

Developing an

Outdoor Classroom

to Provide Education Naturally



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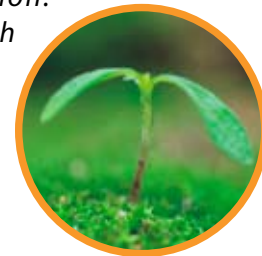
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INTRODUCTION

There are so many distractions in today's world that some youth might never see the sun come up except by watching it on television. National surveys say most children spend very little or no time observing or interacting in their natural environment and surroundings. Youth need assistance to understand the ecology of our natural resources. This understanding is a vital part of environmental education. One way to achieve this is through an outdoor classroom or outdoor learning facility.



An outdoor classroom is an outdoor educational facility that can be developed into a natural study grounds for educators, students and anyone interested in the natural environment. All subjects or curriculum can be presented in an outdoor classroom. Outdoor classrooms also provide alternatives for all to gain a better knowledge of what natural resources are and to understand the interconnectedness of these resources. Opportunities are available in an outdoor classroom to educate youth on the importance of taking care of the environment.

An outdoor classroom provides an opportunity to experience natural and human-created characteristics of the environment in a natural setting. It is a tool that allows educators to take a hands-on approach and move their educational curriculum outdoors. Outside every school building exists a blossoming world of "natural studies" with all types of structures that can do a better job of teaching than video tapes and computers, as children often learn best by "doing." An exciting way to teach youth how plants grow and animals survive is to let them mill in the soil and catch grasshoppers in the grass. All ages can take advantage of teaching opportunities provided in the great outdoors, and an outdoor classroom can facilitate the learning process.

Outdoor classrooms provide opportunities for students to gain knowledge and obtain skills in a natural environment. Instructors can allow students to learn by taking a hands-on approach to almost any subject in an outdoor setting.



Why Have an Outdoor Classroom?

An outdoor classroom should enhance opportunities for teachers to further develop teaching skills, concepts, objectives and outcomes introduced in textbooks. The outdoor classroom can amplify this learning environment and make learning fun. The surrounding environment is a source of knowledge that is often ignored in the indoor classroom. The outdoor classroom can also provide a place for long-term observation as students learn how their activities affect the environment. As they gain skills and knowledge about the environment, students learn to make decisions that affect the use and management of natural resources.

An outdoor classroom is not only applicable when teaching environmental education, it also can be integrated into art, English, math, physical education and science teaching plans. Students may want to draw the landscape in its natural setting or make leaf prints. They can write a journal or article on the progress of the outdoor classroom or an essay on the environment and surroundings. An outdoor classroom is the perfect place to study slope and elevation or how to take measurements. The outdoor classroom can provide a place for physical education where students may hike, run cross country, play outside games, or study safety and first aid. Students can study natural cycles, collect soil or water samples, observe



An outdoor classroom can offer many hands-on opportunities to enhance different skills. The outdoor classroom also can become an instant training facility for 4-H/FFA judging teams.

weather patterns, explore rock and land formations, and these are just a few of the educational activities possible in an outdoor setting.

The outdoor classroom also becomes a prime area to enhance social and technical skills. It can provide hands-on opportunities, such as building trails and picnic tables, constructing nesting/roosting boxes and designing trail markers. Students can study cultures of yesteryear and how their ancestors used natural resources. In an outdoor classroom, students notice insects, weather, plants and other details of nature more acutely than when indoors.

An outdoor classroom can become a very valuable resource for 4-H and FFA judging teams. Almost all forms of judging activities can take place in the outdoor classroom, including soils, forestry, wildlife, and plant and seed identification. An area in the outdoor classroom can also be modified to include animal judging practices, such as cattle, horse and sheep.

Pristine woodlands or wetlands are not necessary when selecting a site for an outdoor classroom. Degraded sites that are not aesthetically pleasing make great areas for outdoor classrooms. These areas are often easy to gain access to and are perfect for improvement projects.

Creating an outdoor classroom can be fun. However, developing and keeping the classroom properly maintained requires team effort. This can be an opportunity for schools, volunteers, agencies, organizations and businesses to work together on projects that benefit the community. Knowledge, time and labor are often required to develop a quality outdoor classroom. Once the classroom is open and a good management plan is implemented, those involved will be gratified in knowing students have a “natural” place to learn, walk, play and study.



Getting Started

The proposed audience can be anyone working with youth and/or adults, which may include elementary, junior high or high school teachers, Extension agents, youth group leaders or other educators. The outdoor classroom should be developed to benefit any number of people of diverse age ranges.

The organization of an advisory committee will assist in the planning, development and maintenance of the outdoor classroom. The committee might include teachers, administrators, agriculture and natural resource agency personnel, students, 4-H or FFA members, community groups, master gardeners, road commissioners, county officials, maintenance staff, PTA members or anyone else who is interested.

The advisory committee should develop a plan that includes the goals and objectives for the proposed outdoor classroom. Goals should be a summary of statements that describe desired outcomes. Objectives should be a precise and measurable sequence of steps structured to accomplish the goals. An outline for determining goals and objectives is in Appendix A. The plan should be developed in phases. Often, once the first phase is completed and its success celebrated, there is motivation to start on the next phase of the plan.

Finally, county officials, including school board members, the county mayor(s)/executive and commissioners, and any city officials should be contacted. It is important for county or city officials to support and understand the benefits of an outdoor classroom. In fact, county or city officials should be selected as committee members.



The area selected for the site of the outdoor classroom might be in the geographic center of the county, near a school, or in a city/county park. The size of the outdoor classroom can be less than an acre to several acres.

Site Selection

The area selected for an outdoor classroom might be in the geographic center of the county or town, in the school courtyard or near the playgrounds, or in the county or city park. Regardless, the site should be conveniently located with an easy entrance, plenty of parking and a clear exit in a “safe” area. Outdoor classrooms must be based on the available resources, landscape and special needs.

An outdoor classroom can be as small as a courtyard or several acres in size. The best place to begin the search for an outdoor classroom site is at or near a county or city school. Check with principals to see what area or areas could be designated as a proposed outdoor classroom site. The entire school ground should be taken into consideration as the site. A school site evaluation plan is in Appendix B. Ask the local Extension agent or natural resource conservationist to assist with assessment of the school site.

If it is not possible to establish the outdoor classroom at a school site, try a local park. Most parks are owned and managed by the city or county. Ask city or county officials if a designated area in the park could be used for an outdoor classroom. Begin small and use the existing landscape as a classroom activity. For example, if trees are growing in the park, ask a forester to assist identifying them with both scientific and common names. A botanist can help identify herbaceous plants. In addition, a vegetable garden could be set aside in an area that receives little traffic.

Check with county or city officials to see if there is a site for an outdoor classroom. Many counties own land for future development. A small area of the property could be used to establish the classroom. Even the most rural cities have community centers that would be an excellent place for an outdoor classroom. Civic centers in urban areas could also make an excellent site.

After a site has been chosen, develop a needs assessment to determine the requirements for further planning and development. Inventory what is already present on the proposed site. An example of a needs assessment outline is in Appendix C. A task sheet table that might be helpful while planning further development is in Appendix D.

An organized advisory committee should be formed to assist in planning, managing, and maintaining the outdoor classroom.



Obtaining Funds

Funding is often a limiting factor in the success of an outdoor classroom. Make a list of the items needed. The items should be essential to the outdoor classroom and based on the overall development plan. After the list is completed, check with area businesses and organizations for materials they might want to donate. It is helpful to write a proposal outlining the budget, project schedule and final vision so the donor can visualize the end product.

Once the proposal is developed, begin searching for funds. It is important when asking for funds or materials to ask for exactly what is needed and clearly explain how it will benefit the community. Try not to ask one person or entity for all materials or funds. Instead, contact as many sources as possible. Make a personal visit to the person or business as a possible funding source and invite a young person involved in the project to assist. If applicable, you might also mention funds are needed as a match for certain grants or other funding. Sometimes businesses will donate materials and loan equipment before they will provide funds. Consider local clubs, such as garden clubs, 4-H or FFA to donate members' time. For a list of possible funding sources, see Appendix E. Donors and sponsors should be recognized with a sign in the outdoor classroom, a letter of appreciation, a newspaper article and personal contact.

Many grants are available for environmental education and outdoor educational facilities. Corporations, federal and state agencies, and organizations offer a variety of grants that might fit the needs of the proposed outdoor classroom curriculum. Appendix F provides addresses for granting agencies that deal with outdoor facilities and environmental education. The Internet also can be used to find potential grant sources. Appendix G lists Web sites for outdoor classroom grants. Local or state libraries also provide information on grant sources.

When all else fails, don't rule out planned, organized fund-raiser activities. Many opportunities, like running a concession stand at the fair, or ball games, bake sales, plant sales, fruit sales or a fish fry on Saturday night, will help. There are many other possibilities. A motivator is needed to get these fund drives organized and accomplished. A subcommittee may be identified to focus strictly on acquiring resources and funding.

Maintaining the Outdoor Classroom

The first and foremost goal should be keeping the outdoor classroom safe and maintained. Make sure when constructing each feature that consideration is given to all safety factors. Keeping the outdoor classroom simple and constructing all features with durable materials will help keep maintenance at a minimum.

Many times a properly maintained outdoor classroom facility will inspire more visitors. The area doesn't have to be spotless. In fact, to perpetuate a natural setting, it may be necessary to let the grass grow (so to speak). It is usually a good idea to solicit at least three committee members to be in charge of maintenance. A monthly maintenance schedule should be generated so everything gets proper attention, including feeding and cleaning bird feeders and baths, cleaning bird houses and checking their condition, pruning trees and planting flowers and food plots. Trees, flowers and garden plots may need watering in dry weather. All trails will need to be maintained by adding new chips or gravel and weeding or spraying weeds. Signs and/or identification markers may need to be replaced or redone. During heavy usage periods, trash will need to be picked up weekly at a minimum. The maintenance practices may vary, depending on the size and type of outdoor classroom facility. Remember, there is always something to do when maintaining an outdoor classroom.

Maintaining the outdoor classroom might be the most important goal to insure a safe and pleasing facility. It is very important that at least a monthly maintenance plan be established.





An outdoor classroom is an on-going project. All features and project ideas in the outdoor classroom should be developed with the landscape and learning objective in mind.

Features & Project Ideas

- Agricultural crops
- Amphitheater
- Animal tracks plots
- Arboretum
- Archaeological area
- Berry-producing shrubs
- Bird blind
- Bird feeder and baths
- Bulbs, corms and tubers
- Butterfly garden
- Compost pile
- Creek or stream
- Elevated walkway or bridge
- Erosion control demonstration area
- Existing timber stand
- Garden plot
- Geological site or rock pile
- Groundwater monitoring hole
- Historical area
- Horticultural demonstration area
- Insect traps
- Marsh or wetland
- Native grasses and wildflowers
- Nesting/roosting boxes
- Orchard/vineyard
- Outdoor seating area
- Permanent water source
- Pioneer garden
- Pond
- Restroom facilities
- Shelter
- Soil profile area
- Storage buildings
- Sundial
- Time capsule
- Trails
- Trees and woodlands
- Water resources
- Wildlife brush piles
- Wildlife food plots

Features and Project Ideas

As mentioned previously, the outdoor classroom may vary in size, depending on the area available for development. The project sites and features should be allocated in coordination with the school grounds and the area set aside for the classroom. All features should be developed in consideration with the available landscape. Try to design each feature to accomplish identified learning objectives and goals. Take advantage of features already available in the proposed outdoor classroom site. Ask the county Extension agent or conservationist for assistance on planning featured sites.



Developing outdoor classrooms does not happen overnight. Begin with the features needed most, and then work towards other planned sites as the outdoor classroom grows. Planning for each featured site and project idea will take time, but the result can be extraordinary. As the outdoor classroom enters another season, nature will take its course and changes will occur. The committee may decide to adapt to the changes or include new features and ideas. Whatever changes occur, all features of the outdoor classroom can provide continued opportunities for the whole community. Listed below are some examples of features that might be included.

OUTDOOR CLASSROOM RESOURCES

Site Enhancements

Agricultural Crops Plot – A crops plot can be a small field or plot of corn, soybeans, tobacco, wheat or hay crops. In this plot, various farm practices could be demonstrated, such as contour farming, conservation tillage versus conventional tillage, and crop rotation. An area farmer might assist with planting seed and harvest. The plot will allow students to look at the importance of conservation farming and understand the dynamics of their food supply.

A small area in the outdoor classroom can be designated as an agricultural crops plot. Youth can assist in planting corn, tobacco, or other row crops and gain more knowledge of agriculture.



Amphitheater – An amphitheater is basically an outdoor theater, usually oval or circular, set aside in the outdoor classroom with seats facing an outdoor stage or raised area. The area can be used as the gathering place or teaching area.

Animal Tracks Plot – An area of sand or mud can be designated for an animal tracking plot. The plot can be as small as 4 feet by 4 feet and marked for animal tracks. Areas along pond banks and stream edges can be used to view animal tracks. Table scraps, cracked corn and other baits could be placed in the tracking plot to entice animals to “step” in. Remember that protein foods will attract rodents.

Arboretum – An arboretum is an area of woods where different trees are established or planted. The area can be mowed with maintained walking trails throughout the arboretum or allowed to grow up into various successional stages. Each tree in the area should be marked with its common and scientific name, uses and characteristics.

Archaeological Area – An area set aside for students to learn about archaeological digging, tools and techniques is fun and exciting. Inside the archaeological digging area, students may search and uncover historical artifacts or substitutions for “real” ones made. The artifacts can be purchased. The site also could be used as an area to study soils and history.

Berry-Producing Shrubs – Berry-producing shrubs provide a wonderful display of color through foliage, flowers and fruit. Producers such as blueberry, flowering dogwood and crabapple help attract many different types of wildlife into the outdoor facility. Normally they grow quickly and can help slow soil erosion.

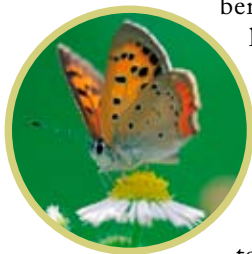


Bird Blind – A bird blind is simply a boxed frame made of wood or metal with wire woven around it. Branches with leaves and other natural vegetation are then laced across the wire to provide a sense of camouflage. The blind is placed near feeders or at the edge of brushy areas with a hole or viewing area left clear. Bird noises can be mimicked through human calls or audiotapes.



Bird Feeders and Baths – Bird feeders and baths provide excellent food and water sources for many different species of birds. Providing the proper type of feeder with the right type of food can attract mourning doves, woodpeckers, chickadees, blue jays, finches, sparrows and cardinals. Of course, during the summer months it is important that at least one birdbath be available in an outdoor facility. Under dry conditions, birdbaths can attract more birds than any feeder.

Bulbs, Corms, and Tubers – Fall is the time to plant bulbs, corms and tubers. The result will be a well-developed display of colorful flowers. The bulbs and tubers can be planted in a flowerbed or along trails, walkways, signs and entrances. Students may also use bulbs, corms and tubers to gain experience and knowledge about landscape maintenance.



Butterfly Garden – To have a productive butterfly garden, attract these peaceful vibrant insects with colorful, attractive flowers. Plant species like butterfly weed, daylilies, goldenrod, lilac and purple coneflower in the garden.

Another option might be to purchase or build a butterfly house. The enhancement will be a great place for students to collect and study butterflies and moths.



Compost Pile – All outdoor classrooms with a vegetable garden or horticultural plot should consider adding a compost pile. A compost bin can be constructed or purchased relatively inexpensively. Grass clippings, leaves, table scraps and other debris placed in the bins can turn into some very rich topsoil in a short period of time. Once again, remember that protein foods attract rodents.

Creek or Stream – Streams and creeks provide an excellent place for students to observe aquatic plants and animals. They also provide a great opportunity to perform dissolved oxygen, pH, temperature and types of water quality tests. Streams also add a water source and possible food source for wildlife.

Elevated Walkway or Bridge – Elevated walkways and bridges allow a person to get above nature and look into ecosystems, such as streams and grasslands, without disturbing the habitat. Bridges over streams are very useful for getting water samples and exploring aquatic organisms. The walkway or bridge can be constructed very easily with driven poles and boards.

Erosion Control Demonstration Area – Select a site in the outdoor classroom to set up an erosion control area and demonstrate how erosion affects the soil. Select an area with approximately 5 percent slope and about 15 feet wide. Scrape out or rip all existing grass and vegetation in this area until bare ground is exposed. Next, split the section of ground into three equal parts. The first section should be left alone, the second section should be covered with large stone or rip rap and the last section should be sown in rye grass or a similar plant. A collection container should then be placed at the downhill section of the demonstration and used to collect and measure the amount of sediment from each section after a rainfall or planned flood.

Existing Timber Stand – A pre-existing woodlot inside the outdoor classroom can be used for studying modern forestry practices, tree identification, species diversity, wildlife and watershed management. Most existing timber stands may need to be thinned out or improved. Talk to the local or area forester about timber stand improvements.

Garden Plot – Everyone should experience planting and managing a garden at some point in his or her life. The garden plot can be as small or as large as desired. Remember that many young people are not in school during critical growing seasons and even harvest time. When planting a garden, consider planting fruits and vegetables that do not require constant care and that can be harvested and enjoyed during the school year, such as cool-season fruits and vegetables.



A garden plot can assist youth gain many skills such as decision making, responsibility, and making healthy lifestyle choices. A garden plot can be very small to large in size depending on available space in the outdoor classroom.

Native grasses and wildflower plots are just a few of many features/ project ideas that can be added to the outdoor classroom. These native plants not only become a great project for youth, they also add lots of color to the outdoor classroom and are beneficial to wildlife.



Geological Site or Rock Pile – Cementing a variety of different rocks together can form a rock wall. Rocks can also be piled up in an area of the outdoor classroom to provide a great place to study geology.

Groundwater Monitoring Hole – If constructed properly, this feature can be an excellent way for students to observe how the water table fluctuates. Students may also be able to look at the difference in the movement of ground water in different soil types that might be available in the outdoor facility. To construct a monitoring hole, first dig a hole 4 to 5 feet deep with an auger or post hole digger. Then cut a piece of PVC pipe 1 foot longer than the hole and drill several holes throughout the entire pipe. Place the pipe in the hole and pack dirt around it to secure it in place. The pipe should be covered when not in use.



Insect Traps – Students could have an educational experience in entomology through the study of different types of insect traps. The traps may be constructed by the students or purchased. Each trap may vary in design, size, whether it uses an attractant or not, and depending on the type of insects sought.

Marsh or Wetland – A marsh or wetland area can easily be developed in a manner similar to digging a pond. A marshy area should not be deeper than 3 feet throughout the surface area of the pond, thus helping to promote aquatic plants and many amphibians and insects. The potential outdoor classroom site may already contain a marsh or wetland area. In this case, aquatic life is more than likely present. It's important to protect edge habitat in these areas through construction of a dock or observation and sampling site.

Historical Area – The historical area could pertain to anything related to history. One area in the outdoor classroom might display historical relics from the Civil War, old farming equipment or state themes. Another section could recognize former presidents with a marker or favorite tree. An area outlined like the state with state plants and geographic markers is especially impressive.

Horticultural Demonstration Area – This area can be a squared plot with many types of grasses, turf, ground cover, herbs, nursery plants and ornamentals, or flowers. The horticultural area could also be used to show the differences in pesticide use for weeds, insects or diseases.

Native Grasses and Wildflower Plot(s) – The addition of native grasses and wildflowers may add to the effects of the outdoor classroom area. Research the local area to see what grasses and wildflowers are native and how the plants or seeds can be obtained. Many seed companies will donate seeds at the end of the season. The seeds can be kept and planted the next season, even though they might have a decreased germination rate. Native grasses are oftentimes readily available in the seed bank and may only require a controlled burn or tillage of the soil to get them started. Native grasses and wildflowers are attractive at the entrance of the classroom, near signs or along trails and walkways. These native grasses and wildflowers are also very beneficial to wildlife.



A turf grass plot in the outdoor classroom allows students to explore horticulture. The horticultural plots can be very small or up to an acre or more depending on how much space and time for maintenance is available.

Nesting/Roosting Boxes – Properly designed and placed nesting boxes can be added to the outdoor facility to attract different types of wildlife. The boxes can be designed for songbirds, wood ducks, bats, owls, squirrels and other small mammals. The boxes can be easily designed with standard woodworking tools or purchased at retail stores. A technology/vocational class could also construct them as a class assignment.

Orchard/Vineyard – If the climate allows, find an open area in the facility to develop an orchard. Young people can learn how farmers raise apples, peaches, pears, grapes, brambles and other small fruits. Let students participate in the design of the orchard/vineyard. Allow them an active part in the planting, maintenance and harvest of the fruit to get the full benefit of the growing and harvesting cycle.

Outdoor Seating Area – Ample seating areas in the outdoor classroom are very important. The seats can be as simple as a 5-foot 2" x 6" on two 4" x 4" treated posts at various locations along the trail. Arranging some picnic tables under a shelter so that students can have a place to meet, write or observe would be a positive addition.

Permanent Water Source – A permanent water source will be an important necessity for the outdoor classroom. With the vast amount of plant life, keeping them watered during the dry months will be crucial to their survival. A pond or a water hose from the local school or community building is a possible water source.



Pioneer Garden – Planting gourds, corn, squash, herbs and grain will take the students back to the time of early settlers. The plants can be used to make tools and utensils that Native Americans and early settlers used.

Pond – Constructing a pond will be a great opportunity to teach water quality and pond volume as well as study fisheries management and aquatic plants. The pond should be constructed deep enough to manage a small fishery. On a smaller scale, a great option would be to construct a mini pond approximately 4 feet deep and 5 to 6 feet across the surface. The mini pond can be used for similar purposes and educational opportunities. The mini pond will also attract many amphibians and aquatic plants that create extraordinary learning experiences. If the pond is located on a school or community site, it is important to check on liability issues.



A covered pavilion or shelter should be considered for an outdoor classroom that is not near a school. The shelter can provide a place for students to escape weather as well as an area to sit and study or eat.

Restroom Facilities – Probably one of the more expensive features that might be added to the outdoor classroom, but a great investment, is a restroom facility. The facility might dictate the amount of visitation the outdoor classroom receives. Check with the local health department to see if a dry pit latrine is acceptable. Remember that the facility needs to be as maintenance free as possible and something that could sustain winter weather conditions.

Shelter – The shelter should be large enough to accommodate at least 25-35 students and strong enough to withstand bad weather. A shelter may not be necessary if the outdoor classroom is near the school or other indoor facility. If possible, to minimize the cost, try to take advantage of any standing structure available.



A small pond constructed in the outdoor classroom can assist youth in gaining more knowledge and skills in aquaculture. The pond also provides a watering hole for wildlife as well as habitat for reptiles and amphibians.



Trails are one of the most important features in an outdoor classroom. Trails create established, designated areas for safe walking as well as maintain the focal point for all features and projects of the outdoor classroom. Much time and consideration should be taken when establishing trails.

Soil Profile Area – An area set aside to study soils is very important. A soil pit labeled with the different soil profiles does the best job of explaining the different soil types, textures and profiles, but it might also hold water and be a hazard if not covered properly. A stream bank or bank cross-section can be used to accomplish the same goal. A core sample, if done properly, is also useful.

Storage Buildings – To keep the outdoor facility properly maintained, it may be convenient to have tools on-site. Although a storage building may not be a necessity, it is better than letting the tools be stolen or rust, and may also save time.

Time Capsule – A time capsule can be a grand opportunity to record history and might be a fun venture for students. Current environmental and natural resource issues, news articles or photographs could be buried in a designated area in the outdoor classroom using a water- or rust-proof container placed in a secure area.

Trails – Trails may be the most important feature of the outdoor facility. Consider establishing the trails and then planning the rest of the features around them. Spend time on the layout and design so the trail remains safe, easy to maintain and compatible with important features of the outdoor classroom. When establishing the trail, land terrain may also be an important factor. Give consideration to the prevention of erosion, the placement of culverts and the type of top soil layer to provide for walking. Consult the local Extension agent or soil conservationist for further assistance.

Trees and Woodlands – Establishing a tree or woodland plot is a perfect opportunity for forestry management education. If possible, use an existing woodlot and make additions to it. If the woodlot is not available, get the stu-

dents involved in measuring, marking and identifying the tree plot. Site selection is very important. Planting a black willow in upland terrain or a flowering dogwood in shallow soils would not be a good choice. Ask a state or local forester to assist with the project.

Weather Station – A weather station can be as large or as small as funds allow. The same concepts can be viewed regardless of the size. Weather patterns and trends, temperature, precipitation and wind speeds can be observed over time and recorded on a computer. All weather-observing equipment must be stored in a secure area to prevent theft or vandalism..

Wildlife Brushpiles – Brushpiles can be established very easily at the beginning of any outdoor project. If developing the outdoor classroom from scratch, simply ask the dozer operator to place fallen trees in areas compatible with the development plan. These brushpiles also can be established with old Christmas trees or dead, fallen trees. Brushpiles help attract many different types of wildlife and provide hiding, nesting and resting cover for many birds, reptiles and small mammals.

Wildlife Food Plots – Food plots can provide an extra food and cover source for wildlife. A wide variety of plants can be used in food plots including millet, corn, wheat, sorghum, milo, sunflowers, rye, clovers, oats and soybeans. Most food plots are two acres or less. Plots are often arranged in a long, narrow fashion. Plots may be placed close to edges, fencerows or near water. Proper fertilization and liming are required for wildlife food plots to be successful. Contact the local Extension agent for assistance with soil samples and other wildlife food plot establishment recommendations.



Cross-Curriculum Integration

Art: Students could make pencil sketches of natural landscapes or animals, design markers and signs, and create promotional material. Other possibilities include using leaves, flowers or bark as textural features or for decorations along with other natural findings.



English: The outdoor facility can provide a great opportunity for students to keep a journal on the developmental progress of the outdoor classroom. Students may also want to sit in the natural area and write poems or essays about their surroundings. Writing news articles on the outdoor classroom's success would be an excellent opportunity to practice journalism. A monthly newsletter might also be developed.

History: The outdoor classroom can be used to study methods of how early settlers and Native Americans used natural resources to make artifacts, grow food, make clothes and live off the land. Students may also look at the history of the outdoor classroom site to see how it has changed over time. Students may document the outdoor classroom's appearance at present for other students to observe changes at a later date. The outdoor facility could also be used to study other cultures.

Family and Consumer Sciences:

Students could learn how to grow a vegetable or flower garden and the economic benefits of doing so. Outdoor cookery or food preservation could be practiced, as well as the study of edible natural plants. The students may even want to help plant some of the shrubs and trees. Natural items could be used as decorative features of the home or classroom.

Health/Safety: Students could locate poisonous plants in the outdoor classroom, identify them and study potential human health effects. Students could practice first aid by simulating outdoor scenarios. Students may also want to search the outdoor classroom for potentially unsafe areas and describe what should be done to correct the problem. Natural remedies might also be planted and discussed.

Life Skills: As young students face the challenges of becoming teenagers and young adults, they need certain skills to prepare them for future situations. The outdoor classroom is filled with opportunities that can help young people gain skills and knowledge in citizenship, ethical decision-making, leadership, teamwork, responsibility, achieving goals, building relationships, communication and self-esteem. Knowledge and skills in these areas may be attained through hands-on projects, learning by doing, making positive contributions to society and by participating or leading organized outdoor activities in the outdoor classroom.

Mathematics: The outdoor classroom is a prime area to study mathematics, especially in the developmental stages. Math students may assist in calculating featured plots, determining the size of the developed area or measuring slope and elevation. Students could also measure tree heights and diameters, weigh large outdoor objects and tabulate volumes. They can also learn to use a map and a compass. Measuring, cutting and constructing habitat boxes and feeders are also direct applications of math concepts.

Music: Music students could study how different cultures use nature as a part of their music. Students may consider making instruments from items they find in the outdoor classroom. Students could study other musicians who use nature as their inspiration, and possibly use the outdoor classroom in preparing their own music.

Physical Education: Outdoor classrooms provide prime opportunities for PE students. Activities such as hiking, running cross country, exercising and playing outdoor games can be included in the class curriculum. Students may also create games from objects they find in the outdoor facility and many of the activities can be combined with other subjects. Measure the walking trails and post distances so that "walkers" can set and achieve goals for regular exercise.

Science: The outdoor classroom is a "natural" science lab. Science students can conduct experiments that should only be attempted outside. Students could study aquatics, soils, animals, air, weather and plants and how living organisms interact with each other, as well as biology, chemistry, ecology or geology. Natural communities and ecosystems found in the outdoor facility can also be observed.

Technology: An outdoor classroom is an excellent facility for students to learn more about the use of different technologies. Students can take digital cameras into the outdoor classroom and capture images of insects, flowers, snakes, animals and other natural scenes. The images can be used to design Web pages or presentations about the outdoor classroom. Students may learn new concepts of Global Positioning Systems and Geographical Information Systems.

Vocational Agriculture: Vocational agricultural students will have plenty of objectives in their curriculum that will include and involve the outdoor classroom facilities. For instance, students can study pond management, forestry management or participate in land judging. Other areas to consider include designing trails; participating in building shelters, bird feeders and picnic tables; or growing the flowers and plants needed for the facility.



General Resources

Alabama Wildlife Federation

3050 Lanark Road
Millbrook, AL 36054
(Phone: (800) 822-9453
www.alabamawildlife.org/

The Alabama Wildlife Federation (AWF) offers an Outdoor Classroom/Schoolyard Habitat Planning Guide that is filled with information on how to create and sustain an outdoor classroom or schoolyard habitat. Go to the AWF Web site and click on "Conservation Education" or call the toll-free number above to obtain a copy.

Georgia Wildlife Federation

11600 Hazelbrand Road
Covington, GA 30014
Phone: (770) 787-7887
www.gwf.org/schools.htm

The Georgia Wildlife Federation (GWF) offers information on how to design an accessible wildlife schoolyard habitat. The GWF Web site is filled with information on how to start a wildlife schoolyard habitat while making it accessible to all people and wildlife. You can also call the phone number listed above to obtain more information.

National American Association for Environmental Education

2000 P St. NW, Suite 540
Washington, DC 20036
Phone: (202) 419-0412
<http://eelink.umich.edu/plt.html>

The National American Association for Environmental Education (NAAEE) is a network of professionals, students and volunteers that promotes environmental education throughout North America and other countries. The NAAEE provides EE-link, Environmental Education on the Internet. EE-link is a Web-based resource for educators to assist with providing information on environmental-based school projects, activities and lesson plans, facts, data, higher education links and much more. The information can be viewed at the Web link listed above. For more information about EE-link, call the NAAEE at the phone number listed above.

National Arbor Day Foundation

100 Arbor Ave.
Nebraska City, NE 68410
Phone: (402) 474-5655
www.arborday.org/

The National Arbor Day Foundation has many resources such as tree planting information, tree identification guides, educational lessons, contests for youth and much more. To access this information, log onto their Web site or call the National Arbor Day Foundation at the phone number listed above.

National Audubon Society

700 Broadway
New York, NY 10003
Phone: (212) 979-3000
Fax: (212) 979-3188
www.audubon.org/

The National Audubon Society strives to conserve and restore natural ecosystems, with a focus on birds and other wildlife. The National Audubon Society has resources available to the general public that include environmental education curriculum, workshops, games and materials for both youth and adults that could be very valuable for use in an outdoor classroom.

National Wildlife Federation

11100 Wildlife Center Drive
Reston, VA 20190-5362
Phone: (800) 822-9919
www.nwf.org/

The National Wildlife Federation provides information on how to certify your schoolyard habitat site. The federation also offers educational resources and workshops. Most of the information can be accessed online at the Web site listed above. You can also call the toll-free number listed for more information.

Project Learning Tree®

1111 19th Street NW, Suite 780

Washington, DC 20036

Phone: (202) 463-2462

www.plt.org/

<http://eelink.umich.edu/plt.html>

Project Learning Tree® (PLT) is an award-winning, multi-disciplinary environmental education program for educators and students in pre-K through grade 12. PLT, a program of the American Forest Foundation, is one of the most widely used environmental education programs in the United States and abroad. The educational information can be obtained by the Web site or phone number listed above.

South Carolina Wildlife Federation

2711 Middleburg Drive, Suite 104

Columbia, SC 29204

Phone: (803)256-0670

www.scwf.org/

The South Carolina Wildlife Federation (SCWF) provides online resources assisting schools, teachers, students and community members in the use of school grounds as learning sites for wildlife conservation and cross-curricular learning. The Web site also includes a kid's page, as well as valuable links for outdoor educational programs and habitats. The Web address is listed above, or for more information, call the SCWF in Columbia directly.

Tennessee Department of Environment and Conservation

401 Church Street

Nashville, TN 37243

Phone: (888) 891-8332

www.state.tn.us/environment/

The Tennessee Department of Environment and Conservation (TDEC) provides grant opportunities for establishment of trails and maintenance costs in an outdoor classroom facility. TDEC also has many sources that could be beneficial for those interested in developing an outdoor classroom. For more information, check the Web site or call the toll-free number listed above.

Tennessee Division of Forestry

Ellington Agricultural Center

P.O. Box 40627

Nashville, TN 37204

Phone: (615) 837-5520

www.state.tn.us/agriculture/forestry/

The Tennessee Division of Forestry (TDF) strives to protect natural resources and promote the sustainable use of forest resources through science-based forest management. The Tennessee Division of Forestry offers educational publications, programs and assistance as well as resources for tree seedlings. Contact your area Tennessee forester, log onto the TDF Web site or call the phone number listed above for more information on how TDF can assist with your outdoor classroom needs.

Tennessee Wildlife Federation

300 Orlando Avenue, Suite 200

Nashville, Tennessee 37209

Phone: (615) 353-1133

www.conservetn.com/

The Tennessee Wildlife Federation (TWF) is a statewide organization dedicated to the conservation of wildlife and natural resources through stewardship, advocacy and education. The TWF provides many youth programs and other educational opportunities that are beneficial to educators. Call the TWF for more information at the number listed above.

Tennessee Wildlife Resources Agency

Ellington Agricultural Center

P.O. Box 40747

Nashville, TN 37204

Phone: (615) 781-6691

www.tnwildlife.org

The Tennessee Wildlife Resources Agency (TWRA) has several resources available such as teacher's guides, films and publications on subjects such as wildlife, aquatics and natural resources. TWRA also has educational directors throughout the state that can assist you with other outdoor educational projects and programs. Log onto the TWRA Web site listed above or contact them by phone in Nashville.

University of Tennessee Extension

2621 Morgan Circle

119 Morgan Hall

Knoxville, TN 37996

Phone: (865) 974-7114

www.utextension.utk.edu/

The University of Tennessee (UT) Extension offers educational publications on specialized gardens, planting trees, attracting wildlife, native grasses, soil preparation and many more topics to meet your needs of constructing and maintaining an outdoor classroom. UT Extension also has an Extension agent in every county in Tennessee as well as state and area specialists who can assist with implementing educational programs in an outdoor classroom.

USDA Natural Resources Conservation Services

675 U.S. Courthouse

801 Broadway

Nashville, TN 37203

Phone: (615) 277-2531

www.tn.nrcs.usda.gov/

The USDA Natural Resources Conservation Service (NRCS) has literature; conservation educational materials for students and teachers; and tip sheets on developing backyard ponds, wetlands and wildlife habitat. The NRCS also has valuable information on controlling soil erosion, improving water quality and beautifying the landscape. The NRCS is represented in most counties across the United States. Log onto the Web site listed above or call the Tennessee USDA Office in Nashville to find ways the NRCS can assist with your school or community outdoor educational facility needs.

U.S. Environmental Protection Agency

Region 4, Sam Nunn Atlanta Federal Center

61 Forsyth Street, SW

Atlanta, GA 30303-3104

Phone: (800) 241-1754

www.epa.gov/epahome/resource.htm

Environmental education creates awareness and sensitivity and allows others to gain knowledge and understanding of the environment and environmental challenges. The US Environmental Protection Agency (EPA) is just one government agency that strives to be active in environmental education for both youth and adults. The EPA host many resources such as educational curriculum, awards, grants, workshops, student information and community service project ideas. Take a close look at the Web site listed above for an overwhelming amount of information that can be used in coordination with the outdoor classroom. For other information, call the toll-free number for the national office in Atlanta.

U.S. Fish and Wildlife Service

300 Westgate Center Drive

Hadley, MA 01035-9589

Phone: (413) 253-8200

Fax: (413) 253-8308

www.fws.gov/

The U.S. Fish and Wildlife Service provides education resources that include a conservation library, pictures, videos, training courses and curriculum for educators. The USFWS Web site above also provides many links for schoolyard habitats, invasive plants, endangered species, youth programs and grants. For more information, check out the Web site or call the USFWS at the number listed.

Websites for Teaching Plans (All Grades)

A to Z Teacher Stuff™

Title: "Hands-on Outdoor ABC's"

Grade level: pre-school

Subject: Language Arts

Objectives: Children walk on a nature trail and gather items to learn about ABC's and nature.

Web site: www.atozteacherstuff.com/pages/376.shtml

Canadian Parks & Wilderness Society

This non-profit organization offers many free educational lesson plans on many subjects for all grades.

Grade level: pre-K through 12

Subject(s): All

Web site: www.cpawscalgary.org/education/free_resources/lessons.html

Emergent Literacy

The website is a valuable resource for an outdoor art lesson using flowers.

Title: "Art with Flowers"

Grade level: pre-K through 2

Subject(s): Art & Science

Objective: Students create art with flowers.

Web site: web2.airmail.net/kboyle/Flower.htm

Emergent Literacy

The Web site provides a lesson plan that combines art, English and science by collecting leaves in the outdoor classroom.

Title: "Leaf Rubbings"

Grade level: K through 2

Subject(s): English, Science and Art

Objective: Students will compare, contrast, describe and write of all the different leaves.

Web site: web2.airmail.net/kboyle/Leafrub.htm

Emergent Literacy

This Web site contains a lesson plan involving outside water that combines English, math and science.

Title: "Puddles that Evaporate"

Grade level: K through 2

Subject(s): English, Science and Math

Objective: Students will predict, write, measure and describe evidence and facts.

Web site: web2.airmail.net/kboyle/Puddle.htm

Kidsgardening.com

This Web site provides outdoor classroom activities from flowers to wildlife. The site also has information on how to design and plant outdoor gardens.

Grade level: All

Subjects(s): All

Web site: www.kidsgardening.com/

Lesson PlanZ.com™

This site is filled with other links for physical education lesson plans that can be used in the outdoor classroom.

Grade level: pre-K through 12

Subject(s): Physical Education

Web site: lessonplanz.com/Lesson_Plans/Physical_Education/

Project WET

Project WET (Water Education for Teachers) is a nonprofit water-education program that facilitates and promotes awareness, knowledge, appreciation and stewardship of water resources. The site is available for educators to order materials, conduct a Project WET workshop, obtain education guides and lesson plans, and order a Project WET curriculum and activity guide.

Grade level: K through 12

Subject(s): All (with a focus on water)

Web site: www.projectwet.org/

Project WILD

The site is designed to assist educators in conducting a Project WILD workshop. The workshop is used to distribute materials that focus on all subjects centered on wildlife and ecology.

Grade level: K through 12

Subject(s): All

Web site: www.projectwild.org

Possible Funding Sources

County/City Budget
County Farm Bureau
Electric Cooperatives
Endowment Programs
Farm Service Agency
Farmer's Co-op
Federal, State and Local Grants
Garden Clubs
Local Businesses and Corporations
Local Service Clubs and Organizations
Natural Resources Conservation Service
School Board
School PTA/PTO
Soil Conservation Board
Tennessee Wildlife Resources Agency
Tennessee Division of Forestry

and Fund Raising Ideas

Bake Sales
Candy Sale
Christmas Tree or Wreath Sale
Concession Stand
Donations
Fish Fry
Fruit Sale
Park Cars at a Ball Game
Plant Sale
Plate Lunches During Holidays
Road Block
Telephone and Television Drives
Work at the County Fair
Yard Sales and Auctions

The SolutionSite.com

The site is filled with teaching plans and units for all subjects. The site is very easy to navigate and has hundreds of units to download on any subject.

Grade level: K through 12

Subject(s): All

Web site: www.thesolutionsite.com

U.S. Environmental Protection Agency

The Environmental Protection Agency's site is loaded with educational tools for all grades that focus on conserving the environment. The site includes games, activities, curriculum and teaching resources.

Grade level: pre-K through 12

Subject(s): All subjects, with most lessons focusing around the environment.

Web site: www.epa.gov/epahome/educational.htm

Addresses & Websites for Outdoor Classroom Grants

American Greenways Program

1800 N. Kent St., Suite 1120

Arlington, VA 22207

(703) 525-6300

Coca-Cola Foundation

P.O. Drawer 1734

Atlanta, GA 30301

(404) 676-2568

Do Something, Attn: Grants

423 West 55 St., 8th Floor
New York, NY 10019
(212) 523-1175
FAX: (212) 523-1175
<http://www.dosomething.org>

Frost Foundation

Suite 205, Cherry Creek Plaza II
650 South Cherry Street
Denver, CO 80222

L. J. and Mary C. Skaggs Foundation

Attn: Philip Jelley
1221 Broadway, 21st Floor
Oakland, CA 94612-1837

National Environmental Education & Training Foundation

915 Fifteenth St, NW, Suite 200
Washington, D.C. 20005
(202) 857-0162

National Gardening Association

Tat: Youth Garden Grants
180 Flynn Ave.
Burlington, VT 05401
(800) 538-7476
www2.garden.org/nga/EDU/Home.html

Phillips Petroleum Foundation

Phillips Building, 16th Floor Bartlesville, OK 74004
(918) 661-9072

Tennessee Department of Economic and Community Development

446 Metroplex Drive, Suite 128
Nashville, TN 37211-3139
(615) 741-1534
Fax: (615) 532-1896
www.state.tn.us/ecd/

Tennessee Foundation for Agriculture in the Classroom

P.O. Box 313
Columbia, TN 38401-0313
www.tnfb.com/specialprograms/ocggrant.htm

Tennessee Resource Conservation and Development Council

1081 Deer Run St.
Culleoka, TN 38451
(615) 359-2211

Other Grant-Related Websites

www.epa.gov/enviroed/grantsols.html
www.levistrauss.com/responsibility/foundation/grants/uslocal01.htm
grants.fws.gov/
www.grants.gov/
www.for_wild.org/seedmony.htm
www.sewanee.edu/biology/mountainhome/
www.seaworld.org/
www.lib.msu.edu/harris23/grants/2educat.htm
www.agclassroom.org/
www.ageducate.org/activities/
www.hort.vt.edu/human/CGgrants.html
www.kidsgardening.com/grants.asp
www.nfwf.org/programs/programs.htm
http://eelink.net/grants_eespecificresources.html
www.tnfarmbureau.org/
www.benjerry.com/foundation/guidelines.html
www.captainplanetfdn.org/
www.eealliance.org/occ%20symposium/grant_resources.htm

APPENDIX B. School Site Evaluation

Class: _____

School: _____

Grade: _____

Address: _____

Yes	No	Site Characteristics
School Building		
_____	_____	Wood Frame
_____	_____	Stucco
_____	_____	Brick
_____	_____	Other
Trees		
_____	_____	Shade Trees (mature)
_____	_____	Young Deciduous
_____	_____	None
Shrubs		
_____	_____	Foundation Plantings
_____	_____	Hedges (windbreaks, dust filters, erosion checks, etc.)
Grass Areas		
_____	_____	Lawn
_____	_____	Playing Fields
_____	_____	Wild Grasses
Flowering Areas		
_____	_____	Native Plants
_____	_____	Annual Plants
_____	_____	Perennial Plants
Barren Areas		
_____	_____	Paved Areas (playgrounds, streets, parking lots, sidewalks)
_____	_____	Eroded Areas (drainage ditches, drainpipes, exposed hills, etc.)
Water Areas		
_____	_____	Stream
_____	_____	Ponds
_____	_____	Puddles - consistently filled with water after rainfalls
_____	_____	Ditches (water runoff)
_____	_____	Storm Sewers, Gutters, Drainpipes

Yes	No	Site Characteristics
------------	-----------	-----------------------------

Elevations

-----	-----	Flat
-----	-----	Hill Slope (gradual or steep)
-----	-----	Hilltop
-----	-----	Mountain

Animal Signs

-----	-----	Homes (in trees, under roots, in holes in the ground, on tree branches, etc.)
-----	-----	Droppings (on stumps, sidewalks, grass, side of building, fences, etc.)
-----	-----	Tracks (in mud, dust, etc.)

Wetland Areas

-----	-----	Swamps (forested or in shrubs and bushes)
-----	-----	Bog
-----	-----	Marsh (cattails, grasses, reeds, etc.)
-----	-----	Flood Area (sedimentation, debris, etc.)

Rock and Mineral Areas

-----	-----	Stone Walls
-----	-----	Sidewalks
-----	-----	Driveways and Parking Lots (graveled)
-----	-----	Curbstones
-----	-----	Eroded Areas (exposed rocks)

Outlying Areas (near school grounds)

-----	-----	Open Fields
-----	-----	Crop Land
-----	-----	Orchards
-----	-----	Deserted Farms
-----	-----	Old Graveyards
-----	-----	Old Building Foundations
-----	-----	Tree Stumps
-----	-----	Fence Rows
-----	-----	Trees, Shrubs, Etc.
-----	-----	Vacant Lots

APPENDIX C. Needs Assessment

1. What features does the site possess that could be used in the design of the project? Include geographical features, sources of water, vegetation, wildlife, etc.
2. What areas could be enhanced to improve the site?
3. What could be added that is not presently available on the site?
4. Are there any restrictions to consider when making plans for site enhancement? Consider utility lines, neighbors, safety precautions, summer maintenance, etc.
5. Which resources are available within the community to aid in the design and completion of the project?
6. Who will be responsible for the implementation of your project plan? Include school and community members.

APPENDIX D. Task Sheet

Group Name: _____ Partner(s): _____

Project Title: _____

Tasks

<i>WHO?</i>	<i>WHAT? To Do TASKS</i>	<i>WHEN?</i>	<i>HOW? RESOURCES</i>

Safety

<i>Safety Plan</i>

Time Line

Start

Finish

References

- Harper, C. A. 2004. A Landowners Guide to Native Warm Season Grasses in the Mid-South. PB 1746. UT Extension, University of Tennessee.
- Harper, C. A. 1999. Improving Your Backyard Wildlife Habitat. PB 1633. Agricultural Extension Service, University of Tennessee.
- Harper, C. A. 2004. Growing and Managing Successful Food Plots for Wildlife in the Mid-South. PB 1743. UT Extension, University of Tennessee.
- Hill, T. K. Management of Farm Ponds in Tennessee. PB 1234. Agricultural Extension Service, University of Tennessee.
- Martz, J. T. 2000. School Nature Centers/Outdoor Classrooms Environmental Education Program. Agricultural Extension Service, University of Tennessee.
- Natural Resource Conservation Service, Kansas Conservation Districts, and State Conservation Commission, 1995. Getting into Outdoor Classrooms, Salina, Kansas.
- Studer, M. L. Developing an Outdoor Classroom: Blending Classroom Curriculum and Outdoor Play Space. 1999. "Texas Child Care." Austin, Texas.

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