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# Kinderforest: Connections to Indiana Academic Standards

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## Context:

In the early months of 2016, a local school district approached Merry Lea with the idea of creating a Forest Kindergarten for its students. Merry Lea partnered with the district in implementing the resulting program: “Kinderforest.” Kindergartners came to our nature preserve once a month on day-long visits, supported by careful, research-based pedagogy in environmental education.

Since then, Merry Lea has grown to become a leader in this programmatic approach within the region. We have assisted multiple schools and districts in implementing Kinderforest and have provided support to private schools adapting their own version. We also conduct research, host national experts within the field, offer professional development, present at state and national conferences and more.

Throughout our experiences, we are regularly asked one question in particular:

### “How does Kinderforest connect to the academic standards?”

This simple question is fraught with overtones: those of accountability, of bureaucratic systems, swings of the pendulum and others. In essence, it asks how students spending so much time out of the classroom can be justified. This paper intends to respond to that question and provide a starting point: additional reading, research and discussion is necessary for further understanding. Barring the opportunity for such a deep dive, we offer several main points for practitioners’ consideration throughout this paper.

**Although meeting academic standards is not the intent behind nature-based early childhood education, they are inevitably supported within well-designed and high-quality Forest Kindergartens.**

Describing a well-rounded, holistic approach to a child’s education certainly sounds lovely, and to many, refreshing! Despite this rosy depiction, on the practical level it is typically insufficient justification for school districts to adopt such a program, as they are accountable for measuring academic achievement in very specific ways. Understandably, administrators and teachers are therefore anxious to know more about how Forest Kindergarten programs support this measurement— particularly through alignment to academic standards.

At Merry Lea, our experience has been with a multi-visit model, where students spend their day in the forest 10 times (approximately once a month) over the academic school year. For most within the field of environmental education, this represents a *minimum frequency* to even be considered a Forest Kindergarten. Many programs bring students outside once a week, and others every day. Despite this, we have found that our model **does** demonstrate connections to, alignment with, and support of academic standards. Thus, we are confident that higher visit frequencies would lead to even higher student growth and connections. These demonstrations are described below.

### Forest Kindergartens are generally established using a holistic approach to children’s development.

There is currently no universally accepted standard of what defines a Forest Kindergarten (although some certifications are emerging). Individual programs vary widely in structure, format and implementation; however, they are built upon common philosophical tenets.<sup>1</sup> These include experiential/hands-on learning, a place-based approach, allowing unstructured/free exploration time, some degree of emergent curriculum, inquiry-based learning and significant time spent outdoors. Additional resources describing Forest



Kindergartens (and the more broadly defined Nature-Based Early Childhood Education, or NbECE movement) are plentiful.

### Despite this variation in program format, research shows that well-designed NbECE allows children to benefit in four main ways:

- 1) Socially
- 2) Cognitively
- 3) Physically
- 4) Emotionally

Such programs provide opportunities for children to take appropriate risk, problem solve, communicate, negotiate, experiment, think critically, build, jump, climb and splash (and the list goes on!). Each of these elements contribute to a holistic and healthy pattern of growth. Research also shows that this kind of approach is developmentally appropriate for young children.<sup>2</sup>

One long-term study compared students enrolled in holistically-minded, play-based kindergarten classrooms to students in traditional classrooms that focused on cognitive achievement. The study found that by the time children in the play-based classrooms were 10 years old, they were “more advanced in reading and mathematics, and they were better adjusted socially and emotionally in school. They excelled in creativity and intelligence, [and] oral expression.”<sup>3</sup>

Could the approach leading to these gains be aligned to academic standards? Absolutely. Yet these overall benefits are the compelling reasons for explaining the appeal of NbECE – not academic standards.

1. NAAEE, 2017  
2. Sobel et al, 2016  
3. Miller and Almon. 2009. Page 7

# I. Academic Standard Connections within Designed Curriculum

Within our program, portions of each Kinderforest day include structured time and activities prepared by our professional educators. Philosophically, these can be described as “Playful Classroom with Focused Learning” in Figure 1, below. In our context, we substitute outdoor learning spaces for the ‘classroom’.

As such, these portions of the day are deliberately intended to benefit the students developmentally, and in some cases, are chosen because they support outcomes identified within academic standards. Examples are described below.



Figure 1. A conceptual model for Kindergarten curriculum | Source: Crisis in the Kindergarten, Miller and Almon (2009)



## A. Sit Spots

On each visit, students return to their individually-chosen sit spots for quiet observation and reflection. Early in the year, students sit for only four to five minutes, but eventually progress to 15 minutes or more, practicing and building their self-regulatory skills. Sit spots are designed to hone students’ observation skills, build familiarity with ‘place’ and develop kinship with natural places.

During sit spots, students use journals to record their observations and practice writing. In our experience, students become highly motivated to describe personal experiences in ‘their’ spots (Ex: “a mushroom is growing at

my sit spot!”). Connections to English/ Language Arts are clear:

- *Kinderforest students regularly demonstrate connections to writing (K.W.1-3), vocabulary (K.RV.1), grammar and usage (K.W.6), and others.*
- *Because they return to their spot on each visit, they are intimately aware of the pattern of local weather conditions over time (K.ESS.3) and observe growth and development of living plants and animals (K.LS.1).*
- *Following sit spots, students share observations during a reflection time, practicing their speaking and listening skills (K.SL.1-3).*



## (continued) I. Academic Standard Connections within Designed Curriculum

### B. Discovery Activities

In the afternoon of a Kinderforest day, students are provided with materials and prompts (activities) to engage their thinking. In one example, students are presented with the surprisingly complex challenge of making mud and figuring out what to do with it. When facilitated by a skilled educator with an appropriate pedagogical understanding, this activity offers students ample opportunities to explore and learn. Appendix A offers a glimpse into how students might problem solve, communicate with peers, observe, classify and more... using mud.

From a curriculum development standpoint, connections to academic standards are not the driving force behind allowing students to make mud.

Rather, this activity is chosen because it provides: a rich experiential opportunity, divergent avenues of inquiry dependent on individual choice, multiple modality options and other pedagogical reasonings. However, within this example, students' muddy investigations directly connect to multiple academic standards:

- *Students must plan and conduct their investigation, using senses to describe and classify objects by their*

*properties (K.PS.1), by communicating with others, and through generating questions (K.PS.1) about their process.*

- *They identify and explain uses for an object (substance) based on its properties and compare with others (K.PS. 2).*
- *Depending on a student's end product, connections also exist for: Life Science (LS) (e.g. the smell and color of black walnut husk added to mud mixtures) and Engineering (E) standards (e.g. using conversations, tools, and models to create dams, re-direct streams of water, construct shelters, etc.).*



From a curriculum development standpoint, connections to academic standards are not the driving force behind allowing students to make mud.



## II. Connections within Unstructured Time

Each of the two examples above (sit spots and discovery activities) are adult-designed activities with defined intended outcomes, even if the nature of the activity is intentionally left open-ended. In contrast, a Kinderforest day also includes *unstructured* time for students to explore, learn and play on their own terms. Philosophically, this approach is depicted in Figure 1, as “Classroom Rich in Child-Initiated Play,” (albeit in an outdoor context).



### A. Anecdotal connections to academic standards

Classroom teachers and Merry Lea educators have seen this unstructured time as valuable for their students developmentally and have had little trouble identifying connections to academic standards.

For example, in the simple act of balancing on a log while talking with a friend following behind, a kindergartner connects to Math, Science, Math, ELA and Physical Education standards, respectively:

- *Using positioning words like over, in front of, and next to (K.G.1)*
- *Noticing how slippery the log is compared to when it was raining (Local weather conditions- KESS.3) during last month’s (concepts of time- K.M.2,) visit.*
- *Practicing speaking and listening skills (K.SL.1-3), all while practicing locomotor skills (K.1.1-2 & K.1.5), movement, (K.2.1-3) and other areas of physical literacy (K.4-5).*



(continued)

## II. Connections within Unstructured Time

### B. Merry Lea's 2019 Research Project

During the 2018-2019 school year, a graduate student at Merry Lea, V. Benko, conducted a research project to document the frequency of academic standards connections within free exploration time during Kinderforest programs. With input from classroom teachers, Benko selected 24 academic standards within ELA, Science and Math, and then documented evidence of these academic standards during hour-long observation periods.

An example of student interaction and resulting academic standards connections are described below. The scene involves three students exploring a nearby wetland and discovering frog eggs floating within.

**Student 1:** "I found something slimy. I think it's a jellyfish!"

**Student 2:** "Let me see! It's snot!"

**Student 1:** "No, it's a jellyfish!"

**Student 3:** "It's frog eggs."

**Student 1:** "I need to put it back in the water!"

**Student 2:** "I have frog eggs here."

**Student 1:** "Put it in the water!"

**Student 3:** "I want to see."

*(Student 1 releases the frog eggs that she has)*

**Students 2 & 3:** "Where did they go?"

*(All three students begin looking for new frog eggs)*

From this short interaction and resulting investigation, Benko identified connections to both Science and ELA standards:

#### SCIENCE:

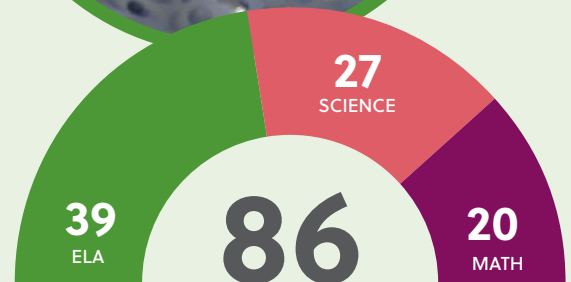
- **K.LS.1** Describe and compare the growth and development of common living plants and animals.
- **K.LS.2** Describe and compare the physical features of common living plants and animals.
- **K.LS.3** Use observations to describe patterns of what plants and animals (including humans) need to survive.

#### ENGLISH/LANGUAGE ARTS:

- **K.SL.1** Participate in collaborative conversations about grade-appropriate topics and texts with peers and adults in small and larger groups.
- **K.SL.2.3** Listen to others, take turns speaking, and add one's own ideas to small group discussions or tasks.
- **K.SL.2.5** Continue a conversation through multiple exchanges.

Throughout this research project, Merry Lea graduate students observed 12-18 hours of student interactions, tying student behaviors to academic standards. Observers logged an average of **86 instances of individual students connecting to a given academic standard during each observation period (1-1.5 hours)**. These instances represented on average, 39 connections to English/Language Arts standards, 27 connections to Science standards, and 20 connections to Math standards.<sup>4</sup>

As a whole, the results suggest that students in the Kinderforest program are engaging with the natural space and each other in ways that easily connect to academic standards.



INSTANCES OF INDIVIDUAL STUDENTS CONNECTING TO AN ACADEMIC STANDARD WITHIN A 1 TO 1.5-HOUR OBSERVATION PERIOD

4. These frequencies represent a sample size of 1-5 children being observed at any given time, and do not include any adult-child interactions during the observation period.

### III. Connections to the indoor classroom

Finally, there is evidence that Kinderforest programs support learning (including academic standards-based outcomes) beyond the day students visit the woods. Teachers have consistently reported that Kinderforest provides rich fodder for subsequent classroom follow up. This occurs frequently when students become highly motivated to write about their Kinderforest experiences. In one instance, a teacher described that a reticent young writer “requested more pages” because he had more to share!

#### A. Inspiring further learning

In one memorable example, a flock of 200+ sandhill cranes migrated overhead during a fall Kinderforest visit. Captivated, students (and adults!) watched for 5 minutes or longer as the birds circled on thermals, their calls echoing down to the entranced humans. Over the following weeks, this led to a spontaneous classroom ‘unit’ on migration and hibernation. Students researched and wrote about cranes, measured their height, engineered dens for hibernating animals and more. Although never appearing in the Kinderforest lesson plan, this unexpected moment spurred students to learn and explore in surprising ways!



## Conclusion

Ultimately, can a program like Kinderforest support academic standards? We certainly believe so. The evidence we’ve collected indicates that these connections do exist and that the main limitation in identifying the connections is familiarity with the academic standards themselves.

Perhaps more importantly, we find that when adults (teachers or otherwise) observe students in the woods on a Kinderforest day, their takeaway isn’t how much the program aligns with

academic standards. Rather, they consistently note how deeply engaged the students are in their learning; how much of their minds and bodies they are using; how they communicate with peers and resolve social disputes; and how students are intrinsically motivated to learn.

Creating a high-quality NBECE program is not easy, and this commentary describes only our experience over the past several years. As with any project, there is a lot to

lose (or gain) in translating an idea from theory to implementation. The level of support, investment of participants, physical constraints and other factors will affect the resulting quality. However, when provided with the setting of an excellently designed program - built on research and best practices, and supported by trained and knowledgeable educators - we believe that children will inevitably learn, grow and blossom.

And yes, all those things are aligned with academic standards.

#### SOURCES CITED:

- Miller and Almon. (2009). *Crisis in the Kindergarten: Why Children Need to Play in School*. College Park, MD: Alliance for Childhood.
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- Sobel, D., Stires, A., Bailie, P. E., Fritz, R. W., Finch, K., & Kenny, E. K. (2016). *Nature preschools and forest kindergartens: The handbook for outdoor learning*. St. Paul, MN: Redleaf Press.



# Appendix A: Kinderforest outdoor lesson activity example

## Discovery Activity: Makin' mud

### 1) OVERVIEW:

Students explore mixing two materials (water and soil) to create a substance with new properties (mud). Students experiment with process, materials, proportions and physical characteristics.

### 2) DIRECTIONS:

**a. Hook:** Explain to students that in this activity, they will experiment with making mud... but they have to figure out how to make it and what to do with it!

1. Novel materials: spray bottle/cup of water and dirt
2. Spark imagination: What could you do with these two things? Individually? Together?

**b. Show** students where they can access water and dirt to help with this activity (e.g. a cooler, bucket or stream)

**c. Encourage** and facilitate free-form, self-directed exploration.

*Note: Educators shouldn't direct students to "do" anything specific with the mud. Students will inevitably choose what they want to create or do with the mud, whether that's make a mud pie or use mud as finger paint. See extensions below for suggested facilitation techniques and avenues of inquiry.*

*These directions are intentionally vague and open-ended! If students ask clarifying questions like, "Where can I find some dirt? How can I get the dirt?" reflect the question back to them. For example: "What do you think? What ideas do you have?"*

### 3) EXTENSIONS AND QUESTIONS FOR FACILITATORS:

**a. These broad questions** can be used to instigate or prompt students to describe their thinking:

1. How are you going to make the mud?
2. What other materials can/did you add to the mud?
3. How could you \_\_\_\_\_?
4. How did you \_\_\_\_\_?

**b. Here are more** specific suggestions to encourage or identify student learning and prompt curiosity:

1. What would happen if you added more water? Soil?
2. Describe the texture: what does it feel like, smell like, etc.? Is it sticky? Dry? Does all mud feel the same? Why or why not?
3. How quickly does/did it dry? Can/did you make it dry faster somehow?
4. Does/did the color change when you \_\_\_\_\_?
5. Where else is mud found? How does it change throughout the year? Is it always possible to make mud?

### 4) MATERIALS NEEDED:

- a. Cups or other containers for mixing mud (optional)
- b. Water cooler (if no water source nearby)

## Connections to Indiana Academic Standards:

*From a curriculum development standpoint, connections to academic standards are not the driving force in allowing students to make mud. Rather, this activity is chosen because it provides a rich experiential opportunity, divergent avenues of inquiry dependent on individual choice, multiple modality options and other pedagogical reasonings. Nonetheless, within this example, students' muddy investigations directly connect to multiple academic standards:*

- Students must plan and conduct their investigation, using senses to describe and classify objects by their properties (**K.PS.1**), by communicating with others, and through generating questions (**K.PS.1**) about their process.
- They identify and explain uses for an object (substance) based on its properties and compare with others (**K.PS.2**).
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### PHYSICAL SCIENCE

- **K.PS.1** Plan and conduct an investigation using all senses to describe and classify different kinds of objects by their composition and physical properties. Explain these choices to others and generate questions about the objects.
- **K.PS.2** Identify and explain possible uses for an object based on its properties and compare these uses with other students' ideas.

### LIFE SCIENCE

- **K.LS.2** Describe and compare the physical features of common living plants and animals.

### ENGINEERING

- **K-2.E.1** Pose questions, make observations, and obtain information about a situation people want to change. Use this data to define a simple problem that can be solved through the construction of a new or improved object or tool.
- **K-2.E.2** Develop a simple sketch, drawing, or physical model to illustrate and investigate how the shape of an object helps it function as needed to solve an identified problem.