

Schoolyard Education: Habitats for Learning

WHAT is Schoolyard Education?

Schoolyard education involves teaching core curriculum in an outside context. It is using the local natural surroundings to actively engage students in motivating learning activities. Schoolyard education is using the model of environment- or place-based teaching to integrate students' ingrained enthusiasm and curiosity of the natural world with core skills and content. With a little creativity, teachers can greatly enhance student learning of both process skills and content area concepts by taking core curriculum outside.

Schoolyard education is not just going outside to play. It is rigorous, well-thought-out lesson activities, typically inquiry based, with set learning objectives that take place outdoors. Every school has an "outdoor classroom" that can be used for schoolyard education. Outdoor classrooms come in different sizes and shapes, host a diversity of resources, and are used by students and teachers for a variety of purposes. Basically, schoolyard education can occur on any site outside of the school building that is used as a place for learning.

WHY Implement Schoolyard Education?

Student Performance Benefits

- **Higher Statewide Test Scores**

A 2003 study entitled "Environmental Education: Improving Student Achievement" compared 77 pairs of demographically equivalent schools. Half of the schools had implemented environmental education (EE) programs for three years or more and the other half did not have programs. The study examined standardized test performance in those schools, including the Washington Assessment of Student Learning and the Iowa Test of Basic Skills. Schools with EE programs showed higher scores on standardized tests in math, reading, writing, and listening. The pattern of improved test scores for students who had been through environmental education programs persisted for the five years of data investigated (1997-2002).

- **Increase in Student Achievement**

In 1998, the State Education and Environment Roundtable (SEER) published a seminal study on the contribution that environmental education makes to student achievement. "Closing The Achievement Gap: Using the Environment as an Integrating Context for Learning" covered 40 schools across 12 states. The study found that integrated environmental education programs throughout the curricula (science, language arts, arts, and social studies) combined with hands-on learning elements like nature study areas, team teaching, and broad school administration support, created top-performing students. A comprehensive follow-up study conducted in 2000 found that EIC classes performed better in 154 of 201 measures as follows:

Language Arts: 86 of 108

Math: 22 of 34

Science: 10 of 15

Social Studies: 10 of 13

Discipline: 4 of 4

Attendance: 22 of 27

SEER has continued to study the use of the environment as an approach to learning, showing that integrating environmental studies into other disciplines and teaching strategies can help solve many of our current problems in education.

Student Health Benefits

- **Increased Fitness and Decrease in Obesity**

Watching television consumes about the same number of calories as sleeping. The Centers for Disease Control (CDC) now warns that childhood obesity has reached epidemic proportions in the U.S. The prevalence of obesity among children aged 6 to 11 more than doubled in the past 20 years, to 17 percent of children in this age group. The rate of clinically obese adolescents (aged 12-19) more than tripled, to 17.6 percent. Part of the obesity epidemic is due to poor eating habits, though the CDC also emphasizes that today's children are more sedentary than ever before. The CDC concludes that a major missing ingredient is an hour per day of moderate physical activity. In fact, even children who participate in organized sports are gaining weight. The primary recommendation focuses on children spending more time playing and running around, which includes outdoor play. Regular time in nature is a critical tool that can be used to prevent obesity and encourage physical activity, at no cost.

- **Sunlight and Vitamin D**

According to the first national assessment of Vitamin D in young Americans, millions of U.S. children have low levels of this crucial nutrient, setting them up for increased risk of bone problems, heart disease, diabetes, and other health issues. According to an analysis of federal data representing more than 6,000 children, low Vitamin D levels are particularly common among girls, adolescents, and people with darker skin. Low levels of this nutrient are blamed on a combination of factors, including a decreased amount of time going outside and getting healthy doses of sunlight.

- **Eyesight**

Duke University's Medical Center reported in the *Journal of the American Academy of Optometry* that incidences of near-sightedness are increasing nationwide due to lack of outdoor time. The study said that a child's chances of becoming nearsighted, if he or she has two nearsighted parents, are about 6 in 10 for children who spend 0-5 hours outside a week, but the risk drops to 2 in 10 when outdoor time exceeds 14 hours a week. Children with better eyesight have an improved quality experience in the classroom.

(From *TIME OUT: Using the Outdoors to Enhance Classroom Performance*)

HOW to Create Space and Integrate using the Schoolyard

There is outdoor classroom potential at every school. After doing a site map and inventory, you may decide that you can effectively use the space as it is currently. Or you may decide to do a major rehabilitation of your schoolyard space. Here are some things to consider as you start this process.

A. Creating the Space

1. The first thing to do is to survey your schoolyard and create a map of all the different existing areas. (Classroom Observation Map Activity: First have students draw a map of the schoolyard from memory. Look at how different each one is. Do a purposeful walk about the schoolyard and draw a new map gaining consensus. Discuss the process of observation and what a difference it can make. Use GPS to add technology!)
2. Second, brainstorm ways to use the schoolyard as context for core curriculum. Prioritize your list and decide which areas of the schoolyard best suit the needs of each activity or use. Do you need a hard surface or would a dirt surface be better? Are some areas quieter and away from foot traffic? Would a dry area or wet area help learning?
3. Take into consideration logistics and maintenance. The space you create should be functional as well as easy to maintain. Make sure to consider the following points as you plan.
 - How many students will be using your "outdoor classroom" at one time?

- The weather! Will you use this space year round? Will you need a covered area for rainy days or to provide shade? Will you need some wind breaks?
- How will you provide a variety of areas that are still easy to maintain? Will you need to establish boundaries between different activity areas?
- Will you need to do soil testing? What about plant selection, or pest control?
- What is the best way for you to store and organize equipment and materials? Will equipment need to be periodically cleaned or disinfected?
- Have you considered safety in your planning? What regulations govern schoolyard structures and spaces? What kind of rules or lists of appropriate behaviors will you need to create?

(Adapted from *Schoolyard Habitat Guide*)

B. Creating Integrated Lesson Activities

Your site is prepared, your students enthusiastic and excited, now it is time to combine the two with focused academic activities.

A Word about the Teacher’s Role. Effective education starts with enthusiastic students who are curious about the subject matter. It is not essential that you know all about nature as long as you are passionate about the task at hand. Practice your listening skills and responding to students with open-ended questions so they can be the ones to “discover” the knowledge. Use questions to prompt, coach, model inquiry, and support the current learning objective. The teacher’s job is to guide students’ natural curiosity through a hands-on approach, encouraging them to touch, see, hear, smell, taste, investigate, and learn!

Relax and enjoy the process. Consider the schoolyard an outside reference library. We all use libraries without knowing the total content of every book or internet site. You don’t need to be the expert to effectively use the outdoor classroom. For best success, keep the following in mind as you prepare to move your activities and lessons into the outdoor classroom.

- Just as with indoor lessons, each activity needs to have a defined learning objective.
- Prepare the students for each session before heading outdoors. Check current knowledge, share tools or processes they will use outdoors, and explain recording options.
- Have the student help develop clear student-behavior expectations for each activity.
- If students are to work in small groups, designate the roles (tasks) of each student.
- Plan for a follow-up experience back in the classroom. This is a time for students to reflect, share, draw conclusions, make comparisons, write stories, perform calculations, create charts and graphs, and develop new questions for future exploration.
- Make sure students are prepared to spend time outdoors. Nothing ruins an activity—and a future desire to spend time outdoors—more than sending students outside unprepared, leading to an uncomfortable experience. Students should be properly dressed for weather conditions.

Some Features & Project Ideas to Consider

Agricultural crops	Bulbs, corms and tubers	Geological site or rock pile
Amphibian Oasis	Butterfly garden	Groundwater monitoring hole
Amphitheater	Compost pile	Historical area
Animal tracks plots	Creek or stream	Horticultural demo area
Arboretum	Desert Garden	Insect traps
Archaeological area	Elevated walkway or bridge	Marsh or wetland
Berry-producing shrubs	Erosion control demo area	Native grasses and wildflowers
Bird blind	Existing timber stand	Nesting/roosting boxes
Bird feeder and baths	Garden plot	Orchard/vineyard

Outdoor seating area	Soil profile area	Water resources
Permanent water source	Soil testing	Wetlands
Pioneer garden	Storage buildings	Wildlife brush piles
Pond	Sundial	Wildlife food plots
Retention Pond	Time capsule	Wildlife Watch checklist for your schoolyard
Restroom facilities	Trails	
Rooftop Garden	Tree Nursery	
Shelter	Trees and woodlands	

(Adapted from *Developing an Outdoor Classroom to Provide Education Naturally*)

Core Curriculum Integration Suggestions

Skills for Reading Assessment

Outdoor classrooms can provide the impetus and purpose for a variety of informational and literary readings. Whether students are reading about landscape design or different types of spiders, they can relate what they are reading to real-life applications. More specifically, building and maintaining an outdoor classroom directly relates to practical or workplace reading. This type of reading includes excerpts from warranties, receipts, forms, memoranda, consumer texts, and “how to” manuals. Students have to follow directions; explain why the correct sequence of activities is important; interpret specialized vocabulary found in practical reading passages; identify information, which provides additional clarity; and locate and apply appropriate information.

Skills for Mathematics Assessment

Outdoor classrooms fit with core content strands within mathematics including: Number and Computation, Geometry and Measurement, and Probability and Statistics. Elementary students should be able to sort objects and compare attributes; use standard and nonstandard units to measure length, area, liquid capacity, volume, temperature, and weight; pose questions that can be answered by collecting data; collect, organize, and describe data; construct and interpret displays of data. Middle school students should be able to estimate large and small quantities and computational results, identify characteristics of two- and three-dimensional shapes, estimate measurements in nonstandard and standard units, gather data about large populations, and use counting techniques to solve probability problems. These are all skills applicable to planning, setting up, and implementing outdoor classrooms.

Skills for Writing Assessment

As with reading, outdoor classrooms are a vehicle to motivate students to write, whether writing a personal narrative, a vignette, imaginative writings, or a persuasive piece. Writing based on experiential learning in the outdoor classroom capitalizes on real-life vocabulary/language acquisition that is readily transferred to written language. The outdoor classroom provides a perfect opportunity to develop higher-level thinking skills described in Bloom’s taxonomy, including compare and contrast, design, interpret, and analyze. These higher-level skills form the foundation of open-response questions. Students could compose plays, public relations brochures, schoolyard guides, journals, stories, poetry, or posters, just to name a few options.

Skills for Science Assessment

In many ways, science skills are obvious in an outdoor classroom. Nevertheless, to ensure that specific skills are covered, it is important that areas of concentration are identified. All of the science-process skills (observing, classifying, communication, measuring, predicting, inferring, identifying, and controlling graphs, analyzing, formulating hypothesis, and designing investigations and experiments) can be carried out in an outdoor classroom, but not at the same time. You must choose your focus. The content areas of physical science, life science, and earth and space science are all very appropriate for outdoor classrooms.

Skills for Social Studies Assessment

Outdoor classrooms are easily aligned to understanding geography. Outdoor classrooms help students understand that patterns on the Earth's surface can be identified by examining where things are, how they are arranged, and why they are in a particular location. The Earth is vastly complex with each place on its surface having human and physical characteristics to deal with these complex people-created regions; patterns emerge as humans move, settle, and interact on Earth's surface; and human actions modify the physical environment and, in turn, the physical environment limits or promotes human activities.

(Integration ideas adapted from *Schoolyard Habitat Guide*)

Resources Used for this Summary:

Developing an Outdoor Classroom to Provide Education Naturally

Kimbrow, Craig C. UT Extension Agent, University of Tennessee.

<http://www.utextension.utk.edu/publications/wfiles/W113.pdf>

Schoolyard-Enhanced Learning: Using the Outdoors as an Instructional Tool, K-8

Broda, Herbert W. Portland, Maine: Stenhouse Publishers, 2007, ISBN 978-1-57110-729-9

Schoolyard Habitat Guide

Jefferson County Public Schools Center for Environment Education.

<http://www.jefferson.k12.ky.us/departments/environmentaled/outclass.html>

TIME OUT: Using the Outdoors to Enhance Classroom Performance: A School Readiness Guide for Teachers and Parents

Coyle, Kevin J. From the Publishers of *Ranger Rick* Magazine.

Additional Schoolyard Education Resources:

Backyard Conservation: Bringing conservation from the countryside to your backyard

USDA's NRCS, National Association of Conservation Districts, Wildlife Habitat Council, and the National Audubon Society. <http://www.nrcs.usda.gov/feature/backyard/>

Beneficial Insects

Clemson University. <http://entweb.clemson.edu/cuentres/cesheets/benefici/index.htm>

Certify your wildlife garden through National Wildlife Federation.

<http://www.nwf.org/Get-Outside/Outdoor-Activities/Garden-for-Wildlife.aspx>

Developing an Outdoor Classroom: Blending Classroom Curriculum & Outdoor Play Space

Studer, Mary L. *Texas Child Care*. Summer 1998.

http://www.childcarequarterly.com/summer98_story1a.html.

Greening School Grounds: Creating Habitats for Learning

Grant, Tim and Gail Littlejohn. Gabriola Island, BC, Canada: New Society Publishers, 2001, ISBN 978-0-86571-436-6

IPM for the Outdoor Classroom.

University of Kentucky. <http://www.uky.edu/Ag/IPM/teachers/outdoorclassrm/odc.html>

O. Orkin Insect Zoo Student Resource Page

Mississippi State University. <http://insectzoo.msstate.edu/Students/>

Schoolyard Ecology Leaders' Handbook.

Institute of Ecosystem Studies. Schoolyard Education for Elementary School Teachers.

<http://www.ecostudies.org/syefest/howuse.htm>

Schoolyard Resource List

Chesapeake Bay US Fish and Wildlife Services. <http://www.fws.gov/chesapeakebay/school/resource.htm>.

Ten-Minute Field Trip: A Teacher's Guide to Using the School Grounds for Environmental Studies.

Russell, Helen Ross. National Science Teachers Association, 1990. Call 800-722-6782.