without all of you. A special thanks goes out to the raven family who nested in a nearby tree and allowed us the wonderful opportunity to observe them going about their lives from week to week. Thank you for your patience with us, for letting us meet your offspring, and for connecting us all to the forest in such truly memorable ways. There will always be a special place in our hearts for “Raven’s Wood.”



Appendix

Bundle	# of Links between Observations and Standards ⁸
<i>Bundle 1: What do plants and animals need to meet their needs and survive within their environments?</i>	231
K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive	69
K-ESS2-1. Use and share observations of local weather conditions to describe patterns over time	60
K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool	47
K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change their environments to meet their needs	37
K-ESS3-3. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment	16
K-ESS3-1. Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live	2
<i>Bundle 2: Can change in weather patterns be observed over the course of the year? Can weather influence the ability of plants and animals to meet their needs in their environment?</i>	178
K-ESS2-1. Use and share observations of local weather conditions to describe patterns over time	60
K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool	47
K-PS3-1. Make observations to determine the effect of sunlight on Earth's surface	37
K-ESS3-2. Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to severe weather	27
K-PS3-2. Use tools and materials provided to design and build a structure that will reduce the warming effect of sunlight on Earth's surface	6
K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps its function as needed to solve a given problem	1

⁸ Note that some observations were linked to multiple standards, so the total numbers of observations linked to standards is greater than 138.

<i>Bundle 3: How do pushes and pulls affect the motion of an object?</i>	226
K-ESS2-1. Use and share observations of local weather conditions to describe patterns over time	60
K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool	47
K-PS2-1. Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object	40
K-2-ETS1-3. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs	40
K-PS2-2. Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or pull	39