

I love to explore classrooms! The first thing I do when assigned to a new classroom is search through cabinets and cupboards to see what the previous teacher left behind. Often, I discover things that haven't been used for years or that I've never seen before! Finding such treasures has often renewed my creativity and enthusiasm for the new school year.

Not only do I search the new indoor classroom, but I also investigate the outdoor areas around the school. They become part of my inventory of teaching materials. In fact, the outdoor areas are some of the most important because they help connect the indoor classroom to the world in which my students live.

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The Outdoor Laboratory: *How to Begin Using It*

teacher chooses to use as a learning area. Here, nature becomes a living textbook. By going outside the classroom to instruct, we follow Christ's example. In the Garden of Eden, He gave Adam and Eve their first lessons, using nature for their textbook. During His ministry on earth, Jesus often used the outdoor laboratory. "He made His lessons interesting and held the attention of His hearers by frequent illustrations from the scenes of nature about them."¹

Likewise, today there are pages from God's textbook everywhere, just waiting to be studied. Students can view the heavens for hours—by day, observing weather patterns in drifting clouds; at night, studying the twinkling stars and brilliant planets of our galaxy. Rocks, logs, and grass double as desks and chairs in this classroom. They can be both seats for observers and objects of study. Kneeling down, students can peer into cracks and crevices to find whole civilizations of tiny, scurrying creatures and can smell the pungent perfume of rich loam and green, growing things. They can feel the raised veins of a leaf and hear the wind's whisperings. Nature provides students with an unlimited supply of sensory experiences to pique their imaginations.

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Using the Outdoor Laboratory

Take Inventory

Beginning an outdoor laboratory is as simple as opening the door and going outside. Just as I prepare

Carl Swafford

B Y C A R L S W A F F O R D

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to do battle with dust and cobwebs when exploring a new classroom, be prepared to get dirty as you take inventory of your outdoor site. Ask an outdoor expert to join you if you're not sure where to begin. Local volunteers from nature centers, private environmental groups, and representatives from government entities, such as the state or provincial fish and game agency, forestry commission, or the soil conservation service, can help you conduct these assessments.

Start with the immediate area around the buildings. Take your time, and peer

into every corner where things could be stored or hidden. Make lists of unusual objects and features of the schoolyard. Take note of areas that are graveled, mowed, wet, or wooded. Compile a list of the number and types of trees and plants. Survey the buildings for materials like brick, stone, or wood. Locate nearby vacant lots, gardens, train tracks, or parks. Many of these things can be used in the outdoor laboratory. This survey of readily available resources will help you decide which activities will work best.

Plan a Lesson

Planning is the key to success. An outdoor assignment exposes students to many sensory experiences. According to Ellen G. White: "Jesus plucked the beautiful lily, and placed it in the hands of children and youth . . . He gave the lesson, 'Consider the lilies of the field, how they grow . . .'"² This involves more than taking students out on a nature hike or sitting under a tree to read a story. These projects, though useful, are free-time activities rather than actual outdoor laboratory lessons.

Review the goals and objectives of

your indoor curriculum. Perhaps students need inspiration for a creative writing lesson or materials for an art project. Or maybe you want to enrich a math or history class. Identify the lesson you wish to teach and think of ways to achieve it in the outdoor laboratory. For example, if you're teaching a history lesson about ancient civilizations, you could have the students learn how archaeologists discover clues to the past. Students can become "urban archaeologists" as they search the schoolyard and nearby community for clues to past history. Bricks, sidewalks, and other manmade materials become part of the past that students can see and feel. They can discover history in differences between sections of buildings and layers of asphalt.

Students might also investigate the habits of residents in nearby communities. Have them collect garbage from trash cans, ditches, and roads near the school, then analyze it to see what food people in the area prefer, where they shop, and how they treat the environment.

Math skills are required to calculate the pounds of garbage per person and the cost to taxpayers for cleaning up trash.

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Social and environmental issues can be explored as students study how to dispose of the waste. Should it be burned, buried, or recycled? For English class, they can write letters to community leaders telling about their concerns for the environment or volunteer to help in a community clean-up project.

Students can also imagine what it was like to be an early pioneer or indigenous person living on the school site. Have them research what they would have used for food, shelter, clothing, medicines, and dyes.

To be effective, each activity should offer a practical approach to learning the subjects normally taught only in the indoor classroom. This will integrate and reinforce learning through hands-on experience. At all grade levels, students learn best by doing. The more realistic the activity, the more meaningful and lasting will be the lesson.³

If you need additional clues or specific help with a unit, professionals from state, local, and national outdoor education organizations can help you develop a curriculum and put you in touch with other groups or individuals who are willing to help you. Contact nature centers, parks, zoos, and aquariums about current local programs that will contribute to your curriculum. Programs like NatureScope, Living Lightly in the City, and Project WILD⁴ can provide you with prepared activities to supplement the curriculum. Such lesson plans require little equipment or time to plan and provide connections to some major textbook curriculums (e.g., Holt, Merrill, and others). They're not always complete units, but they can help stimulate your creativity in planning outdoor activities.

Find Equipment

Outdoor teaching does not require a great deal of equipment. However, what-

ever you use should be relevant to the students' experiences and applicable to the lesson. At every grade level, less is often better. No equipment is necessary for many beginning activities. Often, a rock or a tree is sufficient. Help students understand that they can explore, investigate, and discover new things outdoors without a lot of equipment. A hand lens, pencil, clipboard, paper, and a few containers for collecting objects are all you need for most simple activities.

If textbooks list materials and supplies you don't have, improvise. Drinking

glasses, plastic tubs, and zip-closed bags can replace beakers. A hand lens can serve as microscope.

Teach the Lesson

Before going outdoors, have the students focus on the activity. They should know why they are visiting the outdoor laboratory and what is expected of them. Make sure the objectives are clearly defined, planned, stated, and understood by all, yet flexible enough to allow spontaneous learning to occur. Each student should have the correct clothing, equip-

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ment, study materials and background information for the activity.

As you present the activity, observe the students' reactions and participation. Be ready to interject questions that point in the directions you want them to explore. Good questioning techniques can increase student curiosity and excitement about discovery.

A vital part of each lesson is debriefing, which gives each student time to in-

ternalize the concepts. As you combine debriefing with observations of student participation, you will be able to evaluate the activity's effectiveness in terms of student learning. Debriefing can be done indoors or, better yet, outdoors in a selected area. An easy way to involve students in this process is to use open-ended questions to reveal what the students learned, what insights they gained, and how they reacted. This feedback provides vital information for future planning.

Roadblocks to Success

Fear of Management Problems

Perhaps you are afraid to go outdoors because "so much could go wrong." How will the students behave outside where there's less control? The first rule of the

outdoor laboratory is to keep your group small. If possible, solicit help from a parent or a teacher's aide and divide the class into groups of 10 to 12 each. This will make the activities more manageable.

Be sure to prepare students for the outdoor experience. Tell them briefly what to expect, how to dress, and what to bring. Warn them about any anticipated hazards, and describe the behavior you expect of them. If you anticipate problems

with specific students, talk to them or their parents before you begin the outdoor activity. However, students who misbehave or appear bored in a traditional indoor class often blossom in the outdoor laboratory. One of the greatest discoveries students can make, and one of their great surprises, is to find out that they can do something they feared they wouldn't be able to do.⁵

Remember how the Master Teacher handled His students. He taught "His disciples by the lake, on the mountainside, in the fields and groves, where they could look upon the things of nature by which He illustrated His teachings. And as they learned of Christ, they put their knowledge to use by co-operating with Him in His work."⁶ Teachers who nurture a sense

of wonder and a love of nature will cultivate a cooperative spirit among their students and thereby reduce the likelihood of behavior problems.

Lack of Knowledge

Many teachers are afraid they don't know enough about nature to teach outdoors. National workshops are available to help those lacking experience. Such programs provide a good source of activities, hands-on experience, and peer involvement. A one-day in-service like Project WILD is enough to help first-time teachers get started. Other popular programs are Project Learning Tree, Aquatic Wild, and Project WET. You can enroll in these free programs at most state parks and wildlife and forestry agencies.

Another program available worldwide for teachers of grades 7 through 12 is GLOBE (Global Learning and Observations to Benefit the Environment), an international project that involves teachers and students in collecting information about their school environments. This information, along with other data collected worldwide, gives both scientists and students a clearer understanding of the changes in the global environment and helps them better understand how to improve the health of the planet. (For more information on GLOBE, see Lonna Henriquez and Gerald Linderman's article on page 29.)

Teachers who want more experience can attend a resident outdoor-education program with their students. During the two days to a week that most such programs run, outdoor educators model activities and suggest lessons that the teacher can take back to the classroom. Some of these resident centers provide pre- and post-activities, as well as follow-up visits by a staff member to the school site.

No Place for an Outdoor Classroom

Outdoor classrooms can be found not just at nature centers and parks, but also in every schoolyard. Many teachers feel that nature observation requires a rural setting, but Ellen White reminds us that "The rough places of nature, the wild places, God has made attractive by placing beautiful things among the most un- sightly."⁷ No matter how barren or unex-

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citing the site might appear, you can find many things on every school property that can be used for learning. Inner-city students can search cracks in sidewalks for insects and plant life, then study how these illustrate adaptation and survival. They can turn a third-story window ledge into a feeding station that attracts many varieties of birds. Anyplace can be an outdoor learning site if you take advantage of students' natural curiosity.

The Recess Syndrome

Students have been conditioned to expect learning to stop and play to begin when they go outside. This response occurs in all age groups—kindergartners through college age. The academic community has unwittingly taught students that learning has to involve textbooks and classrooms. To overcome this mindset, you may have to begin using the outdoors gradually. Go outside for short intervals with one or two specific goals in mind. For the first lesson, have students make a five-minute search of the schoolyard for signs of animal life. Ask them to collect three objects to observe with a hand lens or a microscope. Each successive trip can take more time as interest builds in various activities. Students thus become excited about learning both inside and outside the school walls.

The Outdoors Is Not Just for Science

The outdoor classroom is a resource room for all subjects and every grade level. Certain parts of the curriculum can best be taught out-of-doors. For example, in grades K-2, students can go outside for sensory walks during which they look for colors, shapes, textures, and patterns, or go on a special hike to look for items that can be classified as nouns. They can collect acorns, nuts, and stones to use as math manipulatives.

Students in grades 3 and 4 can put food in an animal track box, leaving it out until the next day to see what kinds of nocturnal creatures visit the school. They can also make feeders for various types of daytime animals.

Fifth and 6th graders will enjoy seeing things in perspective. Drawing a life-sized great blue whale on the parking lot allows them to understand the enormity of this animal more effectively than just looking

at its picture in a book. They can also position appropriate-size spheres on the athletic field to represent the planets of our solar system. For math class, they can be asked to figure exact distances using this scale model.

Seventh and 8th graders can measure the amount of water flowing through a creek or ditch and estimate how long it would take that water to fill a local swimming pool. They can observe plants and animals and write about them in a haiku, a cinquain, or some other type of poem.

Problem-solving takes on a new meaning on the high school level when coupled with the outdoor laboratory. Students can use math class to solve real engineering problems, such as estimating the amount of rainwater runoff from the parking lot. Where does it go? How is it diverted to reduce soil erosion? They can observe and measure spider webs to understand basic geometry applications. History classes can research and debate local wildlife issues. English classes can do creative writing exercises like pretending to "interview" animals after observing their activities.

The Challenge

The 21st century will bring even more challenges in motivating students. Our knowledge base will continue to increase faster than we can assimilate it, and the electronic media will consume even more of the time and energies of our students, distracting them from the natural world around them. How can teachers solve this dilemma? The outdoor classroom is part of the answer.

By using students' innate curiosity about nature and the outdoors, we can help them develop their powers of inquiry, reasoning, and creativity. This will help satisfy their need for excitement naturally, and provide the most powerful benefit of all—a connection with the Creator. "The book of nature is a great lesson book, which in connection with the Scriptures we are to use in teaching others of His character. . . . As the works of God are studied, the Holy Spirit flashes conviction into the mind."⁸

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