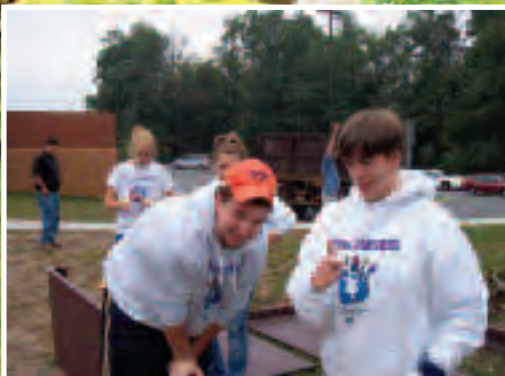




SCHOOLYARD HABITATS® How-to-Guide



NWF MISSION

To inspire Americans to protect wildlife for our children's future

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Welcome to the Schoolyard Habitats® Program

Thousands of educators, parents, administrators, and community members are working together on Schoolyard Habitats projects. No prior gardening experience is necessary – just dedication and resourcefulness.

Creating Schoolyard Habitats Sites: A How-To Guide is an introductory tool for schools and other education organizations interested in restoring and creating wildlife habitat on their school grounds. This publication can serve as a prepared to guide process, for school communities or with consultation for NWF's professional staff and volunteers.

Included in this guide are the basics of gardening for wildlife, using the schoolyard as an educational tool, involving the school community, inventorying the schoolyard, creating a budget and project plan, acquiring resources, and sustaining the project. Practical tips and activities will guide readers through the successful completion and use of a Schoolyard Habitats site as an outdoor classroom for hands-on teaching, experiential learning, and as a resource for the entire school community.

This guidebook can be used by anyone involved with a Schoolyard Habitats project. Educators will find age-appropriate activities and tools to engage students in the process of planning and creating Schoolyard Habitats Sites. Non-formal educators can easily use this guide to incorporate Schoolyard Habitats projects into afterschool clubs and nature center programs. School and community volunteers can use this guide to familiarize themselves with the general process of creating a Schoolyard Habitats project.

The National Wildlife Federation recognizes the efforts of schools working on Schoolyard Habitats through its national certification program. With thousands of schools certified nationwide, NWF provides continual support through a newsletter, resource materials, curricula, and volunteer support. Whether you are a teacher, a parent, or a school volunteer, we hope this guide helps you transform your schoolyard into a thriving wildlife habitat for all to learn from, and we look forward to welcoming you into our network of certified schools.

We hope this guide will engage and encourage everyone to appreciate the natural world around us and take action to help conserve it.

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This guidebook was created through the collaborative efforts of the National Wildlife Federation staff.

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A lush garden scene featuring large, grey, mossy rocks. In the foreground, there are vibrant green plants with large, heart-shaped leaves. To the right, there are pink flowers with drooping stems. The background is filled with more greenery and some autumn-colored leaves in shades of orange and red.

Section I

The Schoolyard Habitats Program

This section provides an overview of the Schoolyard Habitats Program, including two articles supporting the use of habitat-based learning areas as a context for interdisciplinary learning and student achievement.

- Greetings from National Wildlife Federation
- Schoolyard Habitats Program Overview
- Frequently Asked Questions
- Articles: *Down by the Schoolyard* and *The Schoolyard Habitats Movement*

Greetings From National Wildlife Federation

Dear Friends,

Thank you for your interest in the National Wildlife Federation's Schoolyard Habitats® Program. The National Wildlife Federation (NWF) has encouraged individuals and communities to create and conserve wildlife habitat since 1973, when the Backyard Wildlife Habitat™ Program began. In 1996, the Schoolyard Habitats Program was created to meet the growing interest and distinct needs of schools and school districts in creating and restoring wildlife habitat on school grounds. The Schoolyard Habitats Program focuses specifically on assisting school communities in the use of school grounds as learning sites for wildlife conservation and cross-curricular learning. Through our Certified Wildlife Habitat certification program, we recognize the accomplishments of, and foster networking among, innovative school communities nationwide.

The entire school community can become involved in creating valuable habitat—food, water, cover, and places to raise young—for wildlife in your neighborhood. While creating a dynamic outdoor classroom, and expanding educational opportunities for teachers and students, you will also be creating positive change in your local environment.

Why should we make this effort to help songbirds, butterflies, and other wildlife with whom we share our communities? Habitat loss is the greatest threat to biodiversity—the grand variety of life forms that live on Earth. No matter where we are, we can take small actions in our daily lives to make a positive impact on our local environment. At our schools and learning centers, we have a chance, and perhaps an obligation, to put our youth in contact with the natural world. While doing so, we will enhance the quality of education in our schools. Throughout North America, and in many other parts of the world, interest in using outdoor teaching areas is increasing. Instead of limiting hands-on, outdoor learning to infrequent off-site field trips, you can make use of your own living laboratory right outside the classroom door. By engaging in a Schoolyard Habitats project, you can foster students' sense of stewardship for the local environment while also saving money on grounds maintenance, developing stronger ties to the wider community and supporting need to “green the schools in face of climate change.”

In addition to actively supporting school communities in creating habitat-based learning sites, the Schoolyard Habitats Program is proud to recognize schools' work on behalf of wildlife through a national certification process. I encourage you to join the thousands of educators, students, and community members who have worked together toward their projects' certification as official Schoolyard Habitats sites. Once certified, schools gain national recognition and media attention, as well as access to many special NWF resources and networking opportunities.

We at NWF appreciate the efforts you're making to bring the natural world into the lives of people in your school community. Good luck with your project! We hope to see your application soon.

Sincerely,

Craig Tufts, Chief Naturalist, *National Wildlife Federation*

Schoolyard Habitats® Program Overview

Schoolyard Habitats: Opportunities for Student Success

“By providing our children with many opportunities for hands-on learning experiences, including observation of plants and animals in a natural setting, we hope to instill and nurture in them a strong sense of place, an awareness of the ecology of our areas and how humans affect and are affected by our natural environment. We hope to inspire a sense of stewardship and caring about our environment in our students. Within the framework of outdoor education, curriculum areas in art, literature, reading, social studies, science, and math can be integrated in meaningful, fun ways. Activities our students have been and will be involved in, including bird and waterfowl identification, care for songbird nesting boxes, gathering and interpreting data on nesting box use, developing a field guide, creating interpretive signs for our trail, weed pulling and clean-up projects for the area.”

Frenchtown Elementary School,
Missoula, MT

Imagine a day when your schoolgrounds are bustling with activity:

- One class watches birds using a nest box they constructed, taking notes on adaptations for flight and feeding.
- Another class learns about plant reproduction by examining the flowers they planted and observing bees and butterflies pollinating them.
- Another group uses math skills to estimate the tadpole population in a pond students helped construct.
- A fourth group records observations of squirrel behavior as they gather nuts to feed their young.

Turning your schoolgrounds into a National Wildlife Federation certified Schoolyard Habitats site is easy and fun! Your new site will provide outdoor learning opportunities that are:

- interdisciplinary
- standards-based
- hands-on
- inexpensive

In fact, your Schoolyard Habitats site will not only provide inspiration for learning among students, teachers, and the community, but will become an important part of your local ecosystem, providing essential habitat for wildlife. Read on to learn how Schoolyard Habitats projects positively impact the entire school community.

1. Students

Abstract concepts and connections between various subject areas come to life in a Schoolyard Habitats site, enhancing student comprehension and performance. Students fully engage in learning through hands-on projects, investigations, and observations in outdoor classrooms. Many educators also report rises in students' self-esteem, ability to work as part of a team, curiosity, and their level of motivation. Lastly, students' sense of empowerment—the belief that they have the capacity to create positive change—and sense of stewardship for their surroundings are often enhanced through the tangible results and rewards of their schoolyard work.

2. Educators

Schoolyard Habitats sites provide increased resources and opportunities for creative instruction. Using the schoolgrounds as an integrating context for learning, educators are able to teach across subject areas in the living laboratory outside their classroom doors. Teachers use Schoolyard Habitats projects as tools to help them reach higher academic standards, and to provide an authentic context with which students can learn new content and apply new skills. Expanding classroom walls to include Schoolyard Habitats sites also helps educators meet the needs of students with varied learning styles. Students who

How the Schoolyard Habitats Program Affects Students

Recently, educators were asked: "How has the Schoolyard Habitats Program affected the students with whom you work?" Their responses included:

- "They love the gardens, are proud of them, and love to learn from them."
- "They have gained a greater appreciation and knowledge of wildlife, plants, ecosystems, and the interaction of humans and the natural world."
- "Their interest in science has grown. Students enjoy studying in an outdoor setting, which serves as a model for taking care of the earth."
- "Students have a heightened awareness of nature and more respect for the environment."
- "It has been very motivational to the kids who have participated. Many of my 8th grade students who have been the most helpful are not always the best in the classroom. It's nice to offer these students success!"
- "It has helped us to grow in so many areas, socially and academically. They are learning stewardship and responsibility."



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have difficulty learning within the classroom often thrive in these hands-on, fully engaging outdoor laboratories.

3. Schools

The entire school benefits when teachers and students are teaching and learning more effectively. But the benefits continue: school administrators faced with limited budgets enjoy knowing that student and teacher access to hands-on

learning and teaching will not be limited to infrequent and costly field trips; instead, these opportunities are available on a daily basis, just outside the school building. Many administrators also appreciate the natural connections between concepts that can be taught in Schoolyard Habitats sites and many of their

state and national learning standards for all subject areas. In addition, administrators enjoy cost savings: many schools spend less on school grounds maintenance after establishing a Schoolyard Habitats site, as high-maintenance turf grasses and exotic plantings are replaced with native species which require less water, fertilizer and general maintenance.

4. Community

The wider school community benefits from Schoolyard Habitats projects in many ways. Businesses, civic organizations, parents, retirees, college students, and others find their lives enriched through volunteering or making donations to local schools involved in this work. This community involvement and support is often essential for the very success and sustainability of a school's project. The tangible results of Schoolyard Habitats projects often elevate feelings of pride and accomplishment throughout the wider community.

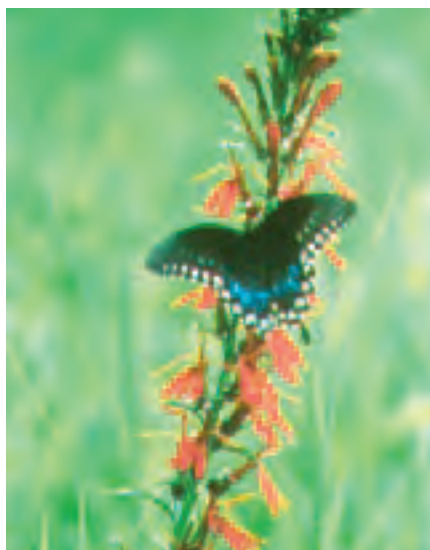
How the Schoolyard Habitats Program Affects Teachers

Educators from certified Schoolyard Habitats schools were asked: "How has your involvement with NWF's Schoolyard Habitats Program affected you?"

- "I now value the land surrounding our school. I am able to use the area as a teaching tool. I am more interested in being a part of preservation of our resources."
- "As teachers, using our outdoor classroom, we have been inspired to focus on natural resource education and integrate it into our curriculum. We now have a hands-on approach and an outside environment/ classroom to use."
- "My involvement reinforces my belief in doing hands-on activities and field studies with my students."
- "Teachers and students are more aware of the species (plant and animal) found in our area. Everyone is more aware of the significance of studying nature and exploring our environment."

Benefits of Schoolyard Habitats Sites

- Provide easy access, on-site field trips
- Empower students
- Provide long-term involvement and access to a natural place
- Affirm a place and role for humans in the environment
- Demonstrate student ability to make a difference
- Build community
- Restore the local environment
- Transform and beautify the schoolyard
- Reduce landscape maintenance needs (labor and costs)
- Provide a context for teaching across all subject areas
- Increase safety and productive use of schoolyard
- Promote physical and mental health and well-being (both through the physical activity associated with garden work, and the peacefulness the habitat area provides)
- Provide good opportunities for creating positive social relationships across the school community
- Promote high levels of student achievement
- Provide new ways to meet the needs of all students



5. Wildlife

Schoolyard Habitats projects help support local wildlife by providing food, water, cover, and places to raise young; the very basics every animal needs to survive. The need for schools and communities to restore and create wildlife habitat on their grounds is becoming greater, as more species face loss of habitat in growing towns and cities across the country. By providing native plants and making landscaping choices with wildlife in mind, schools can make an important difference in supporting the health and survival of their local pollinators, amphibians, and other wildlife.

6. The Local Environment

In addition to enhancing the habitat and viability of local and migratory wildlife, schools which plant native species and restore land improve the overall health of their watershed and larger ecosystem. Many schools have also reduced their energy consumption through the strategic placement of new plantings around (and atop!) school buildings. Runoff is reduced when areas of asphalt are surrounded by native vegetation or replaced with soil and native plants. The local environment also benefits when Schoolyard Habitats projects serve as demonstration sites that inspire others to transform their own homes and community spaces.

“This project will give the Oshkosh Area School District the chance to preserve, develop, and enhance educational opportunities for the Oshkosh Area elementary students, and serves the town residents in their need for additional green space and an area for recreational/ leisure activities. Indirectly this project benefits all users of the Winnebago-Butte des Morts and the Fox-Wolf River watersheds through the improvement in water quality.”

*Sheldon Nature Area,
Oshkosh, WI,
Schoolyard Habitats site #1418*

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The Schoolyard Habitats® Program Can Help

Website

Visit the Schoolyard Habitats website (www.nwf.org/schoolyardhabitats) to learn more in-depth information, access resources, download lesson plans and resources and much more.

Curriculum

Our award-winning Access Nature curriculum provides hands-on lessons for K-12 educators which are inclusively designed for all students. Additionally, other supportive curriculums are available on the website for downloading.

Regional Office Staff Support

Regional Education managers bring NWF's programs to life on a regional basis. These staff members can assist in connecting you with local resources and volunteers that can support your project.

Distance Learning

NWF provides two distance learning courses for students and teacher to learn how to create a schoolyard wildlife habitat. Happenin' Habitats and Creating Places for Wildlife can be access through www.nwf.org/wildlifeuniversity.

Volunteers

National Wildlife Federation support nearly 6,000 volunteers national who are trained to work with schools and communities to create demonstration and outdoor learning gardens on school or community grounds.

Certification

NWF provides a certification for wildlife habitats. The certification program motivates schools to reach high standards in their habitat work, rewards the school community for their achievement and provides a network. See section eight on how to certify.

Field Education Coordinators

Field Education Coordinators bring NWF's programs to life on the local level. These regional educators facilitate professional development workshops as well as community presentations about all of NWF's Education programs.

Eco-School Program

Green the Building, Green the grounds and Green the curriculum by extending your Schoolyard Habitat to an intergrated school approach through Eco-schools. Learn more on how to participate at www.nwf.org/ecoschools.

See **Appendix C** (p. 169) for a listing of regional NWF field offices and contact information.



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Frequently Asked Questions

■ *Is there any difference in certifying a school or other site?*

Backyards, schools, community and businesses sites each certify the same way. The difference between the sites is size and intent for teaching that a schoolyard or community location may have.

■ *Where are Schoolyard Habitat projects located?*

The number of certified schoolyard habitats sites grow each day. There are certified schoolyard in every state in the nation and two territories. Certified habitats are also international in Thailand, Italy, United Kingdom and others.

■ *What age groups are involved with Schoolyard Habitats projects?*

All ages are involved. From children in day care centers and preschools, to thousands of students in grades K-12, to parents, university students, teachers, administrators, community members, and volunteers, Schoolyard Habitats projects truly do reach all ages.

■ *How much land do you need to begin a Schoolyard Habitats project?*

There is no minimum amount of land needed for these projects. Many schools complete successful projects with no land at all—by building planter boxes and adding feeders, bird baths, etc. onto an unused section of their asphalt playground, ripping up this asphalt and planting in the ground, or by converting their roof into a school garden. Others use their limited amount of green space—i.e. a small courtyard—to its fullest potential. Smaller projects may focus on attracting and supporting local insects, butterflies, and birds, while schools with more land do everything from restoring native prairie, to planning and creating a schoolyard wetland.

■ *Why should I apply for certification as an official Schoolyard Habitats site?*

Schools and organizations benefit from certifying their habitat projects in many ways. Each time a school gets certified, NWF sends out a press release to the school's local papers; this publicity helps schools gain additional community support and aids in future fundraising efforts for the schoolyard project. Once certified, schools are also able to order an attractive sign, which they can post to announce and describe their efforts.

In addition, certified schools gain lifetime access to the wildlife on line newsletter, and benefit from belonging to this dynamic network of other educators and schools involved in habitat restoration and hands-on outdoor instruction. Teachers provide concrete ideas and support to each other Blogs, and certified schools gain special access to NWF news and resources.

Most people find that applying for certification is a helpful, tangible goal along the road of habitat restoration. Receiving Schoolyard Habitats certification from NWF is a huge accomplishment and reason for a school-wide celebration; certification represents official acknowledgment for a school's hard work and achievement thus far, and provides a new boost of energy for the work that lies ahead. Certification is not an ending, but represents an early milestone along the way.

Down By the Schoolyard

This article was written by Stephen R. Coffe, Executive Director of Arlingtonians for a Clean Environment, originally published in the Virginia Journal of Education, March 1998.

Sometimes the simplest ideas are the most profound. How else to describe the growing schoolyard education movement that has at its heart one fundamental axiom: “Take those kids outside!”? This simple idea has become a river into which some very robust streams of thought are pouring, streams which draw from the watersheds of environmental education, education reform, human ecology and beyond.

Across North America, teachers by the thousands are discovering that the outdoors presents a broad palette of opportunities for enriching their teaching. They are being encouraged not only by regional and national environmental organizations, but by natural resource agencies, community and parent groups, and school administrators. Perhaps more importantly, they are being reinforced by the results they see and the feedback they get from their students.

Schoolyard-based learning has become important to several Arlington County schools. At Tuckahoe Elementary, the schoolyard emphasis has become part of the school’s very identity, as expressed by the school’s motto, “Experience the World Through Tuckahoe.” According to art teacher Caryl Williams, this means that “learning about the world should start where you are. A thorough understanding of your school and schoolyard form the best foundation for understanding the world at large.”

The school is ringed by gardens, compost bins and a greenhouse, but most of what makes the Tuckahoe story special is invisible. Invisible, that is, if you don’t notice that the place is crawling with parents.

Williams explains that the schoolyard program provides parents opportunities for involvement “beyond baking cookies.” Together, a committee of parents and teachers designed a proposal for a series of Expedition Days, in which teachers and other adults work with small, mixed age groups of children for an hour each month on a self-selected outdoor exploration.

Parent Beth Reese explains that the Expedition Days have allowed teachers to try out ideas in a low stress situation. “We specifically asked them to spend no more than one hour



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“The Schoolyard program provides parents opportunities for involvement beyond cookies.”

(Caryl Williams, Tuckahoe Elementary School)



planning for the activity,” she says. “The important thing is to start with a good question.”

Expedition groups have studied birds, erosion and storm water, trees and soil. They have mapped and drawn and written poetry. One group has marked out a nature trail in an adjoining park. An important component of Expedition Days is the sharing of new knowledge with the rest of the school, whether through a poster, photographs or video. One group has developed a hypertext field guide to the schoolyard.

“It hasn’t been just teachers leading these activities,” says Reese. “Several parents and community members have been involved, as well as the school secretary. Our custodian leads a litter study.”

At several Arlington schools, parents have provided the spark for outdoor learning. At Nottingham Elementary, parent and naturalist Karen McCall

visited classes and asked students to help envision an outdoor classroom. What eventually emerged was an expansive bird and butterfly habitat garden that stretches across the front schoolyard. “Involving students in the planning is one of the most important

“Involving students in the planning is one of the most important principles.”

(Karen McCall, parent and naturalist)

principles,” says McCall. In a recent survey of the schoolyard habitat movement, educator Mary Rivkin identified eight national and 28 regional or local organizations devoted to promoting schoolyard habitat projects. No doubt there are more. But while the schoolyard as wildlife habitat is a major current in the movement, it does not define it. Nor is science the only subject that benefits. There is also a strong current flowing around gardening, emphasizing the cultivation of plants as a window into literature, nutrition, history and math.

Ecological Literacy

In part, the schoolyard movement flows from a concern that has echoed through environmental education literature: the belief that the next generation absolutely must possess a fundamental ecological literacy if it is to have a chance of dealing with such daunting challenges as global warming and the loss of biodiversity and other natural resources.

How many adults today can define what soil is, for example? And yet the loss of topsoil is a worldwide problem, growing quietly towards crisis status. The typical urban or suburban schoolyard cannot convey the grandeur of the caribou migration or the richness and complexity of the rainforest, but most likely it will hold some kind of soil, perhaps of dubious quality, but which nonetheless hosts countless tiny organisms interacting in tandem, ready to decompose anything that nature has ever discarded.

The schoolyard also presents an opportunity to counteract a very dangerous myth, that nature is something that exists in faraway places, unconnected to our lives and managed by experts. Our trees sequester carbon and host life just like those in the rainforest. The simple knowledge that birds migrate through our neighborhoods on their way to those very rainforests can add a real sense of connectedness. Wildlife habitats such as butterfly gardens can provide intimate experiences with such fundamental but elusive concepts as food webs, energy flows and symbiosis. A vegetable garden can provide a personal lesson on just how much



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energy it takes to produce the food that sustains us, linking us once again to the soil.

Rivkin points out that a hundred years ago most children walked through woods and fields to reach school; teaching about the natural environment was in many ways moot. Today, however, urbanization and its side effects have dramatically altered the life-space of most North American children and put them in what may be deeply “unnatural” environments for the human animal.



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Habitat For Children

The second major source of the movement is the realization that the schoolyard is a critical habitat—for children. By the time they finish sixth grade, most children have spent close to 2000 hours of their lives in schoolyards. It was the barrenness of so many of these environments that inspired the creation of the British program Learning Through Landscapes (LTL), which in turn inspired the transformation of 10,000 schoolyards into imaginative learning gardens. The program started after a 1985 survey found that the vast majority of British schoolyards failed miserably to provide creative spaces for either formal or informal learning.

Summarizing research commissioned by LTL, director Bill Lucas says that the schoolyard forms part of a hidden curriculum, through which children learn how much or how little adults

value their environment. “When they see tarmac they think of pain and the territorial advantage that attaches itself to so many of the games played on it. When they see flowers, they feel good. All around them they see indicators of care or lack of care by those who designed their outdoor spaces.”

The importance of play environments has been well studied, and inspiring models of natural and enriching play environments exist. What the schoolyard movement adds is the possibility of blending play and teaching. There’s no reason learning shouldn’t be fun. For the best results, students have to be involved from the beginning, defining and creating their own environment and recreating it every day, as humans are destined to do.

Educational Rewards

The importance of connecting with nature and of respecting children’s human nature provide strong justification for the schoolyard movement, but its third source is what ensures its future: For starters, it facilitates most of what we call the educational reform agenda. If the call for hands-on learning begs the question, “hands on what?”, the answer is right outside the door. For inquiry-based science, questions abound in the schoolyard: What lives here? Where did the weeds come from? What makes the clouds? For social studies, What used to be here before it was a school? What do our street names mean? “

After we began our garden, all kinds of connections to the curriculum presented themselves,” says Linda Williams of the Arlington Science Focus School. An ongoing outdoor project such as a garden provides a context that the class can return to again and again, providing continuity. Interdisciplinary teaching comes naturally, as do team projects.

Reese explains that the casual approach to Expedition Days helps teachers “relax into the mode of being one of a community of learners. Instead of the adult having to have all the answers, they instead model how to be a learner.”

The schoolyard also presents an opportunity to counteract a very dangerous myth, that nature is something that exists in faraway places, unconnected to our lives and managed by experts.

When the schoolyard truly becomes an extension of the classroom, teachers move easily among indoor and outdoor activities, bringing in samples to study under the microscope, generating ideas for library research, reading stories that illuminate our relationship with nature, or collecting data to share on the Internet.





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Beyond the Curriculum

Equally important to teachers are the meta-curricular benefits of schoolyard projects. “I knew the math connections would be there,” says Linda Williams, “but I delighted in the thinking skills as students planned, compared, sorted, predicted and analyzed. Best of all, though, was the character lesson in patience and perseverance, which paid off when my students came back in September to find the ‘totally awesome’ 8-foot sunflowers they had started from seeds in April.”

“We’ve found that kids who are ‘hyper’ or otherwise difficult to deal with in the classroom often flourish in the outdoor setting,” says Mary Rita Prah, resource teacher at Oakridge Elementary. Put more generally, the schoolyard provides opportunities for children with a wide range of learning skills. In Tuckahoe’s Expedition Days, one emotionally troubled child gained a reputation as an artist and a bird expert. Both physically and mentally handicapped children benefit from opportunities to manipulate the

The schoolyard supports teaching and deepens learning.

natural environment and especially to nurture.

Arlington has seen a tremendous influx of immigrant families, and teachers at schools such as

Glencarlyn Elementary have found schoolyard projects to be a way to engage non-English speaking students.

Common Ground

“We chose environmental science as part of our instructional initiative,” says Glencarlyn Principal Chris Sutton, “because it lends itself to hands-on learning. We didn’t anticipate that schoolyard projects would become a stimulus for community building.” Sutton explains that each grade level has responsibility for a particular garden or other part of the courtyard. A pond and garden club meets on early release days to clean and maintain the student-built pond. Kindergartners raise crickets to feed the frogs. The Vietnamese custodian brings aquatic plants and expertise. With schoolyard gardens, Glencarlyn has found a way to attract otherwise reticent immigrant parents. Indeed, gardening is a wonderful platform for

multicultural education, as the crops, herbs and flowers display both our cultural differences and our universal agrarian heritage.

Perhaps the schoolyard movement bespeaks a deep desire to restore for our children something we know is missing in their lives. As their world becomes more and more dominated by asphalt and electrons and constrained by adult fears, the schoolyard may emerge as the community’s shrine to the importance of nature in their lives, an oasis in the urbanized environment where both children and adults can develop stewardship skills, nurture each other and touch ancestral home.

An ongoing outdoor project such as a garden provides a context that the class can return to again and again, providing continuity.

The Schoolyard Habitats Movement

What It Is and Why Children Need It

This article was written by Mary Rivkin, Department Editor, originally published in Early Childhood Education Journal, Vol. 25, No. 1, 1997.

Introduction

Do young children need experiences in natural environments? From an evolutionary standpoint, the answer is probably yes. Our development as a species occurred in natural environments—a wide variety, to be sure—and now, our mostly indoor existence in primarily urban environments is clearly a radical departure from the previous norm.

The departure is so recent that most adults in our country still remember outdoor play as a significant and treasured part of their childhoods, even as they recognize that today's children do not have the same access to the outdoors that they did. Concern about this phenomenon has led some education and conservation groups to spearhead efforts to have schoolyards provide nature-based environments for children. Why schoolyards should provide such habitats and what is being done to create them are the focus of this article.



How Children Have Lost Natural Habitat

The environmental movement's focus on endangered species has made us aware that loss of habitat is a primary cause of species extinction. In other words, if there isn't a place to live, life doesn't flourish or even occur. The adaptability of humans is such that some children do survive in habitats of enormous range, including abject hunger, squalor, and stress. It is clear too that children can grow up

and raise their own children in highly urbanized and crowded conditions. Hence, I will not speak here of what the species is capable of but rather will focus on what appears to be optimal development for children. I suggest that intense urbanization and industrialization and their follow-ons have deprived children of outdoor, in particular nature-based, experiences.

Urbanization and industrialization have taken nature-based habitats away from children in several ways. A major factor is automobiles. Cars and other vehicles dominate the outdoors in urban and suburban areas—children are simply no match for their high speeds and wide roads. Children's range is thus limited. Furthermore, while many children used to walk to school, interacting with neighborhood yards or vacant lots, now many, if not most, children are driven to school.

Roads and buildings take up land that formerly held plants and animals and usually some form of water; a growing population, concentrated in cities, means less land for play. Furthermore, some of the least expensive housing which is available to families with young children is in densely populated areas, with little open space. In particular, highrise apartments prohibit easy access to outdoor play. Additionally, deteriorated social conditions such as homelessness, crime, substance abuse, and the proliferation of guns make being outside riskier than previously. Vacant lots which used to have some varieties of plants and animals in them now also have the detritus of our times, such as broken glass, old tires, and endless plastic and cardboard packagings.

Finally, because we have not been able to manage the side effects of technology, natural areas such as rivers, streams, and lakes suffer widespread pollution. Low-income families especially feel this effect: wastes such as lead and heavy metals contaminate the soils in many places—three out of five African-Americans and Hispanic-Americans live in communities with toxic waste sites (United Church of Christ, 1987).

Even where children have access to clean, natural sites, the air can be polluted with harmful particles, gases and ultraviolet rays. The “bad” and “good” ozone problems seem particularly intractable.¹ When vehicle exhaust and other chemicals make the “bad” ozone level in the air high our lungs are damaged. According to the American Lung Association (1996), children “are at particular risk because



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their lungs are still developing, they breathe more air relative to the size of their lungs than adults, and they spend more time outdoors engaging in vigorous exercise.” When the amount of “good” ozone in the upper atmosphere is low, more ultraviolet rays reach us, with implications for skin cancer, cataracts, and immune suppression. Australian youngsters routinely apply sunscreen before venturing out; children here may soon do the same, a further complication for outdoor play.

Children Have Lost Access to Their Former Habitats

The idea of universal public schooling absorbing perhaps a third of a child’s waking hours is historically very new, basically an idea of the twentieth century. While it can be argued that children have never had much time to call their own, given the demands of agrarian and subsistence economies, children’s spending so much time

away from home is new. The institutionalizing of children, beginning with school, and now child care, has been extended to include team sports, lessons, and camps. The hours spent transporting children among institutions also reduce children’s time for outdoor exploration and play.

Accompanying the institutionalization of children has been the fragmentation of neighborhood play supervision. Parents who used to keep their eyes on children outdoors are very frequently today not at home but working elsewhere. Children’s access to their own neighborhoods is curtailed for lack of adequate supervision.

The penetration of television into virtually every home in the United States also works to keep children from outdoor play, due to television’s attractiveness to children, and parents’ use of it for “child-minding.” Related technologies such as videos, electronic

¹The reader may find useful the following explanation of ozone. “Ozone (O₃) is a bluish gas made up of three oxygen atoms bonded together. Because the bond is not very strong, ozone is an oxidant; that is, one of the oxygen [atoms] can easily break off and combine with other chemical compounds. These reactions can damage materials, vegetation, and human health. Ozone is beneficial when found high above the earth’s surface in the stratosphere, because it helps to filter solar rays that can harm humans, animals, and plants. Closer to the earth’s surface in the troposphere, ozone is considered a pollutant because of its harmful effects on people, materials, and ecosystems.” (American Lung Association, *Breathless: Air Pollution and Hospital Admission/Emergency Room Visits in 13 Cities*. Washington, DC: American Lung Association, 1996, pp. 3–4.)

games, and computers contribute to the indoor nature of childhood, as does air-conditioning for many.

Why We Should Restore Natural Habitats to Children

The Bio-Psychological Reasons

A corollary of the evolutionary argument stated above is the “biophilia hypothesis,” which asserts “a human need, fired in the crucible of evolutionary development, for deep and intimate association with the natural environment, particularly its living biota” (Kellert, 1993, p. 21). According to this hypothesis, we are “hard-wired” to affiliate with natural environments, needing such affiliation in the same way we need contact with other people.

Studies of adults reviewed by Kaplan and Kaplan (1989) on “nearby nature”²⁴—the sort that children have access to as opposed to distant national parks or seashores—led them to conclude:

The immediate outcomes of contacts with nearby nature include enjoyment, relaxation, and lowered stress levels. In addition, the research results indicated that physical well being is affected by

such contacts. People with access to nearby natural settings have been found to be healthier than other individuals. The longer-term indirect impacts also included increased levels of satisfaction with one’s home, one’s job, and with life in general. Surely this is a remarkable range of benefits. (p. 173)

Although the Kaplans reviewed studies of adults, it seems logical to infer that studies of children would reveal comparable benefits.

Furthermore, a substantial body of autobiographical and biographical literature attests to the poignancy and strength of memories of childhood experiences in natural settings, as evidenced by reviews by Cobb (1977) and Chawla (1994). An account of contemporary children in natural settings by Nabhan and Trimble (1994) indicates that children continue to affiliate with such settings in productive and pleasurable ways.



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The Environmentalism Reason

When children do not play in natural habitats, they tend not to know about the plants and animals that live there (Nabhan & St. Antoine, 1993). Does not knowing lead to not caring? Research has yet to show just how childhood experience develops environmental values, but such values “must be partly rooted in childhood environmental experiences” (Moore, 1986, p. 232). Chawla’s study of environmental activists in both Kentucky and Norway indicated that childhood experiences were significant precursors for their adult activism.

The Developmental Reason

Children are multisensory, physical beings. The younger the child the more the child learns through sensory and physical activity. The variety and richness of natural settings—the wind, the sky, the changing clouds, the moving animals, the cycling plants, the hardness of rocks, the flowingness of water, the varieties of colors and sounds, the wide range of permitted behaviors (shouting and running and climbing)—all contribute to physical, cognitive, and emotional development more than manufactured indoor environments typically can or do. Even old-fashioned outdoor play spaces that offer mainly large motor opportunities also provide wind, sky, sun, rain, and some vistas of interest.

Natural areas offer children benefits beyond the cognitive. Research at a primary schoolyard in Berkeley, CA, that changed part of its asphalt into a meadow with woods, streams, ponds, and flowers showed that children have more positive social relationships in such areas and more creative play



²⁴“Nearby nature” is a broad term that can range from a view of trees or plants to walking-distance parks or home gardens. Key characteristics include perceived accessibility and opportunity to interact, including observing (Kaplan & Kaplan, 1989).

(Moore & Wong, 1997). Social emotional development is well served by natural areas.

The Schoolyard Habitats Movement

Early Childhood Education Outdoor Play Endangered

Many preschools have excellent outdoor play spaces because early childhood teachers have a long and sturdy tradition of having plants and animals accessible to children and of incorporating outdoor play into their daily activities. However, when early childhood teachers find themselves in public school settings, the bleakness of asphalt and close-mown grass in outdoor areas pre-sents a major challenge to outdoor nature experiences. That many preschools and childcare facilities are housed in institutions such as churches and, increasingly, office buildings, where the primary mission is not the broad education of young children, also hinders the providing of rich outdoor experiences. For these reasons, the burgeoning schoolyard habitat movement in this country and abroad has much to contribute to early childhood education.

Recent History of the Schoolyard Habitat Movement

Since the environmental movement of the 1970s, some schools have had grounds improvement projects. Long-lasting national environmental education programs such as Project Learning Tree and Project Wild have helped foster such improvements. In the last decade, a highly successful national program in Great Britain, Learning through Landscapes, which has improved at least one-third of Britain's 30,000 schoolyards, has inspired a national program in Canada, Learning Grounds, sponsored by the Evergreen



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Foundation, and also a major Swedish program, Skolans Uterum. Learning through Landscapes has also given fresh impetus to the schoolyard improvement efforts in the United States, some of which are described below.

The United States—Many Efforts Loosely Linked

A recent survey (U.S. Fish and Wildlife Service, 1996) revealed more than 40 organizations either solely devoted to schoolgrounds enhancement or sponsoring programs to that end. Many of these organizations have a traditional wildlife conservation mission and view schoolyards as places to directly inform children about their natural heritage and engage them in its preservation. The U.S. Fish and Wildlife Service, state fish and game departments, and the National Wildlife Federation (NWF) are the leaders in this regard. Some organizations originated in environmental education and have forged a variety of links among science and education departments of universities, state school systems, natural science museums, arboreta, and conservation organizations.

The daunting task of helping the 108,000 schools in the United States “green their grounds” has created a desire for sharing information and joining efforts among many like-minded groups. Conferences

sponsored by the American Horticultural Society, the North American Association for Environmental Education, the Society for Ecological Research, and both the Brooklyn and Cleveland Botanical Gardens have helped bring people and ideas together. The Schoolyard Habitats program sponsors a listserv for organizations working on schoolyard improvement; web pages for

NWF, the Evergreen Foundation, and Project Wild provide both information and links to other projects (see Appendix). Most projects are local or state in scope, which indicates that there are undoubtedly many projects not captured by the recent survey but teachers could locate them by calling local and state conservation and education groups and agencies. Soil Conservation Districts are good sources of information.

(My state exemplifies the range of organizations: The U.S. Fish and Wildlife Service is very active in schoolyard restoration, along with the state department of natural resources. Some school systems have projects, and there is a large urban reforestation project.)



Typical “Greening” Efforts

Schools usually start with small projects, although some schools do major work, especially in new construction. Typical small projects are butterfly gardens, bird feeders and baths, tree planting, sundials, weather stations, native plant gardens, Native American gardens, and compost piles. Larger projects are ponds/wetlands, nature trails, meadows/prairie, stream restoration, shelters for small animals, such as brush piles, and big veg-etable gardens. There is a trend to choose ecologically valuable projects over simple beautification ones, e.g., turf converted to meadow contributes more to the local ecology than azaleas planted around the school’s foundation.

Optimally, students are involved in the planning, implementing, and maintenance of projects. Important curriculum aims can be served as well as a sense of ownership and stewardship encouraged. While older children may find digging, clearing, and planting a refreshing alternative to classroom exercises, young children generally find such work tedious and are not expected to do very much. Young children do contribute ideas, however, and often find creative ways to use the environment even while it is being transformed. Making a hole for



a new piece of equipment can inspire playful digging as well as make a playworthy dirt pile (Chenfeld, 1996).

Green, But Also Appropriate for Young Children

Harmonizing the needs of children of different ages is important in planning schoolyard greening. Excellent facilities for observing nature can be appropriate for older children but too limiting for young children. A “garden teacher” at an elementary school with extensive gardens had to abandon her lesson plan for the kindergartners when they discovered mud after a rainshower. Before she knew it, shoes

had flown off, and feet were joyously squishing.

Early childhood teachers need to assert their children’s rights to this kind of full experiencing of the natural world, however. Dirt and sand must be for digging as well as planting; clay can often be found for making things. Some plants must be for picking. Delights such as pinecones, berries, nuts, and abundant flowers should be made available for children’s pleasure and investigation. Seeing such things is only part of learning about them.

Touching, tasting, smelling, and pulling apart are also vital (Moore, 1993). Shrubs and trees for climbing are the real thing that manufactured climbers imitate.

Early childhood teachers also need to affirm young children’s need for private spaces “to get away from their enemies and their friends” (Humphries, 1996). Such spaces can be bushes or tall grass or a cluster of rocks. A circle of 6-foot pines is “a forest” to young children (Lorain County Community College, 1995). If the perimeter of a schoolyard is secure, small shelters for small children should be possible within them—barren open spaces where one





recess aide can watch 200 children at a time may seem necessary but limit children too much.

Finally, teachers of young children should promote the enduring value of waterplay. Access to hoses and faucets, ponds shaped with gently sloping sides or elevated with an edge for seating, wetlands, and pump-operated or natural streams are all items to press for when planning changes in the schoolyard. Water-scarce areas can have water tables with tubing and gutters, strategically placed so that overflow ends up on grass or gardens.

Good Schools Have Good Grounds

The schoolyards habitat movement is literally gaining ground. Natural affiliates of the movement, early-childhood educators can help assure that the habitats being established to foster diverse plant and animal species also serve the play and developmental needs of young children.

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