Natural Learning Initiative

*Preschool Outdoor Play and Learning Environments*

# Best Practice Toolkit

## Second Edition

NC STATE

NLI

NATURAL LEARNING INITIATIVE

The *Toolkit* is a component of Preventing Obesity by Design (POD), launched in 2006 by the Natural Learning Initiative to support the North Carolina Division of Child Development and Early Learning (DCDEE) in transforming childcare center barren "playgrounds" into health-promoting, naturalized Outdoor Learning Environments (OLEs).

Since 2006, POD has evolved into a strategic, multi-faceted model, now adopted by states beyond North Carolina, with content transferred via the Natural Learning Initiative professional development online certificate programs and linked resources for early childhood educators, designers, and public health professionals. Supported by the Blue Cross and Blue Shield of NC Foundation and the John Rex Endowment in Wake Co, NC.

In 2011, Shape NC was launched by the North Carolina Partnership for Children (Smart Start) and adopted POD as the Built Environment Component. The first edition of the *Toolkit* was published in 2014 to support built environment community-based design, implementation, and evaluation.

Shape NC completed the third cycle of evolution in 2020. As a contribution, the *Toolkit* second edition has been updated, re-arranged, expanded, and a new chapter on risk management added. Revisions reflect many years of post-construction evaluation. Like the first edition, this publication covers only preschool environments (children 3-5 years old). Further publications are planned to cover outdoor play and learning environments for infants and toddlers as well as for school-age children. Over the many years of program evolution, the positive influence and suggestions of the Shape NC team are gratefully acknowledged.

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*The children were able to plant and have a garden this past summer. We had cucumbers, basil, tomatoes, corn, squash, and green peppers.*

*Director of participating childcare center*

# 01 IMPLEMENTING THE VISION

## BACKGROUND

The *Best Practice Implementation Toolkit* is a guide for implementing POD (Preventing Obesity by Design), launched in 2006 by the Natural Learning Initiative. The original focus, to modify the built environment to support physical activity and healthy eating, was gradually expanded, driven by scientific evidence and community concern, to include outdoor learning, social-emotional development, and mental health. POD is based on the North Carolina Division of Child Development and Early Learning (NC-DCDEE) policy to transform each childcare center "playground" into a health-promoting, naturalized Outdoor Learning Environment or childhood habitat—children, plants, and animals living together naturally. The vision, implemented in 2007, expanded the function of childcare facility outdoor spaces to become places for holistic child development.

*1.1 After Renovation*

*1.2 Before Renovation*

***1.1, 1.2** The POD health promotion strategy dramatically improves the outdoor environmental quality, which directly impacts the quality of life and health of underserved children.*

**POD is an evidence-based, health promotion strategy** activated through built environment/naturalization interventions in childcare centers.[1] The POD process creates a range of naturalized activity settings with sufficient diversity and level of microclimatic comfort that children and teachers are irresistibly "pulled" outside to enjoy playing and learning, engaged with diverse surroundings. Early childhood outdoor system change is achieved by creating best practice demonstration sites which serve professional development programs through direct experience supported by print, online, and webinar resources generated by demonstration site data.

*1.3 Downtown Center*


*1.4 Suburban family child care home*

***1.3, 1.4 Annual Gathering and Tour.*** *Early childhood teachers and providers visit demonstration sites, discuss with owners their creation, obstacles overcome, and positive impacts on children and staff. POD Wake County, Gathering and Tour, 2017. Credit: NLI.*

**POD is focused on the approximately 40% of children enrolled** in more than 4,600 regulated childcare centers in North Carolina,[2] where they receive most meals and spend the majority of their waking hours. The potential for exposing these children to high-quality habitat conditions is enormous. Action is particularly needed in low resource communities, which may be food deserts and where neighborhood environmental quality is typically low.

*1.5*

***1.5** Raised bed gardening can contribute significantly to snacking, daily meals at the center, and offer produce for home cooking.*

**POD emphasizes physical activity and healthy eating** because curbing onset childhood obesity remains a challenge:

> *Childhood obesity continues to be a significant concern for the United States. The past 18 years have seen increases in the levels of severe obesity in all ages and populations despite increased attention and efforts across numerous domains of public health and individual care. Groups that are historically disenfranchised are affected the most by this epidemic, predicting increased morbidity across a lifetime (Skinner et al., 2018. p.8).*[3]

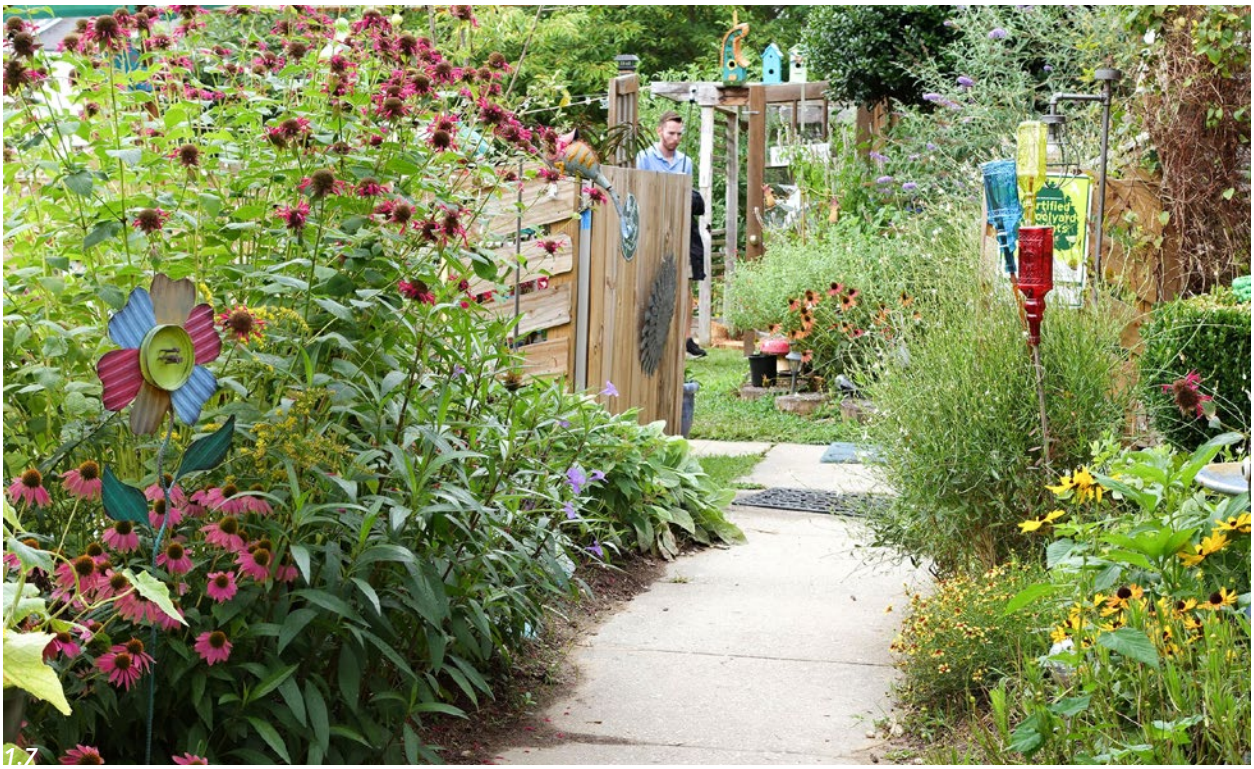

*1.6*

***1.6** At this family childcare home, children have daily contact with rabbits, chickens, and the miracle of egg production.*

**Healthy eating, supported through hands-on gardening,** continues to attract teacher engagement as a best practice. Current NLI research supported by USDA underscores prior research on preschool gardening as a health promotion strategy.[4] POD teachers report that gardening and other plant-based activities motivate outdoor learning and generate positive social interactions between children.[5]

Habitat diversity stimulates children to engage with each other and their surroundings day after day. Low biodiversity (see box) means that children lack the preventive health benefits of daily engagement with nature, including healthy eating, immune system boost, stress reduction, and more.[6] Important opportunities are also missed to experience and learn about and through nature.

***1.7*** *This entry to an outdoor learning environment, full of flowering plants and buzzing pollinators, immediately impacts the senses and prompts awareness of biodiversity.*




Biodiversity refers to the variety of life on Earth (plants and animals on land and in water) or in a particular ecosystem or habitat, including human habitats. Biodiversity is measured by the number of species present (including big things like trees and elephants and micro-things like lichen, insects, and microbes). Biodiversity is the result of billions of years of evolution and ecological change, now advancing far more rapidly as a result of human activity. Global biodiversity, including the terrestrial, oceanic, and atmospheric environments, comprises the biosphere, upon which all life depends. If biodiversity is disrupted or diminished, so human life will be.

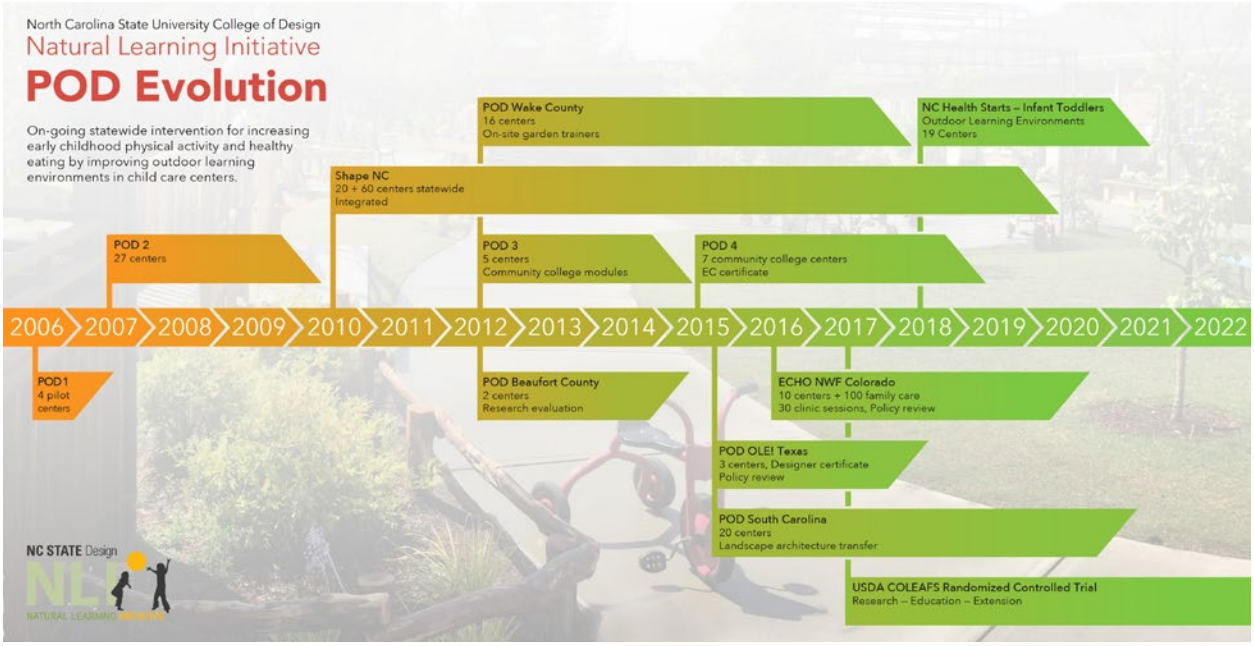
***Naturalize*** means "to cause a plant or animal from another place to begin to grow and live in a new area."[7] The vast majority of childcare centers can be visualized as sites where natural ecosystems can be restored, designed, and managed ***(naturalized)*** to engage children while increasing biodiversity.



***1.8, 1.9*** *This center turned a barren asphalt section of their outdoor preschool space into a raised-bed garden, gathering place, and relaxation setting.*

**The concept of One Health** describes the interdependence of human well-being and ecosystem health.[8] The concept dates back to the 1986 Ottawa Charter for Health Promotion,[9] which includes "strengthen community actions" and "create supportive environments" as two of five essential health promotion actions, along with peace, social justice, and equity as fundamental prerequisites of health. Application to the youngest of our species and their daily habitats is new and innovative. Childcare center habitat restoration activates a child's right to nature[10] and offers children opportunities to engage with the natural world of plants and animals through self-motivated free play and learning experiences.[11]

The potential for change is enormous. There are approximately 110,000 regulated childcare centers in the U.S.,[12] serving more than 10 million children under five each day.[13] Although OLE thinking has advanced substantially, too many childcare outdoor spaces in North Carolina and beyond still provide experiences limited to manufactured play equipment, wood chips, mown grass, and chain-link fencing.



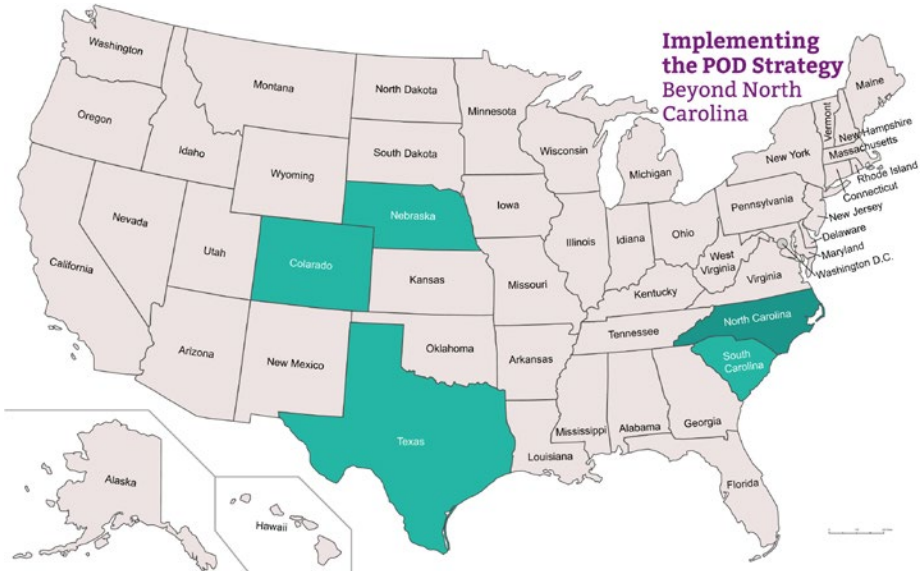

## THE POD STRATEGY

**The POD vision** is creation of healthy early childhood habitats in every childcare center by replacing monocultures with diverse opportunities for playing and learning, including lush biodiversity designed to boost the health of children's hearts, minds, and bodies each day.

***1.10 Above.*** *Evolution of Preventing Obesity by Design through four stages in North Carolina, beginning in 2006, now active in five states.*

**POD has evolved into a strategic,** social-ecological, multi-faceted, comprehensive, health promotion strategy focused on improving the quality of early childhood outdoor environments through design assistance, professional development, and dissemination of information. As a built-environment design intervention, the primary POD outcome is achievement of a positive health trajectory for children by: increasing physical activity and healthy eating; engaging children in outdoor play and learning; and creating settings that support social interaction, mental health, and wellbeing.

***1.11 Below.*** *Map showing active POD states: NC, SC, TX, CO, NB.*



**POD has been adopted by states beyond North Carolina** (1.11), with content delivered online, including NLI professional development certificate programs directed to varied audiences, including early childhood educators and designers.

**POD is informed by rapidly growing research evidence,** including:

1. Preschool children are more physically active in diverse outdoor environments.[14]

2. Preschool outdoors is a determinant of children's physical activity.[15]

3. Design of childcare outdoor environments and their physical components supports increased levels of preschool physical activity and healthy eating.[16]

4. Vegetable gardens support children's knowledge of and engagement with vegetables and fruits.[17]

5. Gardening increases the frequency of consumption and acceptance of varied vegetable and fruit tastes.[18]

6. Gardening, as a food awareness activity, is regarded as a positive strategy to support healthy eating.[19]

7. Outdoor and/or green environments support children's health outcomes such as attention functioning;[20] motor development;[21] and myopia reduction.[22]

8. Increased contact with biodiversity boosts the immune system, which may reduce allergies both now and later in life.[23]

9. Youth gardens increase healthy behaviors in young children.[24]


1.12


1.13


1.14

***1.12*** *Children gardening.*

***1.13*** *Children preparing food.*

***1.14*** *Children enjoying eating the food they have grown.*

## RENOVATION FOCUS

**The POD focus on renovation of existing facilities** reflects an overwhelming national need. Renovation is most effectively executed when a group of centers in the same county or multi-county system work together to achieve best practice outcomes. The POD strategy is delivered through state and local policy channels and county and/or regional early childhood technical assistance organizations, such as Child Care Resource and Referral agencies, Childhood Councils, and/or Quality Rating Improvement System (QRIS) organizations.

*1.15*

In North Carolina, the Partnership for Children is pivotal. Centers are chosen using a competitive process, through which they demonstrate a willingness to produce outdoor changes, to collaborate with each other, and to offer the leadership and community engagement necessary for sustained outdoor quality. To lessen the burden of typical challenges faced by centers (low financial resources, lack of time, and insufficient skills to implement physical changes), annual symposia, webinars, face-to-face training sessions, online technical assistance, and evaluation/management tools help centers achieve progress.

***1.15*** *NLI Annual Design Institute participants engaged in hands-on workshop session led by a local expert on "Toad Houses."*

## COLLABORATIVE IMPLEMENTATION STRATEGY

**An on-site implementation team creates a vision** for the OLE, including increasing biodiversity to support health of both children and local ecosystems. The center director or owner usually serves as the renovation project leader. Her or his role is to lead a successful implementation strategy, with children, teachers, and parents, to accomplish a high-quality result in collaboration with early childhood agencies, civic organizations, and other community stakeholders. Director or owner usually leads day-to-day coordination, sometimes shared with an administrative assistant and one or two lead teachers. Ideally, the implementation team includes a design/build/landscape contractor experienced in working on community projects, willing to listen to team members, able to create design drawings or use those created by others, and execute them on the ground.

**To increase reach,** POD includes a train-the-trainer approach to developing implementation teams able to deliver the POD strategy and transfer knowledge to their peers, focused on programming and managing outdoor play and learning environments to support POD outcomes. Teams may be configured within and between a variety of organizations such as university research centers, cooperative extension units, early childhood agencies, nonprofit organizations, state health departments, professional firms, etc. An effective implementation strategy team includes a range of roles (1.16), providing the flexibility required to respond to changing circumstances, including:

1. **Project leader –** center director or owner to facilitate team consensus and guide decisions on priorities and financial allocations.

2. **Project champion –** project leader or other individual to generate project support in the broader community.

3. **Project coordinator –** project leader or administrator, teacher, parent or community volunteer.

4. **Project accounting –** in-house bookkeeper and/or accountant or qualified volunteer able to track income and expenditures for the duration of the project.

5. **Community engagement/fundraising coordinator(s) –** one or two individuals covering linked roles as described in Chapter 5.

6. **Lead teachers –** solicit/communicate teacher feedback.

7. **Technical assistants –** facilitate project implementation, management, and sustainability while recognizing licensing requirements.

8. **Licensing consultant –** involved early on to ensure that licensing requirements are met.

9. **Landscape professional –** landscape designer/architect, design/build firm or landscape contractor working with team members to create a master plan drawing and/or to facilitate installation of the play and learning environment.


***1.16 Above.*** *The flexible project team and their roles.*

10. **Contractors –** one or more professionals experienced in small-scale landscape installation, able to install trees and other plant material, and items such as pathways, decks, arbors, dry stream beds, raised garden planters, surface drainage, etc. May also be needed for periodic management/maintenance tasks.

11. **Volunteers –** parents, teachers, and community members provide basic labor and specific skills to assist installation.

12. **Gardeners –** teachers, volunteers, Master Gardeners or paid specialists provide ongoing care, management, and maintenance of the evolving outdoor play and learning landscape.

## PARTICIPATORY DESIGN PROCESS

**Community participation** is essential to POD success, launched at the beginning of each project to engage stakeholders and ensure sustainability. Members of the implementation team work with the landscape professional through the following steps:

1. **Center survey –** to gather basic information describing the center profile, when opened, licensed and actual enrollment, numbers and ages of children, special needs, type of building, size of outdoor area, etc.

2. **Teacher/community online survey –** to gather information about staff profile, attitudes towards outdoor play and learning, previous experiences, relevant skills offered, desired improvements to the outdoors, interest in volunteering, etc.

3. **Children's design participation –** to gather ideas, opinions, and help them feel enthusiastic ownership.


1.17

***1.17*** *NC State design students listen to children presenting their OLE design ideas.*


1.18

***1.18*** *Preschooler and design student discussing OLE design ideas.*

*1.19*

***1.19*** *NLI Staff documenting site measurements.*

4. **Site documentation –** landscape professional/volunteer or trained TA measures/documents/photographs site parameters and existing features within licensed areas. See *Installation Guide* for more details (p. 95).

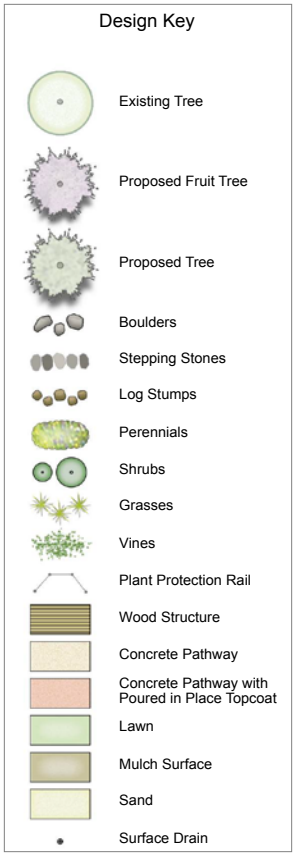
5. **Community gathering and interactive design workshop –** to facilitate master plan development. May include an open community gathering held the previous day or immediately before the workshop.

6. **Design program –** contains descriptions of selected activity settings developed during the interactive design workshop.

7. **Schematic design –** created during the interactive design workshop using hands-on methods. Scaled drawing developed post-workshop by the landscape professional for publicity, fundraising, and installation. May be needed for code review and/or permitting.

8. **Schematic design review and revision –** conducted with implementation team online using real time, collaborative design software. Large or complicated sites may need more than one cycle of review and revision.

9. **Cost opinion –** created by a landscape professional to provide a rough idea of total installation cost of non-volunteer items, based on prior experience and prevailing rates. May be reviewed by implementation team, with design adjustments to ensure buildability within budget constraints.



1.20

***1.20*** *Introduction of basic outdoor play and learning environment design and management principles at POD interactive workshop.*

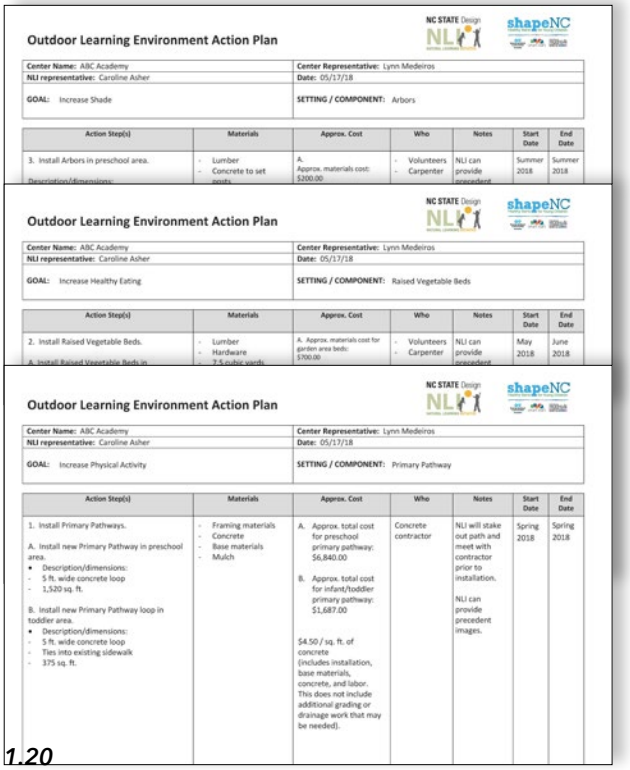
***1.21 Below.*** *St. John's Child Development Center, Salisbury, NC, outdoor play and learning environment schematic design.*


1.21

10. **Action plan –** conducted with local technical providers, face-to-face and/or online, to assist centers in creating an incremental development plan, reflecting fundraising strategy to support sustainable implementation (1.20). Includes task definitions, sources of materials, potential donations, and installation plans, including items built by contractors or volunteers and/or ordered from manufacturers.

11. **Incremental/phasing plan –** matches potential cash flow projected by the implementation team.

12. **Seed grants –** ($2,000–$5,000, dispersed incrementally as progress is made) supporting initial cost of design implementation, construction materials, plants, and gardening tools.



Outdoor Learning Environment Action Plan

NC STATE Design NLI | shapeNC

| Center Name: ABC Academy | Center Representative: Lynn Medeiros |
|---|---|
| NLI representative: Caroline Asher | Date: 05/17/18 |
| GOAL: Increase Shade | SETTING / COMPONENT: Arbors |

| Action Step(s) | Materials | Approx. Cost | Who | Notes | Start Date | End Date |
|---|---|---|---|---|---|---|
| 3. Install Arbors in preschool area. Description/dimensions: | - Lumber<br>- Concrete to set posts | A. Approx. materials cost: $200.00 | - Volunteers<br>- Carpenter | NLI can provide precedent | Summer 2018 | Summer 2018 |

Outdoor Learning Environment Action Plan

NC STATE Design NLI | shapeNC

| Center Name: ABC Academy | Center Representative: Lynn Medeiros |
|---|---|
| NLI representative: Caroline Asher | Date: 05/17/18 |
| GOAL: Increase Healthy Eating | SETTING / COMPONENT: Raised Vegetable Beds |

| Action Step(s) | Materials | Approx. Cost | Who | Notes | Start Date | End Date |
|---|---|---|---|---|---|---|
| 2. Install Raised Vegetable Beds. | - Lumber<br>- Hardware<br>- 7.5 cubic yards | A. Approx. materials cost for garden area beds: $700.00 | - Volunteers<br>- Carpenter | NLI can provide precedent | May 2018 | June 2018 |

Outdoor Learning Environment Action Plan

NC STATE Design NLI | shapeNC

| Center Name: ABC Academy | Center Representative: Lynn Medeiros |
|---|---|
| NLI representative: Caroline Asher | Date: 05/17/18 |
| GOAL: Increase Physical Activity | SETTING / COMPONENT: Primary Pathway |

| Action Step(s) | Materials | Approx. Cost | Who | Notes | Start Date | End Date |
|---|---|---|---|---|---|---|
| 1. Install Primary Pathways.<br>A. Install new Primary Pathway in preschool area.<br>• Description/dimensions:<br>- 5 ft. wide concrete loop<br>- 1,520 sq. ft.<br>B. Install new Primary Pathway loop in toddler area.<br>• Description/dimensions:<br>- 5 ft. wide concrete loop<br>- Ties into existing sidewalk<br>- 375 sq. ft. | - Framing materials<br>- Concrete<br>- Base materials<br>- Mulch | A. Approx. total cost for preschool primary pathway: $6,840.00<br>B. Approx. total cost for infant/toddler primary pathway: $1,687.00<br>$4.50 / sq. ft. of concrete (includes installation, base materials, concrete, and labor. This does not include additional grading or drainage work that may be needed). | Concrete contractor | NLI will stake out path and meet with contractor prior to installation.<br>NLI can provide precedent images. | Spring 2018 | Spring 2018 |

*1.20*

***1.20*** *Example of various Action Plans.*

13. **Installation –** executed in increments as resources become available.

14. **Management strategy –** focused on care of the evolving landscape as it becomes established, including use policy, material replenishment, periodic maintenance, stewardship, and upkeep (detailed in Chapter 3).

***1.21*** *Construction underway.*

15. **Teacher training –** symposia, institutes, training workshops, and webinars to transfer POD knowledge.

16. **Technical assistance –** on-call, on-site, and web-based.

17. **Dedicated web pages –** for participating centers.

*1.21*

**18. Rigorous pre/post evaluation –** using behavior mapping, POEMS, COLEQT, center director and parent surveys, and interviews, as appropriate.(See Additional Resources, p.95)

***1.22 "****Day of Giving" volunteers at work planting shade trees.*

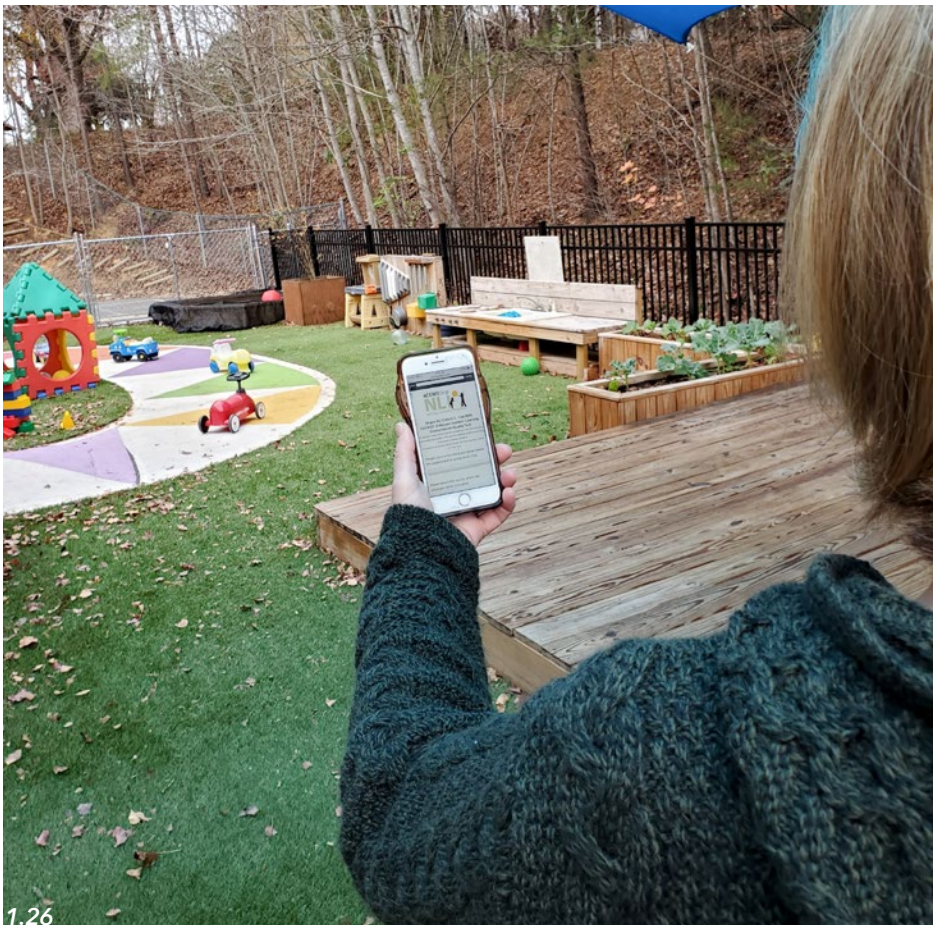
***1.23*** *NLI Staff conducting an online review session.*

**If major elements such as pathways are in place,** consider adding inexpensive increments that may offer high play and learning value, enhance the environment aesthetically, and contribute to the overall master plan vision. For example:

1. Building a vegetable garden.
2. Installing a vine-covered teepee.
3. Creating a natural loose parts setting.
4. Installing a log sitting circle.

***1.24*** *Community volunteers building a Teepee.*

***1.25*** *Installing a fruit and vegetable garden.*



1.26

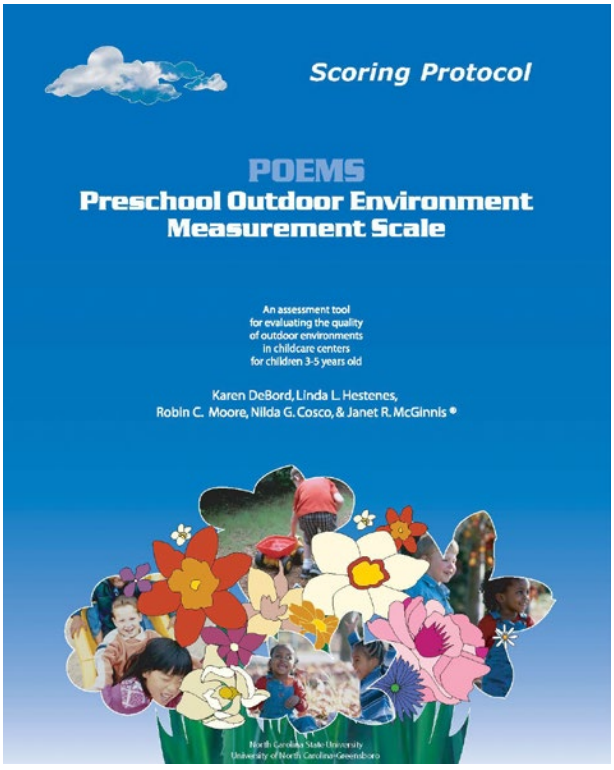
***1.26 Left, 1.27 Below.*** *COLEQT in use on a smart phone by a Smart Start TA.*


***1.28 Below.*** *Preschool Outdoor Environment Measuring Scale (POEMS) cover.*

Two tools used by NLI to assess quality are:

**COLEQT** (Children's Outdoor Learning Environment Quality Tool) provides a reliable indicator of best practice achievement (See *additional resources inside back cover*).

**POEMS** (Preschool Outdoor Environment Measurement Scale), provides an assessment of environmental and programmatic quality across seven domains (See *additional resources inside back cover*).



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*We have a wonderful trike track, container gardening, art, a stage, a bridge, pathways, a huge sand/water area, and multi-surface areas such as sand, rocks, grass, cement, small pebbles, and mulch.*

*Director of participating childcare center*

# 02 BEST PRACTICE INDICATORS

***2.1*** *In one year, this center has already installed ten or more play and learning settings. Visible below are sand play; a curvy, looping path (post and rope protect planting); open, grassy areas; a shade-covered deck; planting beds; a teepee; natural, loose parts; and storage.*

## INTRODUCTION

The Best Practice Indicators (BPIs) are based on more than two decades of NLI research and practice in the design and management of outdoor play and learning spaces in licensed childcare facilities. The intention of this chapter is to introduce the BPIs as a guide to achieving high quality preschool[A] spaces and, where possible, provide a sense of what is necessary to achieve a high score using the associated assessment tool, COLEQT.[B] The BPIs can be applied at regular intervals, during the process of incremental development to assess progress and to help ensure progress is balanced, while covering all indicators equally.

*2.1*

## BEST PRACTICE INDICATORS ILLUSTRATED

The 13 BPIs listed below relate to the health promoting attributes of outdoor play and learning environment settings and components. The most significant are those that assess active play and hands-on gardening—activities closely related to physical health. However, high-quality, diverse, naturalized outdoor environments sustain many additional health and wellness benefits, including social/emotional development, and outdoor learning—inherently more active than indoor learning.

1. There are 10 or more play and learning settings (selected from Figure 1 listing of more common settings).

2. There is a looping, curvy, primary pathway for circulation and wheeled-toy use.

[A] Equivalent indicators for infant, toddler/twos, and school-aged spaces are under separate development.

[B] COLEQT (Children's Outdoor Learning Environment Quality Tool), is an associated assessment tool, administered on site using a smart phone or tablet. COLEQT uses a 4-point scale, providing scores that guide providers in making outdoor physical improvements during and beyond the incremental development process. Contact NLI for further information.

Play and learning settings and components are the basic building blocks of an effective outdoor play and learning environment. The more settings and components a space contains, the greater the diversity of choice for children with different skills, personalities, genders, and varied racial, ethnic, cultural backgrounds to play and learn together—in short, the more inclusive the space becomes.

3. There is a grassy lawn for games, activities, and events for many children.

4. There are sufficient shady settings in addition to trees.

5. There is a variety of loose materials, accessible for children to play with.

6. There is sufficient portable play equipment, including different types of wheeled toys, accessible for children to play with.

7. There are sufficient gross motor activities supported by the outdoor play and learning environment.

8. There are sufficient trees.

9. There is a proportion of trees that are edible fruiting species.

10. There are sufficient shrubs and vines (including fruiting species), ornamental grasses, and perennial flowering plants.

11. There is a designated vegetable garden with sufficient produce for snacking and/or meals.

12. There is a covered outdoor classroom/ gathering place large enough for all children in a class to use together.

13. There is sufficient storage for wheeled toys, portable play equipment, loose parts, and other play and learning materials.


***2.2*** *A new curvy, concrete pathway and pergola constructed from pieces of grape vine provide a unique OLE entry. Physical activity is stimulated by the many portable and wheeled toys.*

BEST PRACTICE INDICATOR #1

There are 10 or more play and learning settings.

Play and learning settings and components are the basic building blocks of an effective outdoor play and learning environment. The more settings and components a space contains, the greater the diversity of choice for children with different skills, personalities, genders, and varied racial, ethnic, cultural backgrounds to play and learn together–in short, the more inclusive the space becomes.

**Preschool outdoor play and learning activity settings are:** *Physically-bounded spaces with predictable patterns of activity.* A high-quality preschool play and learning area contains at least ten activity settings of the 30 examples that follow:

- Acoustic/Music Play Setting
- Cut Flower Garden
- Deck
- Dry Stream Bed
- Earth Play Setting
- Fruit and Vegetable Garden
- Gathering Setting
- Grass Maze
- Greenhouse
- Grove of Small Trees/Shrubs
- Indoor-Outdoor Transition Setting
- Loose Parts Setting
- Manufactured Play Equipment
- Mound
- Mud Kitchens or Cafés
- Multipurpose Lawn
- Natural Construction Setting
- Orchard
- Outdoor Classroom
- Pathway (primary)
- Pathway (secondary)
- Performance Setting
- Playhouse
- Project Setting
- Sand Play Setting
- STEM or STEAM Center
- Teepee
- Water Play Setting (full-body)
- Water Play Setting (hands-in)
- Wildlife/Pollinator Garden

**Further information**

- NLI InfoSheet–*Top Ten Activity Settings for Outdoor Learning.*
- NLI InfoSheet–*Benefits of Engaging Children with Nature.*
- NLI InfoSheet–*Affordable Settings and Components.*

2.3 Grass Maze

**Preschool outdoor play and learning components are:** *Physical objects that add play value and/or functionality to a preschool play and learning area.* A high-quality preschool outdoor play and learning area may contain any number of the following 30 component examples below:

- Arbor
- Boulder
- Bridge
- Birdbath
- Container Plants
- Edible Plants
- Flowering Perennial Plants
- Infant Walking Rail
- Interior Fence
- Naturalized Fence
- Plant Protection Rail
- Porch Swing
- Portable Equipment
- Seat
- Shading Device
- Shrubs
- Stepping Stones
- Storage
- Sunflower House
- Table
- Tire Planter
- Tree – shade
- Tree – fruiting
- Tree Cookies
- Tunnel
- Turnover Stone
- Vine – decorative
- Vine – fruiting
- Wildflower Patch
- Workbench

*2.4 Earth play*

*2.5 Acoustic play*

***2.3 - 2.5*** *Many common play and learning settings and components, such as a grass maze, are cost effective, high in play and learning value, and mostly installable with volunteers. Together, they offer a broad range of activity options for preschoolers every day.*

BEST PRACTICE INDICATOR #2

There is a looping, curvy, primary pathway for circulation and wheeled-toy use.

Broad, curving, looping pathways that accommodate children using wheeled toys are highly attractive and afford increased levels of physical activity than other types of settings. They are a top priority for health promotion, providing structure and primary circulation, connecting all the settings, motivating movement, and also adding overall synergy and diversity to children's activity. Teachers can easily and comfortably circulate. When a primary pathway directly connects to the indoor classroom building, there is greater likelihood that children will follow the pathway, spreading out activity more evenly across the outdoor play and learning space. Primary pathways are the first installation of the incremental development process. They immediately subdivide the site into smaller chunks, helping the center community to visualize installations to come—motivating volunteers and prospective donors.

2.6

***2.6*** *Decomposed granite provides a soft, friendly surface to this curvy primary pathway.*

***2.7*** *Curvy, looping primary pathway lined with small trees to provide summer shade and fall color. Note attractive, tinted concrete surface.*

**Further information**

- NLI InfoSheet—Designing Pathways.
- NLI Green Desk—Primary Pathways.

2.7

BEST PRACTICE INDICATOR #3

There is a grassy lawn for games, activities, and events for 25 or more children.

A single, well-maintained, defined lawn, surfaced with high-quality turf, is a more valuable asset than large, amorphous grassy areas where higher value settings could be installed. An open lawn is a key setting for many types of activity such as group games with loose parts, portable equipment, large scale construction, parachute play, "sports," etc. Bare feet on soft grass can provide a delicious, tactile experience. Lawns should be installed on well-drained soils. Natural surfacing options include turf and grass seed. Turf is preferred, if affordable, as it rapidly creates a usable surface. Although not a substitute for a living lawn, artificial grass may be a viable alternative in locations with insufficient sunlight, poor drainage, or heavy use. All-weather use is an advantage, too.


2.8


2.9

***2.8*** *A soft, shady lawn can provide the perfect spot for story time on a blanket.*

***2.9*** *Lawns support group games with rules.*

***2.10*** *An open grassy area can offer a perfect spot for high-energy group play.*


2.10

BEST PRACTICE INDICATOR #4

There are sufficient shady settings in addition to trees.

Young children must be protected from harmful ultraviolet sunlight. If not, sunburn can easily happen at any latitude during summer. Shady settings designed to protect children from direct sunlight are best provided by trees (BPI #8). However, before trees are large enough, other types of structures can be installed, either as permanent components such as arbors and pergolas, or temporary solutions such as shade sails that may eventually be removed. A structure can augment shade in part of a setting. Large shade sails may cover an entire setting.

**Further information**

- NLI InfoSheet–Shade Solutions.
- NLI Green Desk–Summer Play: Beat the Heat.

2.11

***2.11*** *Arbor with lattice sides supporting climbing plants and provides a patch of shade to a primary pathway.*

2.12

***2.12*** *Suspended textile for group activity with integrated planting. Built by volunteers with recycled galvanized pipe and standard shade cloth.*

BEST PRACTICE INDICATOR #5

There is a variety of loose parts materials, accessible for children to play with.

Loose parts of all types will likely stimulate creative, imaginative, social, and cognitive play. Both natural and manufactured loose parts are included and collectively considered as playthings or play objects, including small, manufactured toys. Natural loose parts include fallen leaves, pine needles, sticks, seed heads and seeds, flowers and flower parts, tree cookies, pieces of tree bark and tree roots, pebbles, straw bales, lengths of bamboo, and pieces of tree branch.

Manufactured loose parts include recycled receptacles of all kinds, repurposed kitchen utensils, and recycled tires. Included are "hybrid" items; i.e., natural materials that have been through a manufacturing process, such as scraps of dimensioned lumber, pieces of plywood, recycled carboard boxes, and lengths of fabric. Dress-up clothes are also relevant as play props. Excluded is portable play equipment, defined in BPI #6 below.

**Further information**

- NLI InfoSheet–Natural Construction Settings.
- NLI Green Desk–Nature Play (tagged posts).


2.15

***2.13*** *Natural loose parts in containers can be managed to add focus. Here, a large basket with plant parts.*


2.13


2.14

***2.14*** *Loose soil provides a sensory mix for digging, molding, and imaginary gardening activities.*

***2.15*** *Manufactured loose parts as simple as lengths of colored cloth can animate active, imaginative play.*

BEST PRACTICE INDICATOR #6

There is sufficient portable play equipment, including different types of wheeled toys, accessible for children to play with.

Portable play equipment means manufactured items made for an intended purpose. Included are balls, hula hoops, building blocks, sand play toys, skipping ropes, bowling balls and pins, tents, tunnels, parachutes, musical instruments, and more. Excluded are loose parts (BPI #5 above).


2.16

2.17

***2.16*** *Traditional play trucks, cars, and tractors add interest to snow and ice play.*

***2.17*** *Classic hollow blocks are an example of portable equipment that can be used in myriad ways.*

***2.18*** *Standard "landscape timbers" have been cut into shorter lengths to provide building blocks.*

2.18

BEST PRACTICE INDICATOR #7

There are sufficient gross motor activities supported by the outdoor play and learning environment.

Support of gross motor activities is a critical outdoor play and learning function. Figure 2.21 below lists more than 40 gross motor activities that can be supported by diverse elements: fixed, loose, and moveable—natural and manufactured. Balancing, for example, can be afforded by logs, rocks, manufactured balance beams, lines marked on the ground, lines of tree cookies, and so on.

2.19

2.20

***2.19*** *Something as simple as an anchored log can become an object to jump off or leap over.*

***2.20*** *Real, recycled boat on a sea of pine needles can be slightly moved by the children, stimulating physical activity.*

| | | | |
|---|---|---|---|
| Balancing | Dancing | Leapfrogging | Skipping |
| Bowling | Dribbling | Lifting | Sliding |
| Bouncing | Drumming | Pedaling | Somersaulting |
| Brachiating | Gardening | Pulling | Spinning |
| Carrying | Gyrating | Pushing | Striding |
| Cartwheeling | Hammering | Raking | Sweeping |
| Catching | Hanging | Rocking | Throwing |
| Climbing | Hoop-rolling | Rolling | Tossing |
| Clinging | Hopping | Running | Tumbling |
| Crawling | Jumping | Scooping | Walking |
| Creeping | Kicking | Scrambling | Wheeling (wheelchair) |

***2.21*** *Gross motor activities that can be supported by diverse outdoor learning environments.*

BEST PRACTICE INDICATOR #8

There are sufficient trees.

Trees provide shade, comfort, seasonal change, and natural loose parts. They are the most critical components of biodiversity and climate equilibrium—and outdoor play and learning environment quality. The best practice number of trees is calculated relative to the size of the site. Estimating how many trees are needed to achieve the highest level of quality can be tricky—even where latitude and elevation are held constant. For an open site, the NLI rule of thumb for OLE design projects is one tree per 500-1000 square feet, with a mix of deciduous canopy/shade trees, smaller "understory" trees, evergreen trees (green in the winter), and fruiting (edible) trees.[C]


2.22

***2.22*** *A small, multi-trunk tree adds color in late fall and serves as a play object/social connector for children—their special resting place. Meanwhile, the child on the bench separated by the high back is absorbed in her own thoughts, oblivious to the chatter behind.*

Shade is important but so is sunlight—essential for growing vegetables and flowers. Large, existing shade trees can cast excessive areas of shade, which result in boring, mulched areas, preventing understory growth. Location of new trees must also take account of existing, healthy trees in the OLE or adjacent, on the other side of the boundary fence. Depending on existing conditions, the required additional number of trees could be substantially less. Small to medium-sized understory trees allow sunlight to penetrate extensively, casting smaller patches of shade interspersed with sunny spots, keeping understory plants happy and close to children.

***2.23*** *Within two years, half a dozen trees already add patches of shade to the timber deck wheeled toy circuit.*


2.24

***2.24*** *Large magnolia trees, there before the center, provide dense shade and fragrance in the summer, but nothing grows beneath.*


2.23

[C] Based on analysis of 58 POD demonstration site designs developed by NLI across NC.



***2.18***

BEST PRACTICE INDICATOR #9

There is a proportion of trees that are edible fruiting species.

Although "edible landscape" is an old idea in the domestic realm, it is new to childcare centers. Edible landscapes include permanent fruiting trees, shrubs, and vines (BPI #10), as well as a designated vegetable garden setting (BPI #11). Edible fruit trees can be mixed in among non-fruiting species or installed as a mini-orchard, grove, or associated with a designated vegetable garden. They can add interest and identity to settings such as an outdoor classroom or gathering area. The number of possible edible fruiting trees will depend on available sunlight, soil conditions, center interest, and capacity to manage care of the trees, including regular pruning.

2.25

2.26

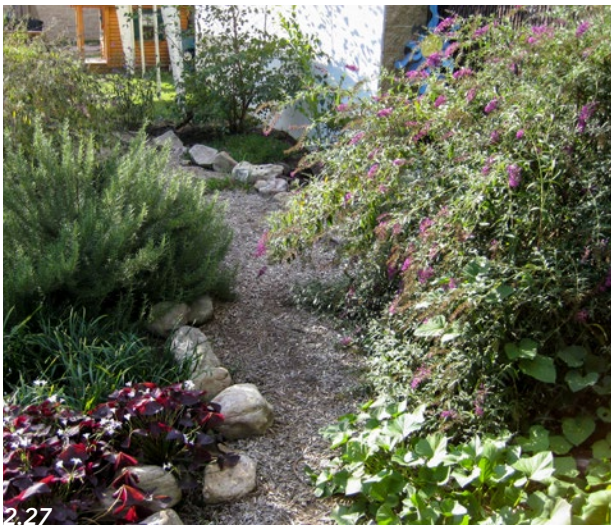
***2.25*** *Grove of fig trees (and group of smooth, river-washed stones) provides a shady social corner and climbing opportunities.*

***2.26*** *Fruiting trees produce wonderful, colorful objects that are edible!*

BEST PRACTICE INDICATOR #10

There are sufficient shrubs and vines (including fruiting species), ornamental grasses, and perennial flowering plants.

Fruiting shrubs and vines (blueberries and grapes for example) add to the edible landscape. Ground level plant diversity offers increased sensory experiences (color and fragrance) for children, including plants that attract insects to "pollinator gardens", prompting children's curiosity towards small critters. Shrubs and vines (including fruiting species), ornamental grasses, and flowering perennials can define spatial boundaries and extend sensory interest to primary and secondary pathways. Besides attracting wildlife, these plants mark seasonal change and provide natural loose parts. Vines on chain-link fences rapidly become green walls. Large shrubs add patches of shade and appear like small trees to young children. A cluster of ornamental grasses can create a maze. Fruiting shrubs and vines (thornless blackberry, grape, or kiwi) may be used to create settings or be integrated with other settings. Numbers of plants and location decisions will vary, sometimes greatly, reflecting the number and sizes of existing plants, soil conditions, sun exposure, etc.


2.27

***2.27*** *A mix of shrubs and perennials define this short, "secret," tertiary pathway, where children can slow down and interact directly with the vegetation, such as the rosemary on the left.*

***2.28*** *A pergola with grape vines offers an explorative learning oppurtunity for teachers and curious children.*


2.29

***2.29*** *Gourds come in many shapes and sizes. Here they offer summer shade supported by a timber pergola.*


2.28

BEST PRACTICE INDICATOR #11

There is a designated vegetable garden with sufficient produce for snacking and/or meals.

A hundred square feet of well-managed warm season garden can produce an abundant harvest of several hundred pounds of fruit and vegetables from beds filled with excellent topsoil, located in full sun, and regularly irrigated. For sunny locations, a cool season garden can produce a substantial additional harvest. If children are engaged in the complete hands-on gardening cycle, from exploring seeds to eating the results, they will acquire the knowledge and understanding necessary to support fruit and vegetable liking and gain healthy eating habits early in life. Research also indicates that the experience of growing fruit, vegetables, and herbs helps children understand that food comes from seeds planted in the earth.


2.30

***2.30*** *A "walk-in" raised bed garden can be reconfigured each year to fit desires of children and teachers. This year they built a vine teepee, grew sunflowers against the garden shed, planted herbs and flowers, and enjoyed the watermelon!*

**Further information:**

- NLI Green Desk–Edibles (tagged posts).
- NLI InfoSheet–Fruit and Vegetable Gardens.
- NLI InfoSheet–Growing Edibles in Containers.


2.31

2.32

***2.31, 2.32*** *Timber and sheet steel raised planters support a mix of vegetables and flowers. "U" shape provides a compact growing area. Elevated soil is easy for children to work. Horizontal edges provide resting places for tools and sitting spaces for teachers.*

BEST PRACTICE INDICATOR #12

There is a covered outdoor classroom/ gathering place large enough for all children in a class to use together.

Outdoor classrooms or program bases are covered, multipurpose structures with storage for tools, equipment, and materials essential for group activity and outdoor learning programs. Possible structures include prefabricated gazebos and custom-made timber shelters. Decking floors add functionality.

Structures can be open on all sides, partially or fully enclosed with insect screens and a screen door. A transitional deck/stage in front can support performances. Translucent polyvinyl curtains added in winter can protect children from cold winds. A skylight can reduce winter gloom. Hanging baskets and ground level containers of flowering plants add sensory richness and delight. Structures can include a "greenhouse" component for seedling production or be surrounded by a micro-farm. Styles can range from historic log cabin to contemporary architecture. Indeed, outdoor classrooms can serve as architecture class building projects or *pro bono* contributions from architecture firms.


2.33


2.34


2.35


2.36

***2.33*** *An outdoor classroom can take the form of a greenhouse where seedlings (sown by children) get an early start.*

***2.34*** *Raised deck, covered group setting with benches easily accessible from primary pathway.*

***2.35*** *A program base/storage setting doubles as a ride through tunnel on a primary pathway.*

***2.36*** *Large, covered outdoor classroom accommodates a whole class for fresh air activities and serves as home base for explorations in the surrounding OLE. The translucent roof provides a light, airy feeling and avoids winter gloom.*

BEST PRACTICE INDICATOR #13

There is sufficient storage for wheeled toys, portable play equipment, loose parts, and other play and learning materials.

Storage tends to be overlooked even through it adds essential functionality to preschool outdoor spaces. Storage comes in all shapes, sizes, construction materials, and price points—off-the-shelf or custom-made. Storage should always be included/built into an outdoor classroom. Covered wheeled toy storage is really important, located off the primary pathway so children can be responsible for "parking" at the end of outside time. Good quality coffers are an inexpensive solution for distributing small tools and materials to individual settings. Wooden sheds upfitted with deep shelves and bins can be a great solution. Inexpensive plastic units can be a good start, but are not made to serve childcare outdoor functions and eventually will look worn, possibly break, and need replacing.

2.37

***2.37*** *Simple covered wheeled toy storage off primary pathway.*


2.38


2.39


2.40

***2.38*** *Lift-up bench storage for boots located in transition space.*

***2.39*** *Plastic crates repurposed as STEM storage system.*

***2.40*** *Storage closet with deep shelves and translucent roof.*


2.41

***2.41*** *Storage chest conveniently located beside primary pathway.*

## BEST PRACTICE INDICATORS AS INCREMENTAL DEVELOPMENT GUIDE

In addition to assessing outdoor quality, BPIs can guide those involved in the five-step site development process:

1. Engaging the community in developing a master plan.

2. Improving site layout by installing primary pathways, repositioning fence lines, relocating fixed equipment items, etc.

3. Increasing diversity of play and learning opportunities by adding settings and components.

4. Naturalizing the space by planting trees, shrubs, ground covers, vines, and hardy flowering perennials.

5. Establishing an ongoing management process (see Chapter 3: Managing Incremental Development).

*I loved making my in-person action planning visits after the first year of installation to see how proud, inspired, and energized the directors and teachers were after installing their first few OLE settings. The spaces were transformed and so were the directors and teachers.*

***Director of participating childcare center***

# 03 MANAGING INCREMENTAL DEVELOPMENT

## MANAGING, MAINTAINING, SUSTAINING

"How will it be maintained?" is a common question asked by clients when reviewing designs for children's environments. Rarely is the word "managed" used. Sometimes, "sustained" comes up, most often related to maintenance cost. Teachers don't talk much about classroom maintenance but rather classroom management. By this they mean consideration of day-to-day furniture layout, location of learning centers, ease of circulation, activity ideas, learning objectives and lesson plans, and associated instructional materials. In other words, how the classroom will be used as a dynamic, constantly changing learning space.

Why not consider outdoor play and learning spaces similarly—as classroom extensions offering children additional choices for active, free play and learning—as places where teachers are motivated to extend learning processes into a living environment beyond the constraints of classroom walls? Of course, classrooms also need regular (daily, weekly, monthly) maintenance: floors and furniture cleaned, play and learning materials put back where they belong, plants watered, litter recycled, etc. Outdoor spaces likewise. Maintenance alone narrowly supports the status quo. It lacks the long-term time dimension of dynamic evolution, growth, and change of effective management. Nonetheless, maintenance must obviously be included.

## PLAYING AND LEARNING ECOSYSTEMS

Think of outdoor play and learning spaces as high-quality ecosystems that promote children's health. To keep children engaged and buffered against boredom, something more than fixed, standardized play equipment is required (although equipment may still serve important functions, such as gross motor development). That "something," that critical ingredient, is nature. Only nature offers the rippling shadow play of sunlight, wind, foliage, birdsong, and the ebb and flow of children's hubbub to create enticing places of irresistible, pleasurable, multi-sensory enjoyment—and pure fun!

Sustainment is the long term result of active, intentional maintenance and management, producing an outdoor play and learning space that sustains life—human and non-human alike. The limitations of staff and community, economic and otherwise, also need consideration.

## NATURE AND MUCH MORE

What does "nature" mean at the micro-scale of outdoor play and learning environments? Typically, prior conditions consist of barren mono-cultures of woodchips, mown grass, asphalt, and manufactured equipment, enclosed with chain-link fences. Such conditions are so commonplace that their unacceptability is rarely questioned. Teachers endure. Children mal-adapt to these deplorable conditions, expressing complaint through the bickerings of boredom. This invariant *terra incognita* remains unknown to the surrounding community, regardless of socioeconomic status.

Lifeless, mono-cultural conditions can be replaced over time with healthy ecosystems containing a mix of trees, shrubs, vines, groundcovers, and hardy flowering perennials. To thrive, they require healthy soil, water, and sunlight. Before long, animals will magically appear to colonize diverse habitats, especially if plant species are chosen to attract wildlife (i.e. birds and small critters that fascinate children). As they become established, children will benefit from "ecosystem services" day by day, five days a week, eight or more hours a day, year-round.

Nature alone is insufficient. To be viable, naturalized outdoor play and learning ecosystems must contain a mix of biotic and manufactured/constructed (abiotic) settings designed to embrace all children, by engaging their inborn curiosity, stimulating their imaginations, and helping them live harmoniously with each other and their inherently fascinating natural surroundings. Besides nature, healthy outdoor play and learning ecosystems must contain settings to support active, creative play and learning, providing all children with a daily range of choices supported by pathways; sand, water, and earth play; natural construction; gathering places/outdoor classrooms; playhouses; flowers; vegetable and fruit gardens; multipurpose lawns; decks and stages; play structures for gross motor and dramatic play; and more, depending on the age groups, elected from NLI's longer list of activity settings and components **(3.1).**

## INCREMENTAL DEVELOPMENT

Achieving the above is an incremental process that takes time—to plan, make decisions about physical steps (outlined on the next page), gain community support, raise funds, identify volunteers, engage teachers in sharing the vision, and obey the realities of seasons and climate. Incremental processes include learning by doing and trying new things, so that future action is informed by accumulated knowledge. Time must be devoted to celebrating progress and engaging the user community in gradually taking responsibility for caring for the evolving ecosystem. This is the incremental development process.

Playing and learning ecosystems contain habitats for plants and animals, but they are also childhood habitats containing diverse activity settings and components. Incremental development is a multi-faceted, dynamic process, aimed at converting barren to beautiful. As an intentional process, it requires modest understanding of ecosystem needs and a trust in natural processes, especially as they relate to child development and their role in children's play and learning.

## PHYSICAL INTERVENTION STEPS

Based on the master plan (Chapter 1, p.13), incremental development may include the following physical steps in rough chronological order:

1. **Demolition** may seem like a dramatic term for removing old play equipment, obsolete surfacing, fencing, or ramshackle storage; nonetheless, this industry term is the correct one to use.

2. **Infrastructure installation** such as drainage systems, retaining walls, repositioned fencing, primary pathways, and regrading of soil. This step is typically the most expensive and physically disrupting, often requiring part or all of the space to be cordoned off from regular activity during construction.

***3.1*** *Incremental development is the process of adding settings and components over time: "We took down a fence and installed a pathway. Instantly, the children started to move more. We've added a pollinator garden to attract insects and butterflies. We have birdhouses. We set up centers so that children can capture and observe nature. There's art, science, and math. It's part of what we do—every day." Kim Shaw, Owner, A Safe Place Child Enrichment Center, Raleigh NC. (Visit the NLI Virtual Fieldtrip for more details.)*

3. **Hard-surfaced primary pathway installation** (usually concrete, sometimes asphalt) is an essential first step to achieve a high-scoring, health-promoting outdoor environment. Primary pathways "make children move" as one teacher observed, enabling wheeled-toy use and make it easy for teachers to move around the space and keep eyes on the children. Over time, primary pathways become a verdant "main highway", connecting all activity settings.


3.2


3.3

***3.2, 3.3*** *Primary pathway installation is a major initial task in creating a dynamic outdoor learning space.*


3.4

***3.4*** *New primary pathway encircles exiting play structure. Trees installed in generous use zone add shade and green impact.*

***3.7 Right. A-centers, B-entrances, C-edges, D-corners.*** *Strategic locations accommodate particular types of settings. Pathways loop around play structures and trees. Entrances connect to pathways. Edges accommodate linear settings like dry stream beds. Boundary fences become green walls by supporting vines.*

4. **Central construction** often must respond to existing playground structures that influence primary pathway layout but also provides opportunities for shade tree planting to improve usability.

5. **Tree planting** can be executed once strategic, space consuming or disruptive steps have been taken. If at all possible, plant a few carefully chosen large-caliper shade trees for immediate visual impact, comfort, and sun protection.

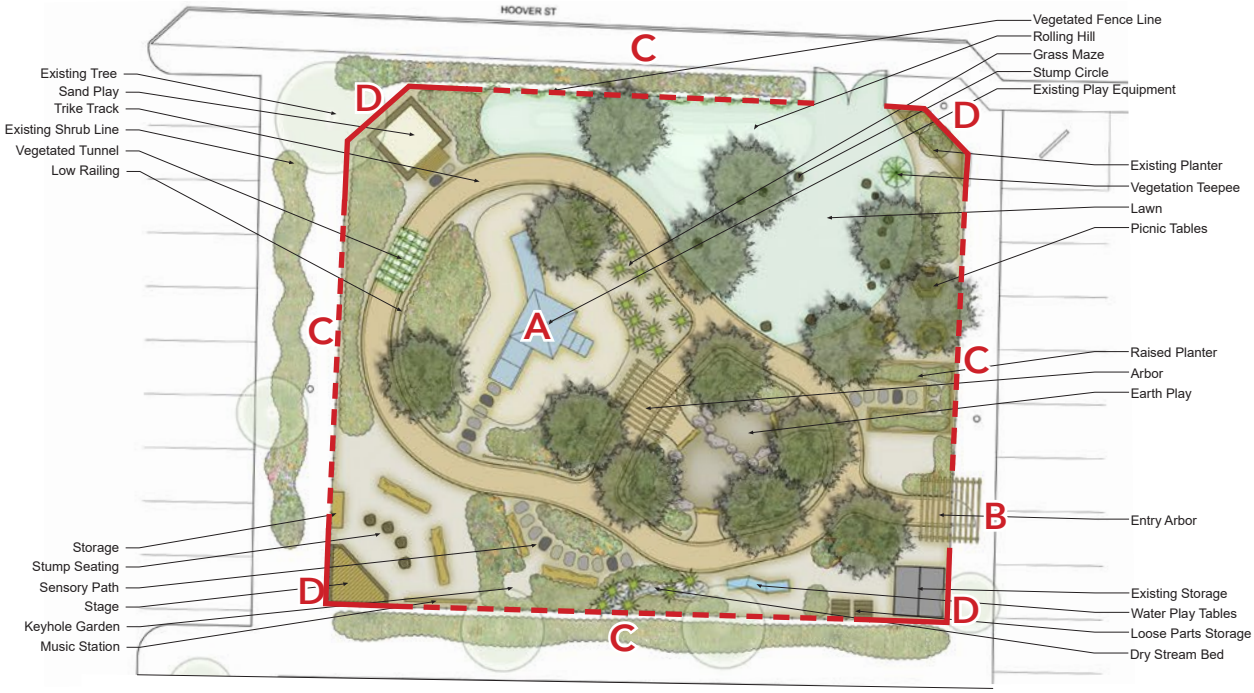
6. **Edge construction** recognizes that the vast majority of childcare sites are bound by 48-inch-high chain-link fences, enclosing the licensed area, as the most cost-effective solution. Untreated, as is usually the case, chain-link presents a stark-looking, transparent edge with parking lots or uninteresting buildings beyond. However, chain-link is easy to naturalize. Vines can twine with ease and minimum human aid. The fence protects added shrub or perennial plantings from kids running through. Settings described above for corners can equally be located along fence lines including linear settings such as dry creek beds and lean-to storage for wheeled toys.

***3.5*** *Entrance is a vine-covered portal to joyful adventures around the corner.*

***3.6*** *Dry stream bed runs parallel to the boundary fence (edge), offering fun with water and mud.*

***3.5***

***3.6***

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7. **Corner construction** takes advantage of the fact that a potential structure can already be enclosed and supported on two sides. Corners are great spots for sand play settings—tucked away, reducing the tendency for sand to migrate. Corners are also good for mud kitchens or other settings requiring "backs" and for storage sheds (tucked in a corner so children can't hide behind). Corners are equally suited for multipurpose decks or performance stages, where uninhibited young children will naturally "perform" for each other. This may motivate teachers to engage children in more organized "scripted" productions based on favorite children's literature or cultural festivals, with plot lines created by children. The possibilities are endless.

8. **Entry setting(s)** may be the next priority. Depending on site configuration relative to the center building, the main entrance may be the most important entry from classrooms into the outdoor play and learning environment. Think of entry settings as social spaces where people meet, chat, and hang out with each other. Provide shady, comfortable seating. Use entrances to communicate first impressions of being child and family focused. Make it festive and colorful. Exhibit children's work.

9. **Beyond first steps,** installation of any number of other settings and/or components depends on site level desires, financial support/cash flow, volunteer support, potential donations, and other community support (Chapter 5). Most likely, by this point there are "ten or more settings" already installed, meaning that BPI #1 has been met. The outdoor play and learning ecosystem now looks

***3.8*** *Colorful, fragrant vines turn boundary fences into green walls, attractive to pollinators.*

***3.9*** *Corners protect raised garden beds and here offer a quiet, restful hangout for afterschool users.*

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and feels very different. Most centers take about three years of incremental development to reach this point. Although much has been accomplished, much more can be done, now with a more open-ended approach.

10. **Naturalization** can now become a main focus of the incremental process, with continued tree planting using smaller stock, as well as flowering shrubs, perennials, and vines. Attention to living ground covers can take priority, along with installation of plant protection railings (the key to plant survival).

Wise management of the living landscape of trees, shrubs, and perennial plants—and the soil, water, and sunlight they need for healthy growth—is essential to achieving a best practice ecosystem. Once trees, shrubs, vines, ornamental grasses, ground covers, and a multipurpose lawn have been installed as part of the master plan, effective landscape management will help habitats thrive and gain value with the passage of time.

Community participation and engagement are fundamental to successful management (Chapter 5). Key groups include the teaching staff, maintenance personnel, the broader community of interest, and the children themselves. If children care for their environment from an early age, research tells us that they will be more likely to grow up with a deeper understanding of human dependency on the natural world and become bio-stewards. Practically speaking, by the time children are preschool age, they should be able to usefully participate in caring for their daily ecosystem as a best practice of personal life.

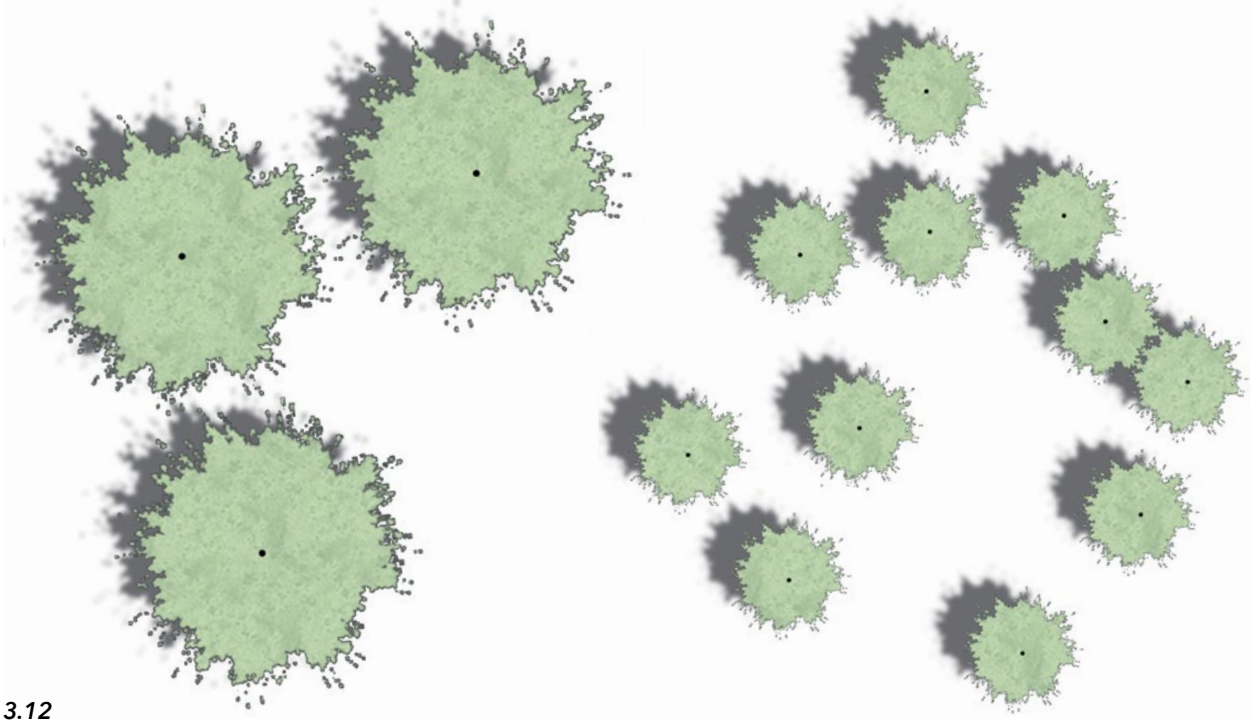
***3.10*** *Corners are the best location for sand play settings, protected on two sides and enclosed with high sides to reduce sand migration.*

***3.11*** *Corners are great locations for decks and stages, offering enclosure on two sides, where children invent their own shows.*

## SUN EXPOSURE, SOIL QUALITY, AND SURFACE DRAINAGE– THREE KEYS TO SUCCESS

Managing sun exposure, soil quality, and surface drainage are critical to establishing nature-rich play and learning ecosystems that support children's health. Children in turn learn about ecosystem services and begin to understand–tacitly and emotionally before cognitively–that the quality of human life depends on nature.

***3.12*** *Small shade trees provide a more varied pattern of sun and shade (right) than large shade trees (left).*



***3.12***

## DESIGNING FOR VARIED SUN EXPOSURE

Plants are classified by the amount of sun they either need or can tolerate. Some plants are sun loving; others thrive in shade. Most vegetables prefer full sun, all day. Some shade-loving perennials get scorched in full sun, wither, and die. Designing for variations of shade across the site, ranging from full sun to full shade, will help create diverse, under-story planting conditions. Small shade trees work better than large trees for moderating sun exposure because they can be located and more easily managed to achieve small "patches of shade," with sunny patches in-between. That way, children are never far from shade. Large shade trees cast too much uninterrupted shade that inhibits under-story growth (3.12).

Children have similar requirements for seasonal sun and shade exposure for both comfort and health; in other words, sun in winter and shade in summer. As shade trees take time to mature, consider installing manu-

factured shade sails and/or vine-covered arbors, pergolas, or trellises to provide patches of green shade–as rapidly as in a single growing season.

Prolonged exposure of children to full summer sun can expose them to sunburn. On the other hand, sunny spots are needed to provide warm comfort in winter when too much shade makes the outdoors cold and uncomfortable. Patches of sun and shade around open areas of multi-use lawn and vegetable gardens will support food production and provide safe, comfortable time outdoors in all seasons.

## IMPROVING SOIL QUALITY

Soil quality is a primary factor in achieving success for all types of plant growth and ecosystem quality. If soil is compacted and slow-draining, the ground surface will be muddy and take longer to dry out after a rainstorm. Most plants require well-drained organic soils, although some can tolerate clay soils. Texture is the most important and observable soil quality. Soils that stick together when wet are more likely to be heavy clay. Soils that are too loose and contain mostly sand tend to dry out quickly and wash away during rainstorms. Best quality soils for planting are crumbly in texture and dark brown in color, indicating they contain high amounts of organic material, which plants need to thrive.

Managing soil quality is a key to healthy plant growth. Before planting, evaluate soil quality. Dig a few test holes to see what kind of soil exists. Is it wet, even though it has not rained recently? Is it dry and dusty? When damp, can you make a ball of soil in your hands? Feeling the texture of the soil will provide basic information that can be discussed later with soils experts, such as the local cooperative extension agent who can assist with conducting a soil test. Results will offer recommendations for improving soil quality, list missing nutrients, and describe needed soil amendments.

***3.13 - 3.14*** *Well-drained, organic soils are dark brown and feel crumbly in texture.*


3.13


3.14

Clay soils require the addition of organic material—lots of it—to create a well-drained planting medium. Compost created on site or obtained from a municipal garden waste-composting facility should be worked into the existing soil when planting perennials and fruiting plants, such as blueberries. Add several inches of compost to the planting area and mix into the soil with a hand shovel or rototiller. Shrubs and trees, especially native species, may require less compost, but will generally perform better if they are planted in amended soil.


***3.15*** *Muddy pathway caused by clay soil erosion from an adjacent, unmulched, potential planting bed.*

Mulching helps soil hold moisture and reduce the risk of erosion, especially during hot summer months. Three types of mulch are typically used depending on location: pine straw, shredded wood mulches, and leaf mulch/mold which organic nutrients as they break down. Leaf mulch/mold works very well in garden beds. It's often free or inexpensive from municipal composting facilities–or make your own. Pine straw mulch is lightweight and costs less than shredded hardwood mulch, but the latter lasts longer. In all instances, buy in bulk from a landscape material supplier to save money.

## FALLEN LEAVES – A PLAY AND LEARNING RESOURCE!

Fallen leaves are a seasonal resource that should be maximized for their full play and learning value before being swept away and composted. Giant leaf piles can provide a wonderful, temporary play opportunity. Leaf collecting, leaf classification, leaf sweeping, and leaf crafting all make the most of children's curiosity and interest. To maximize these opportunities, staff should not immediately remove leaves from the ground in the fall. Keep some raked aside into a natural area. Children love sweeping leaves, which is also a vigorous physical activity. As the winter season progresses, thick wet leaves in garden beds should be cleaned out so that they will not restrict plant growth before spring. They can be composted or better still, distributed around plants to serve as mulch and/or dug in as organic matter to improve soil quality.


***3.16*** *Here, fallen leaves provide transportation material for play with wheeled toys.*

## IMPROVING SURFACE DRAINAGE

Surface drainage occurs when precipitation falls on the ground within and around the site. Ideally, all precipitation should be kept on site to support life. If soil is pervious and quality is good, water soaks in to irrigate plants without eroding soil or leaving standing water and muddy areas.

If soil is impervious and quality is poor, surface drains are required; if not, water will pool after a storm, sometimes leaving muddy spots that last for days. Thus, poor drainage can be a major barrier to effective outdoor use. Without surface drains, water may run off so fast that erosion gullies form and soil washes away to pollute local streams.

Surface water drainage can be remediated by mimicking nature, which usually avoids the expense of underground pipes and a storm sewer connection. Sometimes, lack of drainage on land adjacent to the site is the main problem. In which case, discussions with the adjacent owner may be needed to find a solution.

Effective surface drainage is achieved in the initial construction phase by shaping the ground surface to provide a path for water to flow without eroding the soil. Attempts to re-grade later may cause significant interruption to construction and potential damage to already installed settings. Poor drainage on a renovation site can be remedied in several ways, including: installing a French drain or underground pipes with drain inlets; constructing a vegetated swale; planting wet areas with native wetland/bog plants; or installing what is popularly known as a "rain garden." "Bridging" a wet area with a deck or other constructed surface is another option.

***3.17*** *Clay soils need to be broken up, sometimes with heavy tools, before adding organic matter for planting success.*

***3.18*** *The dramatic, colorful result of soil quality improvement, achieved just a few weeks later.*

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***3.19*** *Gully erosion was a serious problem at this center before OLE renovation.*

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***3.20*** *Drainage being installed to solve repeated flooding due to poor soil composition.*

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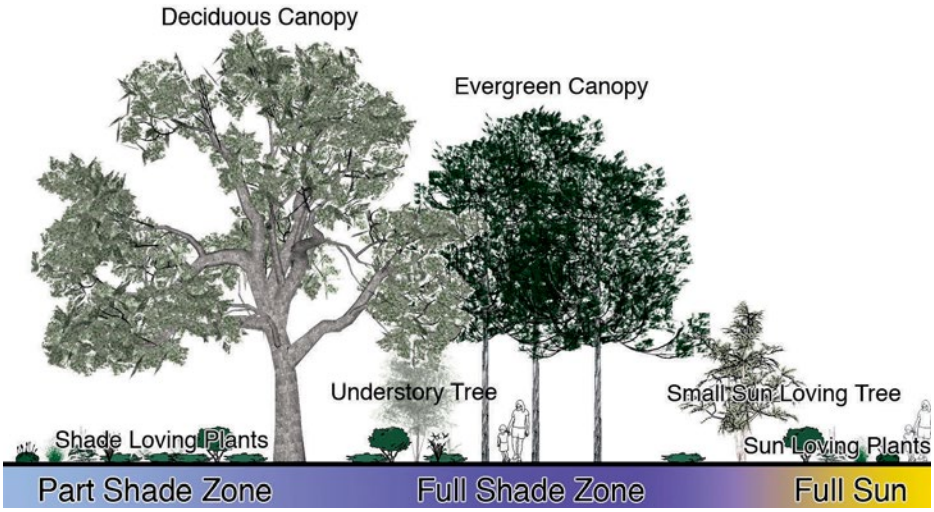
***3.21*** *Eroded gully transformed into a best practice water-play setting after OLE renovation.*

## MANAGING PLANTS

In their natural state, plants grow in layers. Shade trees cover an understory which in turn covers forest floor plants and myriad species of birds, insects, and other small critters that fascinate children. To an extent, especially on larger sites, new planting can be designed to mirror this type of natural structure and ecological process. Fast growing species usually need to be mixed in to speed up the process of naturalization. Evergreen species add interest, especially in the winter when deciduous trees lose their leaves. Use of native plants is essential for maximum support of wildlife.

## TREES: LARGE, MEDIUM, & SMALL

Multiple tree sizes and varied rates of growth support best management objectives—creating ecological diversity and a place that feels natural, with a year-round mix of sun and shade. Careful management can emphasize the multiple benefits of trees: cooling the air by providing shade, adding aesthetic interest, offering natural loose parts, creating habitat for wildlife, adding daily interest by responding to the weather, and marking seasonal change.




Trees can be installed to provide memorable, shady spaces where children can comfortably gather in warm weather. Small trees or large shrubs 6 to 12 feet tall offer genuine woodland experiences for preschool children, with leaves and branches within reach. Tall trees with spreading canopies provide patches of cool shade. Some tree species are fast growing and provide a visual impact and significant shade in just a few years. Shade from slower growing species will take longer but the trees themselves will live more years and provide long-term benefits. To fully thrive and serve multiple functions, trees need intentional management, particularly during the first couple of years after transplanting. As a long-term investment, trees require annual care, pruning (see below) and protection from damage (see below).

***3.22 Above.*** *A healthy landscape contains layers of trees and shrubs of different sizes. Layers provide a rich wildlife habitat, including diverse ground level plants where children can explore small critters living in varied shade conditions created by tree canopies.*

## SHRUBS: LARGE, MEDIUM, & SMALL

Shrubs usually provide aesthetic interest, natural loose parts, and habitat for beneficial wildlife. Shrubs change appearance across the seasons and can buffer activity settings and define them with ground-level surroundings positioned not to impede use–pruned if they intrude. Long, arching branches can be trained to create intriguing, vegetated tunnels.

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***3.23 -3.25*** *A variety of tree sizes and species support ecological diversity and add year-round interest to an OLE.*

***3.26*** *Infants and toddlers enjoy a rich OLE landscape composed of small trees, shrubs, and ornamental grasses.*

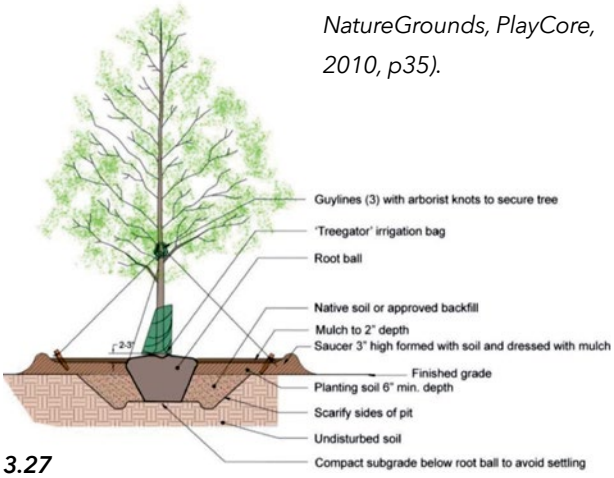
## PLANTING TREES AND SHRUBS

Trees and shrubs gain value with time, which makes them an excellent, long-term play and learning ecosystem investment. To maximize value, purchase high-quality, healthy stock from a reputable nursery or garden center. Even if more expensive, they are less likely to be root bound or diseased. Some trees are grown in containers and others are grown in fields and sold as "ball-and-burlap" stock, meaning they are dug out with soil intact and their roots wrapped in burlap and tied up with twine and wire. Ball-and-burlap trees are generally larger, so planting them involves more labor and equipment than planting smaller container-grown trees. If volunteer assistance is involved, a smaller tree sold in a 5 to 10-gallon container will be easier for the planting team to lift and install.

In general, the best time to plant trees and larger shrubs is in the fall, when the weather

3.26

is cooler and plants require less irrigation than in the hot summer months. The ground holds moisture over the winter, which allows trees to slowly sink their roots into the damp soil. When ready to plant, dig a hole that is twice as wide and almost as deep as the pot the tree is in. Trees should be planted so that the base of the trunk is approximately 3 inches higher than the surrounding soil. Use a sharp, pointed shovel or mattock to help break up any hard soil.




***3.27*** *Best practice planting techniques are vital for large shrubs and trees, such as "ball-and-burlap," to ensure successful establishment and healthy survival. (Source: NatureGrounds, PlayCore, 2010, p35).*

Remove the tree from the container. Although usually not needed, gently break up the edge of the root ball if the roots appear to be growing in a circular direction, which could result in root-bound, unhealthy growth. Position the tree in the center of the planting hole, ensuring it is vertical (or "plumb") by viewing from one side and another at 90 degrees, preferably against a background building corner or other trusted vertical line. Fill around the roots, up to the level of the ground around it, with the same soil that was dug out to create the hole. Tamp down the soil to ensure there are no air pockets–top of a pickaxe handle or similar tool works well. Water the tree thoroughly. Spread mulch around the tree crown, taking care not to pile it up against the trunk, which might induce rot. Leave around 3 inches clear. Like any valuable investment, trees and shrubs need careful management from the moment they are planted to ensure their good health and long-term survival. During the first year, trees should be thoroughly watered every couple of days if heavy rains don't happen or when the soil becomes dry.

***3.27***

## PRUNING TREES AND SHRUBS

Pruning trees and shrubs is an important management activity to ensure good health and to maintain clear sight lines. However, take care not to remove all vegetation from a child's reach. Retain some branches close to the ground so that children can "hide" in the tree, get to know how it feels, and play with it. Take care when pruning to avoid creating sharp ends of thin, horizontal branches that a child could run into and become injured. Let children use prunings for nature play after checking for sharp ends or splinters.

***3.28*** *A group of volunteers and center staff working together to plant a small "ball-and-burlap" tree to provide immediate, natural shade for children.*


***3.29*** *Children using tree prunings to build a fort.*

## MANAGING VINES ON FENCES, ARBORS, PERGOLAS, AND LATTICES


***3.30*** *Vegetated fence with gourd vine, which produces fascinating fruit that can be dried and used for craft activities, including OLE enhancements such as birdhouses.*

Vines are adaptable plants that can grow using their own "aerial roots" or they can be trained by twining around supporting wires or mesh attached to vertical structures. Some vines are annuals, such as pole beans and gourds; others are perennials, such as coral honeysuckle and crossvine. "Living tunnels" can be created using native vines supported by an armature of welded re-bar or arched steel mesh. Local species of willow (not weeping willow) that grow quickly can be trained to be self-supporting or to easily cover wooden or metal tunnel structures. Elaborate "living structures" can be created by willow artists. Ultimately, success with willow depends on the local climate – preferably wet, sunny, and cool conditions are good.

Childcare licensing rules normally require perimeter fences, usually chain-link because it is so cost effective. However, it does not need to look ugly because it is also easy and inexpensive to naturalize using hardy vines (preferably evergreen). A permanent green fence can also be created using native grape vines, thornless blackberry, or annual, food-producing vines. Fast naturalization on other vertical components such as arbors, trellises, and teepees creates patches of shade and comfortable gathering spaces scaled to young children. Structures can be custom built or assembled from kits. Different vine species exhibit varied climbing behaviors and requirements to achieve growth. Materials such as lattice, sections of welded mesh, or stretched wires are usually necessary to ensure tidy, successful climbing habits. Plant vines close to the support system so they can easily be trained upwards. Children will have fun weaving the vines through supporting structures.

***3.31*** *Children feel they are in a secret place created by a circle of large, multi-branched shrubs, which have been carefully pruned over the years to ensure visibility to teachers.*

Note that some childcare sanitation jurisdictions, for example North Carolina, enforce rules to keep a space 6 to 12 inches from the ground clear of foliage to discourage undesirable animal life from inhabiting fence lines. Such a rule does not seem particularly logical in a naturalized play and learning ecosystem, which is designed to attract wildlife, so it may be worthwhile to at least question such a rule and try to move toward modification.

***3.32*** *This center entrance fence was planted with a mix of vigorous vines and a border of perennial flowering plants. Carefully tended over several years, the result is a "green wall," which welcomes children every morning.*

***3.33*** *This sensory flagstone path was planted with a mix of hardy, "step-able," fragrant, textured plants, providing a stimulating experience for young children.*

## IN PRAISE OF GROUNDCOVERS

Groundcovers are low-growing plants, including vines, grasses, dwarf spreading shrubs, or low-growing, perennial plants, usually reaching less than 12 inches tall. They cover the ground surface in planting beds, around trees, and along the borders of pathways. Groundcovers help reduce erosion, retain moisture, and cool the soil much like a mulch covering would, but with the added benefit of serving as a living carpet, adding natural beauty for children's enjoyment with eyes close to the ground.

## PERENNIAL FLOWERING PLANTS

Perennial flowering plants die back in the winter and regrow every year. Known for their colorful beauty and naturalizing effect, perennials also provide natural loose parts for play, change with the seasons, and create habitat for beneficial wildlife. They are best used in borders and flowerbeds that are protected from children's foot traffic by some form of low guardrail. "Pollinator gardens" are a form of perennial planting that require open, sunny areas.

3.34

## ORNAMENTAL GRASSES

Ornamental grasses, including many native grasses, offer fascinating annual growth cycles and can provide year-round sensory interest if carefully managed. Moving in the wind, soft grasses provide year-round sensory stimulation. Grass mazes are fun and easy to create using informal arrangements of ornamental "clumping" (non-invasive) species. Grass mazes support chase games like tag and hide-and-seek, and provide space for intimate conversations, rest, and reflection. Recycled tires offer a cheap, convenient, and protective container option for grass mazes and ornamental grass planting in general.

***3.34*** *This collection of potted, flowering plants provides colorful, fragrant enclosure to a semi-sheltered gathering area. A great advantage of potted plant borders is their flexibility, allowing plants to be changed throughout the growing season.*

## ANNUAL FLOWERING PLANTS

Annual flowering plants are similar to flowering perennials and have many of the same benefits, except that they die after a single growing season and do not regrow. Annuals provide seasonal color, often with abundant flowers and decorative foliage. They are best used in borders, flowerbeds, pots, or beds that are protected from children's foot traffic by low railings. Children can easily participate in planting annuals as a classroom activity.

3.35

***3.35*** *Small patch of ornamental grass adds sensory interest and a place of discovery.*

## WEEDS AND OTHER INVASIVE PLANTS

A well-worn cliché is that weeds are "plants growing in the wrong place" and in that sense, the problem can be that they are prolific, relentless invaders with no redeeming value. However, individual species are not viewed as weeds everywhere. Dandelions, for example, are an enemy of golf course managers but a valuable salad crop. For some, a golden meadow of springtime dandelions is beautiful. And of course, the "dandelion clock" has survived as a universally attractive game for children. The best way to reduce or eliminate weeds is by thoroughly mulching perennial beds in early spring and annual beds as soon as plants are in the ground. Otherwise, weeds need to be removed, including roots, using hand tools. Do not compost weeds on site. Take them to a professional composting facility to ensure that seeds are killed. Beyond weeds at a domestic level are invasive plants, capable of completely dominating the landscape visually and ecologically to a degree that machines and massive person power are required to remove them. Again, the seriousness varies from region to region. English ivy is an example of a potentially invasive plant that should always be removed before it gets a toehold on play and learning ecosystems.


3.36

***3.36*** *Children learn to care for their Outdoor Learning Environment, experience the diversity of plants, and begin to understand what plants need for healthy growth.*

## INTENTIONAL MULTI-PURPOSE LAWNS

**Ubiquitous grass is too often a default groundcover occupying an** unreasonable proportion of childcare center outdoor spaces. Not only does grass limit other types of uses for the space, it is expensive to mow. A recommended, more economic approach is to intentionally provide a designated turf area, specifically designed and managed as a multiuse setting, and convert the rest of the grass to more relevant play and learning settings. Lawn space can be sized for use by 25 children or so–roughly the size of a classroom group. Small, multipurpose lawns have many uses and need not be expensive. Turf may be selected to thrive under particular shade conditions in a specific region. Lawns

work well as a central space bordered by other settings such as pathways, diverse plantings, and shade trees. Even a small 100-square-foot circle or square can provide many play opportunities. A lawn does not need to be flat. Graded with slopes and mounds, children will playfully respond with more varied running and rolling activities.

3.37

## LAWN CARE

The best way to ensure a high-quality lawn is to install it properly and allow it to become established before use. Starting the lawn with turf or high-quality grass seed selected especially for the site conditions (sun/shade and soil type) can help ensure a healthy start. Design the lawn as a contained, specific area (instead of a fence-to-fence ground surface). As such, it will be easier to maintain and mow, and support more play and learning activities.

***3.37*** *Vigorous play and physical exercise supported by an open, multipurpose lawn.*

***3.38*** *Children and teacher engage in a math lesson as they gather and count the grapes growing on grape vine supported on a wooden arbor—and taste the results after washing the fruit.*

## PROTECTING PLANTS FROM IMPACT

Ground level planting beds and lawns, especially when adjacent to a primary pathway, should be protected from children carelessly running through and inadvertently damaging the plants. Methods include stone edging; post and rail; post and wire or rope; split bamboo hoops; and recycled, planted, stacked tires.

## EDIBLE LANDSCAPE

### Perennial Fruiting Landscapes

Fruiting trees, shrubs, and vines began to be installed by childcare centers in North Carolina more than 20 years ago. Fruiting trees include apple, pear, and plum. Fruiting shrubs include blueberry; vines include grapes, kiwi, and thornless blackberry (needs training like a vine). All can be grown on overhead arbors and along fence lines. These fruiting species, including

3.38

raspberry canes, not only provide all the benefits of flowering, ornamental plants–they also contribute edible fruit, year after year. Many other "specialty berries" exist but lack popularity for various reasons. These include gooseberry and red and black currant berries (Ribes genus), which are still illegal in a few states but legal in most if new cultivars resistant to the White Pine Blister Rust are used. In the early 1900s, this disease resulted in all Ribes being banned. However, new rust-resistant cultivars are making a comeback possible.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***3.39*** *Decorating a center entrance, compact vegetables such as peppers grow happily in buckets and pots painted by children.*

## VEGETABLE GARDENING

Provided basic requirements are met (good soil, at least six hours of direct sunlight per day, and adequate irrigation), success with vegetable gardening is not difficult to achieve–even by those who say they lack a green thumb. Growing vegetables is an affordable way to expand outdoor play and learning opportunities. Designated fruit and vegetable gardens is a best practice indicator. Gardening is an experience-based skill, best done one step at a time.

Container gardening is an easy, low cost, child-friendly first step for growing fresh, edible produce at childcare centers. Children delight in growing and eating their own food and research shows that repeated exposure to healthy food options can increase the likelihood of establishing healthy eating habits. Any recycled container will do (old


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***3.40*** *Father, child, and gardener plant watermelon seedlings in a straw bale near the front entrance of the child care center.*

kiddie paddling pools, tin cans, old shoes, reused plant pots, any number of plastic containers), as long as drainage holes are added. Containers can be moved around and expanded year after year. Similar alternatives include purchased grow-bags and straw bale gardening.

Permanent vegetable gardens provide an established, less flexible alternative that can replace container gardening or the two can be combined. Raised beds are a great solution as they are easily accessed at children's height, provide control of soil quality, and are easier to irrigate and maintain than in-ground beds.

## VEGGIES YEAR ROUND

In most southern states, vegetables can be grown and harvested almost year round through four seasons.

***3.41 Below.*** *OLE management chart for best practice naturalization –lists maintenance tasks by season for basic types of plants.*

| Type | Spring | Summer | Fall | Winter |
|---|---|---|---|---|
| **Vegetable garden** | • Work 2-3" of compost into garden soil<br>• Plant spring vegetable seeds and transplants<br>• Pull weeds as they emerge | • Set watering schedule<br>• Plant pumpkin seeds now for fall harvest<br>• Pull weeds that emerge<br>• Identify and treat garden pests and plant diseases | • Enjoy the harvest!<br>• Remove old plant material and use in compost pile<br>• Sow cover crops or plant winter vegetables | • Grow winter vegetables under low tunnels or in cold frames<br>• Stay ahead of winter weeds |
| **Flowering perennials/ ornamental grasses** | • Cut back last year's growth to 6" high and compost the trimmings<br>• Divide larger perennials in half and transplant<br>• Mulch planting beds<br>• Plant perennials and grasses | • Remove spent flowers to encourage more blooms | • Save seeds from flowering perennials<br>• Plant perennials and grasses<br>• Apply fresh mulch if necessary | • Leave dried foliage standing to provide food source and shelter for birds |
| **Trees and shrubs** | • Prune spring-blooming trees and shrubs after they are done blooming | • Irrigate newly planted trees and shrubs | • Mulch fallen leaves and spread in planting beds<br>• Plant new trees and shrubs | • Prune summer-blooming trees and shrubs |
| **Permanent fruiting edibles** | • Plant blueberries, blackberries, strawberries<br>• Spray fruit trees with dormant oil<br>• Thin blackberry canes to 5-7 per plant and ensure they are tightly tied to fence<br>• Apply compost to planting beds | • Water plants regularly<br>• Thin fruit to one every 4-6" on apples, plums<br>• Watch closely for pests and disease | • Plant fruit trees<br>• Remove fallen leaves around fruit trees<br>• Apply mulch to planting beds | • Prune apples, pears, plums and figs to thin branches<br>• Prune grape vines |

**Early spring** is a time bursting with possibilities and many ways to get gardening started with kids, taking advantage of everything the season has to offer. Early spring vegetables include greens, lettuce, onions, broccoli, peas, and carrots. Spring is also a good time for planting trees, shrubs, and vines to get established before summer heat sets in.


3.42

**Summer** is prime time in the vegetable garden. Beans, tomatoes, squash, melons, pumpkins, eggplant, and corn are all growing full-force. Summer is a time for managing and harvesting, while keeping an eye open for pests and diseases, which often attack more strongly in summer than other seasons.

***3.42*** *Raised planters in a full-sun location can produce vegetables year-round, shown here in early summer with mixed vegetables ready to harvest.*

**Fall and Winter** are quieter times in the garden, providing a needed break between seasons. Some plants continue to produce until the coldest part of the season sets in; others, if planted in the fall, are given a head start during the winter and will grow more quickly when the warmer sun returns in the spring. Greens, cauliflower, cabbage, onions, and carrots can all be planted in the late summer for a fall harvest or planted late fall for an early spring harvest.

## COMPOSTING

Garden waste of leaves, twigs, grass clippings, pruned material, etc., together with kitchen vegetable waste (no animal material)–all can be composted. A mix of "greens" (protein-rich) and "browns" (sugar-rich) is important. Finished compost can be used as mulch around plants or as soil amendment in garden beds. Composting units come in two basic types: tumblers and bins. Tumblers are manufactured. Bins too but can also be DIY. Locate unit in a warm spot to speed up the decomposition and curing process. Many variations and practical advice can be found on-line, including how to introduce mini-composting in the classroom using glass jars.

***3.43*** *In-classroom, small worm bins can be used to introduce worms to young children and help them understand the connection of worms to composting and their important role in improving soil quality.*

3.43

## VERMICOMPOSTING

Vermicomposting uses decomposing organic matter consumed by earthworms and excreted as castings to enrich soil and add nutrients. Vermicompost is a mixture of castings and

3.44

3.45

decomposing organic materials. Like the compost described above, vermicompost improves soil structure, helps water to permeate and stay next to plant roots, and helps roots to spread by loosening soil particles. A multitude of vermicomposting ideas can be found online, including how to start in the classroom with children.

## TOOLS

### Essential hand tools for adults

Garden tools and equipment are designed for specific tasks. Needless to say, it is important to select the right tool for the task. Using the wrong tool can make a task more difficult. When installing and managing an outdoor play and learning environment, consider tasks to be completed and the type and number of tools required. Common hand tools include shovels, spades, forks, pick mattocks, hard and soft rakes, hammers, hoes, trowels, and push brooms. Other useful items include work gloves, a tool belt or pouch, measuring tapes, wheelbarrow or garden cart, garden hoses, survey flags, and spray marking chalk.


3.46

### Essential hand tools for children

Involving children in installation of planting, maintenance, and

***3.44*** *A manufactured tumbler provides a practical option for childcare centers.*

***3.45*** *A tri-compartment compost bin provides an option for centers with schoolage programs. Can be constructed by volunteers. Note: bag of shredded paper ready to add. Fresh waste goes in left. When compartment is full, it is transferred (turned, mixed, and aerated) to the middle compartment, and eventually to the righthand compartment. The two halves of each compartment front are removable for ease of access to turn compost and remove uniform, dark brown, "cooked" product– ready to improve soil quality.*

***3.46*** *A set of high-quality gardening tools is necessary for effective management of naturalization.*

3.47

3.48

management tasks increases their fascination with natural processes and sense of ownership. Direct experience coupled with discussion with teachers will help children to be considerate and careful with plants. Hands-on experience helps children learn new skills. Useful child-size hand tools include trowels, shovels, rakes, brooms, wheelbarrows, tool belts, and watering cans. Tools should be "real," meaning manufactured from strong durable materials, and used with appropriate supervision.

***3.47*** *Garden essentials include hoses, long and short measuring tapes, survey flags and spray marking chalk.*

***3.48*** *Robust, child-sized tools are essential for children to learn how to contribute to naturalization, including vegetable gardening.*

## FERTILIZERS, PESTICIDES, & HERBICIDES

### Fertilizers

Avoid using chemical fertilizers by amending soil with compost and planting healthy, vigorous plants. If necessary, add fertilizers or compounds prior to planting so they are not on the soil surface or on the leaves of the plants.

### Pesticides

Avoid using pesticides by selecting pest-resistant plant cultivars and keeping the outdoor area clean and well-maintained. Most insects are beneficial and if provided with a well-balanced, diverse ecosystem, they will keep the more harmful ones in check.

### Herbicides

To be safe, herbicides containing glyphosate should not be used in children's environments. Several nontoxic herbicides are available and reviewed online. If possible, pull weeds by hand, especially while they are small. To stop weeds from growing, cover garden beds with at least 3 inches of mulch and plant densely to prevent open patches of soil that could harbor weeds.

3.49

***3.49*** *Be sure to carefully read the labels and "fine print" on fertilizer, pesticide, and herbicide containers, and follow the instructions, including "re-entry" time.*

## Use only when absolutely necessary and with extreme caution

For the few weed species that are extremely persistent and impossible to eradicate by physical means, chemical treatment may be necessary. If so, use as little as possible and with extreme caution. If application of fertilizers, pesticides, or herbicides in a play and learning area is unavoidable, keep several things in mind. Never use chemicals while children are in the area. Use chemical sprays over the weekend or when children will not be using the space for an extended period of time.

***3.50*** *Beneficial critters are fascinating to children and stimulate a sense of discovery and sharing. Here, children have rolled a large log to find what's living in the damp patch of earth underneath.*

All products have instructions on the label regarding the time period required after application for the product to dry (if wet). This is usually noted as 're-entry' time. Always use a product that is labeled for use around the home and follow the directions on the label. If you have questions about using the product, most companies have a toll-free number on the bottle that users can call for expert help and advice. Consult professional help if necessary, particularly for problems that are beyond the ability of a home-use product to address.

## RESOURCES

1. Consult the fruit tree pruning guide published by NC State University Cooperative Extension Service: https://content.ces.ncsu.edu/training-and-pruning-fruit-trees-in-north-carolina
2. Download the NLI InfoSheet–Using Plants to Add Value to the Outdoor Learning Environment. https://naturalearning.org/using-plants-to-add-value-to-the-outdoor-learning-environment/
3. Consult LOCAL FOODS: Childcare Center Fruit & Vegetable Gardening Series. Eight guides include #7 on composting and #8 on vermicomposting. https://naturalearning.org/gardening-series

*The remodeled outdoors has given children a huge variety of activities and learning experiences. Children cry if parents come to pick them up early!*

*Childcare center director*

# 04 BALANCING RISKS WITH BENEFITS

***Photo opposite:*** *Low-risk, cost-effective nature play. Five-foot log, bedded and surrounded by wood mulch, accommodates five children playfully practicing balancing and related movement skills, including lots of laughter (encouraged by teacher).*

## INTRODUCTION

This chapter[A] introduces the idea that play and learning in childcare centers are inter-related with risk-taking for young children. Their lives are full of "first times," through which they come to know the world, become effective in navigating it, and contribute to its positive evolution, while developing their own unique talents and proclivities.

Childcare centers also have an ethical commitment to provide an explicit standard of care to protect the health, safety, and wellbeing of each individual enrolled. Professionals around the world have wrestled with the risk vs. benefit dilemma for years and have concluded that real life is never risk free, but risks must be balanced with the developmental benefits they afford. Leaping off the top of a play structure is not a good way to see if you can fly; alternatively, running fast, furiously flapping homemade wings, probably is. In addition to learning how to make wings, health benefits accrue from the vigorous physical activity of "flying" by running.

In 2007, the NC Division of Child Development (as it was then), replaced the term "playground" with "Outdoor Learning Environment" (OLE). This new conception of the outdoors, as a place for holistic child development, helped set in motion the evolution of NLI's POD (Preventing Obesity by Design) built environment strategy and rapid advances in OLE renovation. The Division of Child Development and Early Learning (DCDEE), *Child Care Center Handbook*, Chapter 3: OUTDOOR LEARNING ENVIRONMENT, introduces the concept of the outdoor learning environment and promotes the importance of daily outdoor play and the health benefits of exposure to nature:[1]

> "The outdoor learning environment offers a sense of freedom for children. Children are able to play freely with peers, expand their imagination beyond the restraints of indoor activities, release energy, and explore their sense of touch, smell, taste, and motion. Caregivers are in a unique position to utilize the outdoor environment to promote development and learning. The Division requires that children in licensed child care programs spend time outdoors every day, weather permitting" (page 3.1).

[A]Chapter 4 is in part adapted from Nature Play and Learning Places, Chapter 6 (Moore, R. with Cooper, A., 2014)

Although health promotion is the goal of replacing childcare center "playgrounds" with more diverse outdoor play and learning environments, all involved with the care of young children still need to be assured of children's basic health and safety. Currently, these concerns are addressed in the North Carolina Administrative Code (NCAC) in Title 10A (Department of Health and Human Services), Chapter 9 (*Child Care Rules*, 2008):[2]

> Section .0605-"Condition of Outdoor Learning Environments" (14 paragraphs and additional sub-paragraphs cover manufactured equipment, safety surfacing, and fencing);
>
> Section .1402-"Outdoor Space" (5 paragraphs cover required square footage related to size of enrollment);
>
> Section .1506-"Outdoor Play Area" (a single paragraph covers square footage requirements for child care centers that provide part-time or drop-in care exclusively).

Chapter 3 of the *Child Care Center Handbook* further clarifies, through text differentiation and graphic illustrations, the aforementioned DHHS rules, making them more easily understood by providers and those with outdoor learning environment responsibilities.

## OUTDOOR PLAY IN NATURE IS ESSENTIAL FOR HEALTHY CHILD DEVELOPMENT

North American practitioners and academics, who recognize risk as an essential aspect of healthy child development, continue to search for ways to balance levels of risk with related developmental benefits, while protecting children's health and safety.

4.1

***4.1 Water affords a strong attraction*** *to children for play and learning. Benefits include multi-sensory stimulation, with teachers helping children understand that water is the key to life! Little is needed to create a viable water play setting. Here, a trickling stream is operated by the children turning a valve (off camera). The mix of large, fixed stones and smooth, loose pebbles adds substantial play value.*

The issue of balance has been foregrounded by the nature play movement and the realization that intentionally provided nature play spaces cannot be fully assessed using the safety standards for traditional playgrounds. These are spaces constructed of stable, unchanging components manufactured under standardized factory conditions. Nature, in contrast, is highly variable, with loose, moveable, manipulable components that change day to day.

The Canadian *Position Statement on Active Outdoor Play* (children 3 to 12 years old)[B] offers a substantial, authoritative reference informed by research literature, expert consensus, and practitioner experience. The health risks of spending too much time indoors are contrasted with the many benefits of time outdoors, including exposure to fresh, germ-free air, longer durations of physical activity, positive impacts of self-directed spontaneous play, and the health-promoting effects of exposure to nature.

The *Position Statement* concludes that "Access to active play in nature and outdoors—with its risks—is essential for healthy child development," and recommends "increasing children's opportunities for self-directed play outdoors in all settings—at home, at school, in childcare, the community, and [in] nature" (p.6476).[3]

This point of view reflects pioneering effort in the U.K., beginning in the 1990's, to develop the concept of "balancing risks and benefits." Play England's *Managing Risk in Play Provision*[4] is commonly cited by the growing international community of play professionals that recognize free play as a biological imperative, essential for children to acquire agency, executive functioning, and resiliency to confront life's inevitable challenges.

## STEPS TOWARDS A RISK MANAGEMENT APPROACH

How can the principle of balancing risks and benefits be applied to the management of diverse outdoor play and learning environments in childcare facilities?

Risk management in children's play settings has historically focused on injury avoidance. Standards for manufactured play equipment (ASTM)[5] and the playground safety handbook (CPSC)[6] were developed to

[B]The statement resulted from an extensive, rigorous process conducted with leading researchers, sectorial leaders, and the stakeholder community. The process included two systematic reviews, a critical appraisal of the current literature and existing position statements, engagement of research experts and cross-sectorial individuals/organizations, and an extensive stakeholder consultation process. More than 95% of the stakeholders consulted strongly agreed or somewhat agreed with the Position Statement; participating individuals/organizations endorsed it; and over 1,000 additional individuals and organizations requested their name be listed as a supporter.

achieve that goal. Unfortunately, an exclusive focus on injury avoidance has tended to produce uninspired, "cookie-cutter" playgrounds with diminished play value.[7]

Nature play and learning spaces offer a more varied, challenging, and stimulating environment with greater potential play value than is available from manufactured equipment alone. This means providers of natural play and learning must simultaneously, "offer children challenging, exciting, engaging play opportunities while ensuring that they are not exposed to unacceptable risk of harm."[8]

This is not a simple task. One rule does not fit every setting or center. Each provider must decide what level of risk is appropriate for their particular situation. The management goal should be to create an ongoing balance between developmental benefits of risk and avoidance of harm.

In naturalized settings, children will seek challenging play and learning opportunities to engage themselves, stimulate their curiosity, and experience risk-taking appropriate to individual developmental levels. Children normally recognize risks, make judgments, and respond within the limits of their skill development. Under these developmentally appropriate circumstances, injury is unlikely.

## HAZARD, RISK, AND INJURIES

Although "hazard" and "risk" are often used interchangeably and without precision, it is important to have a shared agreement about what the terms mean to achieve play and learning settings that are challenging but do not present unacceptable risk of harm.

**Hazard** refers to any potential source of harm and is often used to describe a situation that is unacceptable and requires mitigation. Yet any action or object has the potential in certain circumstances to cause harm.[9]

Even safety materials in certain circumstances can be hazards. Pea gravel and poured-in-place rubber surfacing used for impact attenuation are also choking and burn hazards under certain conditions. The task is not to eliminate all hazards, but to assess the risk and to remove hazards that in current and foreseeable circumstances present an unacceptable risk of harm.

**Risk** is defined as the combination of the probability of occurrence of harm and the severity of that harm. Risk assessment considers the

4.2

***4.2 Climbing trees*** *is a universal childhood desire and right of passage. In this preschool space, a trio of fig trees, with a strong, branching structure, has been designated as suitable for climbing–as long as a teacher is involved. The ground surface is covered with a layer of wood mulch. Fig trees are hardy and don't mind their root zones being covered. The trees offer multiple affordances that build fitness, agility, and exercise muscle groups that otherwise could remain dormant.*

developmental benefit of a hazard, the probability that it will cause harm, and the likely severity of the harm.[10]

Risk is present in virtually every situation both in nature and in life, and part of growing up is learning how to navigate such challenges. A setting devoid of risk is boring and, from a developmental perspective, lacks opportunity to develop skills and judgment. Thus, play researcher Joe Frost concludes that, "a reasonable risk level is necessary in play but, as in other life activities, there must be limitations on the degree of physical risk."[11]

**Severity of injury** can be described in terms of the *Abbreviated Injury Scale,* defining a range of injury from 1 (minor) to 6 (unsurvivable).[12]

An important goal of any nature play and learning space is to present and maintain a reasonable risk level, so that challenging, interesting conditions are present without risk of harm. In conditions of reasonable risk, minor injuries such as scrapes should not be regarded as adverse outcomes. Risk of severe and life-threatening injury should be infinitesimally small; however, short of removing all trees and draining all bodies of water, some risk remains, and the occurrence of serious injury is not in itself evidence of a poorly managed space.[13]

As children move around their environment, they "read" the risk affordances, evaluate them, and choose whether to activate them. In this way, risks are learned and mastered. With newly acquired skills, the child seeks out and tests new levels of risk. As described in *Managing Risk in Play Provision*, "Good risks and hazards in play provision are those that engage and challenge children, and support their growth, learning and develop-

4.3

ment. Bad risks and hazards are those that are difficult or impossible for children to assess for themselves, and that have no obvious benefits."[14] Risk management strives to cultivate good risks, and eliminate bad ones.

## DEVELOPING A RISK MANAGEMENT PROTOCOL

This chapter is not intended as legal advice, nor is it intended to establish design standards. The purpose here is to encourage providers to create a systematic risk assessment and management protocol in order to offer a stimulating play environment while eliminating exposure to unacceptable risk of harm.

*4.3* ***Observing*** *boisterous, energetic, playful response to mounded multipurpose lawn.* ***Reviewing design*** *to confirm installation was correctly implemented.* ***Recording*** *the health benefits of sustained, repeated vigorous physical activity (running) afforded by the sloping lawn.*

4.4

*4.4 Discussing "reasonable risk" of the running activity, compared to the physical health benefit, as part of a multi-step risk management protocol. Group review is an opportunity to consider the inherent but reasonable risk of playful interactions between a child, other children, and their physical surroundings. Reflection helps staff to consider how design can help afford the multiple, developmental benefits accruing from exuberant play and learning behavior.*

Establishing a balance between risks and benefits is achieved by training staff to adopt a center-level, systematic risk assessment and management protocol, containing the following steps:

4.5

***4.5 A climbing wall*** *can afford climbing intentionally, thus requiring careful consideration with respect to liability (a tree in not installed with this same intention). Safety surface must be approved material, depth, and area. Close supervision is required, along with regular inspection of hand- and footholds. Children respond to the "graded challenge" that affords fitness, skill development, and confidence-building benefits.*

## Step 1

**Determine applicable state design standards.** There appear to be no national or state design standards for naturalized play and learning spaces. Providers may already be aware of standards and guidelines for traditional manufactured playgrounds. The American Society for Testing and Materials (ASTM)[15] develops standards for manufactured playground equipment and impact attenuation systems under and around playground equipment. An additional source is the Consumer Product Safety Commission (CPSC) *Handbook for Public Playground Safety*.[16] Both may apply to manufactured equipment, safety surfacing, and aspects of natural settings (see Step 3 below).

## Step 2

**Engage your insurer.** As adequate insurance coverage is essential to every center, it is important to engage the local agent and/or risk assessor when planning a naturalized play space. Early consultation will allow designs to be reviewed and risk management plans discussed to avoid unpleasant surprises after funds have been invested.

## Step 3

**Conduct risk assessments and eliminate hazards presenting undue risk of harm.** The more common hazards that apply to naturalized play and learning are summarized below.

***Potential for falls.*** The most common cause of injury on standardized playgrounds is falls, especially to hard surfaces.[17] The risk of injury increases with height. When placing natural objects such as logs and boulders that are intended to be climbed, consider what a child might land on if he or she were to jump or fall off.

When creating permanent structures utilizing natural materials, give careful consideration to design and installation in relation to where and how children could be hurt.

***Trees*** in designated play spaces may raise issues related to falls. Generally speaking, the risk of falling from a tree after climbing it would be considered an open and obvious hazard, so no modification of a tree to prevent climbing is necessary, since even a child climbing a tree would be seen as assuming the risk of doing so. But if climbing aids are installed, allowing older children to ascend to heights greater than they could have reached on their own, the modified tree would be viewed the same as a manufactured climbing structure and additional fall-prevention and impact-attenuation measures should be taken.


4.6

***4.6 "Tree climbing"*** *takes many forms. Here, the child is 12 inches off the ground, bouncing on a flexible branch. Providers have decided that the benefit of the child's feeling of accomplishment is more valuable than pruning off the branch.*

***Head Entrapment.*** Head entrapment can occur when a child enters a completely bound opening feet first, then slides his or her body through the opening and entraps their head. Entrapment is more likely to occur for children under 5, as their heads may be larger than their shoulders or trunk. For manufactured equipment, completely bound openings that measure between 3.5 inches and 9 inches must be evaluated to determine whether they are entrapment hazards. In nature play and learning settings, these same measurements may be used to evaluate the configuration of openings that could be considered head entrapment hazards. Examples could include a situation where several logs or branches are permanently attached to one another to construct a fort or a climber, or a hollow log with openings that children can climb in and out of.

***Protrusions.*** Clearly, nature is full of protrusions, so the potential to cause injury must be carefully considered but with discrimination. Some of the most common potential hazards are the ends of pruned branches of trees and shrubs at the eye height of children. However, the harmful potential varies greatly by species. Plants with rigid, horizontal branches are the most obvious. The exposed rootball of a fallen tree is similar. In this case, eye-level roots that a child could run into or fall against should be trimmed and/or sanded smooth.

***Stability.*** Natural objects should be stable if the intent is for children to sit, walk, stand or climb on them. For example, large stones used for seating or climbing should either be heavy enough not to move under the weight of many children, or be securely anchored.

4.7

## Step 4

**Conduct risk assessments of natural features.** For an area designated for naturalized play, all features of the space need to be assessed to ensure that the level of risk presented is reasonable. For example, if dead limbs might fall and injure children, the provider has a responsibility to inspect and trim them.

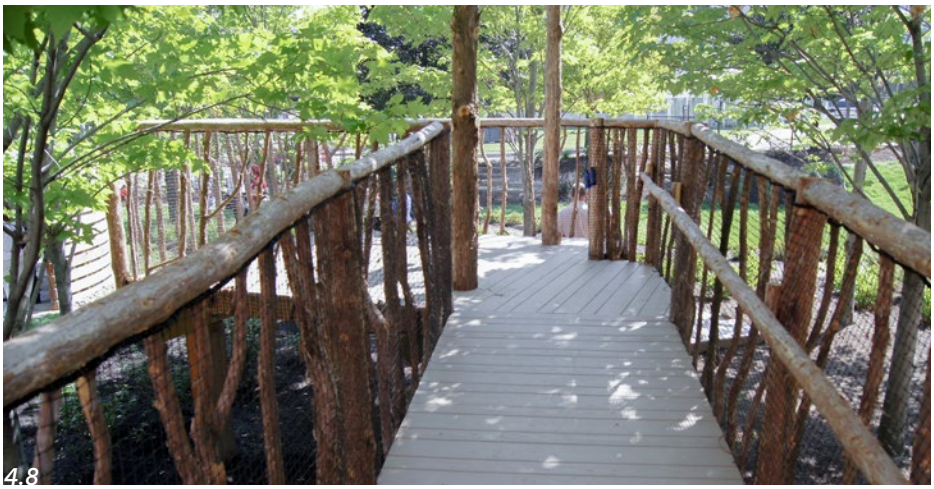
## Step 5

**Develop or add to inspection routines** a checklist that identifies potential hazard sources for each setting. In many states, regular inspection of outdoor licensed spaces is required using a standard checklist. In such a case, add naturalized items to the checklist. If unavailable, develop a naturalized items checklist from scratch. A checklist may vary depending on the geographic location. A play and learning space in an arid, treeless region that features a boulder scramble would include boulder stability as an item. Inspections should not be limited to stagnant timeframes but should include observation of play as children may morph the intended usage to a different unexpected purpose.

## Step 6

**Document, evaluate, and report all incidents.** Developing an inspection routine for a nature play and learning space and documenting all incidents demonstrates conscientious compliance with established risk management protocols.

***4.7 Rock outcroppings*** *are everywhere in the North Carolina Blue Ridge Mountains, including in this outdoor play and learning space, and are much too large to remove. As natural objects, the rocks are not defined as play equipment subject to playground safety standards. Regardless, providers still have an obligation to assess the risk and take remedial action if necessary (installing a wood mulch safety surface, grinding sharp edges, etc.). Children respond to the affordances, perhaps beginning with the smaller rocks, gradually building skills, gaining confidence, and acquiring agency. Maybe these are the first steps towards serious rock climbing as adolescents.*


4.8

***4.8 Elevated bridge*** *provides "prospect and refuge," in this case from among the tree crowns. Children love the feeling of being "up," to see but not to be seen. The bridge serves as a hide-and-seek affordance, resulting in increased physical activity and social interaction. Here the railings are regulation height, constructed with rot-resistant timber, with vertical members spaced according to anti-entrapment dimensions. Note the netting as an added safety measure.*

When required, incident evaluation includes the following steps:

1. Detailed description of the incident.

2. Did an injury result and how serious was it?

3. What was the cause of injury?

4. Is it possible and practical to remove the cause of injury without reducing play and learning value? If so, the cause should be eliminated.

5. If not, complete a risk assessment of the cause:
   a) Is the risk of injury apparent to the children who use the play and learning space? If it is not, can it be made more apparent through modification?

   b) What is the likelihood of the incident recurring?

   c) Is this level of risk acceptable to the provider and community? If the level of risk is not acceptable, the condition should be remediated.

6. A review of prior incident(s) at the site, which may indicate a level of frequency leading to a potential severity of injury.

EIGHT-STEP RISK MANAGEMENT PROTOCOL

1. Determine applicable state design standards.
2. Engage your insurer.
3. Conduct risk assessments and eliminate hazards presenting undue risk of harm.
4. Conduct risk assessments of natural features.
5. Develop or add to inspection routines.
6. Document, evaluate, and report all incidents.
7. Maintain records of inspections and incident reports coupled with regular staff evaluations and recorded responses.
8. Communicate implementation of risk management and request cooperation from teachers and parents.

***4.9 Above.*** *Summary eight-step protocol for balancing risks and benefits.*

## Step 7

**Maintain records of inspections and incident reports coupled with regular staff evaluations and recorded responses.** This record will demonstrate consistent and reasonable risk management, and offer a defense in case of litigation.

## Step 8

**Communicate implementation of risk management and request cooperation from teachers and parents.** It is important to indicate commitment and approach to risk management. On-site signage and information or the center website are opportunities to provide clear guidance information about who to contact if there are problems.

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*This has been such a rewarding and transformational experience. We love what we have learned and seek to grow in this direction more and more. In many ways we are such a better school for this experience!*

***Director of participating childcare center***

# 05 COMMUNITY ENGAGEMENT AND FUNDRAISING

## COMMUNITY ENGAGEMENT IS THE KEY TO SUCCESSFUL FUNDRAISING

**Community** is broadly defined here to include stakeholders who attend or work at a childcare center (children, their parents, teachers, administrators, other staff, etc.), those in the surrounding community who financially support or may support center renovations (local businesses and business associations, civic and nonprofit organizations, faith-based entities, extension agents, etc.), voluntary assistance groups (master gardeners, garden clubs, girl and boy scouts, community service clubs, business groups, etc.), and retired individuals willing to assist.

**Community engagement** refers to processes used to involve the above in contributing to new construction or renovation efforts to improve the quality of childcare center outdoor play and learning environments. Typically, this involves adding new components such as trees, shrubs, gardens, and wildlife habitats along with curvy paths for wheeled toys, quiet retreat spaces, natural settings, sand play, climbing opportunities, dramatic play, arts, and science explorations. Most childcare centers need financial or other types of support to renovate current outdoor spaces and transform them into attractive play and learning environments. Community engagement goes hand-in-hand with fundraising efforts to generate resources that can contribute to renovation success and ensure sustainability. Specifically, community engagement will:

**Stimulate the launch of outdoor play and learning environment improvements or initiate a new construction project** by bringing people together to learn about the important role of outdoor experiences for the healthy development of children, including daily contact with natural materials and processes. Interest and enthusiasm will foster ideas to support center leadership and staff to champion project implementation.

**Educate the broader public about the role of outdoor play and learning environments,** by familiarizing them with the benefits of getting children outdoors in places enriched with nature and showing how high-quality environments contribute to children's health and well-being.

**Ensure sustainability of outdoor play and learning environments** by supporting ongoing management and development of designed settings and components, including trees, shrubs, perennial plants, vines, and groundcovers that constitute best practice. By engaging the larger community, a center will gain friends and allies to maintain and support on-going incremental development more enthusiastically.


## CREATING AN IMPLEMENTATION SUPPORT TEAM

Creation of a support team will spread implementation activities across a dedicated group of people willing to tackle the planning, fundraising, publicizing, building, and planting tasks involved in developing high-quality outdoor play and learning environments for young children.

A support team composed of administrators, teachers, parents, maintenance staff, and community volunteers can serve as a project driver, contributing time, talent, and resources for successful project

***5.1*** *Reinforcing the approach found in chapter 1, a project team includes varied community talents working together for children's health and wellbeing.*

**Successful project community engagement testimonials**

- "Parents and grandparents donated more than $6,500 in cash and contributed around 240 volunteer hours to planting shrubs and trees and building a new tricycle pathway."
- "Partnership with the nearby college horticulture department has been tremendous help for garden design and plant selection."
- "The Community College Carpentry Department is constructing our wooden structures."
- "The Boy Scout Troop assisted with planting a vegetable garden. They tilled a plot of land. Seeds were donated. We ended up with a wonderful garden and a bountiful harvest."
- "A local hardware store donated an arbor and rain barrels and discounted other materials."

implementation. Over time, a successful support team may evolve into an Outdoor Play and Learning Implementation Team, including designers, landscape contractors, garden centers, civic groups, higher education institutions, and funders able to bring additional resources to the project implementation phase. For example, landscape designers and landscape contractors may offer invaluable technical design assistance on site issues such as drainage, timber and masonry construction, and plant selection and installation. Local contractors or volunteer carpenters (e.g. boy scouting clubs) can construct components such as an outdoor classroom, decks, raised planting beds, and a storage shed.

## COMMUNITY ENGAGEMENT PROCESSES

The Preventing Obesity by Design (POD) strategy since 2007 has successfully employed a four-step community engagement process:

1. **Organize a community presentation event.** A community presentation hosted by the children's center provides an opportunity to launch the outdoor play and learning environment project to the larger community, to engage key stakeholders, create buy-in, and leverage additional resources.

   Consider providing a light communal meal, especially for lunchtime or evening events, to motive attendance and encourage participants to mingle and get to know each other. Parents will appreciate the invitation, especially if children are welcome.

   Plan to invite the immediate center community, including staff, parents, board members, and current project supporters. Although a community presentation can be a stand-alone event, consider making it part of another event such as an open-house or annual celebration to increase attendance.


***5.2*** *Community evening gathering and presentation.*

2. **Recruit volunteers.** All manner of volunteer possibilities exist in most communities, available to assist with outdoor project implementation. Parents and older "graduate" children may be willing to help. Current children will benefit from the improved play and learning environment. Service-oriented organizations such as Boy Scouts, Girl Scouts, YMCA, university courses or high schools requiring community service may be willing to take on part of the project, such as building a sand play setting or installing a vegetable garden. The following strategies are effective in identifying and recruiting volunteers:

   - Create parent/volunteer sign-up sheets at the center.
   - Use the center website and/or social media page to post invitations for volunteers or link to online local newspapers and community calendars.
   - Post recruitment flyers in the project vicinity at grocery stores, post offices, senior centers, the town hall, recreation centers, and churches.
   - Ask friends, family, and coworkers to participate and invite *their* friends, family, and coworkers to join in.
   - Make presentations to local civic groups (e.g. Rotary Club, Lions, Garden Club) to recruit volunteers.
   - Ask local businesses to participate, especially those that offer community service days for their employees.
   - Contact local schools and churches to seek interested volunteers.

5.3

***5.3*** *Multi-national corporation staff contributes labor and materials as part of their annual "day of giving back" to the community. For them an enjoyable, meaningful time outside and escape from cubicles!*

3. **Use Traditional and Social Media to Engage the Community.** A variety of tools can be used to get the word out and create public awareness on the importance of outdoor play and learning spaces. Although people still rely on word of mouth and traditional approaches (direct mail campaigns, printed newsletters, and news articles), information is increasingly shared through digital media using websites, blogs, forums, and social media. For effective community engagement, consider the center website and social media as top priority communication channels.


***5.4*** *Multi-pronged community engagement strategy.*

4. **Use Outreach and Networking to Engage the Community.** The purpose of community engagement is to create a two-way interactive relationship across the community. Centers that directly and personally connect with their communities will be able to build new relationships and acquire more forms of community support. To disseminate news about an outdoor improvement project, use outreach and networking as key strategies to connect directly with different groups and sectors of the community. Be creative!

   Below are some strategies to consider:

   - Participate in local child/family events offered by community organizations.
   - Invite children from the community to the center to participate in outdoor art or storytelling events.
   - Host a weekend community event such as an outdoor "Play Day."
   - Offer parent and community programs with guest speakers on related topics such as outdoor play, gardening and healthy nutrition, nature play and child development, or the "hygiene hypothesis" and immune system support. If possible, include child care for such events so parents can attend.
   - Host an open house, ground-breaking or ribbon-cutting ceremony for the new or renovated outdoors and invite the Mayor and local public officials to welcome the community with you.

- Speak to local community groups, such as the Chamber of Commerce, Civic Clubs, and Garden Clubs about the importance of early childhood and natural learning.

- Take photos of events to accompany short articles. Post them on the center website and share them on social media.

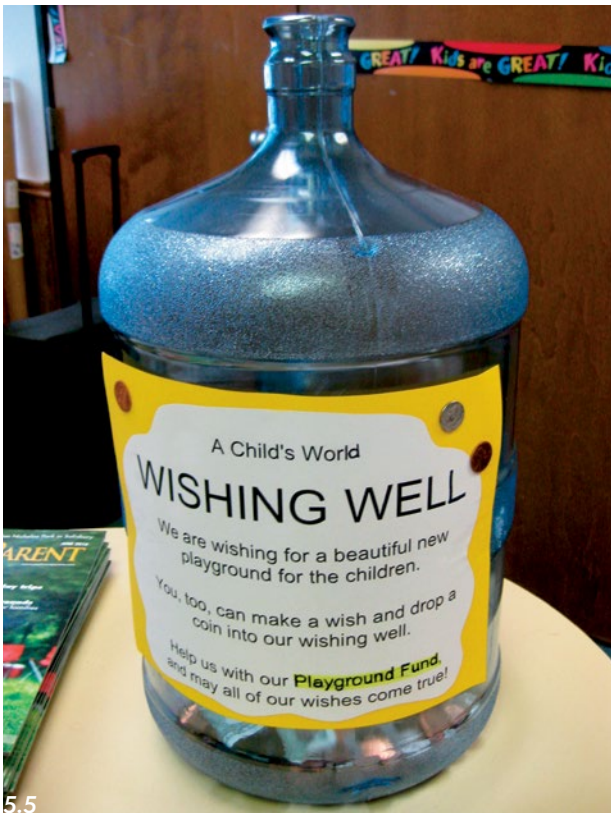
Effective community engagement demonstrates the center's commitment to the community. It will help generate new friends and build lasting relationships.

## COMMUNITY FUNDRAISING

Community fundraising is about people. Success goes hand-in-hand with community engagement, which is about becoming visible in the community and enticing interest from local groups and individuals to support outdoor play and learning. "Friend-raising" is a name given to this first phase of fundraising. In other words, the more friends and relationships a childcare center has, the more likely it is to succeed in fundraising.

Community fundraising is the process of soliciting and gathering contributions—money, products, services, or other resources—from individuals, businesses, charitable foundations or government agencies. Fundraising always involves "asks" or specific requests for gifts, grants or donations. The way in which a request is made may happen through a meeting, a letter, a grant application or a special event.

***5.5 - 5.7*** *Creative fund-raising ideas may include childhood themes. A water dispenser has been converted to a "wishing well" and placed in the center reception area for family contributions. "Pick a leaf" and "one board at a time" are great ways to get donors involved with OLE funding and construction projects.*



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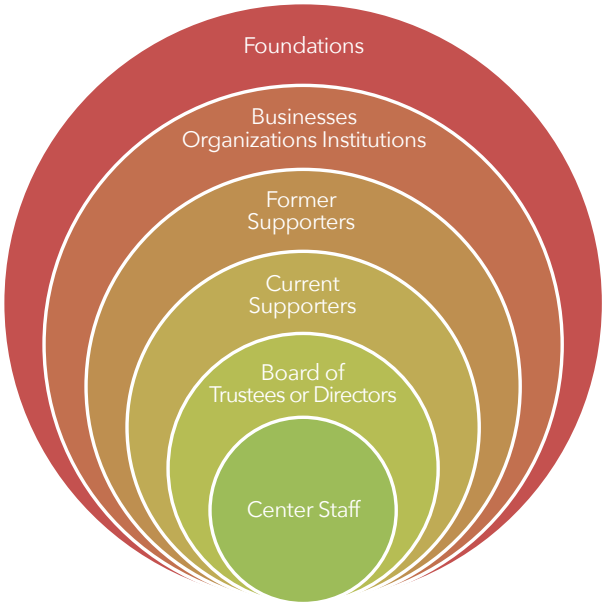
5.6


5.7

## BUILDING RELATIONSHIPS

Regardless of the type of funding targeted, the most successful approaches always build on existing relationships or the creation of new ones. Begin fundraising with those closest to the immediate childcare center community and move outwards from there. The universe of potential donors can be viewed as a nested set of relationships (5.8.) that are progressively more distant and, potentially, more challenging to engage but more profitable. They include:




***5.8** Potential donors are a nested set of relationships that are progressively more challenging to engage. Question: Which members of the staff or board know people in the business community, local organizations, institutions, and foundations that may help or who know potential fundraising partners that can help? The key to success is to ask friends to help in reaching others. Source: Diagram adapted from Bergman, 2010.*

1. **Center staff.** As the immediate front line, staff may have friends in decision making places. For example, a teacher may have a family member willing to help who is a bank officer, hospital administrator, a church leader, elected official, or plant nursery manager. Possibilities may open up once staff are asked to collaborate.

2. **Board of trustees or directors.** If the center has a board of directors and the group understands the mission of the outdoors in healthy development, they will help. Usually Board members are selected because of their potentially influential connections and the ability to represent the interests of the center, including the need for a high-quality outdoor play and learning environment.

3. **Current supporters.** Individuals, businesses, organizations, institutions, and foundations that currently support the center with donations and/or volunteer time. They may have suggestions about other potential supporters.

4. **Former supporters.** Those who have contributed in the past—including former parents, staff, board members, volunteers, etc.

5. **Businesses, organizations, institutions.** Businesses include industries of all types—especially those with a headquarters or regional office in town. Meaningful relationships may be discovered among the vendors that supply goods and services to the center. Organizations may include professional civic groups or governmental departments. Institutions may include health systems, local university campuses, and community colleges.

6. **Foundations.** Cultivate relationships with local foundation officers. Become conversant with proposal deadlines, funding levels, previous grantees, funded projects, and evaluation criteria. Search for common ground in the foundation mission. Listen well. Even if the foundation is unable to help directly, officers may be willing to make introductions to other potential funders.

## APPLYING A FUNDRAISING MINDSET

Regardless of the type of funder, an effective "fundraising mindset" includes several common preparatory steps, including:

1. **Select prospective funders.** Carefully review interest and priorities of prospective funders and choose those that closely match your intentions to draft a proposal.

2. **Contact the program officer** of best prospect with carefully-worded brief outline (maximum two pages) to solicit an initial response, and if positive, begin establishing a relationship leading to an invitation to submit a full proposal.

3. **Be prepared to be turned down.** Even if steps 1 and 2 were followed, a common reason for denial is because current online information does not in fact reflect funder interest and priorities, which may have changed but not made public.

***5.9. - 5.11 "****Marigold fundraiser" involved children in growing plants, and harvesting and packaging seeds for sale. Some seeds were saved for next season.*

5.9


5.10

5.11

4. **Act professionally.** When making a community level request, approach it as a business transaction and "project investment" that will likely resonate with the prospective foundation "investor."

5. **Make a compelling case.** The competition for funding is fierce, so emphasize what is unique, innovative or special about your outdoor play and learning environment. For example, emphasize the "social return on investment" in terms of positive changes in children's social relations or the impact on children's health and wellbeing. If the center is located on a heavily used street, pitch the project as a community beautification effort.

6. **Create a fundraising package.** Include information about the center, the master plan/design, photographs, support letters, and documentation about the importance of nature in the lives of children. The Natural Learning Initiative is an excellent source <www.naturalearning.org>.

***5.12*** *Gift catalog creatively presented with each "flower" as a price tag for a specified item in the master plan and where to buy the item.*


5.12

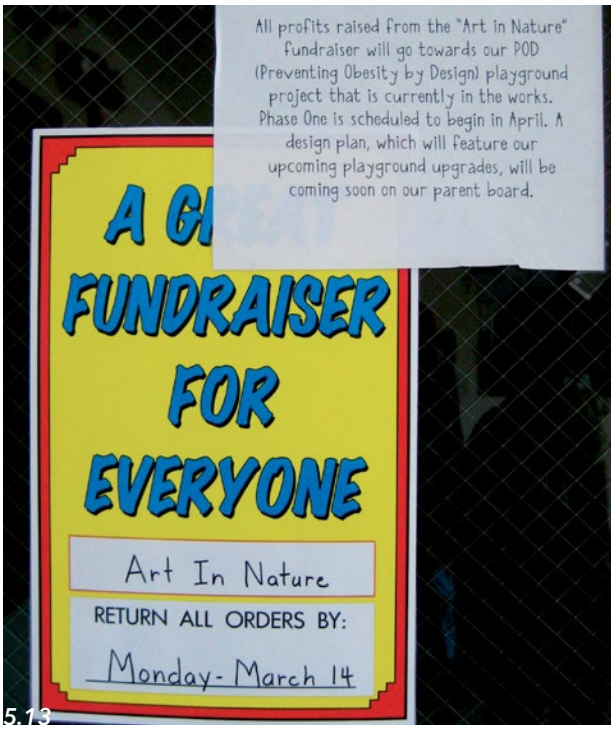
## FUNDRAISING STRATEGIES

An important key to success is choosing an appropriate fundraising strategy. All have advantages and disadvantages. All require time, variable levels of effort, and related costs–to be weighed against potential benefits. In rough order of priority, strategies are:

- **Business contributions.** Local businesses may lend support to new construction or renovation projects in multiple ways, including charitable giving, volunteer days, sponsorships, donations, and discounted materials or services.

- **Grants.** Grant proposal writing is the process of completing an application for funding in response to a request for proposals (RFP) issued by a government agency, corporation, foundation, or civic group. Grant specifications tend to be formal with clear requirements, deadlines, set funding amounts, and a competitive process with no guarantee of success. Follow steps 1-6 above to improve chances of success.

- **Special events.** These can be as small as a hosted lunch or series of lunches bringing together local business leaders to introduce the project. Community events, such as galas, can be organized if a large numbers of volunteers can be mustered. Holding an outdoor performance event (music, theater) at the center is another option. Virtual events offer new ways to bring people together from far locations.



5.13

***5.13*** *Fundraiser communication.*

***5.14 -5.16*** *Annual Edible Schoolyard Hoedown brings together all sections of the community to join in the family fun. It makes money, too! (Greensboro Children's Museum, NC.)*


5.14


5.15

- **Annual appeals:** An appeal can take the form of direct mailing or website outreach to current and prospective supporters. Let them know the impact their contributions will have on the project (e.g.,"every year 120 children will enjoy the new outdoors").

- **Contribution button on website.** Activate a contribution button on your website and add it to your email signature. It will signal the need for support, especially if accompanied by a short statement on the website explaining what the funds will be used for.


5.16

- **Remember:** Every type of event or fundraising activity involves a plan, volunteers, resources, and publicity. A key to success is to get expenses donated (local printer for invitations, restaurant for catering, local business for entertainment). For example, if the project is focused on gardening, organize a "hoedown" event during the harvest season with a local bluegrass band. Above all, ensure the event is fun!

## FUNDRAISING ONLINE

Fundraising online offers new possibilities, including social media, which encourages social interaction rather than one-way communication. Many useful tools applicable to fundraising, including web-based information, blogs, forums, animated graphics, and video clips. All can help by:

- Communicating the powerful transformation of children's environments using naturalization techniques.

- Demonstrating increases in positive behavior through physical improvements.

- Learning from others and connecting with many individuals, rapidly and inexpensively.

- Sparking interest and fostering relationships with future supporters, volunteers, and contributors.

- Providing opportunities for engagement and interaction.

## USING WEBSITES AND SOCIAL MEDIA

- **Websites** are essential for connecting and communicating with the population served and the larger community. A childcare center's website can serve as a powerful vehicle for communicating progress on planning, design, and construction of outdoor learning environment improvements, as well as advertising a continued need for contributions and fundraising success. The overall project progress can be graphically showcased via design drawings, photos, video clips, stories, data, and invitations to participate and contribute.

- **Social media platforms** can connect friends, families, businesses, and related project supporters by sharing news, photos, video clips, and stories about the project with many people simultaneously.


**5.15** *Social media can be used to engage the center community and communicate the center's commitment to healthy nutritional values.*

Once website and social media options are established, online "green giving" can follow. The key to success in digital media is to build a social network that reaches people who already have a personal connection to the center and those who will likely join in the future.

Social media fundraising for outdoor play and learning environment renovation may come from a variety of sources as listed above, beginning with the childcare center population of friends, family, vendors, and extending into the broader social network of civic clubs and local businesses.

## CLOSING THOUGHTS

Creating successful naturalized outdoor play and learning environments will take time, talent, community leadership, and resources. While fundraising for outdoor projects can take many forms, success is more likely if the effort begins with 'friend-raising,' tied to community engagement. It is also true that high-quality outdoor environments develop over time as plants grow and mature, as curricular ideas evolve, and as the functions of individual settings are adjusted to support evolving educational programs.

The nurturing of naturalized outdoor play and learning environments parallels cultivation of community supporters, donors, and funders. Vital synergy between outdoor developments and community engagement will help build permanent relationships and cultivate community resources to ensure sustainability.

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## GLOSSARY

**Aerial roots.** Roots that grow above the ground

**Annual plant.** A plant that usually germinates, flowers, and dies in one year. Annual plants often reseed themselves. Seeds may be collected, stored, and re-sown.

**Arbor.** A shaded or covered alley or walk. A bower or shady retreat, of which the sides and roof are formed by trees and shrubs closely planted or intertwined or of latticework covered with climbing shrubs or vines.

**Arborist.** A professional with expertise in managing and maintaining ornamental or shade trees. Arborists frequently focus on the health and safety of individual trees or wooded areas.

**Armature.** Structure to support plants and vines.

**Ball-and-burlap.** A plant that is grown in a nursery, dug with its soil, wrapped with burlap, and tied with twine or wire to be delivered.

**Beneficial wildlife.** Pollinators and insects that help control pests and keep soils healthy by recycling and eliminating waste.

**Cooperative extension agent.** Expert employed by the Cooperative Extension Service who provides useful, practical, and research-based information to agricultural producers, small business owners, youth, consumers, and others in rural areas and communities of all sizes.

**Cooperative Extension Service.** A non-formal educational program designed to help people use research-based knowledge to improve their lives. The service is provided by designated land-grant universities, usually in the areas of agriculture and food, home and family, environment, community economic development, youth and 4-H.

**Clumping grass.** Grass that grows in distinct tufts that expand slowly over time and stand where planted, as compared to creeping grasses (spreaders or runners), which extend out over the ground and can be invasive.

**Cultivar.** A plant variety that has been produced in cultivation by selective breeding. Cultivar means "cultivated variety" or a plant selected because it exhibits desirable characteristics. Cultivar names are designated by single quotation marks, and are written after the botanical name. For example, Forest Pansy, a specific cultivar of the Eastern Redbud tree (Cercis canadensis), known for having dark purple leaves, would be written as Cercis canadensis 'Forest Pansy'.

**Deciduous plants.** Trees, shrubs, and perennials that lose all their leaves for part of the year. In most cases the loss of leaves coincides with winter. Plants may also lose their leaves during the dry season or during seasonal variations in different climatic regions.

**Ecosystem.** A natural unit that consists of plants, animals, and micro-organisms (living or biotic factors) functioning together with non-living physical (abiotic) factors of the environment. An ecosystem is an independent unit of organisms sharing the same habitat. Living organisms are interdependent with every other element in their local environment.

**Edible landscape.** Natural area containing vegetation cultivated to be eaten by humans; for example, vegetable garden or areas containing fruit trees or grape arbors.

**Erosion.** Gradual destruction of the ground surface by natural forces, most likely water, wind, or ice.

**Evergreen plants.** Trees and shrubs that hold their living foliage year round.

**Fertilizer.** Chemical or natural substance added to soil or land to increase its fertility.

**French drain.** Trench filled with gravel or rock that includes a perforated pipe to redirect surface and ground water away from a wet area.

**Grass maze.** Outdoor maze containing clumping grasses as dividers.

**Ground cover.** Any natural material that creates a cover to the ground. Usually vegetative, groundcovers prevent soil from eroding.

**Grow bag.** Large plastic or textile bag filled with a growing medium used for growing plants.

**Herbaceous plant.** A plant lacking permanent woody stems, which means it dies down to the soil level at the end of the growing season. The opposite of herbaceous plant is woody plant.

**Herbicide.** A substance that is toxic to plants and is used to destroy unwanted vegetation.

**In-ground bed.** Area of prepared soil on the ground.

**Invasive species.** A native or non-native species of animal or plant that heavily colonizes a particular habitat, adversely affecting it economically, environmentally, or ecologically.

**Inverted marking paint.** Spray paint in an inverted can used to create temporary markings on different types of ground surfaces (concrete, pavement, grass, gravel) where permanent markings are not allowed or desired. Often used to mark locations of landscape construction components such as pathways, trees, and play and learning settings.

**Landscape architect.** Is defined by the American Society of Landscape Architects (ASLA) by the work she or he does, which "encompasses the analysis, planning, design, management, and stewardship of natural and built environments." Landscape architects are trained professionals (most have college professional degrees) and must be licensed and registered as a professional landscape architect (PLA) in order to practice.

**Landscape contractor.** A licensed or certified, trained professional with expertise in landscape design, horticulture, and construction. Landscape contractors are qualified to supervise and install landscapes including construction, soil preparation and planting. They usually implement plans prepared by a landscape architect or landscape designer. Landscape contractors may also be landscape designers (see separate entry).

**Landscape designer.** Someone skilled in designing and installing residential and commercial landscapes. May be certified and hold college degree. Landscape designers are often also landscape contractors (see separate entry).

**Lattice.** Wooden or metal structure with square or diamond-shaped spaces used as a screen, fence, and support for plants.

**Lawn.** Area of short, mown, turf grass.

**Mattock.** Garden tool similar to a pickaxe with a long handle and a stout, carved head, used for digging and chopping.

**Mulch.** A layer of material applied to the ground surface to conserve soil moisture, moderate soil temperature, suppress weed growth, control/prevent erosion, and enhance fertility.

**Mulch, bark.** Mulch composed of bark chips produced from the outer layer of tree trunks, used to conserve soil moisture, moderate soil temperature, suppress weed growth, and control/prevent erosion. Chips can vary in size.

**Mulch, leaf.** Mulch composed of chopped or shredded deciduous tree leaves, usually composted, used to conserve soil moisture, moderate soil temperature, suppress weed growth—and to add nutrients and organic matter to the soil.

**Mulch, pine straw.** Mulch composed of pine needles, gathered from a pine forest and baled for sale, used to conserve soil moisture, moderate soil temperature, suppress weed growth, and control/prevent erosion.

**Mulch, shredded wood.** Processed timber used to conserve soil moisture, moderate soil temperature, suppress weed growth, and control/prevent erosion. May be treated to be pest-free.

**Native species.** A plant indigenous to a region or ecosystem, the result of natural processes without human intervention. Since a native species has evolved in response to local climatic and ecosystem conditions in a particular area, it is often best suited to thrive there.

**Naturalization.** The process of re-introducing living landscapes (including trees, shrubs, flowers, groundcovers) into a site, including spaces for children.

**Nutrients.** Substances needed by plants to thrive, including macronutrients (e.g. nitrogen, phosphorous, sulfur, calcium, magnesium, and potassium) and micronutrients (e.g. copper, zinc, iron, manganese, boron, and molybdenum).

**Ornamental grass.** An annual or perennial grass plant valued for its texture, color, and aesthetic properties in the landscape.

**Ornamental plant.** A plant grown mainly for its aesthetic qualities such as form, bark, leaves, flowers, color, texture, blooming pattern, fruit, seed heads or combination thereof.

**Perennial fruiting.** Fruiting plant that grows and lives for more than a single year, producing one or more fruit crops each year, depending on the variety. See Annual Plant.

**Perennial plant.** Plant that lives for more than two years. Perennials may produce one or more flower

crops each year, depending on the variety. See Annual plant.

**Pergola.** An arbor formed of growing plants trained over trelliswork; especially a covered walk so formed. See arbor.

**Pesticide.** Substance used for destroying insects or other organisms harmful to cultivated plants or animals.

**Plant size.** Most commonly, the size of the container the plant was grown in, which until recently was measured in "gallons." New standard container sizes introduced by the American Nursery and Landscape Association establish classes, each defined by volume within a prescribed range of cubic inches/centimeters. Sizes of trees are also specified by caliper at the base of the trunk. "Ball-and-burlap" or "in-ground bag" trees are measured in a combination of bag diameter, depth, and volume (cubic inches).

**Pollinator garden.** Garden composed of plants that attract small flying insects (e.g. bees, beetles, butterflies and moths) and birds that help transfer pollen from the male to female parts of the flower to secure reproduction.

**Pruning.** Trimming plants by cutting dead or overgrown branches or stems to control plant size and/or stimulate growth.

**Rain garden.** A planted depression designed to allow rainwater runoff to flow into it from impervious or compacted surfaces and be absorbed. The purpose is to reduce the amount of stormwater flowing off the site by allowing it to soak into the ground (instead of flowing into storm drains or across adjacent land, possibly causing erosion, water pollution, flooding, and diminished groundwater). Rain gardens are usually planted with native plants because they generally do not require fertilization and are adapted to the local climate, soil, and hydrologic conditions. The plant roots filter and biologically treat the water before it re-enters the groundwater system.

**Raised planter.** Garden bed installed higher than the surrounding soil usually contained by wooden boards, stones, or masonary.

**Rototiller.** Engine-driven machine with rotating blades for breaking up or tilling the soil.

**Sanitation rules.** Rules that enforce standards for human safety and health protection.

**Shade tree.** Tree selected for its shape and growth pattern, planted to provide shade.

**Shrub.** Perennial, multi-stemmed woody plant usually less than 15 feet in height.

**Soil amendment.** Any material added to a soil to improve its physical properties and quality, such as water retention, permeability, water infiltration, drainage, aeration, and structure.

**Soil quality.** Capacity of a soil to support plant and animal life, maintain or enhance water and air quality, and support human health.

**Soil test.** Analysis of a soil sample to examine its content (for nutrients and contamination), composition, and other characteristics to determine levels of fertility.

**Soil, clay.** Soil containing high amounts of clay particles and small air pores. This type of soil retains water and contributes to poor drainage conditions but is high in nutrient content.

**Soil, compacted.** Soil resulting from stress applied to the ground surface, causing densification as air is displaced from the pores between the soil grains. Compaction can be caused by heavy machinery, animals, pedestrian traffic or rain falling on bare soil.

**Soil, organic.** Soil composed of organic matter; i.e., plant and animal residues at various stages of decomposition, cells and tissues of organisms, and other substances produced by soil organisms.

**Straw bale.** Agricultural product created with dry stalks of cereal plants after the grain and chaff have been removed. Can be used loose as mulch, baled to partition spaces, serve as seating, or provide raised planters.

**Sun exposure.** Aspect describing the orientation of a building or outdoor area in relation to the sun.

**Surface drainage.** Natural or artificial elimination of surface and/or sub-surface water from an area.

**Survey flag.** Marking flags (thin steel wire and small colored plastic tag) used by surveyors, architects, and landscape designers to lay out a site.

**Tamp.** Pack something down, e.g., soil around a tree root when being planted, or sand around a vertical post installed in a post hole.

**Trellis.** See Lattice.

**Turf.** Surface layer of earth containing a dense layer of grass and its roots.

**Understory.** Plant life growing beneath the forest canopy.

**Vegetated swale.** Swale that mimics a natural waterway including a rocky base, ponds, and vegetation that assists in filtering water and cleaning it from contaminants.

**Vine.** Climbing or trailing plant that gets its support from climbing, twining, or creeping along a surface.

**Weed.** Common term used to describe a plant considered undesirable within a certain area.

**Welded mesh.** A series of longitudinal and transverse rods arranged at right angles and welded together at the intersection. Typically used to strengthen reinforced concrete. In landscape design, used to support perennial or annual vegetable vines.

**Wildlife.** Usually refers to animal species, plants, fungi, and other living organisms growing in the wild without human intervention.

**Wildlife habitat.** An area that offers feeding, roosting, nesting, breeding, and refuge for a variety of animal species native to the region.

**Woody plant.** Plant with hard stems supporting buds, which survive above ground over the winter. The opposite of woody plant is herbaceous plant.

# ADDITIONAL RESOURCES

## Publications

***Installation Guide:*** *Preschool Outdoor Play and Learning Environments.* 2021. Natural Learning Initiative, NC State University.

***Managing Risks & Benefits:*** *Preschool Outdoor Play and Learning Environments.* 2021. Natural Learning Initiative, NC State University.

***Research Brief:*** *Impact of Naturalized Early Childhood Outdoor Learning Environments.* 2019. The Natural Learning Initiative, NC State University.

***Policy Brief:*** *Achieving Quality in Outdoor Play & Learning Environments for Children Birth to Five.* 2018. The Natural Learning Initiative, NC State University.

***Evaluating a Decade of POD*** (Preventing Obesity by Design). Cosco, N. and Moore, R. 2018. The Natural Learning Initiative, NC State University.

***A Review of Three State Policies:*** *Naturalized Outdoor Learning Environments in Childcare Facilities.* 2018. The Natural Learning Initiative, NC State University.

## Videos

***The Virtual Field Trip:*** Promoting Health in Childcare Through Outdoor Renovation. 2019. The Natural Learning Initiative, NC State University (Multi-Segment Video).

***Playgrounds to Outdoor Learning Environments.*** 2014. The Natural Learning Initiative, NC State University. (Video: 6m)

## Evaluation/Research Tools

***Preschool Outdoor Environment Measurement Scale*** (POEMS). 2005. Fifty-six dichotomous items in five domains. NC State/UNC Greensboro team. Karen De Bord, Linda Hestenes, Robin Moore, Nilda Cosco and Janet McGinnis. Winston-Salem: Kaplan.

**THE NATURAL LEARNING INITIATIVE** contributes important resources that promote getting children outside into naturalized outdoor play and learning environments. We have seen how the embodied messages help connect children to nature, to one another, and motivate learning through play and exploration. We've observed how children love nature and begin to appreciate and care for the natural world. They become encouraged to try new foods they have helped grow in their garden. A sense of wellbeing permeates the whole site as it becomes naturalized. Outdoor play and learning environments with nature engage and benefit all children, families and staff. – *Angela Lewis and Courtney Latta-Sosebee Shape NC Implementation Coaches.*

**CREATING OUTDOOR LEARNING ENVIRONMENTS** in childcare programs has been transformative for children and early educators and opens a wider canvas of learning. The dynamics of imaginative play, social and emotional development, and problem-solving opportunities enhance peer play and develop deeper teacher and child interactions. – *Andee Edelson, Director of Early Care and Education, Randolph County Partnership for Children.*