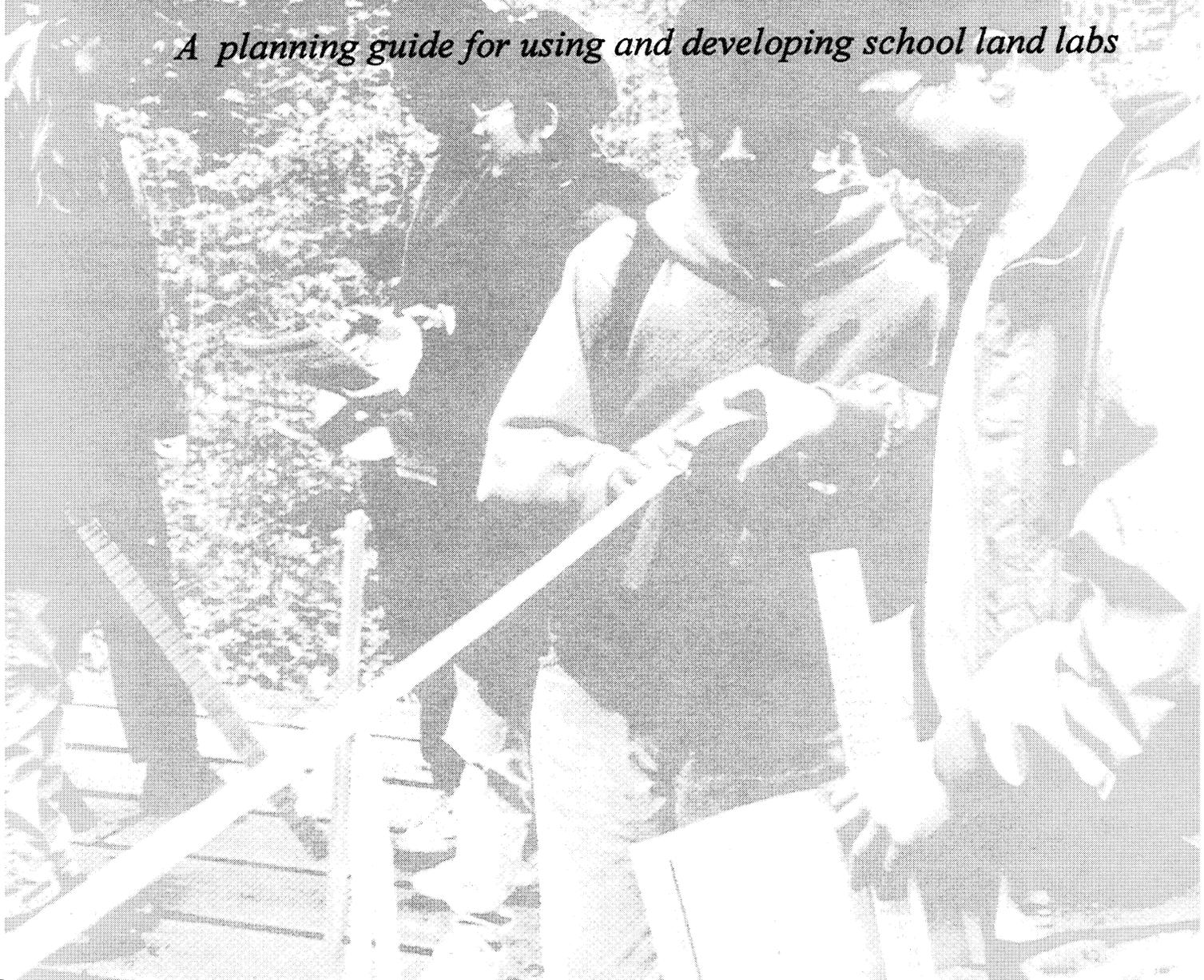


HABITATS FOR LEARNING

A planning guide for using and developing school land labs



HABITATS FOR LEARNING

Developed by:

Ohio Department of Natural Resources
Program Coordinator

Environmental Education Council of Ohio

Natural Resources Conservation Service

Ohio Department of Education

Ohio Federation of Soil and Water Conservation Districts

Ohio State University Extension



This project was made possible in part through a grant from the Ohio Environmental Education Fund, a program of the Ohio Environmental Protection Agency.

Published by:

**Ohio Environmental Education Fund
Ohio Environmental Protection Agency
P.O. Box 1049
Columbus, Ohio 43216-1049**

**1995
Second Printing**

Educators are encouraged to photocopy these materials for the non-commercial purpose of educational advancement.

Design and layout by:
Thomas Schwartz
Office of Public Information and Education
Ohio Department of Natural Resources



Copies available within Ohio from:

Ohio Environmental Education Fund
Ohio Environmental Protection Agency
P.O. Box 1049
Columbus, OH 43216-1049
614-644-2873
FAX 644-3687

Copies available nationally from:

Ohio Department of Natural Resources
Division of Soil & Water Conservation
Environmental Education Section
1939 Fountain Square Court, Bldg. E-2
Columbus, OH 43224
614-265-6878
FAX 262-2064

Printed on Recycled Paper



ACKNOWLEDGEMENTS

The Ohio Department of Natural Resources would like to thank all of the collaborators, their representatives and other individuals who provided guidance, support and expertise during the development of the Habitats for Learning program.

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a planning guide for using and developing school land labs

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PROGRAM OVERVIEW

for

HABITATS FOR LEARNING

What is a "Habitat for Learning"?

Chances are you're familiar with terms like "land lab" or "outdoor learning site" or "outdoor classroom." They're what we call "habitats for learning." A parking lot, a grassy ball field, or the playground can also be a habitat for learning. The main point of the Habitats for Learning program is that every school has a land lab. It may not be in use. Teachers, school administrators and learners may not know what's there or how to use it, but every school does have one!

"Habitat for Learning" or Land Lab — What's the difference?

Everyone involved in developing the Habitats for Learning materials has gotten a phone call like this: "Hi, I'm a teacher here in the county. We have some land and we'd like to develop a land lab. Can you help us?" Those are good calls to get — it shows that people are interested in taking education outdoors, helping young minds think in new ways. The problem is that using and "developing" a land lab is a time-consuming process. And sometimes the educators aren't sure what they need or why. Sometimes the resource specialist doesn't know how to meet the school's needs. Sometimes land labs are developed without consideration to the existing curriculum. Sometimes well-developed, expensive land labs fall into disuse, or are vandalized, or are never used to their full potential.

Habitats for Learning grew out of these concerns. We advocate using what already exists on the school grounds — starting now. Any site can be used to teach almost any subject. It may take some imagination, but there are rich opportunities when you look around. And once you know what you have, you are in a better position to decide what would enhance the outdoor learning site. And that's what Habitats for Learning is all about — use what you have, enhance it as you go along, develop it if and when you need to.

Who are we?

Six collaborators sharing a common goal joined together to develop and implement Habitats for Learning:

- ▲ Ohio Department of Natural Resources—Program Coordinator
- ▲ Ohio Department of Education
- ▲ Ohio State University Extension
- ▲ Natural Resources Conservation Service
(formerly Soil Conservation Service)
- ▲ Environmental Education Council of Ohio
(formerly Ohio Conservation and Outdoor Education Association)
- ▲ Ohio Federation of Soil and Water Conservation Districts

The project was made possible, in part, by a grant from the Ohio Environmental Education Fund, a program of the Ohio EPA.

What does Habitats for Learning consist of?

- ▲ The Planning Guide — Presents the “nuts and bolts” of how to use, enhance and develop habitats for learning. It includes sections on educational value, building a support system, developing and implementing a plan, and site development.
- ▲ The Directory — Lists existing land labs and provides key information. It also lists resource people willing to assist others in using and developing habitats for learning.
- ▲ The Video — Presents an underlying “Habitats” premise — that your land lab is ready and waiting for you — and is designed as a motivational tool.

COLLABORATORS

Ohio Department of Natural Resources (ODNR)

The Ohio Department of Natural Resources is responsible for the preservation, management and wise utilization of the state's natural assets. ODNR helps Ohioans protect and enjoy our fish and wildlife, waterways, forest lands, state parks, nature preserves and recreational areas. At the same time, the agency works to conserve valuable soil, water and mineral resources, and to promote recycling and the use of recycled products. One of the largest and most diverse agencies in state government, ODNR is at work in each of Ohio's 88 counties, making a strong, positive impact on the social, recreational and economic well being of all Ohioans. For more information contact ODNR Public Information Center, 1952 Belcher Drive C-1, Columbus, OH 43224-1386.

Environmental Education Council of Ohio (EECO)

[Formerly the Ohio Conservation and Outdoor Education Association (OCOEA)]

The Environmental Education Council of Ohio is a statewide, professional organization dedicated to promoting environmental education which nurtures knowledge, attitudes and behaviors that foster global stewardship. Teachers, naturalists, camp staff, youth leaders, university students, agency personnel and others join EECO to meet other environmental educators and to share ideas, materials, and teaching techniques. EECO sponsors statewide and regional conferences and workshops, distributes an informative newsletter, provides consulting services, serves as a liaison with other organizations concerned about environmental education, and gives annual awards recognizing outstanding achievements in the field of environmental education. For more information, contact EECO Executive Director, 397 West Myrtle Avenue, Newark, OH 43055.

Natural Resources Conservation Service (NRCS)

[Formerly the Soil Conservation Service (SCS)]

The Natural Resources Conservation Service is an agency of the U.S. Department of Agriculture. The mission of the Natural Resources Conservation Service is to provide leadership and administer programs to help people conserve, improve and sustain our natural resources and environment. "A productive nation in harmony with a quality environment" reflects the agency's commitment to ecosystem based assistance. For more information, contact Public Affairs Specialist, Natural Resources Conservation Service, 200 North High Street, Room 522, Columbus, OH 43215.

Ohio Department of Education (ODE)

For more than 50 years the Ohio Department of Education has had a staff member engaged in improving and extending environmental education programs in Ohio's elementary and secondary schools. There has also been a concurrent effort to provide high quality environmental education programs for inservice and preservice teachers. These two efforts have substantially improved the education of Ohio's young people. One of the important aspects of this effort is the fine cooperation there has been among several state agencies, state professional organizations, profit and nonprofit organizations, all levels of government, and philanthropic foundations. These collaborative efforts have resulted in innovative and successful programs in every part of Ohio. As Ohio's elementary and secondary education curricula continue to move toward a more integrated, interdisciplinary mode, environmental education will be needed as a unifying focus

of learning. For more information contact Professional Development Work Cluster, Ohio Departments Building, Room 1005, 65 South Front Street, Columbus, OH 43266-0308.

Ohio Federation of Soil and Water Conservation Districts

The Ohio Federation of Soil and Water Conservation Districts is a private, nonprofit, nongovernment organization established in 1943 to represent Ohio's 88 county-level Soil and Water Conservation Districts (SWCDs). As local units of state government, SWCDs provide a wide range of natural resources conservation services and programs to landowners and others across Ohio. SWCDs also furnish an important link between private landowners and an array of federal and state natural resources management agencies. SWCDs are administered by boards of locally-elected supervisors (five per district). These 440 people comprise the membership of the OFSWCD. Since their formation, SWCDs have offered educational programs for people of all ages. Today, districts provide a variety of environmental program opportunities for educators and students, including assistance in using and enhancing outdoor learning sites. For more information about Soil and Water Conservation District programs, or for the phone number of your county SWCD, contact the ODNR Division of Soil and Water Conservation at (614) 265-6610.

Ohio State University Extension

Ohio State University Extension is the outreach arm of The Ohio State University. With offices in each of Ohio's 88 counties, Extension's role is to provide current, research-based information on a wide array of subjects to Ohio's citizens. In the early through mid parts of this century, Extension focused its efforts on rural and agrarian families. More recently, Extension programming is related to a variety of needs of Ohio citizens and families, including economic, environmental, health, nutritional, leadership, and family development. OSU Extension has a long and valued history of working with various agencies and programs by representing the wealth of resources offered through the land-grant university for Ohio. Faculty and staff of Ohio State University work as agents in the county offices, providing a point of contact for citizens to their university. For more information, contact OSU Extension, 2120 Fyffe Road, Columbus, OH 43210.

Partial Funding Provided by:

Ohio Environmental Education Fund (OEEF)

The Ohio Environmental Education Fund, a program of the Ohio EPA, was created by statute in October 1990 to enhance public awareness about issues affecting environmental quality in Ohio. Grants are awarded to educators, organizations and others for projects that will help Ohioans understand and solve environmental problems in the state. Funded projects include curriculum and activity guide development, teacher professional development, and environmental education seminars for the general public and regulated community. For more information, contact Ohio Environmental Education Fund, Ohio Environmental Protection Agency, 1600 WaterMark Drive, Columbus, OH 43215-1034.

CHAPTER 1 A New Look at School Land Labs

Although teaching and learning have always occurred outdoors, most formal education now takes place in the school and classroom. Still, many teachers recognize areas around the school building as places where learning can thrive. For some, outdoor learning is an occasional activity; for others, it is an integral part of teaching. For some, it involves stepping out and using what already exists; for others, it means upgrading the area to enrich its learning potential.

This project takes a new look at using and developing school grounds as a **habitat for learning**. These areas are also called outdoor classrooms, outdoor learning sites, and school land laboratories or “land labs,” but the new term reflects a broader notion of the potential of these areas.

A “habitat” is a place where plants or animals naturally live and grow. Habitats for learning are places where people naturally learn and grow. They don’t have to be fancy. Habitats for learning are as diverse as habitats for living, ranging from acres of wilderness to a single school sidewalk. Where some people might see a barren school site with nothing but bricks and concrete, others find a fertile area filled with habitats for learning. Blacktop surfaces, cracks in sidewalks, flagpoles, fences, playgrounds, sides of buildings, and other common school ground features all offer a wealth of learning opportunities. Additional attributes, either natural or human built, only add to these possibilities.

All outdoor school grounds, whether in their existing form or designed especially as an outdoor classroom, can be rich habitats for learning. While some schools designate an off-site location as their land lab, a site’s potential increases if it is right outside the school door or within a short walk.

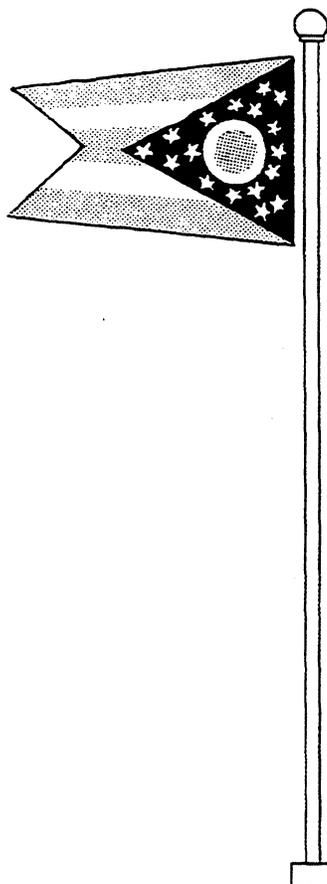
Benefits of Habitats for Learning

Outdoor habitats can be powerful vehicles to achieve educational goals. They naturally motivate young people to learn, building on what Rachel Carson called the “sense of wonder.” It places learning in a meaningful context, helping learners more easily integrate new knowledge and skills into a larger framework.

Outdoor habitats for learning can support curricular objectives in all program areas, including science, mathematics, social studies, language arts, foreign language, arts, health, physical education and others. The trick is to make sure that outdoor learning is based on the existing curriculum. It shouldn’t be an “extra” or add-on.

More importantly, habitats for learning support innovations in education. They are an ideal arena for cooperative learning, hands-on activities and problem solving. They offer a natural way to support integrated approaches to learning and thematic organizations of the curriculum. The interdisciplinary nature of the environment — both natural and manufactured — provides ways for educators to put these and other strategies into action.

Learning objectives in the areas of knowledge, skills and attitude spring to life in the outdoors as learners participate in hands-on, concrete experiences. By making real-life connections, learners apply lessons in



meaningful, relevant ways. Even the most reluctant learners respond to these opportunities.

Outdoor habitats for learning can augment all areas of the curriculum, but they are especially ideal for learning about the environment. They provide first-hand experiences in the out-of-doors, so learners gain an appreciation for the environment, an understanding of environmental issues, and additional insight of their role within the environment. Since everything within the natural world is interrelated and interdependent, learners are better able to see themselves as part of the whole, not apart from it. Land labs help learners build a foundation for making evidence-based decisions. The experiences lead to responsible behavior as learners investigate cause and effect, and explore actions and consequences.

In addition, habitats for learning are an incredible resource because they exist right outside the school door. They provide ongoing "field trip" - type experiences without the expense and logistics usually associated with these activities. The outside environment is an integral part of the school environment and can be used daily for teaching and learning.

A Three-Step Process: Use, Enhance and Develop

The term "school land lab" usually conjures up images of natural areas, large or small, modified in some way to provide outdoor learning experiences. Trails, signs, study stations, plantings and other improvements often come to mind. Schools and communities frequently ask specialists in natural resources, history, aesthetics and the arts to help with this kind of development.

However, such resource specialists commonly express concern about sustaining interest in such elaborate developments. While they can relate wonderful success stories, they also can usually recall as many or more efforts that floundered and fell into disuse. All too often, an outdoor habitat for learning is the pet project of one or two motivated teachers and their students, but their enthusiasm may never fire up the rest of the school. If they leave the district, it is likely that the habitat for learning will fall into disuse and disrepair.

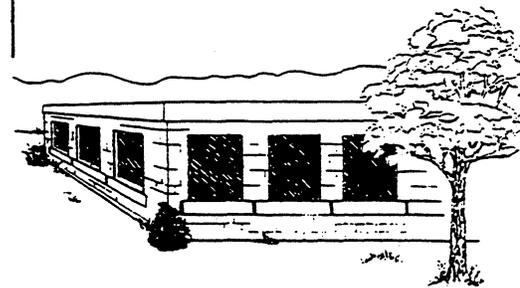
The Habitats for Learning program has been designed to ensure long-term use of the site by using a step-by-step process involving many elements, outlined in this book. However, the philosophical cornerstone for the project is simple:

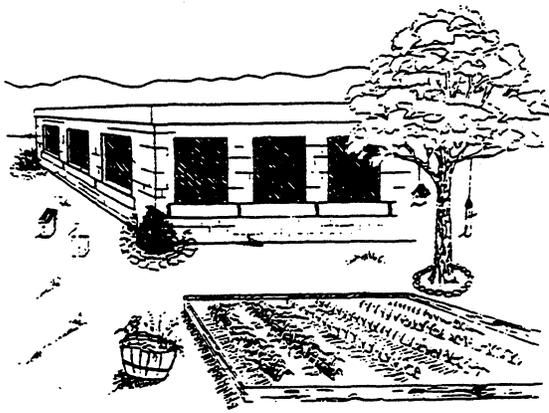
Use of the existing site should precede enhancement and long-term development.

This underlying premise implies a three-phase approach:

USE — Teachers and learners use, or continue to use, the existing site to meet educational objectives.

ENHANCE — Based upon actual use of the habitats for learning, teachers, learners and others make site improvements as needs arise (e.g., attend to poison ivy, pick up litter, mulch muddy areas, hang a bird feeder).





DEVELOP — While using the “enhanced” existing site, a broad-based committee designs and implements a long-range plan that matches site development with the curriculum. This plan should capitalize on existing features and attributes that have been discovered in large part through use of the site. It should also identify needs for further development.

Why does Habitats for Learning promote this three-phase approach? First, existing school sites have tremendous educational value. They are untapped, free resources going to waste as educators wait for time and money to “build a land lab.” Second, regular use of the existing site as a habitat for learning will uphold high-quality and long-term use of the developed site by building broad-based interest and support. The ongoing use of the school grounds from the beginning allows teachers and learners to experience success and continually identify new learning opportunities. In this way, teaching and learning in the outdoors will become an integral part of the educational process, as natural as using the blackboard or the library.

The implications of this philosophy are significant. The concept of land lab development is expanded to **program development** which includes both educational and site planning. Following the architectural premise of “form follows function,” educational program development should precede site development. Traditionally, school personnel or resource specialists inventory the existing site and then decide, with minimal consideration of the curriculum, what to develop and how. A more successful approach involves an interplay between these two elements to make sure both curricular goals and site potential are fully achieved. While not necessarily a linear process, the educational purposes — not the features of the site — should drive the planning and development process.

The best way to explore and understand the educational role of the habitat for learning is to begin by using the existing site. Then, when someone says that this learning activity would be even richer “if only we had a _____” planners know that an important idea to include in the development plan has been identified and will be used.

From Philosophy to Practice

This publication presents guidelines on how to use and develop habitats for learning that support sound educational practices:

Chapter 2 addresses some of the curricular and instructional elements that need to be considered in program development.

Chapter 3 explores how to begin using what already exists and how to overcome teachers’ concerns.

Chapter 4 explains long-term enhancement and development of the habitat for learning through educational and site-planning processes.

Appendices A-H contain additional ideas, activities and resources that may be useful in planning and using a habitat for learning.

CHAPTER 2

Teaching and Learning in Habitats

An outdoor habitat for learning can inject vitality into the school curriculum. Triggered by natural curiosity and an interest in the world around them, learners become more motivated to learn. Their interest continues to increase because outdoor learning is grounded in concrete experiences that provide real-world applications. The immense educational potential of habitats for learning can be unleashed with a little initiative, vision, and resourcefulness.



Balancing the Curriculum

An underlying and recurring premise throughout the Habitats for Learning project is that use and development of land labs must be based upon the existing curriculum. Outdoor sites can be used to teach what is already being taught, but in a more captivating and meaningful way. For this reason, it is important to fully understand the curriculum and how habitats for learning support every facet of it.

A well-balanced curriculum usually includes learning objectives that address four basic components: knowledge, learning skills, attitudes and behavior. The following sections briefly describe each of these and explain how habitats for learning support the objectives.

Knowledge

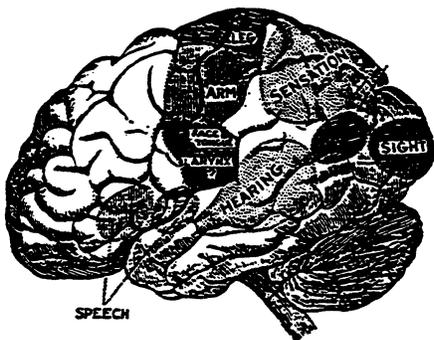
Knowledge refers to subject content, or the major ideas that are the focus of study and investigation by learners. Knowledge includes facts, and on a higher level, centers on concepts and generalizations, and finally on laws and theories, all of which help learners make sense of their world. The more powerful and relevant these ideas are to the learner and the more they build upon the interconnections among the disciplines, the more easily learners are able to understand and use them.

The environment is naturally interdisciplinary, and so it provides an ideal medium for learning that cuts across disciplines. Consequently, a habitat for learning supports all school subject areas and, more importantly, supports integrated teaching and learning.

Learning Skills

One major goal of education is to enable people to pursue lifelong learning, but their ability to do so depends upon their competence in a full range of learning skills. These processes drive learning, beginning at birth. They include cognitive, physical and interpersonal relationship skills (see Appendix A).

Within habitats for learning, these skills become the heart of learning in a way difficult to replicate in a regular classroom setting. Opportunities grounded in meaningful contexts promote the use and development of learners' skills.



Attitudes

Attitudes and dispositions that learners have toward learning and applying what they have learned are also central to a balanced curriculum. This component includes a variety of elements, such as feelings towards a person, an idea, the environment, or living and non-living things; beliefs about something or someone; willingness to pursue an action or decision; the ability to analyze and clarify individual or group attitudes and values; and personal traits supportive of lifelong learning.

This domain is as much a part of learning in the outdoors as are knowledge and skills. It may entail finding a place for personal reflection, revisiting an aesthetic spot to inspire creativity, or discovering a degraded area to challenge group problem-solving.

Behavior

Behavior involves applying knowledge and skills in age-appropriate, real-life situations with an emphasis on problem-solving and decision-making. Through their actions, learners apply what they have learned in a context that is relevant and engaging.

Habitats for learning provide countless opportunities for learners to shine in their behavior. They can help plan learning experiences in the existing habitats and become involved in developing the site to enrich learning objectives. They can assist in making decisions about needs and priorities as well as implement plans for creating learning stations. If areas exist that show some type of environmental problem, they can propose solutions and carry out actions supported by the school.

These actions help learners extend their school-based education to a variety of environmentally based contexts. Acting responsibly in the habitat for learning encourages recycling, conservation and other efforts through an improved understanding of environmental principles.

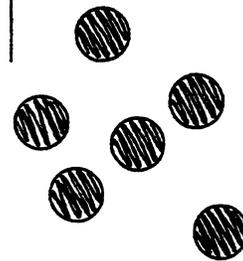
These four components — knowledge, skills, attitudes and behavior — work together to form a well-balanced curriculum. Curriculum writers at the state and local levels identify goals and objectives based upon these elements. Those involved in planning uses for outdoor sites should do no less.

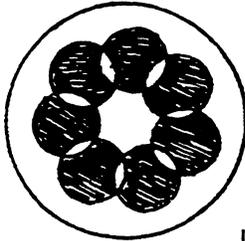
Different Curricular Approaches

School district personnel and individual educators can choose among many ways to organize the curriculum for teaching and learning. These vary greatly and offer different strengths and weaknesses. The following brief descriptions of three approaches illustrate some of this diversity and demonstrate how easily habitats for learning can support almost any approach.

Single Discipline Approach

For years, the most common curricular organization has been by single disciplines. Math, reading, language arts, history, American literature, physical education, home economics and other subject areas are taught separately. Within each subject, learning often focuses on specific topics taught one right after the other. For example, a fifth-grade science curricu-





lum might include the following topics: vertebrates, invertebrates, ecology, electricity, magnets, astronomy, and simple machines.

Some of these topics would be better taught outdoors than in a classroom. Almost all of them could be enhanced through outdoor experiences.

Integrated Approaches

While not as common as the single discipline approach, integrated approaches have become widely accepted as highly effective ways to promote integrated learning. The world works as a whole without artificial boundaries dividing it into parts. Therefore, it makes sense to learn about the world using an integrated approach that goes from whole to part, rather than from part to whole.

Integration occurs when two or more disciplines are combined for teaching and learning. It can be achieved by connecting ideas across disciplines (multidisciplinary), by blurring boundaries among disciplines (interdisciplinary), or by eliminating boundaries of disciplines altogether (transdisciplinary).

As in the single discipline approach, one topic can be the focus of study in an integrated approach. However, learning about that topic is approached holistically, integrating aspects of more than one subject area. The following natural resources topics lend themselves well to integrated investigations in a habitat for learning:

- ▲ Land
- ▲ Water
- ▲ Air
- ▲ Minerals
- ▲ Plants
- ▲ Animals
- ▲ Humans and technology

Topics that can be explored through habitats for learning are not limited to natural resources. Other possibilities include pioneer tool making, ideas garnered from children's books, shapes, careers, senses, communities, aesthetics and communications. Ideas for some of these topics are listed later in this chapter.

Many issues are interdisciplinary by their very nature and are perfect vehicles for the integrated approach. Habitats for learning allow learners to investigate these issues in a real-world context and test alternative solutions to problems. The following issues (Ohio Department of Education, 1985) are among those that could be investigated in a habitat for learning:

- ▲ Energy
- ▲ Food and fiber
- ▲ Population
- ▲ Land use
- ▲ Goods and services
- ▲ Environmental quality (land, air, water)
- ▲ Resource use

These types of issues allow learners to draw upon different disciplines and skills, helping them build an understanding of the big picture as well as the interrelationships among its parts.

Thematic Approaches

A curriculum that focuses on themes is also interdisciplinary. It presents broad concepts that cross disciplines. A thematic curriculum enables learners to organize ideas and incorporate new ideas into their thinking.

A wide range of themes can be explored through habitats for learning. Learners can focus on one or more of the following:

- ▲ Patterns of change
- ▲ Constancy
- ▲ Energy
- ▲ Structure and scale
- ▲ Adaptation
- ▲ Systems
- ▲ Cycles
- ▲ Diversity
- ▲ Models

These types of themes provide an organizational structure that help learners relate similar ideas across different disciplines and transfer ideas to new settings and situations.

Habitats for Learning and Effective Instruction

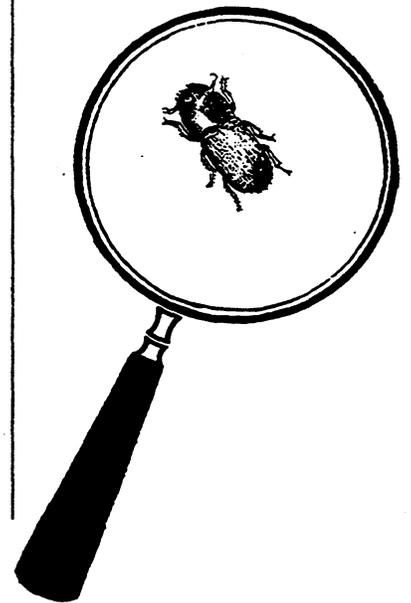
Curriculum comes alive through effective instruction, whether that instruction occurs indoors or outdoors. Effective instruction relies upon key ideas about how learners learn, the role of learners and teachers during instruction, and the selection of instructional methods.

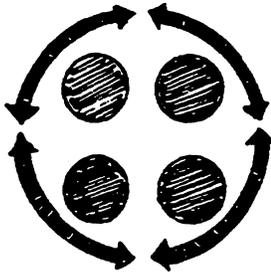
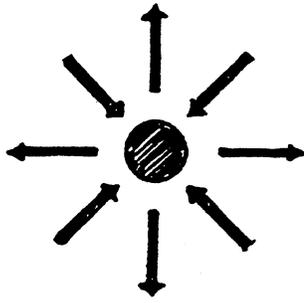
Many effective instructional decisions are based on the idea that people learn by making sense out of information and relating this new knowledge to their own experience (Lorsbach & Tobin, 1992). This theory says that learning involves active mental work on the part of the learner, not passive reception of information. The learner initiates and seeks, rather than follows and acquires. The learner makes connections between ideas and concepts. Learners' ideas, responses and experiences are critical and powerful. The teacher using this premise, called constructivism, uses it to drive lessons, adapt instructional strategies and modify content (Brooks & Brooks, 1993).

Instruction based upon constructivism shines in habitats for learning, where learners predict, investigate, analyze, reflect, create and otherwise interact with the real world in a personal way. The following key instructional considerations are based upon or are consistent with constructivism, and are critical to both indoor and outdoor teaching and learning.

Active Learning

The idea that the learner is an active participant in the learning process is at the heart of constructivism. Active learning not only involves physical interactions with objects and the real environment but also mental interactions with ideas, concepts and questions — hands-on *and* minds-on. Learners question, investigate and examine new ideas until they make sense to the learner.





Learner-Centered Approaches

Constructivist teachers use a learner-centered approach during instruction. The learner, not the content, is the central focus. The teacher serves as a guide, encouraging exploration and interaction. Real-world applications and questions asked by learners drive the lessons. The process used by learners is emphasized over the final product.

Collaborative and Cooperative Learning

Learners can work individually or in small and large groups. Deciding the size of the instructional group depends upon the learning objectives, management decisions, and, sometimes, upon personal preference. However, small groups are particularly conducive to cooperative or collaborative learning. In this arrangement, learners work in mixed-ability groups and are assessed on the basis of the success of the group in addition to individual achievement (Woolfolk, 1993). Lessons and groups are structured to focus on learning objectives and to build interdependence among learners. Cooperative learning can lead to higher achievement than competitive learning, stronger interpersonal relationship skills, higher self-esteem, stronger motivation, and greater acceptance of others.

Diversity Among Learners

Learners are different. Part of their differences are explained by Howard Gardner (1983) through the idea of multiple forms of intelligence. He identifies and describes seven different types of intelligence:

- ▲ Linguistic
- ▲ Musical
- ▲ Logical-Mathematical
- ▲ Spatial-Visual
- ▲ Bodily-Kinesthetic
- ▲ Intrapersonal (understanding self)
- ▲ Interpersonal (understanding others)

Effective teaching and learning includes all seven types, allowing learners to cultivate each intelligence while drawing upon their stronger ones.

Learners also differ based upon demographics, experiences, natural abilities, special needs, and level of development. While addressing this diversity is a challenge, doing so enriches instruction, learning and assessment.

Assessment

New ways to assess learning are required if lessons incorporate active learning, learner-centered approaches, collaborative learning, diverse needs of learners or other concepts consistent with constructivism. Traditional multiple-choice or fill-in-the-blank tests are often ineffective for measuring process skills, higher-level thinking, problem-solving and concept development. More appropriate approaches to assessment involve collecting information about the learners, instruction, and the learning environment throughout the entire instructional process, not just at the end. This information is used to make ongoing instructional decisions (Airasian, 1994).

In keeping with a learner-centered approach, both teachers and learners should assess learning progress. Possible methods might include portfolios, checklists, interviews, self-reports, essays, journals, group work, long-term projects, performances, and oral, written or pictorial responses.

Examples of Learning Experiences

It's a challenge to blend the four elements of a balanced curriculum into an effective curricular organization and then translate that into practice through effective instruction. The following examples of learning experiences illustrate how these elements can come together using outdoor habitats.

Integrated Topic: Trees

The Giving Tree

Groups of three to five learners take a trip around the school grounds and nearby neighborhood to discover 15 or more ways that trees support their local community. Each group shares its list, making one master list for the whole class. As a class, learners categorize the uses and benefits of trees and use this information to write their own version of a book called *The Giving Tree*.

Cooperative learning

learning skill

knowledge

assessment

active learning

real-life connections

learning skill

Adopt-a-Tree (or a Branch)*

At the beginning of the year, each learner chooses a tree (or one branch of a tree) to adopt for a whole year. At regular intervals (e.g., biweekly, monthly), learners observe their tree, capturing their observations in a journal through drawings, prose, poetry, data charts or other means. They compare and contrast observations and predict what might happen next. They develop other learning experiences to conduct with their trees.

learning skills

learner centered

Healthy and Unhealthy*

Working in pairs, learners select two different trees: one that they consider healthy and one they consider unhealthy. They observe each tree and identify signs that indicate the health status of the tree. Learners hypothesize explanations for why the trees are healthy or unhealthy (e.g., damage from lightning, fire, insects; poor growing conditions).

collaborative learning

learning skills

assessment

learning skill

Knowledge

active learning

attitudes

different size groups

Plant a Tree

Learners take full responsibility for planting a tree on the school grounds. As a class they determine tasks to be completed and who will do each one.

- ▲ Receive permission to plant a tree.
- ▲ Analyze the site to determine the best kind of tree to plant and the best location.
- ▲ Determine best time and correct method for planting a tree.
- ▲ Plan a tree-planting ceremony.
- ▲ Use money from a fund-raiser to purchase tree.
- ▲ Plant the tree at a ceremony.
- ▲ Nurture the tree.

learning skills

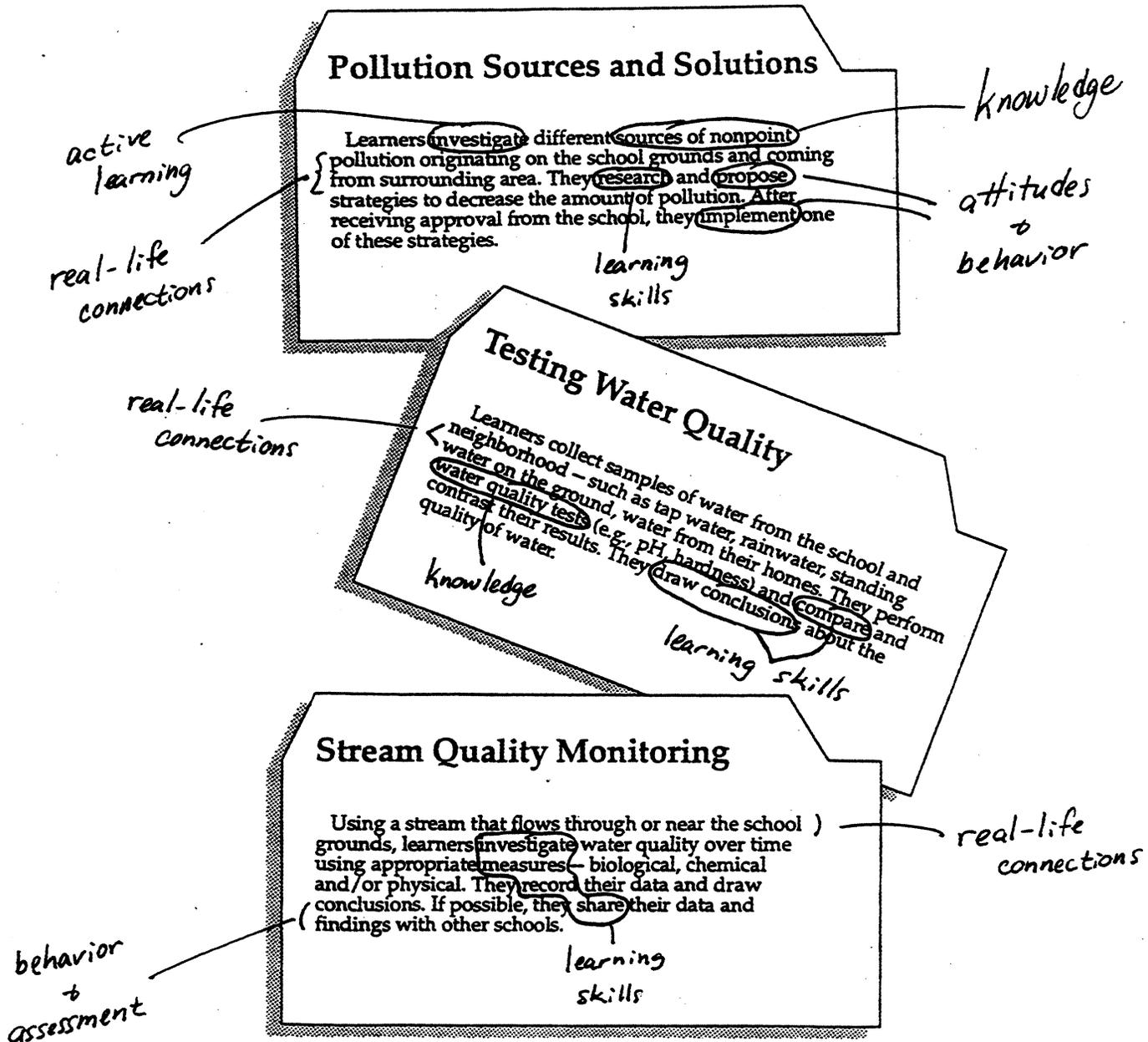
behavior

learner-centered

active learning

*Adapted from Project Learning Tree

Integrated Issue: Water Quality



Integrated Theme: Cycles

Water Cycle

Groups of learners predict where they think rainwater goes after a storm. During and after a heavy rain, they carry out learner-designed investigations to test their predictions. Using illustrations and written descriptions, learners describe how their findings fit into the water cycle. Individually learners write a paragraph answering the question, "Will this water ever cycle back to this location?" and explaining why or why not.

cooperative learning
learner-centered
individual learning

learning skill

assessment

Seasonal Cycles

Throughout the year, learners observe changes in wildlife, humans and plants that relate to seasonal changes in temperature and light. Using individual or group journals, learners write, draw, photograph, graph or otherwise record their data. They periodically draw conclusions about the correlation between data on temperature and light and their observations about wildlife, humans and plants.

Knowledge
learning skill

diversity

Cycling Nutrients Through Composting

The whole school participates in a composting program that uses waste from the lunchroom and yard waste from the school grounds. The resulting compost is used to fertilize the school's vegetable and herb gardens, which provide food for school use. Learners design investigations for each stage of the project: measure volume of waste and compost, analyze how waste is decomposed, investigate conditions necessary for successful composting, compare gardens fertilized with compost to non-fertilized gardens, etc.

behavior
learning skills

learner-centered
knowledge

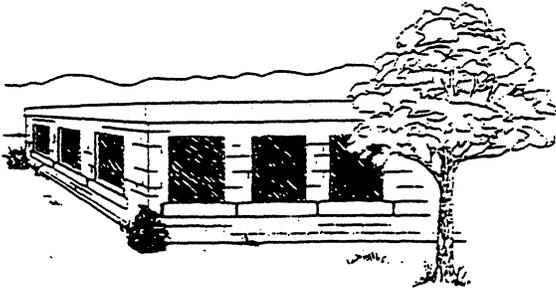
School-Ground Use Cycles

Groups of learners observe, record and categorize different types of human activities that occur on the school grounds throughout the day. They graph the types and numbers of activities, when they occur, numbers of people doing each activity, etc. Learners analyze the data to determine which activities are repeated cycles and which are isolated events.

collaborative learning

learning skills

CHAPTER 3 Using the Habitats You Have



Learning opportunities exist in many types of habitats for learning, from blacktopped playgrounds to wooded fields. To use what is already freely available, all it takes is a little time and imagination. However, paying attention to three major components can help teachers and learners use an existing site more successfully. They are:

- ▲ Identifying potential learning opportunities.
- ▲ Encouraging good conduct and managing logistical concerns.
- ▲ Acquiring the support and cooperation of others.

Each of these concerns should be addressed before making use of outdoor habitats for learning.

Identifying Potential Learning Opportunities

Any outdoor habitat for learning provides excellent learning opportunities. Even the most barren area contains weeds and insects of various types, as well as structures with cracks, slopes and dimensions that learners can investigate during lessons. Math skills can help learners quantify data about the site and produce measurements. Scientific inquiry can lead learners to the most minute observations and improve problem-solving skills used to test their hypotheses. Social studies lessons based on specific site characteristics can help learners understand the relationship between society and the environment. Language arts and fine arts communication skills can be used to describe the outdoor site from different perspectives.

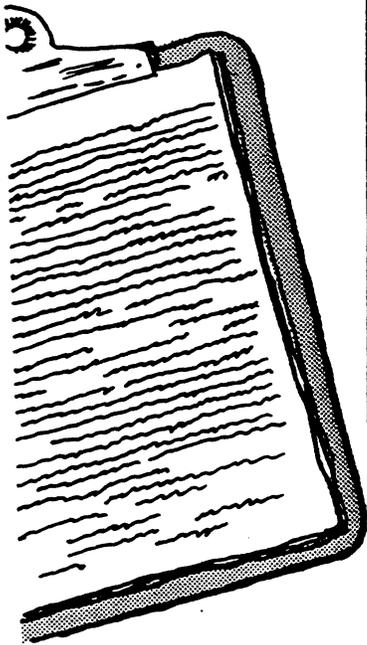
However, as outdoor education pioneer L.B. Sharp asserted, teaching outdoors should be done only when appropriate. For example, a traditional classroom probably remains the best place for teaching the difference between adverbs and adjectives while the outdoor classroom provides rich sensory experiences that enhance the use of adjectives. Consider the activity and the advantages of each site, indoor and out, before deciding where learning can best take place.

Instructional/Site Inventory

When planning activities for an outdoor classroom, teachers should simultaneously consider the lesson's objectives and the specific characteristics of the site. An instructional/site inventory is an effective way to do this (see appendix F). It can be done by the teacher individually, with the help of learners or with support from other school and community groups.

Begin the inventory by observing the site with notebook or recorder in hand. Think creatively and divergently as you search for features and attributes.

- ▲ Identify physical features including shady areas, cracks in the pavement, drainage routes, rocks, fossils, slopes, sunny spots, brush piles, fallen logs, effects of weather, etc.



- ▲ Identify cultural features including fences, walls, flag poles, playground equipment, storm drains, utilities, parking lots, buildings, sidewalks, etc.
- ▲ Identify biological features including evidence of plants and animals, habitat, food chains, interrelationships, etc.

While making these observations, think about the learning objectives and topics, issues or themes which lend themselves to the outdoor learning site. Analyze specific features of the habitat for learning, noting how they could become the means for improving learning skills, understanding subject concepts, encouraging positive attitudes and applying what has been learned.

View the site as if through the eyes of a child. Remember the simple fascination of floating bark in a puddle or watching ants drag a carcass back to their home? Such simple observations in an outdoor learning situation can be used to fulfill many instructional objectives.

Outdoor Learning Activity Ideas

Self-directed, small-group activities that embrace a discovery approach to learning should be integral parts of any outdoor teaching. When using habitats for learning, it is especially important to incorporate problem-solving and cooperative-learning skills into the instruction. These strategies engage the learners and provide rich learning opportunities.

Teachers can create new outdoor activities or use ideas already developed by others (see Appendix D). The diversity of ideas described below give a hint of the vast possibilities. The first two ideas integrate lessons from a variety of subject areas. Those that follow offer numerous activities in science, social studies, language arts, art and music, and health and physical education.

These suggestions are general and not grade specific. They can easily be adapted for different ages, settings, and time considerations. Generally, the teaching ideas in each category progress from simple to more complex. In addition, they demonstrate how activities designed for habitats for learning meet the full range of learning objectives — knowledge, skills, attitudes and behavior — across the curriculum.

Integrated Topic Activity

Pioneer Living

Working in small groups, learners pretend they are pioneers living on the school grounds (i.e., the land without the school buildings) in the year 1750. Using only what they can find on the school grounds, they can choose to draw or describe how they would find something to use for one or more of the following:

- | | |
|----------------------------|---------------------------------|
| ▲ Writing tool | ▲ Shelter |
| ▲ Container to hold water | ▲ Game, musical instrument, toy |
| ▲ Warm clothing or blanket | ▲ Gift |
| ▲ Rope | ▲ Medicine |
| ▲ Food for a week | ▲ Other |

Integrated Learning Skills Activity

Hula Hoop Plot Study

Learners form groups. Each group tosses a hula hoop so that it stops in an interesting part of the school grounds. The area inside the hoop determines the spot learners investigate. The groups should then:

- ▲ Observe the diversity of things they find within their hula hoop.
- ▲ Measure and count everything they find — or selected objects.
- ▲ Record their observations by drawing, labeling, graphing and/or describing everything — or the most interesting things they find.
- ▲ Categorize and analyze their findings.
- ▲ Draw conclusions.
- ▲ Hypothesize about how different things are interrelated.
- ▲ Communicate their findings to other groups and compare similarities and differences.
- ▲ Predict what they would find if they tossed another hula hoop.

Learners then imagine that they are something that they found in their hoop and write a story describing one day in that item's life.

Subject-Specific Activities

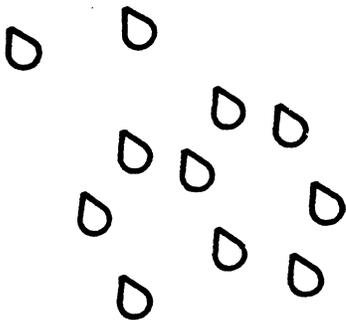
Science

An outdoor habitat for learning can help teach numerous concepts and skills in life science, physical science, and earth/space science courses. The habitat can be viewed as a mini-ecosystem of living and nonliving elements interacting as part of a larger world complex. Inherent to outdoor learning are numerous skills such as observing, identifying and classifying, measuring and recording data, hypothesizing and making inferences.

Rainy Day Science

Learners apply a variety of skills to learn about properties of water, effects of runoff, the water cycle, and weather patterns. In cooperative groups, learners:

- ▲ Carefully *observe* the site when dry and *hypothesize* what will happen to rain water; record observations following a raistorm.
- ▲ *Record data* of rainfall and *describe* other weather factors at the site.
- ▲ *Investigate* drainage patterns, evaporation rates for puddles, particulate matter or pollutants in runoff, soil permeability, erosion, pH of the rainwater, etc. *Analyze* the specific methods used to develop ways to *describe, measure, and record data*.



- ▲ *Problem solve* to determine changes in the site to provide better drainage.
- ▲ *Infer* how changes in the weather, or how different climates, affect personal feelings and group behavior.

Habitation in the Habitat

Learners can improve their understanding of habitat and ecosystems by direct observation in the outdoors.

- ▲ *Identify* the components of habitat, including the needs of plants and animals (water, food, light, shelter, space, heat from the sun) at the outdoor learning site.
- ▲ *Observe* a habitat carefully for examples of plants and wildlife and *describe* the needs of the inhabitants. How are they similar and different than the learners' needs?
- ▲ *Observe* and record evidence of the interrelationships among living things.
- ▲ *Explain* interrelationships among living things and *hypothesize* how different factors such as weather, air pollution, and litter might affect both living and nonliving things, including the learners.
- ▲ *Reflect* upon individual lifestyles and attitudes and their effect upon the ecosystem.
- ▲ *Test* water and air for pollutants.
- ▲ *Assess* learning by identifying ways that each habitat could be changed and how these changes would impact the other habitats on the school grounds. *Develop* a linguistic model, a logical-mathematical model and a spatial-visual model.



Building Blocks

An outdoor setting provides numerous opportunities for groups to explore and discover concepts of geography, geology, and engineering.

- ▲ *Observe* the topography of the area to discover even the smallest elements of the site. *Design* a map or model of the area.
- ▲ *Hypothesize* about how climate and seasonal changes at the site will affect different objects. *Design and conduct an experiment* to verify this.
- ▲ *Identify* the natural and constructed features of the site and *make inferences* about the natural resources required to make the materials that comprise the constructed features. *Conduct research* to verify the natural resources used to make the materials.

- ▲ *Design a model* of the life cycle of a product. Include energy and resources used to make the materials in the product, and the waste and pollution generated. *Compare* this life cycle with that of a natural structure.
- ▲ *Explain* how alternative (recycled, lighter, etc.) materials and products could be used in constructed features at the site to save energy and resources and reduce pollution.
- ▲ *Identify* individual acts of stewardship that would conserve resources.

Subject-Specific Activities

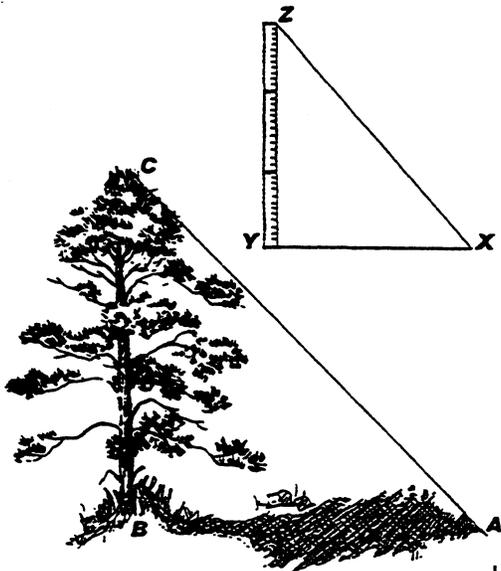
Mathematics

Every habitat for learning can be defined and measured in a variety of ways. Both living and nonliving phenomena can be quantified mathematically by calculating data and constructing graphs. Skills in arithmetic, geometry, algebra and calculus can all be applied in an outdoor situation.

It Depends

Objects can be measured in many ways. The more methods learners use, the better their understanding of an object or phenomena.

- ▲ *Identify* a tall, straight object in the outdoor learning site (tree, pole, utility post, etc.). *Make inferences* about the height, diameter, and circumference of the chosen object. Introduce various methods of *estimating and measuring* height and other dimensions (shadow-ratio method, 12:1 ratio or similar triangles, artists' method, Isosceles right triangle method, etc.) *Calculate* the height and other dimensions, including volume once height and diameter are estimated. Make actual measurements with a tree measuring stick, cruising stick or measuring instruments.



Crack Mathematics

Measurement concepts such as length, perimeter, area, volume, and height can be easy or difficult to ascertain depending upon the object.

- ▲ *Identify* cracks in the school yard. *Observe* characteristics. *Measure* the length, width and depth. Estimate its volume. Design a method to test the hypothesis.

Slippery Slope

- ▲ *Measure* a slope by using a string, a stick, a level and the Pythagorean theorem. Or, *calculate* the angle of the slope using a protractor. Or, calculate the percentage of a slope.

How Many Where?

- ▲ *Estimate* the number of a particular item (grass, trees, stones) in the habitat by sampling and generalizing. *Calculate ratios* of one type of item to another in an area. *Graph* the relationships.

Weather Patterns

There are numerous possibilities for using data collected from weather observations. The most variety can be obtained by using six basic weather instruments: rain gauge, wind meter, barometer, maximum-minimum thermometer, hydrometer and weather vane.

- ▲ *Record* simple numerical readings organized by date and time for each instrument.
- ▲ *Graph data* using line or bar graphs.
- ▲ *Calculate* maximums, minimums, averages, frequencies, divergence from a norm, and other factors.

Scale Down

- ▲ *Construct* a scale map of the site; *calculate* proportions as exactly as possible.

Subject-Specific Activities

Social Studies

Every habitat for learning, including both natural areas and built structures, has a natural and a cultural history. Learners who observe and analyze the site from both ecological and socio-cultural perspectives improve their understanding of the relationships between environment and culture and between cultures. They can relate concepts of geography, history and economics to their personal lives.

From Habitat to Model

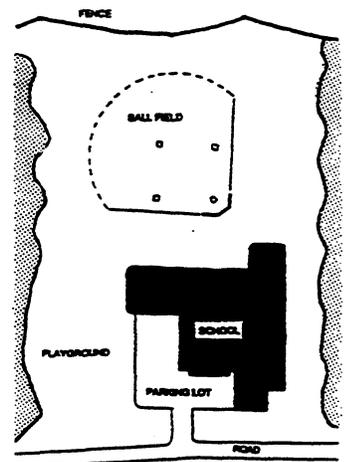
Learners can identify and measure geographical features and details of the Earth in many ways. Some methods can be applied to the outdoor learning site as a microcosm of the Earth. In small groups, learners:

- ▲ *Analyze* the site for as many details as possible and *problem solve* ways to represent the details in a model using a variety of different materials.
- ▲ *Construct* maps, creating symbols for various objects at the site. Make a physical model of the site.

Eco-history

Natural history and human history have affected each other in many ways, most importantly through human exploration of the world and community development. Any location on Earth, including an outdoor habitat for learning, has a story to tell about its past.

- ▲ *Identify* physical and biological features of the outdoor learning site; *categorize* human-made and natural objects; *explain the interrelationships* among living objects; *explain the interrelationships* between living objects and physical objects and forces.



Base Map of Schoolyard

- ▲ *Observe* and list evidence of changes that have taken place at the site and *explain* what may have caused these changes. Obtain aerial photos of the site. *Interview* older residents of the neighborhood to find out what the site was like in the past. *Analyze* historical information by drawing pictures in a series to depict changes that have occurred at the site over two or three generations. These can be accompanied by written text.
- ▲ *Describe* and *explain* the site at various stages in history, beginning with the Stone Age. Various types of oral, written, and visual presentations can be made by groups.

Relatively Speaking

Land-use issues encompass many environmental concerns and can be used to study the institutions of a society, including economic, religious, social, political and family life activities.

- ▲ *Work cooperatively* in "cultural groups," each group *conducting research* to describe the institutions (habits of thought and behavior) of a past culture or other culture from around the world today. *Observe* and *describe* the outdoor learning site as an ecosystem and then *make inferences* about how the site would help meet the needs of the cultural groups. What is missing from the site that is required to meet the needs of specific groups?
- ▲ *Make cultural comparisons* about how different cultures perceive their relationships with the environment based on different cultural perceptions of the value of the habitat at the site.
- ▲ *Discuss* potential uses of the outdoor site were it to be abandoned for current purposes and put up for sale. Uses could include the building of offices or industry, construction of a landfill or a park. Choose one of the uses and *analyze* and *explain* how it would affect and be affected by the environment at the site location.
- ▲ *Identify* actions that are environmentally friendly. What can the learners do?
- ▲ *Synthesize* learning in a debate about the most appropriate use of the site including environmental, economic and social concerns.



Subject-Specific Activities

Language Arts

Outdoor habitats for learning offer sensory perception opportunities not available in the classroom. Activities centered on these opportunities can enrich communication skills, including writing, listening/visual literacy, and oral communication. The stimulation from this alternative classroom can enhance creativity and inspire learners who use various learning styles.

From Another View

When conducted outdoors, descriptive writing is like painting an object; learners can absorb their surroundings and be inspired by them.

- ▲ Select five words to *describe* an object in the habitat. In groups, *compare* word lists for similarities and discuss differences.
- ▲ *Observe* with a partner a living or nonliving object from different angles and in various shades of light. Record observations based on touch (beware of poisonous plants and animals) and smell. *Describe* to another pair of learners the object as completely as possible in both a written and verbal manner.
- ▲ *Describe* individual feelings about various objects (living and non-living) and *prioritize* them from most to least valuable from the individual's perspective.
- ▲ *Describe* the site, as a group, by constructing a brochure for visitors. Include various natural events and minute details observed within the habitat.

Miniature Worlds

Perception is often based on scale. The more careful the observations, the more complex a description will be.

- ▲ *Describe* through "trail signs" a 100-inch hike (or shorter) for an ant by carefully *observing* a small part of the outdoor site. Share the nature trail with a partner.
- ▲ *Observe* an insect or other living thing in the outdoor site and *write* or act out a fictional story from its perspective.

Convince Me

- ▲ *Make a presentation* (oral or written) to support or deny the contention that the outdoor learning site would make a good place for a different type of land use than currently exists. Alternative land use examples include an office building, a factory, a park, a landfill, etc.
- ▲ *Identify* personal and group feelings and attitudes associated with the different alternatives.

Foreign Words

- ▲ *Increase foreign language vocabulary* by taking learners on an "ABC" observation hike where they identify the various objects in the outdoor learning site alphabetically.
- ▲ *Plan and enjoy* a "culturally correct" picnic outdoors and converse during the meal in the foreign language.

la fleur
la flor
die Blume



Subject-Specific Activities

Art and Music

Outdoor habitats for learning provide excellent opportunities to enhance sensory awareness and increase aesthetic appreciation of the environment.

What is Green?

Color, like taste, is frequently based on subjective judgments. How sweet is too sweet; how dark is dark green? Working in cooperative groups,

- ▲ *Identify* various colors prior to going outside and then *observe* all the various shades of those colors to be found in the outdoor learning site.
- ▲ *Make careful observations* and mix colors to represent as close as possible the various shades of colors found outside.
- ▲ *Identify* dark green or brown objects and light green or brown objects and compare the lists.

Environmental Opera

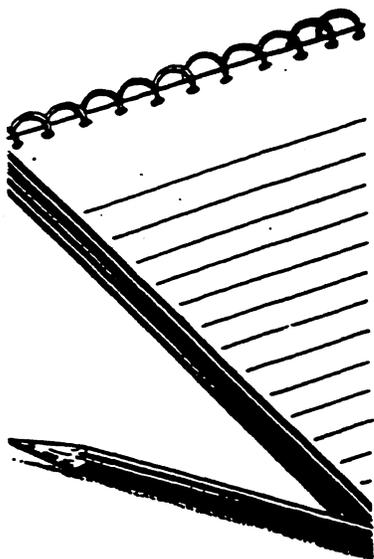
Not only are the hills alive with music, but any outdoor location can be a site of sounds and movement that require only the imagination for inspiration.

- ▲ *Observe* any moving object at the outdoor learning site. Imitate its motion in song or dance.
- ▲ *Listen* to the sounds at the outdoor site and have each learner mimic a specific sound. *Create songs* using these sounds.
- ▲ Using the musical notation of popular songs, adapt them to the habitat for learning by creating new lyrics for them.

Environmental Stories

Environmental writing blossoms like flowers in the outdoors. Nurture words with sensory experiences, explorations and imagination.

- ▲ *Write* and *sketch* creatively to construct storyboards for a documentary, play, or news broadcast using the outdoor habitat as the setting.
- ▲ *Write* and *perform* skits or a play that relies on using the habitat as the stage backdrop and for performance. Conduct the skits for other classes outdoors at the learning site.



Subject-Specific Activities

Health and Physical Education

Human health is closely related to the health of the environment. Examining relationships and using natural models to understand well-being are appropriate extensions for use of the outdoor learning site.

Making Sense

People rely upon their senses as well as scientifically collected data to make judgments about environmental quality. With a partner:

- ▲ *Identify* sensory qualities at the outdoor site. Use blindfolds, ear-plugs, gloves and nose plugs to *investigate* and *explain* what the learners' world would be like if deprived of the different senses.
- ▲ *Identify and explain* ways that sensory perceptions can be altered environmentally (wind, shade, terrain) at the learning site and ways that human actions alter perceptions (smoking, pollution from industry and automobiles, flying, viewing the learning site from the classroom).
- ▲ *Construct a model* of how human health relates to the environment. *Identify* which of these elements exist in the outdoor learning site.

Natural Inventions

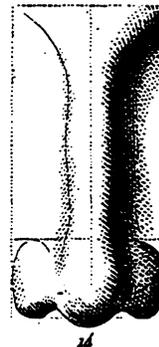
The environment is the source of all of the materials and product inventions in our society. Inventiveness is a creative act spawned by need or idle curiosity.

- ▲ Find natural objects in the outdoor learning site and invent games using them.
- ▲ Identify various types of litter and invent games using litter as part of them.

The above are only a few examples of learning activities that can be used outdoors. All of them can be done now, with no special development of the habitat. A search of environmental education publications will turn up hundreds of additional activities and ideas (see Appendix D). The many different ways to use the habitat for learning are almost limitless once teachers try some activities and add their own imagination and creativity. Yet, with so many possibilities, many teachers still do not use the outdoors for learning. For some, they are more concerned about learner behavior and logistics than with teaching ideas.

Encouraging Good Conduct and Managing Logistical Concerns

Teachers do not need to be overly concerned about their ability to conduct productive learning activities in an outdoor classroom. Addressing learner behavior, liability concerns, logistical factors and unfamiliar methods of learning in an outdoor site are similar to efforts required in an indoor classroom. Still, it's natural to be apprehensive when beginning a new project. Such concerns are addressed in the following letters to "Dear Habi Tat" who has practical advice for these common concerns.



DEAR HABI TAT

Teacher Fears Potential Disaster When Class Ventures Outdoors

▲ Dear Habi: My class behaves well within the four walls of my room, but won't they roam and be unmanageable if I try outdoor learning?

Dear Teacher: Behavior is a function of communication, not a function of a walled-in classroom. Once behavior expectations are established, they can easily be transferred to an outdoor learning site. Behavior problems usually result from not paying attention to the task. Even so, a few practical tips may help you. Set physical boundaries, time limits and a place to meet. Use a specific signal to call the group back together. Have learners work in pairs or small groups. Ask for parent or community volunteers to help. Have older learners work with younger ones. But remember most of all, if you and your learners have constructed a quality activity, then you will not have behavior problems.

▲ Dear Habi: How should I protect against potential liability problems when I take my students outdoors? What if a student gets stung by a bee and has an allergic reaction? Anything can happen out there!

Dear Teacher: Hard to believe, but anything can happen anywhere! The outdoors holds no more potential dangers than indoors. They're just a different set than you're used to. Think through the activities you will be doing, take basic precautions, and know that what can happen is within the existing liability of standard school experience.

▲ Dear Habi: I've seen what happens when teachers take a class outside. When they come back inside, the rest of the day is ruined. The kids are so wound up they won't sit still the rest of the day. How do you help them regain control of themselves?

Dear Teacher: When they're in a learner-centered situation, learners seldom lose control. Make sure everyone is focused on the activity, and know that good activities naturally generate enthusiasm. It sometimes helps to have a "quiet down" or reflective activity before returning inside. We all benefit from these types of helpful transitions.

Teacher: Outdoor Learning Just Not Practical

▲ Dear Habi: I can see how teaching outdoors could really excite my students and make learning

fun. I even admit that it could make learning more meaningful but so does many of the other new programs and ideas that everyone wants us to try. I don't have time to plan for one more thing.

Dear Teacher: The good news is that it's not one more thing. It takes no more time to plan a meaningful and interesting activity for outdoors than for indoors. You are teaching the same thing but better because it is more appropriate outside. Why plant seeds in cups on the window sill when you can plant them in a vegetable or butterfly garden? You accomplish the same learning objective but in a real world setting.

▲ Dear Habi: What if we plan an activity and the weather is bad? Should we still go out in the rain? And what about winter? From December to April I can't see going outdoors. What could we do anyway if it is cold with snow cover outside?

Dear Teacher: Life doesn't stop for inclement weather! In fact, the world looks and is different during rain or snow, heat or cold, wind or calm. You can make use of the weather to teach ecological principles and how climate affects social life. Of course, you must use common sense. When the wind chill factor makes frostbite a real possibility, stay indoors! But in most situations, just make sure everyone is properly attired. Some teachers even have a pile of spare gloves, coats, ponchos, boots, and scarves that anyone can use.

▲ Dear Habi: Isn't it be a hassle to tote all the necessary equipment outdoors, especially if we do science, writing, and artistic activities outside?

Dear Teacher: It just takes a little planning. Besides, who says you have to do all the "toting"? Your whole classroom is filled with learners ready, willing and able to participate. When teachers and learners plan well, carrying equipment isn't a hassle. Soon you'll find that moving outdoors is second nature to you (pun intended).

▲ Dear Habi: Taking my class outside would take so much time. After I gather up the supplies, review the rules, start the trek outside and make sure everyone is back by the time the bell rings, I don't think there will be time to complete a worthwhile activity. Am I wrong?

Dear Teacher: First, don't try to do it all yourself or all at once. Have learners take responsibility for themselves and for supplies. Second, plan the activity in stages in case you do run out of time to complete the entire activity. You may also be surprised how quickly (and quietly) learners can move from indoors to outside and back again, especially if you keep them focused on specific tasks related to the activity. Be

sure to include a preplanned task upon immediate return to the classroom that provides an incentive to focus on the activity.

If Learners Wonder, Won't They Wander?

▲ **Dear Habi:** I have been told that environmental education should be conducted using a discovery and hands-on approach to learning. If we go outside and I leave my learners free to wonder, won't they wander? Then how will I manage to keep learners on task?

Dear Teacher: Discovery approaches to learning and hands-on activities do not mean unstructured and unguided lessons. Such activities, when planned sufficiently, engage learners with tasks that cause less distraction and day-dreaming. In fact, these types of activities often work very well with learners with attention deficits.

Guided discovery and hands-on activities may, however, generate sounds of active learning in the process of engaging learners fully and enthusiastically. These sounds, what I like to call "productive noise," should not be confused with disturbances or "off-task noise." Real learning is infrequently accomplished in an atmosphere of total calm.

▲ **Dear Habi:** I am a good science teacher, using lots of hands-on experiences in the classroom. I definitely see the relevance of outdoor education for science. However, I lack confidence in being able to teach outdoor education in an "integrated" manner as recommended. I'm just not comfortable with language arts, music and art. Should I forget about outdoor habitats?

Dear Teacher: Interdisciplinary lessons are not a prerequisite for outdoor education. However, they can enrich an activity and engage learners who show little interest in science. If you feel uncomfortable constructing interdisciplinary activity ideas on your own, use activities that have proven successful from other sources. Look through environmental education activity books for ideas. Ask other teachers. Find out if any of your colleagues would be willing to team-teach in the outdoor habitat. You don't have to do everything yourself, but it may be worthwhile to try an integrated approach.

▲ **Dear Habi:** Even though outdoor education can be taught using language arts and other non-science subjects, doesn't outdoor education require some knowledge about nature: bugs, critters, plants, atmosphere, water cycles and the like? I am not used to teaching much science, except for a few activities I do to meet school requirements. What

if we get outside and the students ask me a question about plants that I don't know the answer to?

Dear Teacher: Good teaching is not knowing everything about everything, nor even everything about one particular thing. It's about guiding inquiry. It is more valuable to teach how to learn than to teach what to know. When a question arises that you cannot answer, have the class hypothesize an answer and verify it by discovering the answer on their own. Consider the nature of the activity ahead of time and have a variety of references available for learners to use. You may even want to have learners develop a test or experiment to validate their inferences or hypotheses. And enjoy learning right along with your learners. That's the best part!

▲ **Dear Habi:** How do I fit this outdoor learning into my course of study? My year is so full now, how will I fit in more?

Dear Teacher: Outdoor learning shouldn't be an additional activity. It should be used to fulfill some of the same instructional objectives you currently accomplish indoors. Replace some indoor activities, particularly those that were least successful, with outdoor ones. You can use outdoor learning to introduce, reinforce, or assess the learning of a traditional subject concept or learning skill.

▲ **Dear Habi:** I tried taking the children outside for a learning activity once and it wasn't long before word got around that my kids were having a great time "at recess." How do I convince the staff that although we were having a good time, we were also learning?

Dear Teacher: Be proactive before beginning outdoor activities by explaining your plans to other teachers. Ask them for ideas and suggestions. Make them aware of how you are meeting your instructional objectives through specific outdoor lessons. You may even find that other teachers want to participate, thus forming an active support group.

Final Words from Dear Habi:

Teachers should be so inspired by the expansion of creative learning opportunities offered by the outdoor classroom that quality learning should be the normal expectation. This is particularly so in regard to using what already exists. Consider that an outdoor habitat for learning provides a means for continuous real-life study, for unexpected observations, for problem-solving adventures, and for the spontaneous teachable moment. In addition, outdoor learning requires no special permit, no time-consuming arrangements for transportation, no lunch, no comfort facilities, and no shifting of class schedules. Give yourself a break. Just use it!

Acquiring the Support and Cooperation of Others

Before implementing activities in a habitat for learning, teachers should secure the support of key people and clearly establish a rationale for using the site as a learning opportunity. This will help "sell" the program to administrators and other teachers, and help recruit others to participate in the outdoor learning program. Careful planning and preparation by teachers and learners leads to successful outdoor learning experiences.

Key Players to Involve

People who should be aware of plans for outdoor instruction include the learners, principal, school staff, parents, custodian, other teachers and community members. But the most important players are the learners.

- ▲ Learners gain a sense of ownership and control over the outdoor classroom program by being involved in the planning stages. They can help assess the site and prepare guidelines for outdoor behavior. Learners can also volunteer to be in charge of logistical needs such as carrying out equipment and ensuring the class is back in the building on time. They can participate in multi-age teaching, providing assistance and support to other teachers.
- ▲ The principal needs to be involved from the beginning, and be regularly kept informed of progress. Seeking the advice of the principal and other teachers lessens the chance that they will make negative inferences about the enthusiasm or nontraditional activities that are often a part of environmental education. The secretary or other staff person should know when a class is outside for emergency and safety reasons.
- ▲ Custodial support and assistance is often essential. Outdoor activities may require materials and equipment custodians can provide. New materials acquired for the project need to be stored somewhere, and classroom space might not be available. The habitat for learning may need special care. Learners might track in dirt and mud when returning indoors. Asking the custodian for advice on these matters can prevent a lot of problems.
- ▲ Teachers should explain the outdoor program to other teachers, particularly those in their own department or at the same grade level. They may be particularly interested in how outdoor learning can achieve instructional objectives. Asking them for help and advice is a good way to get them involved.
- ▲ Parents should not only be informed about but also involved with the outdoor program. A note from the teacher or a student newsletter helps. Some parents may want to participate in planning and teaching; the others will appreciate knowing about activities in advance when their children begin making comments about that day's outdoor lessons. Some parents may be able to share a special expertise relevant to the outdoor activities.
- ▲ Other community members, such as natural resource specialists, environmental association members and local agency officials also may contribute to your outdoor lessons and activity planning.

Organizing the support group and explaining the program could take the form of a staff development opportunity. This might encourage

some teachers to participate who otherwise may not have become involved in the outdoor habitat. A staff development program would give them time to do some serious planning and review new educational materials. The overriding goal of staff development should be to introduce less-familiar educational processes into the curriculum, with emphasis on the use of an outdoor site at the school.

Rationale and Assessment Plan

Teachers need to show how outdoor educational activities allow them to meet their instructional objectives. It involves the same process used in lesson plans for indoor classroom learning.

As shown in the sample activities in this chapter, outdoor learning helps teachers meet objectives in subject content and learning skills. One advantage of an outdoor habitat for learning is that it supports reform-minded instructional objectives because outdoor activities are frequently designed for self-directed, small-group activities rather than whole-class instruction. Outdoor learning sites also offer opportunities to actively engage learners in environmental stewardship, and help them become aware of the need to be responsible for their own actions.

As part of this process, consideration must be given to how the activities fit into the curriculum. This can be done in several ways, as outlined in Chapter 2.

Assessment of outdoor learning is an integral part of the regular ongoing assessment. As with any assessment, the methods used must be appropriate for the learning. Because of the nature of outdoor activities, they lend themselves well to alternative assessment strategies.

Preparations for Initiating Outdoor Activities

Preparing to initiate outdoor learning activities is similar to preparing the classroom for any type of discovery-based learning activity. The teacher and learners must set the stage for learning and be prepared to participate productively.

First, the parameter of the outdoor learning site needs to be established, and the planning group should outline how specific parts will be used in activities. Potentially harmful things such as poison ivy, broken glass or sharp wire should be cleared away, or at least be pointed out to learners before the activity begins.

Second, teachers must be sure everyone is aware of behavior guidelines before venturing to the outdoor site. Learners can be involved in this process. Policies should remain consistent with those already established in the classroom. It's a good idea to review what learners should be cautious of in order to protect themselves while outdoors. For example, they should not touch poison ivy nor pick up "orphaned" animals nor swat at bees and wasps. Learners need to be aware that the wildlife, plants and other objects are to be observed only, unless otherwise instructed. It's helpful to set boundaries, establish time limits and pick a place to meet. Everyone should be aware of proper attire; teachers might want to make provisions for those who forget to bring necessary clothing or apparel.

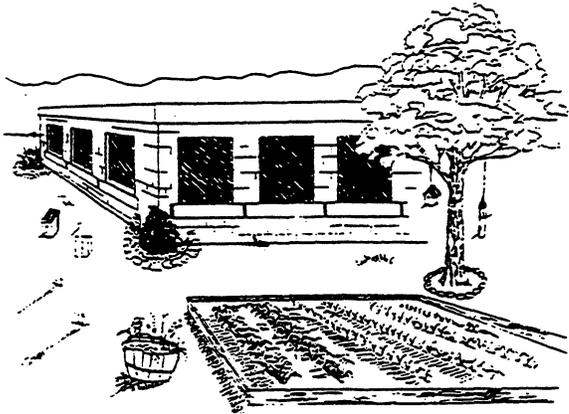
If learners are not used to learning outside, begin with an activity that has a high percentage of success. It's probably best to start with a simple activity and allow other activities to progress in complexity. Give learners enough time to adjust and ease into the new setting. Activities likely will take more time than planned, so they should be designed in segments that have natural cutoffs. It's also a good idea to shape activities similar to an aerobic workout: start with a warm-up, progress to the action, then use a cool-down strategy (a quiet, reflective moment) before coming back into the classroom. After returning indoors, discuss the learning that occurred.

Do You Want to Grow from Here?

As suggested in this chapter, the habitat for learning site should be used close to its original form before attempting any expansion of the program. In some cases, use of the site as it exists is all that may happen. However, just using the site as a habitat for learning builds a base of ideas and resource people who become familiar with it and understand the possibilities of outdoor environmental education.

Eventually, the teacher or teachers who have begun using the site may enhance the area by moving debris or mulching eroded areas. They might decide to set up some type of learning station to help conduct a particular activity. They might think of other improvements that would expand the possibilities for outdoor learning. As this begins to happen and as more people express an interest in using the site, it's time to do some careful and extensive planning. Further developments should be postponed until the information in the next chapter is considered.

CHAPTER 4 *Enhancing and Developing Habitats*



Once teachers and learners regularly use a habitat for learning, they might begin making minor improvements. This is when participants start to visualize possibilities for further enhancement and efforts to “develop” the site take root. These efforts should be well planned to make sure the site reaches its maximum potential.

The habitat for learning can be developed using four major steps:

- ▲ Organize a support system and establish its functions. A support committee should ensure that site development evolves from the educational curriculum.
- ▲ Develop an overall program to guide the use of the habitats for learning. The support committee should identify the program purposes, goals and objectives, and related learning experiences.
- ▲ Identify site development needs and action strategies. The support committee should consider materials and resources, actual site improvements, potential funding considerations, public awareness efforts, and professional development opportunities.
- ▲ Summarize the ongoing planning and strategies for long-term maintenance in a management plan that shows how the habitats for learning will be used, developed and maintained.

Organizing a Support System

It’s hard for just one or two interested teachers or administrators to sustain an effective outdoor learning program, particularly when developing the site beyond what already exists. Therefore, the most important step toward establishing an ongoing and successful habitat for learning is organizing a support system.

Organizing the support system begins with the establishment of a support committee. Potential members, as discussed previously, include learners, principal, school staff, parents, custodian, teachers and community members earlier identified as key players in supporting initial use of the site (see “Acquiring the Support and Cooperation of Others,” Chapter 3). It also should include people of different backgrounds who can lend various types of expertise to the development. It is important to include community members who live near the site as well as parents and learners. Involving all these players from the beginning fosters a real sense of community ownership.

The tasks involved in developing the program and improving the site will require many skills and abilities. The support committee should be designed to spread the workload so that responsibilities do not fall on a few individuals. Eventually subcommittees might be developed for specific tasks which can involve an even wider audience.

Support committee participants should be people who exemplify attitudes consistent with a commitment to sound educational practices,

environmental stewardship, and creative thinking. If other schools are expected to use the site, it might be worthwhile to establish the committee on a district or regional basis. It's also important that the Board of Education be asked to pass a resolution to create the committee or otherwise give official recognition to the effort.

Organizing a support committee is initially an enthusiasm-building effort. Suggesting realistic, attainable goals relevant to other teachers' professional interests is one way to gather support. Invite their advice and ask what they might be willing to do. Consider a wide variety of people including teaching and support staff of the school or district, administration and school board members, parents and community members, and outside resource specialists.

Most important, enlist learners on the support committee and in sub-committees. They should have a sense of ownership and leadership in the project.

The following is a checklist of potential support system committee members:

- ▲ Staff, including teachers, secretaries, maintenance staff, and cafeteria workers.
- ▲ Administration from the school and district and members of the school board.
- ▲ Learners, including club, academic, and student council leaders or any learner with a special interest in the outdoor habitat (this can be a way to help learners express hidden potential).
- ▲ Parents and PTA members.
- ▲ Community members, including nearby landowners, senior citizens, local business and industry representatives, local civic and environmental organizations (garden clubs, fish & game associations, Lions Club, Audubon Society, etc.), and media/public relations professionals (newspaper, radio, public television).
- ▲ Professional resource personnel, including natural resource specialists (from soil & water conservation districts, Ohio Department of Natural Resources, Ohio EPA, recycling centers, OSU Extension), historians, artists, writers, humanistic and spiritual leaders, construction workers, engineers, and landscape architects.

Once the support system committee is established, interest can be maintained by planning short, productive committee meetings. Members should spend meeting time making decisions rather than listening to informational reports that could be read before or after the meeting.

Meetings' goals should include establishing a rationale for the habitats for learning program, developing plans of action, and designating duties that are vital for the success of the outdoor learning program. These duties are described under "support system functions."



Support System Functions

The first function of the support system committee is program development, which must be grounded in both curriculum requirements and site characteristics. Program development should result in a plan that includes a statement of purpose and objectives with related learning experiences.

As the habitat for learning's program is developed, the support committee will take on the additional functions required for the habitat's use and improvement. These may include inventorying the site for potential projects, collecting materials and resources, funding development projects, providing public awareness and professional development opportunities, assessing projects, and sustaining the site. These functions and the program development plan should ultimately become part of a management plan for use, development, and maintenance of the site.

Program Development

It makes sense to develop an overall habitat for learning program before beginning to physically develop the site. Again, this program development merges educational needs with site potential, remembering that form (site development) follows function (educational requirements). The first step is to identify the program's purpose. Then establish objectives and identify educational activities that are linked to specific existing or planned characteristics of the site.

Identifying the Program's Purposes

Program development requires a guiding purpose before all else. To establish the project's purposes, the support committee needs to answer the question, "How do we want the habitat to enhance learning?" Help in answering that question can come from the environmental movement and from the curriculum reform movement.

The habitat's program can draw upon the environmental education movement in many ways. Environmental education can:

- ▲ Help learners develop an ethic of environmental stewardship.
- ▲ Promote ecological literacy.
- ▲ Enhance understanding of basic environmental concepts such as adaptation, carrying capacity, change, diversity and interdependence.
- ▲ Prepare learners for responsible citizenship to make informed decisions about environmental issues.
- ▲ Help learners understand the effect human actions have upon all living things and the earth system.
- ▲ Develop an awareness of alternative ways to conserve natural resources.

The educational reform movement also offers an array of opportunities for learning in an outdoor setting. Habitats for learning are perfect sites to practice:

- ▲ Cooperative learning.
- ▲ Problem solving and decision making.
- ▲ Critical thinking.
- ▲ Learner-centered, hands-on teaching.
- ▲ Discovery approaches to learning.

These methods work well in habitats for learning because individual and small-group learning is very appropriate in the outdoor setting. In addition, the image of the outdoor habitat is not bound by the traditions of the indoor classroom and the stereotypes associated with it.

Instructional innovations and environmental education activities blend easily to help form the outdoor habitat's educational purposes. The support committee should also capitalize on the opportunity to drum up support for interdisciplinary learning. Even if only a few teachers from a few subject areas are initially involved, the promotion of interdisciplinary learning can draw other teachers from different subjects into the program.

Developing Goals, Objectives and Learning Experiences

The goals and objectives of program development should be consistent with program purposes and focus on specific aspects of the curriculum that the site can best support. Goals and objectives can most effectively be developed by conducting an instructional/site inventory that considers both the curriculum and site characteristics (see Appendix F). This should build upon the process which began during the early phases of use of the site (see beginning of Chapter 3).

Begin the instructional/site inventory by asking:

- ▲ What aspects of the curriculum does the site have the potential to support?
- ▲ What specific learning experiences will guide use and development of the site?

Answering these questions requires a knowledge of courses of study and learning experiences, a description of the site, the experiences of those who have already used the outdoor site, resource materials, and an abundance of creative thinking. These are briefly discussed below.

Courses of Study and Learning Experiences. Consider using as many courses of study as possible. Start with the subject areas of all the teachers on the support committee. If only one or a few subjects are represented, look for ways that these can be fused with interdisciplinary or integrated methods of learning. Select specific parts of the courses of study that are applicable to the outdoor site. This can be done by making inferences about how the outdoor site can be used to teach specific subject concepts, topics, themes, basic skills, life-long learning skills, attitudes and behavior addressed in the courses of study.

Think long-term by having members of the support committee serve on curriculum writing committees when school districts revise their courses of study. This can ensure that all subject areas reflect environmental education ideas.

Once goals and objectives are established, start to identify appropriate learning experiences. Encourage teachers to begin with simple, short activities from curriculum areas in which they have a strong interest. Explore ways to modify "indoor" activities that can best be taught outdoors. Develop one of the sample activities described in Chapter 3 and find others in the suggestions and resources listed in Appendices C and D.

When constructing actual lesson plans and learning experiences, remember to address prerequisite subject concepts and learning skills that are critical to the success of the lesson. For example, if collecting, recording and organizing data efficiently and accurately is a primary objective, then remember to provide time for introducing, practicing or reviewing techniques for this skill.

Outdoor learning experiences can be designed to incorporate integrated objectives, including learning skills, interpersonal relations skills, as well as typical content-centered objectives. A word of caution: Learners, teachers and parents are conditioned to think mostly in terms of content outcomes. Therefore, make a conscious attempt to introduce and assess other objectives so they are not left to chance. Also, when planning goals and objectives, make certain that each require direct interaction with the outdoor learning site. Otherwise, the project could take place equally as well in the regular school classroom.



Site Description. To decide if the outdoor learning site can support various learning objectives and activities, those involved in program development need to have a description of the site either in mind or on paper. This site description doesn't have to be a thorough site inventory. It needs to describe only the general physical, biological and cultural features such as the location, size and shape of the area, geologic features, general description of plants and animals, and land use of areas surrounding the site. A more detailed picture will be required when specific activities are planned.

Experiences of Others. Those who have already used the outdoor learning site are the best resource to provide guidance for program development. This is where the philosophy of this guidebook — that use should precede development — becomes very fruitful.

Another way to draw upon others' experiences is to have resource people from outside the support committee share their knowledge. Of particular benefit would be people from other schools who have developed their own outdoor learning sites. These resource people could be invited to a committee meeting, or the support committee could visit with them at their outdoor learning centers to observe and discuss potential projects. For a list of resource people and projects in Ohio, see Habitats for Learning: A Directory of School Land Labs.

The support committee also may want to consider attending seminars, workshops and other professional development opportunities that would build their repertoire of teaching and learning ideas.

Resource Materials. There are many guidebooks with ideas for outdoor activities and suggestions for physical and biological development of outdoor habitats for learning. (See appendices C and D.) Be aware that traditionally, many outdoor education materials were targeted to biology teachers and naturalists. This often led to outdoor "land labs" being developed with only science subjects in mind. Now many environmental education materials exist with activities and developmental ideas applicable to interdisciplinary education. Sometimes integrated teaching ideas can be generated by considering how a variety of non-science subject-specific activity guidebooks treat environmental issues.

Creative Thinking. The potential for the habitats for learning program is fed by creative and divergent thinking. The possibilities are limitless. Brainstorm a wide range of ideas about how to connect all aspects of the instructional/site inventory, to promote educational innovation, and to stimulate use of the different outdoor habitats. Encourage teachers and learners to explore exciting alternatives to the traditional classroom.

One final word of advice. Program development is not a definitive process. Provisions may be made in the goals and objectives to generate activities without knowing when or if the necessary resources and materials will be available. This means that some of the committee's ideas may not be fulfilled; however, it does mean that *provisions have been made for a plan of action and that whatever is accomplished will be an integral part of the curriculum.*

Site Development Needs and Action Strategies

Once the purposes, goals and objectives, and related learning experiences for the site's use and development are established, action planning can begin. This may require forming subcommittees to identify the needed site improvements and to generate specific plans of action. At this point, it is especially important to involve as many learners as possible.

Site development planning includes several components: drawing up a detailed site inventory, listing potential projects, collecting materials and resources, deciding upon funding strategies, increasing public awareness, providing professional development, and making plans to assess projects.

Detailed Site Inventory

The purpose of a detailed site inventory (see Appendix F) is to make sure all teachers, support committee members and other interested parties know what's available on the site. It's important to determine if what already exists will support the overall program or if additional development is needed. To conduct the inventory, write descriptions, take pictures and collect data about as many features of the site as possible, including physical, biological, and cultural aspects. Physical descriptions may include the site's size, shape, topography, climate, geologic features, geographic location, and slopes. Biological descriptions may derive from the components of habitat, including food sources in the food chain, sources of water, natural shelter, and space available for species. Cultural descriptions might include all the elements related to human technology, such as buildings, sidewalks, bus stops or benches. Arriving at a complete description of the site involves observation, writing, measuring, modeling, and collecting and presenting data, among other skills. These skills are relevant to many courses of study and make the site inventory an excellent activity for learners.

Once the site inventory is complete, specific features should be considered in relation to specific learning experiences that are linked to the program's goals and objectives. As more details are known about specific features, new activities can be constructed or modified from original plans. Learners can — and should — help define both educational and site development.

Development Projects

The support committee should consider a great variety of outdoor learning activities and site development projects (see Appendices B and G). As structural objects such as benches, bird houses, and signs are added for various purposes, be sure to consider the overall effect on neighbors and adjacent land. This is one reason why it helps to have community members represented on the support committee.

After identifying potential projects, prioritize them and develop a timeline for each, including short-term and long-term objectives. Begin small and expand upon the projects over time. The development of an outdoor learning site is a dynamic process that will require adjustments along the way; some projects may not happen as anticipated. Experiences will modify and gradually develop the type of habitat for learning that meets initial goals and expectations.

Creation of "learning stations" fits in well with self-directed, small-group teaching practices. These stations can be located in areas designated for soil sampling, weather instruments, wildlife food patches, tree plantings, aesthetic reflection, archaeological exploration, herb garden planting, and more. On the other hand, many intriguing learning activities do not need much development but only observation points or a winding path in places such as an open grassy area, a woodland, a parking lot or near a stream or pond.

Some costly improvements can be considered, such as all-weather paths of gravel, cinders or wood chips. In some cases wheelchair-accessible paths may be required. Steps may be needed on steep slopes; stepping stones or recycled plastic lumber may be used to cross drainage ditches, streams, or wetlands. Simple log seats for individuals or small groups can be built at various locations.

Establishing large classroom-sized seating areas might be appropriate for short gatherings. A disadvantage of such an "outdoor classroom" is that it tempts teachers to conduct "whole class instruction," which should be used sparingly if at all in a habitat for learning. The school classroom probably is a more suitable place for any portion of an activity that calls for a formal whole class setting; still, a large area could be used as a home base or meeting place.

When the outdoor site is used for long periods or if groups are bused to the site, the need for additional facilities should be considered. Often, school rest rooms are not conveniently located near the outdoor site, possibly requiring new construction. If day-long use is expected by bused groups, shelter from unexpected weather may be needed. A source of water and waste receptacles would also be useful.

If the habitat for learning has previously been used by other groups, special consideration should be given to control access to the site. Bicycles,



mopeds, motorcycles, and even cars may need to be excluded. Concern about vandalism may suggest the need for some form of fencing.

It is best if all development projects can be accomplished as part of specific courses of study using learners' skills. Outside resource people can also be asked for assistance. In addition to representatives from government agencies and environmental groups, numerous businesses can help, such as those involved in landscape architecture, garden supplies, and recycling manufacturing.

Development projects and activities need not be confined to the school audience alone. Community groups such as Boy Scouts or Girl Scouts, senior citizens groups, and local environmental organizations may find the site useful for their own programs. The more people involved in the program, the greater the vested interest by the community, and the easier funding, resources, and site protection can be acquired.

A final note about development projects. There are a number of sources of information on different types of development projects (see references and appendices). Therefore, the **Habitats for Learning** program focuses more on the justification and use of these projects, rather than duplicating readily available information on how to do them.

Materials, Equipment and Resources

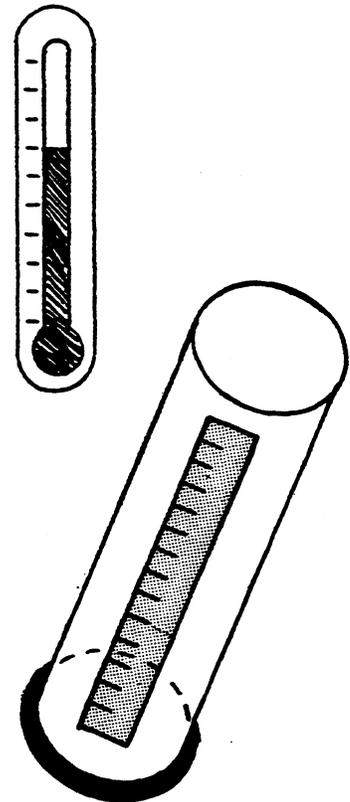
With more specific development projects, learning stations and activities in mind, the support committee should identify what is needed. These might include:

- ▲ curriculum and teaching resources.
- ▲ materials and equipment for development projects.
- ▲ equipment and supplies for conducting activities.

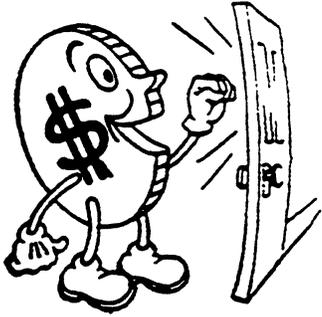
In the time of the one-room schoolhouse, much of outdoor environmental education was based on nature study. Land laboratories built after World War II continued this tradition. But within the last 20 years, curriculum development in environmental education has proliferated, broadening the scope beyond nature study to include interdisciplinary opportunities and multi-media programs. Textbook companies, book publishers, conservation groups, federal and state agencies, and even private industry have developed quality activity guidebooks, games, videos, and computer that provide ready-made materials that can be used in outdoor learning activities.

With such a wide array of available materials, it would be helpful to establish a subcommittee to find those resources which are most appropriate for the program. Resources listed in Appendices D and E provide a good starting point.

Other subcommittees should identify the materials, equipment and supplies that will be needed to construct projects and carry out related activities. For example, a bird feeding station might require lumber and hand tools to build, seed to attract the birds throughout the year, and binoculars and data sheets for learner observations. It is important to consider both development and use when generating the "shopping" or "wish" lists.



Again, much can be done with minimum requirements for development. However, certain materials and resources will be critical to the program. Some are free for the asking or can be borrowed, but others will have costs. Therefore, these subcommittee may find it useful to help develop budgets for material requests.



Cost and Funding Considerations

Once you have decided upon various projects and activities, develop a budget for each and then prioritize them, considering potential costs. Give priority to activities and development projects that are less expensive than others, especially if funding is unavailable for expensive projects.

Begin funding requests with the school. If all the projects fit into courses of study, it should be easy to justify budget requests. If the school district cannot meet these needs, it's time to look elsewhere (see Appendix H).

Costs involved in outdoor learning site development can vary from a few dollars to several thousand dollars. Consider various sources including:

- ▲ donations from individuals, civic groups, PTA, environmental organizations, and private businesses.
- ▲ grants from local foundations, public agencies, and corporations.
- ▲ fund-raisers in the school and the community such as bake sales, car washes, recycling, dinners, ice cream socials, service projects, raffles.

It is best to start with groups or individuals that have previously supported school projects, because they are more of a "sure thing." Encourage them to adopt a part of the program as a special project. Many groups compete with each other for recognition in local communities, so when one group makes a donation, approach others. Let them know who has already donated and that all donors' gifts will be publicized. Also, keep in mind that many sources are more willing to donate services or materials rather than money.

When approaching a potential donor, be sure to tell them exactly what the donation will be used for, how much it costs or what is required, and how it will benefit local education. Remember, it is easier to get portions of funding from many groups than everything from one source. Upon receiving a donation, be sure to express gratitude and provide publicity — newspaper articles, a recognition sign at the learning site, or an announcement at a Board of Education meeting. Groups will appreciate and remember this the next time you ask for money.

Public Awareness

Good public relations are essential for support and maintenance of the outdoor learning program. They will create a positive image for the program, secure support of the school board, aid in acquiring funding and resources, attract the participation of other teachers, and generate support from community members that will lessen the chances of vandalism at the site. Also, publicity about specific projects will increase awareness of environmental issues in the community.

Because public awareness involves a variety of communication skills, learners can be actively involved in these projects as part of course of study learning objectives. For example, they can build awareness in the school, home and community through a number of vehicles.

- ▲ For the school: newsletters and newspaper articles, videotapes, slide shows, hallway displays, morning announcements, guided tours, and buddy teaching.
- ▲ For the home: fliers or letters sent home with learners, notices in parent-teacher newsletters, and site brochure.
- ▲ For the community: news releases with photographs, visits by the media with a media information packet, displays or posters in public buildings, special events held in the habitat for learning, and public tours.

Professional Development

Professional development opportunities such as workshops and mentoring are a good way to encourage the interest of other teachers in the habitat for learning. These can occur when site development is taking place or after site improvement measures are taken and several activities are conducted successfully. Team leaders can pair up with teachers who are willing to try outdoor activities but who feel uncomfortable with the outdoor environment. Teachers' hesitations should be dealt with in the manner explored in the letters to "Dear Habi" in Chapter 3. Perhaps they could write their own concerns, which would be answered through a newsletter or workshop.

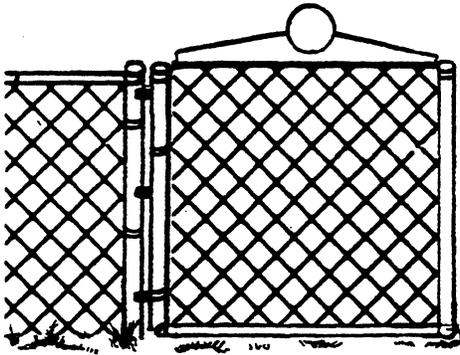
Model activities from a variety of subject areas can be presented at the workshop and given to teachers so they can come away from the session with tried-and-true activities ready to be used. Basic procedures used in the habitat and the overall plan for site use and development should be explained, while inviting teachers' input to help them become part of the system.

Once program and site development planning have been accomplished, working subcommittees established, and a tentative timeline set and budget requests prepared, consideration must be given to long-term maintenance of the site to keep it functioning effectively.

Management of the Outdoor Site

Before projects begin, the support committee should decide how to maintain the site and guard against vandalism. A management plan should address program development elements, site development needs and assessment procedures as well as maintenance guidelines. This will prevent losing sight of the original mission of the habitat for learning, safeguarding it from changes in school administration and from human activity around the site.

Once this "master plan" is developed, it would be wise to have the Board of Education officially adopt it. In more than one case, a school board voted to use an outdoor learning site for another purpose (new building or athletic fields) or to give a utility a right-of-way, radically changing the site's use as an outdoor classroom.



Site Maintenance

Habitats for learning will require some type of routine maintenance depending upon the extent of development and permanent features constructed at the site. A number of decisions will need to be made.

- ▲ What types of maintenance must occur on the site? How will plantings get watered, feeders filled, paths maintained, and fences mended?
- ▲ When do these things need to be done? A monthly maintenance schedule — including times when school is not in session — should be prepared for the site as a whole and for each of its components.
- ▲ Who is responsible for maintenance? Who will monitor the site for vandalism and make necessary repairs?

Learners, teachers, community members and school staff can all help with these tasks. This not only provides a sense of ownership in the project on the part of those who can benefit from it, but it also limits the degree to which criticism and vandalism will occur. It will establish a vested interest in long-term maintenance of the site. Custodians, security personnel and local law enforcement officials are especially important people to involve in the project. They have the abilities to improve maintenance of the site and to protect against vandalism.

Vandalism and maintenance problems will vary depending upon the specific nature of the site. Identify as many potential problems as possible, realizing that not all can be anticipated. More common problems include littering, spray painting, use of mountain bikes in the site, and the destruction of learning stations, picnic tables, fences, flowers, and signs. Take preventative steps.

- ▲ The best protection of the site is creating a program that involves as many learners and community members as possible in activities at the site, including learning activities, development projects, maintenance, and monitoring.
- ▲ Public education and awareness, police patrols, neighborhood watch programs or even a caretaker living at the site can help protect against acts of vandalism. Offer rewards for reporting vandalism. Have perpetrators correct what harm they do and educate them about the program.
- ▲ Structural actions include fencing the perimeter, mounting picnic tables and signs in concrete, planting or building access barriers, placing activity stations and signs in highly visible locations, making structures out of durable materials such as recycled plastic lumber, and removing items during the summer.

Assessing the Site's Success

The success of the habitat for learning can be assessed on a number of parameters. An evaluation subcommittee could be formed to review the progress of projects on an annual basis and make recommendations for changes. Whoever does the assessment, aspects to focus upon include:

- ▲ **Usage.** How often is the site being used? How many learners benefit?
- ▲ **Curriculum.** How is the site helping achieve curricular goals and objectives?
- ▲ **Development.** What is the status of development projects? Are original priorities being followed? Do they need to be changed?
- ▲ **Funding.** Are fund-raising goals being met? Are the goals set too high? Too low?
- ▲ **Maintenance.** Is the site being well maintained? Are there certain components that need additional care? How can maintenance be improved?

In addition, the evolution of the site can be documented with sketches, maps, photographs and videos. Doing so will demonstrate its dynamic and successful development and help future generations track its history. This assessment information can then be used to improve the ongoing program.

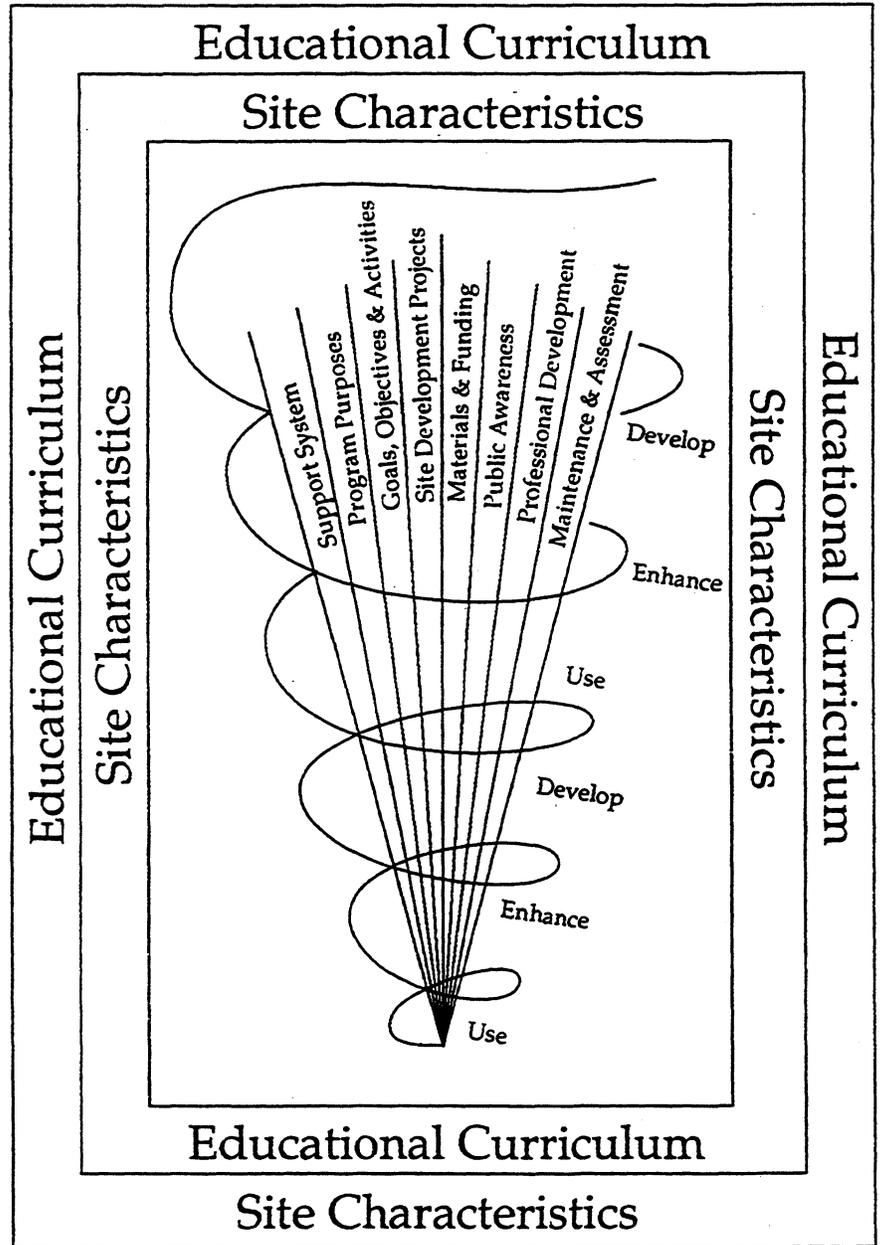
Management Plan

A written management plan culminates all of the program planning for your habitat for learning and should capture the main planning premises identified in this guide:

- ▲ **First,** use of the existing site should precede enhancement and long-term development. This means that your habitat for learning is ready and waiting right outside your school door.
- ▲ **Second,** educational program development should precede and guide site development, capitalizing on the features and attributes of the habitat for learning. The intent is to fully achieve both curricular goals and site potential.

It is important to take time to identify all the essential elements of the project and incorporate them into an overall program management plan. While there's a certain logical sequence to the planning activities, it is not necessarily a linear process. It is more accurately described as a highly interactive, simultaneous and creative process. Figure 1 summarizes the nature of this process and its essential premises and components.

Figure 1
HABITATS FOR LEARNING
Planning Process



This illustration should serve as the back drop for writing the management plan. This plan need not be elaborate nor extensive, but it should include a summary of every important item of the program. More detailed accounts can be generated by the subcommittees and by the support system committee.

Included in the management plan should be:

- ▲ A diagram or description of the support-system components.
- ▲ A statement of purpose and general curricular expectations of the program.
- ▲ A general site description and map.
- ▲ Brief descriptions of proposed development projects.
- ▲ Lists of needed materials, equipment and resources with budget considerations and possible sources of funding.
- ▲ Strategies for building school and public awareness.
- ▲ Outline of professional development plan.
- ▲ Schedule for maintenance and strategies for assessing success.

It may be wise to include a one-year plan in some detail and a five-year plan with anticipated projects, completion dates and time commitments from staff.

Ultimately, the effectiveness of all planning will be dependent upon the participants in the program, especially those on the support system committee. If the individuals involved pace their work from the beginning, grounding support in use of the habitats and taking incremental steps toward development, then success is almost guaranteed. The result — teaching and learning in an outdoor habitat — will become an integral and routine part of everyday life at school.

Closing Words

Undertaking a Habitats for Learning program at your school site can be as big or small of a project as you want. The important thing is to start today. Take little steps and build upon your successes. You need to work together, plan thoughtfully, be willing to revisit and change, and, most importantly, enjoy the benefits of learning in your outdoor habitats!!!

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Appendix A

Learning Skills

The following lists are provided to illustrate the wide range of skills individuals need as lifelong learners and which they can develop through well-designed activities for habitats for learning.

Science Process Skills

Observing
Classifying
Using space/time relationships
Using numbers
Communicating
Measuring
Predicting
Inferring
Formulating hypotheses
Controlling variables
Experimenting
Defining operationally
Formulating models
Interpreting data

Critical Thinking Skills

Observing
Comparing and contrasting
Classifying and categorizing
Sequencing/ordering
Distinguishing fact/opinion
Distinguishing relevant/irrelevant information
Determining reliable/unreliable information
Questioning
Inferring cause/effect
Identifying assumptions/ambiguous claims
Recognizing bias/points of view
Reasoning inductively/deductively

Problem Solving Skills

Identify and define the problem
Gather information and data
Organize and analyze information and data
Identify possible solutions
Analyze pros/cons of each
Choose solution and develop plan
Implement
Evaluate and revise

Decision Making Skills

Defining goals
Identifying alternatives
Analyzing positive and negative consequences
Ranking alternatives
Evaluating highest-ranked alternatives
Acting on the "best" alternative(s)

Communication Skills

Listening
Speaking
Writing
Discussing
Dramatizing
Drawing and symbolizing
Reading
Nonverbal Skills

Research Skills

Conducting surveys, interviews, questionnaires
Searching databases, card catalogs, etc.
Using primary and secondary source documents
Using reference books and materials

Psychomotor Skills

Manipulating materials and equipment
Using fine/large motor skills

Mathematical Skills

Computing
Estimating
Graphing/projecting trends
Problem solving
Determining probability
Analyzing data

Interpersonal Relations Skills

Cooperating
Building consensus
Developing group process skills
Improving leadership skills

Adapted from: Ohio Department of Education.
(1985). Energy and Resource Conservation.
Columbus, OH.

Appendix B

Sample Site Development Ideas

Agricultural Use — fields, pastures, barns and agriculture lots

Animal Tracking Center — “baited” sand box to attract different animals and observe their tracks

Arboretum — a garden planted to show a wide variety of plants

Archeological Dig — area in which to practice techniques for studying a site or to create a simulated dig.

Bird feeding Station and Bird Bath — a variety of feeders to attract different types of birds and a source of water

Butterfly Garden — flowering plants designed to attract butterflies and hummingbirds

Formal Garden — highly manicured, balanced planting of flowers, trees, shrubs and grass

Greenhouse — enclosed building for plant growth

Habitat Cover — “natural” areas and built areas such as den trees, rock and brush piles, or nesting boxes that enhance cover for wildlife

Hanging Garden — potted plants suspended from beams/walls/windows

Herb Garden — formal, potted, or informal planting of culinary, medicinal, or aromatic herbs and plants

Japanese Garden — an enclosed, private garden of symbols following time-honored rules

Meditation Garden — a quiet, secluded area designed for reflection

Native American area — site to recreate earliest inhabitants culture including foods grown, shelter, tools and customs

Micro Habitats — barrels, enclosed courtyards, or window boxes that demonstrate a biome or plant community

Nature trail and observation points — walkway through a “natural” area

Patio Garden — small, paved area with plantings or potted plants

Pond — natural or human constructed body of water

Rooftop — location for bird nests or bee hives

Prairie — large open plantings of indigenous native prairie tall grasses or windflowers

Rock Garden/wall/pile and Fossil Paths — assorted samples of local rocks, minerals and fossils and exhibits of "favorites" that learners share

Sensory Garden — designed planting for heightened sensory appeal often for persons with disabilities

Solid Waste/Recycling stations — areas designed to illustrate waste management practices (reduce, reuse and recycle), including composting

Succession Plots — unmowed areas for observing plant succession

Vegetable Garden — organized planting of vegetables

Weather Station — an area for observation and data collection related to climatology

Wetland — a low-lying or catch basin ecosystem that relies on standing water

Appendix C

Sample Activity Ideas

- . Bird-watching
- . Building birdhouses
- . Installing bat houses
- . Going on a tree/plant scavenger hunt
- . Making bark/leaf rubbings
- . Looking for "found" art sculpture
- . Reading and writing nature poems
- . Recording sounds of nature
- . Identifying patterns in nature: art
- . Analyzing patterns in nature: cycles
- . Studying microhabitats
- . Exploring ecosystems
- . Comparing habitats
- . Making maps
- . Designing a nature walk
- . Observing plant/animal
- . Investigating watersheds
- . Monitoring streams
- . Exploring puddles
- . Counting and measuring
- . Recording and graphing data
- . Recording weather patterns
- . Finding evidence of changes over time
- . Keeping a journal
- . Studying food and fiber
- . Recording images through drawing/photography
- . Investigating day/night sky
- . Dramatizing observations of nature
- . Orienteering
- . Creating musical instruments
- . Writing songs
- . Sharing and reflecting
- . Cleaning or revegetating a stream
- . Preventing erosion
- . Taking a buddy or a parent on a nature walk
- . Creating a nature collage
- . Using natural objects as tools for painting and drawing
- . Creating a culture for a simulated archeological dig
- . Role playing Native Americans, pioneers or future inhabitants

Appendix D

Curriculum Resources

ECO-NET, Institute for Global Communications, 18 DeBoom Street, San Francisco, CA 94107.

ECO-NET provides an inexpensive way to access thousands of resources over the Internet and electronic mail. Special conferences are available on a huge array of environmental issues including environmental education. Curriculum support materials and up-to-the-minute reports are available. Requires a computer and modem. Costs include a monthly rate plus connect-time charges for prime-time use.

ERIC/CSMEE, Environmental Education Activities Books,
ERIC/CSMEE, The Ohio State University, 1929 Kenny Rd.,
Columbus, OH 43210.

The ERIC (Educational Resources Information Center) books provide suggestions for integrating environmental concepts into all subject areas. Each activity is classified according to appropriate grade level (K-12), subject area, and basic concept. The first three volumes contain activities on a variety of topics. Later publications focus on a single topic (e.g., land use, wildlife, population, energy, urban setting, recycling, values, using local communities, basic skills, natural resource management, global education, hazardous and toxic materials, science/society/technology, teaching critical thinking, water, environmental mathematics). In addition, ERIC has many other publications of interest to educators.

GREEN (Global Rivers Environmental Education Network), School of Natural Resources, University of Michigan, Ann Arbor, MI 48109-1115.

GREEN provides a variety of curriculum-related resources on water quality. Emphasizing learner participation, GREEN also provides assistance to international or cross-cultural projects, computer networking and low-cost equipment. Of particular interest to high school classes is the curriculum guide, Investigating Streams and Rivers, and a corresponding Field Manual for Water Quality Monitoring. This program is widely acclaimed and international in scope.

INSIGHTS: Hands-on Inquiry Science Curriculum, Improving Urban Elementary Science Project Education Development Center, 55 Chapel Street, Newton, MA 02160.

The EDC INSIGHTS Curriculum consists of 17 modules, each designed to be used at one of two grade levels (K-1, 2-3, 4-5-6). The module topics represent a balance of life, earth, and physical science and a continuous growth in experience and understanding of six major science themes: systems, change, structure and function, diversity, cause and effect, and energy. INSIGHTS topics emerge from a review of children's experiences and interests and of the basic science phenomena and concepts appropriate for each age level. They are rich in potential for hands-on exploration. Many of the modules contain ideas from ESS (Elementary Science Study) units.

The Institute for Earth Education, P.O. Box 288, Warrenville, IL 60555.

Based upon the work of Steve Van Matre, Earth Education is the process of helping people build an understanding of, appreciation for, and harmony with the Earth and its life. Publications and programs include Acclimatization (1972), Acclimatizing (1974), Sunship Earth (1979), Earthkeepers (1988), Earth Education: A New Beginning (1990), Earthwalks and Conceptual Encounters I & II.

Integrating Environmental Education and Science, Environmental Education Council of Ohio (EECO), 397 W. Myrtle Ave., Newark, OH 43055.

Integrating Environmental Education and Science encourages environmental literacy and responsible environmental behavior at grades K-12 in formal and nonformal learning situations. Curriculum developers and teachers will gain assistance in reflecting about the design/redesign of school curriculum. Included are examples of innovative learning episodes that has learners designing their own experiences in environmental education, guidelines for creating new episodes and strategies to link current reform components to the science curriculum. EECO collaborated with 6 statewide agencies to develop this project that was funded in part, through an Ohio Environmental Education Fund, Ohio EPA grant. Copies are available through ERIC/CSMEE, The Ohio State University, 1929 Kenny Road, Columbus OH 43210.

National Geographic Kids Network Project, Technical Education Research Centers, National Geographic Society, Dept. 5351, Washington, DC 20036.

The National Geographic Kids Network Project is a series of exciting, flexible elementary science units that feature cooperative experiments in which learners in grades 4-6 share data nationwide through the use of telecommunications. Topics will involve the learners in issues of real scientific, social, and geographic significance. The Network project combines basic content from typical school curricula with guided inquiry learning. Kids Network can be used to supplement textbooks and existing materials or to form complete, year-long science courses.

Naturescope, National Wildlife Federation, 1412 Sixteenth St., N.W., Washington, DC 20036.

Naturescope is designed to improve the teaching of natural sciences. It includes hands-on activities and work sheets for elementary grades. Each issue focuses on a specific topic (e.g., birds, trees, geology, pollution, rain forests, weather, oceans, mammals, reptiles, arts and crafts, dinosaurs, astronomy, deserts, wetlands, endangered species, and insects).

On the Trail of Nonpoint Source Pollution (1993), Two Herons Environmental Consulting for the Soil and Water Conservation Districts of Butler, Clermont, Hamilton and Warren counties in Ohio.

This curriculum booklet provides a wide variety of activities aimed at grades K-6 and geared toward understanding nonpoint source water pollution, its sources, and ways to prevent its occurrence. Background

information is provided as well as cross referencing by grade level and subject. Approximate cost \$10 through Clermont Soil and Water Conservation District, 2400 Clermont Center Drive Suite 101, Batavia, OH 45103, (513) 732-7645.

Outdoor Biology Instructional Strategy (OBIS), Delta Education, Inc., Box M, Nashua, NH 03061-6102.

This program, designed for youngsters ages 10-15, promotes the understanding of ecological relationships through hands-on activities that emphasize the managed environment. Activities are packaged into topical sets of folios (e.g., animal behavior, backyard, forest, ponds & lakes, school yard, streams & rivers, winter), or as a complete library set.

Portapark, Ohio Department of Natural Resources, Division of Parks and Recreation, Fountain Square, Bldg C-3, Columbus, OH 43224.

The Portapark is designed to increase awareness of Ohio State Parks through 38 activities that focus on plant and animal life, park environment, litter awareness, and games and activities. These easy to use ideas require few if any special environments.

Project AIMS (Activities to Integrate Mathematics and Science), Fresno Pacific College, 1717 South Chestnut Ave., Fresno, CA 93702.

Project AIMS provides a series of topical activity books (grades K-9) that focus on the integration of mathematics and science (e.g., Critters, Down to Earth, Finding Your Bearings, Our Wonderful World, Overhead and Underfoot, Popping with Power, Primarily Plants, Seasoning Math & Science, Water Precious Water). Each volume consists of two components: a teacher's manual with all the necessary information about the investigations and how to prepare them and a student manual with all the recording sheets and directions.

Project Learning Tree (1993), American Forest Foundation, 1111 19th St., N.W., Suite 780, Washington, DC 20036.

PLT is a annoy set of environmental education activities designed to help elementary and secondary learners better understand the forest community and its relationship to other environments and the day-to-day lives of people. The materials are currently only available to individuals who attend a six-hour PLT workshop. *In Ohio, contact the Division of Forestry, Ohio Department of Natural Resources, 1855 Fountain Square Court H-1, Columbus, OH 43224-1327.*

Project WET (Water Education for Teachers) (1994), 201 Culbertson Hall, Montana State University, Bozeman, MT 59717.

Project WET is a national program designed to teach about water issues. The core of the program is a K-12 curriculum and activity guide containing approximately 100 annoy activities. The guide is available through in-service workshops. In addition, a variety of supplementary resources are being developed to complement and extend the guide including modules (e.g., wetlands, watersheds, ground water), demonstration models, children's literature books, and living history materials. All materials reflect a balanced and diverse approach to water issues, incorporate various cultural perspectives and accommodate

many learning styles. *In Ohio, contact the Ohio Water Education Program, c/o Division of Soil and Water Conservation, Ohio Department of Natural Resources, 1939 Fountain Square Court E-2, Columbus, OH 43224-1336.*

Project WILD (1992), 5430 Grosvenor Lane, Bethesda, MD 20814.

Project WILD is an interdisciplinary, supplementary environmental and conservation education program for educators teaching kindergarten through high school. It prepares learners to make responsible decisions about wildlife and the environment and includes a wide variety of instructional strategies that can be incorporated into different subjects. Aquatic Project WILD (1987) focuses on marine and aquatic education. It includes additional WILD activities as well as adaptations of activities from the original elementary and secondary WILD guides. These materials are only available through a six-hour workshop. *In Ohio, contact the Division of Wildlife, Ohio Department of Natural Resources, 1840 Belcher Drive G-1, Columbus, OH 43224-1329.*

The Rivers Curriculum, Southern Illinois University at Edwardsville, Box 2222, Edwardsville, IL 62026-2222.

The Rivers Curriculum was written by teachers and designed around six units for high school students. Each unit is organized around field trips to the river and include curriculum for chemistry, biology, earth science, mathematics, geography, and language arts.

Sharing Nature with Children (1979), **Sharing the Joy of Nature** (1989), and **Listening to Nature** (1987), Joseph Bharat Cornell, Dawn Publications, 14618 Tyler Foote Road, Nevada City, CA 95959.

The first two books offer a collection of games and activities to teach children about nature and to involve them in nature. For each activity, a chart indicates the basic mood of the game, concepts taught, setting, number of players, appropriate age (preschool & elementary), and any special materials that are needed. The second book also presents a system of learning involving four stages that flow from one to the other. Listening to Nature is a collection of inspirational

WOW!: The Wonders of Wetlands (1991). Environmental Concern Inc., P.O. Box P., St. Michaels, MD 21663, (410) 745-9620.

This educator's guide provides a range of activities labeled from grades K-12, though most of them can be adapted for several grade levels. WOW! is designed so that lessons may be used individually or as an entire unit with much potential for integration with social studies, language arts, mathematics and other disciplines.

Additional Curriculum Resources

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Appendix E

Teaching and Learning Resources

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Computer-aided environmental education
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Appendix F Instructional/Site Inventories

The following examples of Instructional/Site Inventories are provided to assist with planning for the use of the outdoor site. These instruments are designed to help teachers, learners and others fully consider both the curriculum and the site characteristics when developing programs and learning experiences. These instruments are only examples and are intended to be modified to meet local needs.

The six different inventories are arranged in sequential order from exploration to detailed site inventory, each one building on the other.

Exploration

The two "Awareness Building Activities" can be used with groups that have had little or no experience with teaching and learning outdoors as well as with others who have participated in numerous outdoor activities.

Existing Site

Two instruments focus on the existing site, one looks at "Current Use" and the other at "Potential Use." To use these planning aids, you list the curricular needs down the right side of the instrument, using the "integrated approach" and/or the "subject approach" (see pp. 6-8). The existing site features (e.g., parking lot, playground, trees) are listed across the top. For the "Current Use" inventory, learning activities that are currently used are written in the matrix (see example). The "Potential Use" inventory identifies other possible activities that use the same or other existing features to meet curricular needs.

Enhanced and Developed Site

The instruments for "enhanced and developed" sites are completed in the same way but they explore the potential use of a "developed" feature and how well it would match the curriculum. It enables planners to analyze which ideas for development would be the most beneficial. More detailed planning is possible by using the instrument that lists "objectives" down the right side.

Detailed Site Inventory

The final instrument is used to fully inventory the site. This information is used to help make decisions about which features are the most feasible to enhance and develop. For example, even if the curriculum strongly supports the development of a feature (e.g., pond, prairie), information from the inventory may not (e.g., not appropriate soil type; climate too cold).

INSTRUCTIONAL/SITE INVENTORY

Awareness Building Activities

The following activities can be done by teachers and/or learners to explore and experience the school site.

A Threesome Hunt

In groups of 3, select one of the following tasks to complete outdoors. You can collect and return the items, draw them or describe them.

- ▲ Find 3 ways that people have used rocks or minerals and explain.
- ▲ Find 3 types of ground cover. Explain how they are helpful.
- ▲ Find 3 different shades of green, brown and one color of your choice.
- ▲ Find 3 things shaped like a triangle, 3 like a circle and 3 like a square.
- ▲ Find 3 things that represent water and explain how.
- ▲ Find evidence of 3 animals and explain how the animal left that sign.
- ▲ Find 3 things that indicate a healthy environment and explain why.
- ▲ Find 3 things that indicate an unhealthy environment and explain why.
- ▲ Find 3 things that may not be here in the future. Explain why.
- ▲ Find 3 things that represent the past. Explain how.
- ▲ Find 3 different shades of soil and describe where you found them.
- ▲ Find 3 ways humans have changed the environment and explain how.
- ▲ Find 3 things that are interrelated and explain how.
- ▲ Find evidence of 3 ways things are being recycled and explain.
- ▲ Find 3 plants of different ages and estimate how old they are.

List Look Lump

Working in small groups, learners:

- ▲ List from memory as many features from the school grounds as they can.
- ▲ Look around outside for other features to add to their list.
- ▲ Lump the features on their list into categories and explain their groupings.



INSTRUCTIONAL/SITE INVENTORY
Current Use of Existing Site

SAMPLE

HABITATS FOR LEARNING

Grade Level(s) 5

Existing Site Features			
Curricular Approach	Trees	Parking Lot	Playground
Integrated Topic: <u>Trees</u>	ADOPT-A-TREE HEALTHY/UNHEALTHY	NONE	USE TREES IN ALL ACTIVITIES
Integrated Issue: <u>WATER QUALITY</u>	• PLANT TREES TO PREVENT EROSION ALONG DRAINAGE DITCH	• INVESTIGATE DRAINAGE PATTERN AFTER RAIN • TEST WATER QUALITY OF RUNOFF	• INVESTIGATE EROSION • INVESTIGATE SOURCES OF POLLUTION
Integrated Theme: <u>CYCLES</u>	• OBSERVE AND RECORD YEARLY CHANGES	• USE SHADOWS TO INVESTIGATE CYCLE OF SUN	• BURY TRASH TO STUDY DECOMPOSITION AND NUTRIENT CYCLE
Subject: <u>MATH</u>	• ESTIMATE HEIGHT • ESTIMATE BOARD FEET	• MEASURE SIZE OF AN ACRE • GRAPH TYPES OF CARS	• ESTIMATE NUMBERS OF PLANTS • GRAPH DATA FROM HULA HOOP STUDY
Subject: <u>LANGUAGE ARTS</u>	• READ <u>GIVING TREE</u> • WRITE OWN <u>GIVING</u> <u>TREE STORY</u>	• LISTEN TO SONG "BIG YELLOW TAXI" AND DISCUSS ISSUES	• READ ENVIRONMENTAL STORIES • WRITE POEMS • ROLE PLAY THINGS FROM NATURE
Subject: <u>ART</u>	• DRAW PICTURES IN ADOPT-A-TREE JOURNAL • BARK RUBBINGS	NONE	• USE NATURAL ITEMS TO MAKE COLLAGE • MAKE DYES FROM PLANTS
			FENCE
			NONE
			NONE
			• OBSERVE GROWTH CYCLE OF PLANTS ALONG FENCE OR ON IT
			• DESIGN 3 DIFFERENT WAYS TO CALCULATE THE LENGTH OF FENCE AND COMPARE RESULTS
			• READ POEM ABOUT FENCE • RECORD OBSERVATIONS ABOUT LIFE ON OR NEAR FENCE
			• STUDY AND DRAW SHADOWS



INSTRUCTIONAL/SITE INVENTORY
Current Use of Existing Site

HABITATS FOR LEARNING

Grade Level(s) _____

	Existing Site Features		
Curricular Approach			
Integrated Topic: _____			
Integrated Issue: _____			
Integrated Theme: _____			
Subject: _____			
Subject: _____			
Subject: _____			

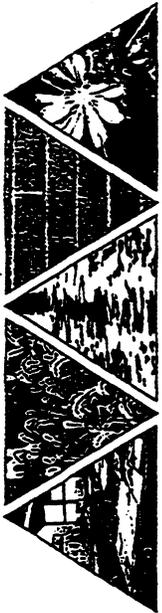


INSTRUCTIONAL/SITE INVENTORY
Potential Use of Existing Site

HABITATS FOR LEARNING

Grade Level(s) _____

	Existing Site Features		
Curricular Approach			
Integrated Topic: _____			
Integrated Issue: _____			
Integrated Theme: _____			
Subject: _____			
Subject: _____			



INSTRUCTIONAL/SITE INVENTORY
Potential Use of Enhanced and Developed Site

HABITATS FOR LEARNING **Grade Level(s)** _____

	Enhanced and Developed Site Features			
Curricular Approach				
Integrated Topic: _____				
Integrated Issue: _____				
Integrated Theme: _____				
Subject: _____				
Subject: _____				
Subject: _____				



INSTRUCTIONAL/SITE INVENTORY
Potential Use of Enhanced and Developed Site

HABITATS FOR LEARNING

Grade Level(s) _____

	Enhanced and Developed Site Features					
Curricular Approach: _____						
Objective 1: _____						
Objective 2: _____						
Objective 3: _____						
Objective 4: _____						
Objective 5: _____						
Objective 6: _____						

DETAILED SITE INVENTORY

- I. Overall site map and information
 - 1. General features
 - 2. Dimensions
 - 3. Visual overview
- II. Natural Physical Characteristics/Features
 - A. Topography and landforms
 - B. Climate characteristics
 - 1. Temperature
 - 2. Exposure (wind and sun)
 - 3. Rainfall
 - C. Geology
 - D. Soils
 - E. Water
 - 1. Sources
 - 2. Movement
 - 3. Depth
 - 4. Dimensions
- III. Biological Characteristics/Features—Historic and Current
 - A. Terrestrial
 - 1. Flora
 - a. Shrubs: Native and Exotic
 - b. Grasses: Native and Exotic
 - c. Trees: Native and Exotic
 - d. Microflora
 - 2. Fauna
 - a. Insects: Native and Exotic
 - b. Birds: Native and Exotic
 - c. Mammals: Native and Exotic
 - d. Reptiles and Amphibian: Native and Exotic
 - e. Microfauna
 - B. Aquatic
 - 1. Flora
 - 2. Fauna
- IV. Cultural Characteristics/Features—Historic and Current
 - A. Human-made structures
 - 1. Buildings
 - 2. Sidewalks
 - 3. Utilities
 - 4. Safety hazards
 - 5. Roads
 - 6. Other features
 - B. Evidence of land use
 - 1. Recreational
 - 2. Educational
 - 3. Economical
 - 4. Social-political
 - 5. Personal

Adapted from:

Schiff, P., & Smith-Walters, C. (1993). Wild school sites: A guide to preparing for habitat improvement projects on school ground. Western Regional Environmental Education Council, Inc.

Appendix G

Site Development Resources

Attracting Wildlife

"Attracting Birds in Ohio"
ODNR, Division of Wildlife
1840 Belcher Drive, G-1
Columbus, OH 43224-1329

Backyard Wildlife Program
National Wildlife Program
1412 Sixteenth Street NW
Washington, D.C. 20036

"Invite Birds to Your Home"
Natural Resources Conservation Service (formerly SCS)
Available in your local NRCS (SCS) or SWCD office

National Bird-Feeding Society
2218 Crabtree Lane
Northbrook, IL 60065

"Woodworking For Wildlife-Homes For Birds and Mammals"
Minnesota Department of Natural Resources
Box 7 Centennial Building
St. Paul, MN 55155

Butterfly Gardens

North American Butterfly Association
909 Birch Street
Baraboo, WI 53913

Hearts & Flowers Butterfly Farm
3977 Condit Road
Sunbury, OH 43074

Composting

"Backyard Composting"
Harmonious Press
Ojai, CA

"Composting at Home"
Extension Fact Sheet (HYG-1189-93)
The Ohio State University Extension
Horticulture
2001 Fyffe Court
Columbus, OH 43210-1096

"Composting News"
8383 Mentor Ave. Suite 102
Mentor, OH 44060-9908

Constructing Structures/Facilities

"Engineering: Conservation Structures and Practices"
Agriculture Education Services
Curriculum Material Service
The Ohio State University
Columbus, OH 43210

"Working Drawings of Basic Facilities
For Campground Development"
Agriculture Information Bulletin No. 264
Superintendent of Documents
U.S. Government Printing Office
Washington, D.C.

"Native" Gardens: Wildflowers and Prairie

"Making a Prairie Garden"
ODNR, Division of Natural Areas & Preserves
1889 Fountain Square Court, F-1
Columbus, OH 43224-1331

National Wildflower Research Center
2600 FM 9
North Austin, TX 78725

Environmental Education Organizations and Agencies

The Ohio Alliance for the Environment
445 King Ave.
Columbus, OH 43201

Ohio Department of Education
Room #1010
65 S Front Street
Columbus, OH 43226-0308

Environmental Education Council of Ohio
397 W Myrtle Avenue
Newark, OH 43055

Natural Resources Conservation Service (NRCS)
200 North High Street
Room 522
Columbus, OH 43125

Ohio Department of Natural Resources
Fountain Square
Columbus, OH 43224

Divisions of:

Forestry
Marketing Services
Oil & Gas
Parks & Recreation
Recycling &
Litter Prevention
Water
Wildlife

Geological Survey
Natural Areas
& Preserves
Reclamation
Soil & Water
Conservation
Watercraft

Ohio Federation of Soil and Water Conservation Districts
ODNR Division of Soil and Water Conservation
1939 Fountain Square Court, E-2
Columbus, OH 43224-1336

Ohio State University Extension
2120 Fyffe Road
Columbus, OH 43210

Local Environmental Education Organizations and Agencies

District Offices for ODNR Divisions of

Forestry
Recycling
Soil and Water Conservation
Wildlife

County office of The Ohio State University Extension
County office of Soil and Water Conservation Districts
Local office of Natural Resource Conservation Service
Local Zoo Education Department
Local Arboretum
Local Nature Center
Local Historical Society
Local University/College
Local Garden Clubs
Local Recycling Program & Center

Recycling

Association of Ohio Recyclers
P.O. Box 242
Kirkersville, OH 43033

Resource Recycling
1428 McKinley Avenue
National City, CA 91950

"Waste Age"
Suite 300
4301 Connecticut Ave. NW
Washington, D.C. 20008

Trees: Planting and Caring for

TreeSource Development Fund
American Free Tree Program, Inc.
P.O. Box 9079
Canton, OH 44711

"Arbor Age"
P.O. Box 10129
Riverton, NJ 08076-8129

Landscape Management
750 Old Oak Blvd.
Cleveland, OH 44130

The Ohio Nursery and Landscape Association
ATTN: Julie Ferrel
72 Dochester Square
Westerville, OH 43081

Vegetable Gardens

"Vegetable Grower"
37733 Euclid Avenue
Willoughby, OH 44094

Appendix H

POTENTIAL FUNDING SOURCES:

Money, Materials, Equipment and Services

School

- ▲ School Budget
- ▲ PTA
- ▲ Special Funds
- ▲ School Board

Community

- ▲ Local Service Clubs and Organizations
 - ▲ Local Garden Clubs
 - ▲ Local Youth Groups
 - ▲ Local Senior Citizen Groups
 - ▲ Local Environmental and Conservation Organizations
 - ▲ Local Businesses
 - Nursery/Landscape
 - Utility
 - Concrete
 - Lumber
 - ▲ Local Corporations
 - ▲ Local Government Agencies
 - ▲ Local Recycling Program or Center
- Garden/Feed
Hardware
Office Supply
Building/
Construction

Fundraisers

- ▲ Bake Sales
- ▲ Car Washes
- ▲ Recycling
- ▲ Dinners
- ▲ Ice Cream Socials
- ▲ Service Projects
- ▲ Raffle

Grants

- ▲ Local Foundations
- ▲ Endowment Programs
- ▲ Ohio Environmental Education Fund
1600 WaterMark Drive
Columbus OH 43266-0149

Greenworks!

Green Works! is an environmental education and community action partnership between the United States Junior Chamber of Commerce (Jaycees) and American Forest Foundation's Project Learning Tree (PLT). It provides a framework for interaction of students and community leaders so that together they can tackle projects that require additional people and/or funds.

For more information contact:

State Coordinator
Project Learning Tree
ODNR Division of Forestry
1855 Fountain Square Court H-1
Columbus OH 43224-1327

Adapted from:

Carman, S. (Ed.). (1992). Guideline and features for outdoor classrooms. Indianapolis: Indiana Department of Natural Resources.