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# Natural Outdoor Classrooms: A National Survey

FINAL REPORT

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*with photographs and quotes from follow-up interviews by Rod Diercks*

September 2019

## Acknowledgements

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The National Natural Outdoor Classroom Study was conceived through a partnership between Nature Explore, The Outdoor Classroom Project, and the Environmental Design Lab in the Department of Planning and Landscape Architecture at the University of Wisconsin-Madison.

Survey analysis was conducted by Alexandra Wells, Managing Director, The Environmental Design Lab. Survey development was a joint project with Nancy Rosenow and Christine Kiewra of Nature Explore and the University of Nebraska-Lincoln, Eric Nelson and Elyssa Nelson of the Outdoor Classroom Project, and Samuel Dennis, Jr. and Alexandra Wells of the Environmental Design Lab, University of Wisconsin-Madison.

Survey implementation was contracted through the University of Wisconsin Survey Center (UWSC). The UWSC is a department of the College of Letters and Science at the University of Wisconsin-Madison and is supported by the College and revenue generated from contractual work. The UWSC serves the survey research needs of University of Wisconsin faculty, staff, and administration; federal, state, and local governmental agencies and not-for-profit organizations. Professor Nora Cate Schaeffer is the Faculty Director of the UW Survey Center. Vicki J. Lein served as Project Director on this project.

A research advisory council of national experts (listed on the following page) was convened at the beginning of the project to help guide development of the survey by identifying areas of need as identified in their own discipline as well as existing research that could inform this project. The group met again in summer 2015 to discuss preliminary survey results and to provide input on interpretation. Follow-up ideas were provided through electronic communications. Targeted individual interviews were carried out by Rod Diercks, Professor of Education at Doane University. In 2017 the group reviewed a draft of the preliminary report and provided suggestions. The core research group then reviewed and approved the Final Report document and completed it in September, 2019.

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# 1) EXECUTIVE SUMMARY

## Background

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Dimensions Educational Research Foundation, with its Nature Explore Program, and Child Educational Center, with its Outdoor Classroom Project are among the organizations at the forefront of the movement in the United States to create nature-based learning environments in early childhood settings. To date, hundreds of natural outdoor classrooms have been built using their evidence-based guiding principles. More research on how these natural spaces are affecting children's learning can influence educators, administrators, school district officials, and policy makers to make informed decisions regarding where and how to invest resources that enhance education quality.

To support this effort, a multi-disciplinary Research Advisory Council was created to provide guidance regarding the emphasis of this study, and to periodically review the data analysis and interpretation. Involving advisors from a variety of disciplines, including design, education, health, and mental health fields in the planning of the study will enable us to gather the most valuable information and then disseminate it in the most useful venues. We convened through in-person and online meetings and used electronic correspondence to share information and ideas.

The survey was developed by Samuel Dennis Jr and Alexandra Wells of the Environmental Design Lab at the University of Wisconsin-Madison.

## Survey Objective

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The goal of the project was to conduct a survey with educators and administrators who work with children in natural outdoor classrooms to examine educators' observations and perceptions related to supporting children's social, emotional, cognitive and physical development; educator perceptions of their own experiences in the outdoor classroom; and administrators' perceived value of natural outdoor classrooms for their programs. As a follow-up to pilot research conducted in 2014, the larger-scale initiative studied the efficacy of nature-based outdoor classrooms in delivering whole-child learning, specifically in supporting children's initiative, creativity, skill-development, healthy eating, social-emotional development and environmental stewardship.

## Pilot Study

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A post occupancy study conducted by the Environmental Design Lab (EDL) for Nature Explore and the Outdoor Classroom Project examined the extent to which natural outdoor classrooms produced their intended outcomes. Findings supported existing theories linking nature-based outdoor education to positive learning and developmental outcomes. The results of the pilot were published in Dennis, S.F., Wells, A., & Bishop, C. (2014) A Post-Occupancy Study of Nature-Based Outdoor Classrooms in Early Childhood Settings. *Children, Youth and Environments* 24(2): 35-52. Access the full paper at: <http://www.jstor.org/stable/10.7721/chilyoutenvi.24.2.0035>

## Survey Methodology

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The University of Wisconsin Survey Center contacted 274 sites that were certified or recognized by Nature Explore, The Outdoor Classroom Project, or both. Educators and administrators at the sites were invited to take a web-based survey. The survey asked educators questions related to their support of children's development, interests, needs, and attention restoration. Questions about educators' perceptions of their own work included self-efficacy, attention restoration, and the importance of design features, as well as questions about experience, training and time spent in the outdoor classroom. Administrators were asked about staff appreciation, interest in the program, and official recognition.

## Key Findings

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### **Educators**

Most educators felt that in the natural outdoor classroom:

- they supported children's learning and development in all domains with the most frequent being creativity and imagination and social emotional development;
- they could observe children's interests/needs more than on a traditional playground;
- children with identified special needs were more engaged in the outdoor classroom than indoors;
- they saw positive or appropriate developmental behaviors in children;
- they noticed restorative aspects to children's behavior when returning indoors;
- they themselves felt refreshed and patient and therefore better able to respond to children's need;
- they felt increased effectiveness in their work as they were able to adjust activities to the appropriate level for children and more able to calm upset children.

### **Administrators**

Administrators at programs with natural outdoor classrooms (including early childhood education settings, elementary schools, and public settings such as libraries and nature centers) felt that having a certified or otherwise officially recognized natural outdoor classroom added value to their educational program, by:

- increasing interest in the center and its programs;
- offering official recognition that an informal outdoor classroom could not; and
- increasing staff satisfaction.

### **Supplemental Interviews and Photographs**

Rod Diercks from Doane University traveled to several Nature Explore and Outdoor Classroom sites to take photographs of the natural outdoor classrooms while they were being used and interviewed staff members. He followed the interview protocol developed at the University of Wisconsin and used in the initial Pilot Study. Quotations and some of the photos in this report are from those interviews. Pseudonyms have been used to protect the privacy of programs and children.

## 2) BACKGROUND AND OBJECTIVES

### Study Background

Dimensions Educational Research Foundation, with its Nature Explore Program and Child Educational Center, with its Outdoor Classroom Project are among the organizations at the forefront of the movement to create nature-based learning environments in early childhood and other educational settings. To date, hundreds of natural outdoor classrooms have been built using their evidence-based guiding principles.



Nature Explore began research-based program of Dimensions Educational Research Foundation, a non-profit organization based in Lincoln, Nebraska. The program focuses on supporting children's engagement with the natural world through the integration of nature and the outdoors into daily learning. Nature Explore has been consulting, researching, providing educator workshops, and designing research-based natural outdoor classrooms nationally and internationally since 1998. As of this writing, there are over 450 Certified Nature Explore classrooms at schools, early childhood programs, libraries, museums, nature centers and other educational sites around the world. Nature Explore Certified classrooms must comply with specific requirements to receive certification, including following the research-based design guidelines, annual maintenance, staff development, and family involvement.

The Outdoor Classroom Project is an initiative of the Child Educational Center, a nonprofit child care program affiliated with the California Institute of Technology and the NASA Jet Propulsion Laboratory in La Cañada, California. The initiative's premise is based on the assertion that children are learning everywhere and all the time, and therefore need a broad variety of learning experiences and opportunities in natural outdoor settings as well as indoors. The Outdoor Classroom Project was created in 2003, based on 35 years of field-tested experience and early childhood research. Since its inception, the project has recognized over 60 education centers as Outdoor Classrooms, many of which also serve as demonstration sites. To be recognized, classrooms must agree to maintain standards that show an ongoing commitment to the principles of the Outdoor Classroom Project.

Both initiatives are based on the design of outdoor spaces that include developmentally appropriate learning opportunities, child-initiated experiences, open-ended play settings, and the importance of educators' roles in supporting learning. The certified Nature Explore classrooms are based on evidence-based guiding design principles as well. The two organizations have a strong interest in research and have collaborated on several research initiatives that examine the positive impacts of natural outdoor classrooms on child health and development.

## Pilot Study (2014)

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A post occupancy study conducted by the EDL with Nature Explore and the Outdoor Classroom Project examined the extent to which natural outdoor classrooms produced their intended outcomes. The study gathered post-occupancy data for eleven classroom sites using semi-structured telephone interviews. Overall, our findings provided strong supports for existing theories linking nature-based outdoor education to positive learning and developmental outcomes, including enhanced imaginative play, increased physical and mental well-being, and heightened environmental stewardship.

The outdoor classroom environments described most favorably in interviews were those that: (1) maximized choices, (2) provided many distinct spaces at all scales, but especially child-sized ones, (3) embedded play affordances within pathways and borders, (4) encouraged spatial evolution in response to changing conditions, and (5) supported ongoing stakeholder engagement, especially with families.

### Pilot Study Findings:

- This study confirmed the crucial role nature-based settings play in supporting positive learning outcomes for children.
- Teachers noted positive behavioral outcomes for children after the installation of the outdoor classroom. This was attributed to children connecting with living things and participating in full-bodied learning.
- Teachers reported the following behavior in children: more relaxed, happier, less impulsive, more focused, more engaged, cooperative, nurturing and more creative. This was compared with children in indoor classrooms or on traditional playgrounds.
- Outdoor classrooms supported curricular goals and helped extend engagement into the indoor classrooms.
- Teachers reported increased time spent playing and learning outdoors (up to several more hours per day).
- The positive performance of defined spaces within the Nature Explore Outdoor Classrooms was overwhelming. It was attributed to the many choices in materials, settings, and play affordances; and the provision of a wide variety of small, child-scaled settings.
- The number and variety of well-defined spaces was linked to longer exploration, fewer negative behaviors, and more cooperative play.

## Survey Objectives

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The goal of this survey was to further explore the pilot study outcomes on a larger scale. Through a national survey of educators and administrators who work with children in natural outdoor classrooms, we wanted to learn more about their perceptions of the educational value of those spaces. The survey was designed to evaluate:

- educators' observations and perceptions of children's experiences in the natural outdoor classroom;
- educators' perceptions of their own experiences in the natural outdoor classroom; and,
- administrators' perceptions of the value of natural outdoor classrooms for their programs.

The questionnaire asked educators questions about the following areas:

- time spent supporting children’s social-emotional, cognitive, and physical development;
- time spent observing children’s interests and needs;
- the frequency with which they observed children engaging in social-emotional, cognitive, and physical learning experiences;
- observations of children’s attention restoration when they returned to the classroom after time spent in the natural outdoor classroom; and,
- perceptions about their own teaching effectiveness in the natural outdoor classroom.

The pilot study and previous Dimensions research indicates that educators using natural outdoor classrooms frequently support rather than direct learning when they teach in the natural outdoor classroom (NOC). That is why we asked educators about how often they supported learning.

Because educators in the pilot study reported frequent child-initiated activity in the natural outdoor classroom (NOC), we asked more broadly about interests and needs. We wanted to see how often children get engaged socially, mentally, and physically in a NOC as compared to traditional playgrounds and indoor classrooms.

We also asked about educators’ perceptions of the influence of the NOC on themselves because this issue was raised in pilot study interviews. Questions developed to examine educators’ perceptions of the influence of the NOC to their work included:

- How restored they felt after returning indoors from the outdoor classroom
- How much working in the classroom suited their teaching style
- The importance of various outdoor classroom design features

This area of questions stemmed from Attention Restoration Theory as well as the pilot study that noted:

“...the natural settings provided important health and wellness benefits for teachers, staff, parents and other adults. They too experienced the positive effects of spending time in nature. Successful designs included adult-sized features that accommodated teacher meetings, lunches, strolls, and breaks, reducing stress and improving mood. Most important, interacting directly with the natural environment provided an emotional link to their own past experiences.”

“The most vivid stories described the positive effects these natural settings had on teacher engagement. The most common thread to emerge was that nature-based outdoor classrooms reduced behavior issues among the children, liberating teachers from their stressful role as playground police. This allowed them instead to be more engaged in teaching, playing, and interacting with children in positive, supportive and satisfying ways. Almost all teachers experienced stress reduction—and noticed it in their colleagues—once the nature classrooms were installed. They described being more connected, more interested, and calmer because they could teach, scaffold, and enjoy being with the children. One respondent explained that natural spaces were intrinsically interesting for teachers; monkey bars, she conceded, were boring. This interest allowed teachers to be right there with the children, not supervising behaviors or enforcing rules, but teaching, explaining, and playing alongside them.” From Dennis, S.F., Wells, A., & Bishop, C. (2014) A Post-Occupancy Study of Nature-Based Outdoor Classrooms in Early Childhood Settings. *Children, Youth and Environments* 24(2): 35-52.

Educators were also asked about their experience and training:

- How many hours they spent in the classroom
- How many years they had worked as an educator
- How many years they had worked in an outdoor classroom
- Whether they had received natural outdoor classroom training

Educational research indicates the value of teacher experience and ongoing professional development. This area of questions expands previous Dimensions research that indicates that teachers are able to observe a broad range of children's interests and needs when they have had professional development/training through workshops to recognize the value in what children are doing. They also need to have a NOC with a complete mix of activities that meet children's varying needs throughout the day and their diverse learning styles and preferences.

Administrators were asked:

- how often staff members expressed appreciation for their time in the outdoor classroom;
- how much interest in the program had changed since the outdoor classroom addition; and,
- how important official recognition of their outdoor classroom was

The pilot study indicated the value of formal recognition of natural outdoor classrooms. "The Nature Explore Classrooms program has a formal certification process that recognizes organizations that have made an ongoing commitment to natural learning in an outdoor classroom. The requirements include following evidence-based design guidelines, training of teachers and staff, and enhancement of family involvement. The certification requires evidence of annual maintenance. Participants from these sites were asked if they were certified (all were) and if so, why? Responses ranged from the knowledge that certification added credibility to their program, to the benefits of being held accountable to a formal set of standards. Many also mentioned the benefits of adhering to evidence-based design guidelines as well as providing annual continuing education for teachers. For Outdoor Classroom Project participants, becoming an official demonstration site was similarly a sought-after designation. Teachers valued this association for communicating the value of outdoor classrooms to others and for training teachers and administrators from other early childhood education centers. For participating sites in both programs, formal recognition supported outreach and advocacy for nature-based outdoor classrooms."

## 3) METHODS

### Survey Design

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The Natural Outdoor Classroom Study was a web-administered questionnaire of educators and administrators at early childhood programs, elementary schools, and other sites that have natural outdoor classrooms. The survey was conducted by the University of Wisconsin Survey Center on behalf of Dr. Samuel Dennis, Jr and Alexandra Wells, University of Wisconsin Department of Planning and Landscape Architecture.

The survey was administered beginning on April 21, 2015 and closed on May 12, 2015. Potential sites included 274 natural outdoor classrooms in 39 US states, Washington DC, and 2 Canadian provinces, Ontario and New Brunswick. A list of eligible sites with contacts names, emails and postal addresses was provided by Nature Explore and the Outdoor Classroom Project and public data available through an Internet search. Eligible participants included adult educators and/or administrators who worked directly with a natural outdoor classroom that had been certified or recognized by Nature Explore or the Outdoor Classroom Project, or both. Individuals who did not meet these criteria were excluded from the survey.

To protect participants, ethical human research protocols were followed, and the project received approval from the University of Wisconsin-Madison's Education and Social/ Behavioral Science Institutional Review Board prior to implementation.

The UW Survey Center was sent the list of eligible centers. A contact at each center was sent an email that both invited them to participate in this research and asked that they forward the email invitation on to other educators and administrators at their center who worked in the natural outdoor classroom. In this way, it was hoped that multiple respondents at each center would participate, ideally a minimum of two educators and one administrator per center.

The web-based questionnaire design consisted of four waves of emails sent to the center contact people, asking that educators and administrators at the center participate. All 274 centers with valid contact person email addresses received an initial full email that included an explanation of the study, an invitation to participate, an open link to the survey website, and a request to forward the invitation and the link on to other educators and administrators at the center. Mailings returned undeliverable were sent to the client for review. If a better email address was found, the address was updated, and the initial email resent as soon as possible.

Three reminder emails were sent in the three weeks following the initial invitation, each again inviting the recipient to participate and requesting that they share the invitation, reminder and the open link with others at the organization who might work with the natural outdoor classroom. As reminder emails included not only a direct invitation to participate but also a request that the invitation or reminder be shared with others, they continued to be sent even if a response was received from the center. Reminder emails were discontinued if five or more completed questionnaires were received from a center, or upon request.

The Natural Outdoor Classroom Study mailing schedule can be seen in Table 1 below. It includes the date of each mailing, and the number of emails sent. None of the emails mentioned a specific date by which a response was required. The UW Survey Center stopped collecting surveys on June 9, 2015.

**Table 1: Natural Outdoor Classroom Study Mailing Schedule**

Emails	(N)	Date
Initial invitation*	274	April 21, 2015
First reminder	272	April 28, 2015
Second reminder	251	May 5, 2015
Third reminder	244	May 12, 2015
Survey Closed		June 9, 2015

*\*Does not include emails resent to better email addresses.*

The web-administered questionnaire was programmed to require answers only to the initial two screening questions that determined which questions were appropriate. Respondents were either asked the questions for teachers, for administrators, both sets of questions, or were deemed ineligible. After the initial screening questions, all subsequent questions allowed respondents to move forward to the next question without answering the previous questions. Depending on their role at the center, respondents could participate in the educator questionnaire, the administrator questionnaire or both.

The total number of eligible completed questionnaires was 545, with 532 completes, 13 usable partial completes. In addition, there were 7 ineligible completes. See details in Table 2, below.

**Table 2: Final Disposition of Web-Questionnaire Visits**

Final disposition	Number
Complete (eligible)	532
Usable partial complete (eligible)	13
Complete (ineligible)*	7
Break off (ineligible)	69
No items completed (ineligible)	18
Total visits to web-questionnaire	639

*\*Neither a teacher nor an administrator*

## Survey Response Rate

A traditional individual-level response rate cannot be calculated, because the number of potential respondents invited to the web-based questionnaire is unknown. In addition, multiple respondents per center could participate. Since the center name was requested, response can be considered at the center level. Completed questionnaires per center varied from zero to nineteen. As shown in Table 3 below, respondents from more than 66% of all centers completed questionnaires—a teacher survey, an administrator survey, or both. The response rate was greater than 66%, but 29 respondents did not indicate a center name.

**Table 3: Center Level Response by Number of Eligible Responses**

Completes per Center	Number of Centers	Percent of All Centers
At least two completes	87	32%
One complete	94	34%
No known response*	93	34%
<b>Total</b>	<b>274</b>	<b>100%</b>

*\*Received 29 completed questionnaires where respondent did not provide the Center name.*

The total number of completed questionnaires was 545. Depending on their role at the center, respondents could participate in the teacher questionnaire, the administrator questionnaire or both. See the distribution of questionnaire by type in Table 4, below.

**Table 4: Individual Response - Questionnaire Type**

Questionnaire Type Completed	Number of Completed Questionnaires	Percent of All Completed Questionnaires
Teacher only	269	49%
Administrator	117	21%
Administrator and Teacher	159	29%
<b>Total</b>	<b>545</b>	<b>100%</b>

Table 5 lists the number of Nature Explore sites, Outdoor Classroom Project sites, or dual-certified sites who participated. Completed questionnaires per center varied from 1 to nineteen. Twenty-nine completed questionnaires did not provide the center name and are not included in the table.

**Table 5: Participating Sites by Certification**

Site Type	Number of Sites Participating
Nature Explore	152
Outdoor Classroom Project	23
Dual-Certified Site	4
Unknown	3
<b>Total Sites</b>	<b>182</b>

## 4) RESULTS

In general, questions were answered on a 5- or 6-item scale. To better describe the responses, the items for each question were grouped either in thirds or in twos for analysis. For example, if a question had five response choices: never, rarely, sometimes, often, very often, the items were grouped into three new categories for analysis:

- Never to rarely
- Sometimes
- Often to very often

We used the last grouping in the response set when describing the results of a question. For example, if a question asked how often an educator supported language or literacy experiences in the outdoor classroom, we reported that 77% of educators responded that they supported these experiences often or very often.

### 1. Learning and Development

Seven questions asked educators how often they spent time supporting children’s social, emotional, physical, and cognitive development. Table 6 lists the questions and the percentage of educators who answered they spent time supporting children in the various developmental areas often or very often (the two highest response categories).

**Table 6: Educator Time Spent Supporting Children’s Development**

How often spent supporting...	Answered often to very often (%)
Creativity and imagination	91%
Social and emotional development	90%
Physical explorations and body competence	87%
Building and construction skills	85%
Science-related experiences	81%
Language and literacy development	77%
Math-related experiences	63%

Most educators felt that they spent a significant amount of time supporting children’s development in all domains. Notably, imagination and creativity were most frequently supported, followed closely by social and emotional development, with over 90% of educators saying they supported children in these domains often or very often.



Figure 1: Collaborative building (Photo: Rod Diercks)

*“Here [in the outdoor classroom] it’s like children have so much more imagination in their play because they have so many different materials that are natural to work with.”*  
(Candace)

*“So, in what I see through all these years working outdoors is that the children learn how to self-regulate better.”* (Anna)



Figure 2: Art and creativity in an outdoor classroom (Photo: Rod Diercks)

*“They spend a lot of time with moveable parts, experimenting, figuring out how their body works on a piece of wood.”* (Sheila)

*“...outside is like unlimited amount of science. With rain you can do a rain measure, see how many inches of rain we got. We noticed that the soil got really dark after it rained so the environment changed.”* (Teresa)

On the opposite end of the scale, only 63% of educators felt they spent time supporting children’s math-related experiences often or very often. While still a significant amount of time, this number was more than ten percentage points lower than the next lowest category.

### *Experience matters*

Respondents with more than 10 years of teaching experience were slightly more likely to state that they supported the various developmental areas often to very often, indicating that experience does matter. Experience specifically teaching in an outdoor classroom does too. Educators who had worked 4 or more years in a natural outdoor classroom also were more likely to report supporting all domains often to very often.

For those educators who had worked in their field for more than 10 years, 70% stated that they supported children’s math-related experiences often or very often, compared to only 55% percent of those with 10 or fewer years as early childhood educators.

### *Professional development matters*

Whether an educator had natural outdoor classroom training also affected responses—those with training were much more likely to say they supported various experiences, particularly language/literacy, science-related, and math-related.

### **Takeaway:**

Educators report the ability to support all domains of learning in natural outdoor classrooms. They rated their ability to support social-emotional development, creativity and imagination highest, and ranked their ability to support math-related experiences by far the lowest. Teaching experience and professional development on using natural outdoor classrooms enhances educators’ ability to support the breadth and depth of learning opportunities, especially math.



.....  
*“Overall success I would say is making students feel engaged in learning and have a natural desire to learn. I think that those are things that happen more when you’re in an outdoor space.”*  
(Rhonda)  
.....

Photo ©Nature Explore

## 2. Supporting Children's Needs

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Three questions were asked related to observations of children's interests and needs. Responses included the following:

- 88% of educators said that they were able to observe children's interests and needs in their natural outdoor classroom often or very often.
- 47% of educators said they were able to observe children's interests and needs more often or much more often in the outdoor classroom compared to the indoor classroom,
- Of those who had experience with a traditional playground (mostly plastic structures and safety surfacing, very few natural elements, and very few loose parts), 75% said they were able to observe children's interests and needs more often or much more often in the outdoor classroom.

Most educators reported they were able to observe children's interests and needs in the natural outdoor classroom. More experienced educators and those who had more years of experience in an outdoor classroom were more likely to feel this way. Further, educators who spent more weekly time outside almost all felt they could observe children's interests and needs often to very often.

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*"The natural outdoor classroom] gives me the time to spend more time observing what they're doing, figuring out when I need to step in, provide more materials or more words to continue their engagement. ... And I think the children are observing more things. They're asking about things. They're looking in the trees asking what's happening where in a traditional classroom I don't think that really happens." (Sheila)*

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Less than half (47%) of all educators felt that they were able to meet children's needs more often outdoors than in the indoor classroom. The experience of the educator did not appear to influence this perception. However, the amount of time they spent outdoors did. Educators who typically spent 15 or more hours a week in the outdoor classroom said they were able to observe children's interests and needs more often or much more often than indoors, than those who spent 14 hours or less outside.

For educators with experience observing children on traditional playgrounds, 75% felt that they were more often able to observe children's interests and needs in the natural outdoor classroom than on the playground. This percentage increased even further for more experienced educators or those who had worked in their outdoor classroom four or more years. This was also true for those who spent more weekly time outside.



Photo ©Nature Explore

### Takeaway:

Educators report that both indoor and outdoor classrooms can be conducive to supporting children’s interests and needs. However, those educators with experience using NOCs and who use them consistently for extended periods of time (15 or more hours per week) report that they could support children’s interests and needs in the outdoor classroom more often or much more often.

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*“I think it just opens up a lot of possibilities for how to teach, too. There are so many different materials you could do it with or natural things. Kids get to lead the discussion in a way they don’t always get to.” (Andrea)*

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## 3. Children’s Behaviors

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A total of nine questions in the survey were related to educator observations of children’s behaviors, in the following categories:

- Children’s social-emotional, cognitive, and physical behaviors
- Children with differing/special needs
- Attention restoration in children

Four questions were asked of educators about their observations of children’s social-emotional, cognitive, and physical behaviors. Table 7 lists the questions and the percent of educators who responded that they noticed the behaviors in children often or very often. Most educators noticed children caring for others and the natural world, exploring appropriate physical challenges, and expressing their own ideas and choices. While still high, fewer educators noticed children listening to others and mirroring their emotions.



Figure 3: Taking appropriate risks (Photo: Rod Diercks)

Experienced early childhood educators were more likely to notice children caring for others and exploring physical challenges appropriate to their abilities. The number of hours spent weekly outside also influenced how often educators noticed children’s caring or listening behaviors. The more time spent outside, the more likely educators were to notice behaviors.

“...inside say at a group time and maybe he couldn’t do some of the activities because they’d be so difficult, maybe he wouldn’t be as accepted as much [by the other children]. But outdoors, he can do everything that’s out there.” (Sheila)

**Table 7: Educator Time Spent Noticing Children’s Behaviors**

When with children in the natural outdoor classroom, how often did you notice children...	% who answered often to very often
Expressing their own ideas and choices (cognitive)	94%
Exploring physical challenges appropriate to their abilities (physical)	93%
Caring for other children, adults, animals or plants (social-emotional)	83%
Listening to others and mirroring their emotions social-emotional)	67%

**Takeaway:**

Expressing ideas and choices can be described as a positive approach to learning associated with cognition. 94% of teachers reported that they observe children engage in this behavior often or very often in the natural outdoor classroom.

## 4. Differing/Special Needs

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Photo ©Nature Explore

Children with Differing/Special Needs: A single question was specific to children with differing needs (for example, those diagnosed with developmental, physical or language delays, or autism spectrum disorders), asking educators about how engaged they felt these children were in the outdoor classroom vs. the indoor classroom. Most educators (76%) answered at the high end of the scale, stating they felt children with differing needs were somewhat more or much more engaged in the outdoor classroom. More experienced educators and those educators who had spent more years teaching in outdoor classrooms, were more likely to state this. The more time spent (15 or more hours) outside during the week, the more likely an educator would be to say this as well.

### Takeaway:

In settings where children spend significant amounts of time in their natural outdoor classroom, educators report that children with special needs are more engaged in outdoor classrooms as compared to indoor classrooms.

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*We have a little boy right now who just started with us. He's in the youngest class and he has an IEP. The teachers have adjusted their schedule to spend more time outside because that's basically the only time he's happy. He's very distressed inside. It's just too many people, too close to him. The transitions are too many and so they have adapted their morning schedule to starting outside. And this happened last year too with another student who had similar special needs issues. It was calmer for that child to meet in the treehouse outside under the trees than to meet in the classroom, where you're trying to sit in a circle and everybody has to sit crisscross, and don't touch each other, and all that razzmatazz. To be out there, for both of these children, was calm, soothing, they're happy, they're at peace, and they had a great deal of distress to be inside." (Candace)*

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## 5. Attention Restoration (children)

Attention restoration theory is grounded in the idea that being in natural settings has restorative powers when attention has been depleted through other tasks. Four questions asked educators to relate their observations of how time in a natural outdoor classroom might affect a child’s behavior when they returned indoors. Table 8 lists the questions and percentage of educators who noticed that behavior at the high end of the item scale after time in a natural outdoor classroom.

**Table 8: Educator Observations of Children’s Indoor Behavior**

After returning indoors ...	Top two items of scale	% answered in the top two items of the scale
How distracted are children?	A little distracted to not distracted at all	84%
How often are children able to focus on indoor activities?	Often to very often	83%
How much difficulty do children have listening?	A little bit to no difficulty	81%
How calm and relaxed are children?	Very calm to extremely calm	44%

Years of professional experience, as well as years teaching in an outdoor classroom, affected how educators answered these questions. The more years of experience an educator had, the more they considered children to be calm, focused, not distracted, or having little difficulty listening after returning indoors, suggesting that a teacher’s experience level might positively affect their abilities to help children make the transition from outside to inside or may give them greater understanding of children’s emotional states.

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*“Children seem more engaged [in the outdoor classroom], less agitated, not so much conflict with their peers. It seems to be a lot calmer than when we come inside.” [Sheila]*

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*“Being outside is a spiritual, mental physical renewing thing for every one of all ages.” [Charlotte]*

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### Takeaway:

Educators who use natural outdoor classrooms report a decrease in children’s distractibility and an increase in positive behavior such as improved attention and listening upon return to the indoor classroom setting.

## 6. Attention Restoration (teacher)

Attention restoration in educators: Five questions asked educators about aspects of their own attention restoration when returning to the indoor classroom after time spent in the outdoor classroom. Table 9 lists the questions and the percentage of educators who noticed that behavior at the high end of the item scale. The response items varied depending on the question and are listed in the table.

**Table 9: Educator Perceptions of Their Own Behavior**

After returning indoors ...	Top two items of scale	% who answered in the top two items of the scale
Have less patience than you'd like?	Almost never to some of the time	92%
Feel able to give individual attention to children who need it?	Most of the time to always	87%
Feel able to respond sensitively to requests?	Most of the time to always	87%
Feel refreshed—having renewed mental energy to begin the next task?	Most of the time to always	84%
Feel you've had a break from your everyday working routine?	Most of the time to always	67%

Attention restoration is often measured as a summative scale where individual questions are combined to create a comprehensive measure. The question “How often do you feel you’ve had a break from your everyday routine?” was meant to elicit responses about the restorative nature of the outdoor classroom compared to an educator’s time spent indoors at work. However, for educators who spend much of their day in the outdoor classroom, this question may have had a different meaning. It is possible that educators who spent more time in the outdoor classroom were less likely to feel they were getting a break. Therefore, it was not included in the summative score for attention restoration.



Photo ©Nature Explore

**Takeaway:**

Educators with natural outdoor classrooms reported that time in the space left them always or most of the time feeling refreshed and patient, therefore more likely to respond sensitively to children and ready to give them the individual attention they need.

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*“For us, to have a space where we can just go out the door and be outside, and not on concrete is great. I see staff going out there all the time, and taking a five-minute loop around the space. I think it’s helped us to have green – we have our parking lot, and then we have our big acre park. So, people take their lunches out there, and they go out and they get a breath of fresh air... I think it is a stress reliever to just be able to get outdoors.” (Lidia)*

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*“I feel like it’s calming for me as well to be outside and gives me a chance to really have deeper conversations with students that sometimes can be more challenging to have when you have so many to get each subject in.” (Rhonda)*

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## 7. Teacher Self-Efficacy

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Self-efficacy in educators: Self-efficacy is a context-specific belief about what a person can accomplish and provides a useful construct for measuring educators’ beliefs about their ability to plan, organize, and carry out activities to meet educational goals. Educator self-efficacy has been associated with positive learning and behavioral outcomes in students, suggesting that outdoor classroom educators who believe that they can have positive effects on child behavior are more likely to positively impact child outcomes. Table 10 lists the questions and the percentage of educators who felt they were capable of that behavior at the high end of the item scale.

**Table 10: Educator Self-Efficacy for Helping Children in the Outdoor Classroom**

When you're in the natural outdoor classroom, how much are you able to...	% who answered quite a bit to a lot
Adjust activities to the appropriate level for children of differing abilities?	85%
Calm a child who is upset?	85%
Engage a child who is reluctant to participate in activities?	81%
Re-direct a disruptive child?	81%
Help a fearful child feel more confident?	78%

In general, more experienced educators (even more so those who had spent more years teaching in a natural outdoor classroom) were more likely to feel that they could help children in the outdoor classroom. For most of the questions, time spent outdoors per week didn't appear to matter, except in the case of redirecting disruptive children, where educators who spent more time outdoors with children felt more able to accomplish this goal.

Training was particularly important in relation to this category. Educators with natural outdoor classroom training were much more likely to feel capable of supporting children and observing their positive behaviors in the outdoor classroom. Research in several fields has validated the role of training in increasing teacher self-efficacy. As self-efficacy may have an impact on child health and developmental outcomes, this is another reason to include training when creating and using natural outdoor classrooms.

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*"The satisfaction of helping people along a continuum of understanding and being better observers so that when we see a group of children at play it's not just children being cute, these are children who are engaged in really purposeful work that many parts of their brain are lighting up and firing away simultaneously. This is big stuff and it's way beyond recess. That's the other thing, too, is helping staff move from this is a break; this is an adult break where we just stand and chat with each other. No; it's for safety reasons and just because there's just a lot to see and do.*

*We have to be engaged with children; not to direct them but to support them and just be completely aware of what they're doing. So that's a point of arrival for me, too. Having worked with lots and lots of schools in doing Nature Explore trainings, that's a big shift. Outdoors isn't just standing around supervising. We have to be engaged or, better yet, we get to be engaged. It's part of our teaching day. And it's been so personally transformative for a lot of us." (Veronica)*

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Photo ©Nature Explore

### **Takeaway:**

Educators reported that they felt able to support fearful and reluctant children well in natural outdoor classrooms. Teachers, especially those who used outdoor classrooms the most, also reported their effectiveness in redirecting disruptive children and calming children who were upset when in the outdoors.

## **8. Design Features**

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Design recommendations from Nature Explore include a complete mix of well-defined and clearly-labeled activity areas. Likewise, the Outdoor Classroom Project demonstration sites include a wide variety of outdoor activity spaces. The following list is from Nature Explore.

### **Recommended Areas (Try to include all of these areas):**

- A. An entry feature
- B. An open area for large-motor activities
- C. A climbing/crawling area
- D. A “messy materials” area
- E. A building area
- F. A nature art area
- G. A music and movement area
- H. A garden and/or a pathway through plantings
- I. A gathering area (A separate area, or one of the other larger areas could be used as a gathering area).
- J. A storage area (This could be a separate area, or storage could be included within each area as needed).

**Supplemental Areas (Try to include at least one of these areas):**

- K. A water area
- L. A dirt-digging area
- M. A sand area
- N. A wheeled-toy area
- O. An area for swings or other dynamic equipment
- P. A greenhouse

The 2014 pilot study supported the evidence-based design process, including the design features noted above, and this survey confirms those findings. For example:

- 92% said that open areas were very or extremely important to the success of the outdoor classroom.
- 92% said that messy materials areas, such as an area for building forts with sticks, were very or extremely important to the success of the outdoor classroom.
- 92% said that garden areas were very or extremely important to the success of the outdoor classroom.
- 91% said that shrubs, trees, or other plantings were very or extremely important to the success of the outdoor classroom.
- 89% said that building areas, such as with blocks, were very or extremely important to the success of the outdoor classroom.
- 86% said that sand play areas were very or extremely important to the success of the outdoor classroom.
- 84% said that water play areas were very or extremely important to the success of the outdoor classroom.
- 78% said that art areas were very or extremely important to the success of the outdoor classroom.
- 77% said that music areas were very or extremely important to the success of the outdoor classroom.
- 76% said that pathways through plantings were very or extremely important to the success of the outdoor classroom.
- 67% said that well-defined use areas with clear boundaries or borders and obvious entrances were very or extremely important to the success of the outdoor classroom.

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*“It’s become a sense of place as part of the library. The library is a community space by its nature, and having the outdoor space and the indoor space almost seamless. The children’s area has a door that opens right out into outdoors. Often people refer to the library as the third space. I think for us it really is, it’s a community gathering place. It is really seamless, the outdoors and the indoors here. We have indoor carpeting that looks like leaves and trees. We have big trees in the children’s area so it’s just kind of a natural extension for us.” (Lidia)*

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*“When we planned our areas, we were hopeful that the children would enjoy it. So, when you see children enjoying areas you’ve designed and plans that you put into effect and are happy and you can hear them say, “Oh, this is the best place ever,” or “That was so fun;” or like today a little boy said, “I really wish I had that water pump at my house. So, when you hear the children enjoy themselves and learn a little bit along the way then that’s very effective.” (Shannon)*

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*“We have a lot of parks in the (our)area, but they’re more playground equipment kinds of places. So, having a place that’s more natural, and you have to decide what you’re going to do. A slide gets old, but playing with wood, and water, and that kind of thing doesn’t get old to kids. They could come back every day. There was a little boy who came with his Grandfather every day for a whole summer. The climbing structure he called his fort, so he would come every day to play in the fort. Then for somebody else it might be a castle, for somebody else it’s whatever they want to make it be.” (Lidia)*

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Figure 4: Open play area (Photo: Rod Diercks)

**Takeaway:**

Overall, these findings support existing theories<sup>1</sup> linking nature-based outdoor education to positive learning and developmental outcomes including enhanced imaginative play, increased physical and mental well-being, and environmental stewardship.

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<sup>1</sup> For details and references, see: Dennis, S.F., Wells, A., & Bishop, C. (2014) A Post-Occupancy Study of Nature-Based Outdoor Classrooms in Early Childhood Settings. *Children, Youth and Environments* 24(2): 35-52)

## 9. Administrators

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Administrators were asked three questions:

- How often do staff members express appreciation about their time with children in the natural outdoor classroom?
- Since the addition of your natural outdoor classroom, how much has interest in your program changed?
- How important is official recognition of your natural outdoor classroom, such as having Nature Explore Certification or serving as an Outdoor Classroom Project recognized site or demonstration site?

In general, administrators responded that staff members expressed appreciation often or very often, that interest in the program had grown somewhat to greatly since they installed their outdoor classroom, and that official recognition was very to extremely important. Outdoor Classroom Project administrators were more likely to say that official recognition was important. Of the 12 sites that were dual NE/OCP, all 100% felt that staff members expressed appreciation often or very often, that interest in the program had grown somewhat to greatly since they installed their outdoor classroom, and that official recognition was very to extremely important.



Photo ©Dimensions Educational Research

### **Takeaway:**

Administrators report benefits of having a natural outdoor classroom both internally in their programs and externally through enhancing their reputation in their community. The overall morale of a program increases when staff members express appreciation for their natural outdoor classroom. As reported in the pilot study, recognition for creating a natural outdoor classroom leads to increased enrollment and community interest in general.

## 5) CONCLUSIONS AND RECOMMENDATIONS

### Learning and Development

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Educators and administrators report that learning and development occur in well-designed natural outdoor classrooms. Outdoor time is not a break from learning; the natural outdoor classroom supports learning in all domains, especially creativity and social-emotional development. Overall, the findings in this report support existing theories linking nature-based outdoor education to positive learning and developmental outcomes including enhanced imaginative play, increased physical and mental well-being, and environmental stewardship. Natural outdoor classrooms can be especially conducive to supporting children's individual interests and needs because of factors such as;

- a mix of types of activities to engage in so children have opportunities to exert choice and preference,
- adequate space to accommodate group or individual work thereby meeting their individual needs at the time,
- opportunities for social-emotional skill-building through caretaking of others, plants, insects, and animals
- opportunities for physical exertion and to gauge appropriate risk and challenge for themselves,
- subtle and complex variations in natural materials that engage interest and support learning in math, science, and building,
- ample natural, open-ended materials that require children to use their imagination and creativity to turn them into their props for play or subjects of investigation.

While indoor classrooms and typical playgrounds are not ideal learning environments for many reasons, natural outdoor classrooms have the added benefits of improved acoustics, generous space for movement, beautiful but not overwhelming visual stimuli, and abundant materials that enhance opportunities for children to make choices and exert their will.

### Design Features

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The natural outdoor classrooms (Nature Explore Certified and Outdoor Classroom Demonstration Sites) seem to be the most successful environments because of these attributes: (1) maximized choices, (2) provided many distinct spaces, especially child-sized ones, (3) embedded play affordances within pathways and borders, (4) encouraged spatial evolution, and (5) supported ongoing stakeholder engagement.

### Supporting All Children's Needs

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Educators report that natural outdoor classrooms can be especially conducive to supporting children's interests and needs. This is particularly true when educators have experience using natural outdoor classrooms and use them consistently for extended periods of time.

In settings where children spend significant amounts of time in their natural outdoor classroom, educators report that children with special needs are more engaged compared to indoor classrooms.

## Children's Behavior

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Educators report that they and the space support positive behaviors in children when they are in natural outdoor classrooms and when they return back indoors. Examples of positive behaviors observed related to cognitive, physical, and social-emotional development include.... Positive cognitive behaviors observed frequently were expressing their own ideas and choices. Positive physical behavior observed was engaging in appropriate risk-taking and challenge. Caring for and about others is a reported positive social-emotional behavior. There are abundant opportunities to experience and practice caretaking behaviors of animals such as helping fill bird feeders and bird baths, planting, weeding, watering and harvesting plants, which enhance and support stewardship behaviors.

## Attention Restoration for Children and Adults

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Contrary to the widely held belief that time outdoors overexcites children and encourages challenging behavior, educators who use natural outdoor classrooms report a decrease in distractibility and increases in positive behavior such as improved attention and listening.

Natural outdoor classroom environments that are restorative for adults are conducive to educator's wellbeing and receptiveness to children. Educators with natural outdoor classrooms reported that most often spending time in the space left them feeling refreshed and patient, therefore more likely to respond sensitively to children and ready to give them the individual attention they need. It is valuable to consider how outdoor experiences are beneficial for educators as well as children.

## Teacher Self-Efficacy

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Teachers reported that their natural outdoor classroom afforded them opportunities to feel effective in their work through meeting children's individual social-emotional, cognitive, and physical needs. Observing children exhibit positive behaviors also contributed to their own positive feelings. Frequently being able to engage reluctant children and redirect disruptive children contributed to educators' feelings of effectiveness in their teaching. The ability in the natural outdoor classroom to adjust activities to appropriate individual levels and being able to calm children who were upset also supported educators' feelings of effectiveness.

Findings in this study support the notion that creating natural outdoor classrooms can be an effective way to support educators and thereby children's educational experiences.

## Educator Training and Experience

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Training for educators in understanding the breadth and depth of opportunities that their natural outdoor classroom affords them, and their children, is important. This study reveals that workshops

which support teachers' competence in observing and supporting children's learning help teachers see the learning opportunity in the ways that children use the space and result in their taking children outdoors more often for longer periods of time. Teachers with more training and more experience using natural outdoor classrooms report more benefits for children and themselves.

## Administrators

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Administrators report benefits of having a natural outdoor classroom both internally in their programs and externally through enhancing their reputation in their community. The overall morale of a program increases when staff members express appreciation for their natural outdoor classroom. Administrators report that recognition for creating a natural outdoor classroom leads to increased enrollment and community interest in general.

## Recommendations

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1. Regular time in a natural outdoor classroom supports positive behaviors in children such as calmness, peace, and problem-solving. Many educators and parents are looking for ways to develop these behaviors in children, so we recommend that children have access to these spaces daily.
2. The finding that time in natural outdoor classrooms restores attention for children and adults supports the practice of regular outdoor time for everyone every day, ideally in natural outdoor classrooms. Viewing time outdoors as a privilege that is taken away because of challenging behavior should be challenged, as should concerns over decreased learning time when children are outdoors given the valuable learning that educators report happens outdoors each day.
3. Professional development should be provided for educators on how and why to use their natural outdoor classroom. Ongoing support for time to collaborate with colleagues, gather and replenish materials, and communicate with families about outdoor experiences are also recommended.
4. These findings support encouragement for the creation of natural outdoor classrooms by administrators, educators and their communities to enhance children's educational experiences and overall program quality.
5. We recommend further research on the use of natural outdoor classrooms that delves more deeply into specific benefits, especially related to the physical and mental health of children and adults. It would add richness to this survey data to include additional individual and focus group interviews from sites that participated by adding examples and explanations for survey responses. Studies that capture direct student data would be helpful in supplementing the educators' perceptions of student learning.