The Resource for Environmental Education in Missouri

April 2002 • Vol. 4 • No. 4

What's in it for you?

A Field Trip Planner . . . . . page 2

Taking Action . . . . . page 3

Community Resources. . . . . page 5

Project Resources . . . . . page 8

The Resource Survey . . . . . pages 9

Calendar. . . . . pages 12-13

An entire issue devoted to
Connecting Schools and Community

Field Trips with a Purpose

by: Ned Miller, Heart of Missouri Regional Professional Development Center and Leslie Smith, Osage High School

How do you motivate students? Field trips and visits from experts are tried and true, both as good motivators and as a way to connect classroom learning to the outside world. In the past, a field trip might have been considered a nice addition to the school year and often it was only loosely connected to the curriculum. As school funding gets tighter and more content is expected to be completed in a shrinking number of available school days, the field trip will survive only if it is a vital piece of the school's curriculum. Students on the field trip must be required to complete measurable educational objectives they would not be able to accomplish at school. It is important for teachers to ensure the experiences are directly connected to the school district's learner objectives and are closely correlated to the Show-Me-Standards.

Teachers and field site personnel must connect before, during, and after the field experience. Teachers should relate very specific objectives about what they want students to learn from a field experience as well as explain what topics have already been covered in class. It is also important for teachers to ask what exhibits and experiences will be provided so they can relate them to their objectives and the Show-Me-Standards.

Learner objectives define what the students need to know and be able to do, but only the assessment can focus student learning on those objectives. Educators must decide how they will know if the student achieves an objective, and what evidence will be required. To provide that evidence, the assessment must be written before the field trip is planned and the field trip activities are then driven by the assessment *A short quiz written and given afterwards is not adequate!* Such "quizzes" tend to check lower level knowledge instead of processes and higher level understandings. For activities in the field, performance assessments are usually a much better choice. The teacher should take advantage of the field staff's knowledge and collaborate with them to determine the appropriate activities, assessments, and scoring guides. By sharing assessment results, teachers provide field staff with feedback that may help them improve their programs.

continued on page 2 ...

A Field Trip Planner

by: Ned Miller, Heart of Missouri Regional Professional Development Center
Leslie Smith, Osage High School, Lake Ozark, MO

TWO WEEKS BEFORE YOUR TRIP:

•Review the objectives, design assessments and connect to the classroom.

Objectives must be clear and assessment should drive the experience. Students need to be told what they are expected to know and how they will be assessed.

•Schedule an advance meeting to collaborate with the field contact.

This visit allows for specific field trip planning. The instructor can actually choose appropriate exhibits and activities. In addition, it presents an opportunity to obtain building maps, handouts, parking information and identify a lunch site. If on-site visits are not possible, as much advance preparation as possible should be done over the telephone, by email or visiting web sites.

•Recruit and orient chaperones.

Orientation is a valuable component of the field trip. Provide chaperones with guidelines, maps, directions, schedules and student handouts. Make sure to inform them about students with special health concerns, learning or behavioral needs. Include your home phone number in case there are questions.

•Send out field trip permission slips with a one-week deadline for return.

ONE WEEK BEFORE YOUR TRIP:

•Check bus reservation and schedule.
•Make copies of the map for each driver.
•Confirm and secure payments.
•Assemble the following in a packet to take on the trip:

- Copy of the field trip contract
- Map to the destination
- List of students and chaperones (by bus)
- Chaperone and student name tags
- On-site group assignments
- On-site map
- Schedule for the day
- Scoring guides and activity sheets

•Complete pre-visit classroom activities that integrate the classroom unit with the field trip.

Students will learn more if they understand the vocabulary and other appropriate content before they leave.

•Review schedule and plans for the trip with the students.

Make sure all permission slips are in and students are clear on departure and arrival plans.

•Review behavioral expectations and manners with the students.

Present behavior expectations and trip guidelines to the students. Instruct whether they are expected to stay with their chaperones at all times or if they are allowed to explore alone or, when available, shop at a gift store.

•Confirm chaperones

BEFORE LEAVING SCHOOL

•Meet with chaperones to review the schedule, introduce students, share expectations and discuss manners.
•Make an accurate count of students and chaperones.
•Collect lunches in boxes or bags and label with the school and teacher's name.
•Give the bus driver a map and parking instructions.

ON ARRIVAL

•Arrive early enough to be prepared for the first scheduled activity.
•Instruct the bus driver on exact location and time of scheduled departure. Make necessary arrangements for lunches, coats, backpacks, etc. Locate restrooms and other designated activity areas.

FOLLOW UP

Once back in the classroom, continued assessment is a priority. This is an opportunity to both deepen the educational impact of the field trip and receive vital feedback.

See Assessing the Field Trip on page C-4

continued from front cover...

Students may remember a field trip as "fun" but we need them to do things that they couldn't have done in the classroom and remember more than the ride on the bus, the classmates they were with, lunch, and the weather. While field trips may represent "fun" to students, they are not always a source of joy for teachers or administrators. They can be time-consuming, difficult to organize, expensive, and often affected by the weather. Can the experience be educational and motivating while maintaining the fun? Through careful organization, curriculum alignment, good communication and proper assessment, these experiences can be both fun for the student and a very justifiable experience for learning and achievement. If teachers and non-formals take time to clarify objectives, write assessments, and carefully organize activities, the field trip will be successful learning experience.

Taking action

by: Syd Hime and Paulette Strader, Education Programs, Missouri Department of Conservation

Environmental Education is a process that leads to responsible individual and group actions. Action is the key component of service learning.

Service learning activities blend community service and learning activities in a way that improves both the student and the community. Youth participating in service learning programs perform a needed community service while simultaneously improving skills that include critical thinking, communication, teamwork, problem solving, public speaking, civic responsibility, mathematical reasoning, scientific method, research and analysis. The services can be provided within school walls or in the community, and typically would not happen if the students were not involved.

Many students are aware of the fact that they should help take care of their environment. What they need is guidance. What better way than through service-learning partnerships. These partnerships provide a means to direct projects that conserve resources, develop positive role models and provide sound educational activities. Getting students involved in their community can also produce a sense of loyalty and plant the seed for them to return someday.

According to the National and Community Service Trust Act of 1993 Service-Learning:

- Is a method whereby students learn and develop through active participation in thoughtfully organized service that is conducted in and meets the needs of communities;
- Is coordinated with an elementary school, secondary school, institution of higher education, or community service program and the community;
- Helps foster civic responsibility;
- Is integrated into and enhances the academic curriculum of the students, or the education components of the community service program in which the participants are enrolled;
- And provides structured time for students or participants to reflect on the service experience.

Service learning can be approached in a number of ways. The following models serve as guidelines for successful programs.

Model 1: Service Learning Within a Class
In this model teachers use service learning to address curricular goals usually achieved by conventional teaching methods. American History teachers have had students develop relationships with nursing home residents to learn from a personal standpoint how the current community environment is different from that 50 or 100 years ago. Science teachers have performed water testing in their classes for the Environmental Protection Agency. Business classes have conducted research to identify ways that businesses can conserve and recycle. Language Art and Computer students have designed literature and multi-media pieces to inform teachers, students, and the general public about environmental issues. With this approach students immediately see real uses for what is taught in the class.

Model 2: Service Learning as a Class
When service learning is used as a specific class the planning, evaluation, assessment, and reflection concerning the service effort are all built around structured classroom activities. Students research the backgrounds of community situations, develop alternative solutions, and establish coalitions with service agencies and other community resources to address community needs. Within this structure the entire teaching staff jointly develops the curriculum and determines what skills, knowledge and abilities can be developed as students plan, carry out, and evaluate the service.

Effective Practice in these models include:
Clear Service Goals - Goals for the service learning are clear. Students are aware of these goals and help evaluate the degree to which the goals are met.

Academic Integrity - Student outcomes are clearly defined and supported through the service learning process and specific service learning experience.

Reflection - Students have structured opportunities for thinking about their service learning experiences and reflecting those thoughts. These exercises allow students to show how they value their efforts. Reflection activities should be varied and occur throughout the experience.

Student Initiative - The service performed grows from student interest and initiative. Activities designed to act on issues and needs within the community are encouraged.

Inclusion of Diverse Populations - The variety of students participating in the service learning processes of the school should reflect the population makeup of the school or community.

Celebration and Recognition - A key component to establishing a service ethic among youth is celebration of and recognition for their efforts. These components show them how others value their efforts.

See Service Learning Grants on page 10

Community and Schools Connnecting

Across the nation schools and communities are joining to provide excellent educational opportunities for students of all ages. Below is just a sampling of programs reaching Missourians. If you would like to share information about a program in your school for possible publication in a future issue, please send a full description to the RESOURCE Editor.

•City of Springfield Solid Waste Management & Area Schools

The city joins with local third-graders as they offer a tour of their household chemical collection center. In addition, students are introduced to recycling and environmental terms, government services, groundwater protection and other environmental issues. For further information contact Barbara Lucks at (417) 864-2005 or email barbara_lucks@ci.springfield.mo.us

•KCK Community Gardens Project

This three-part project includes the construction and maintenance of garden beds, garden workshops for students in preschool through middle school, and The Garden Play and other community performances and outreach work. The environment, nutrition, science, math, literacy and community are all essential elements of the program. This program targets Kansas City, KS schools, however, links closely with Missouri resources. For further information email Mark Manning at ReadinginKansas@aol.com

•Rockport Heights Elementary and Fox Junior High School, Jefferson County, MO

These two schools in the St. Louis Region have been spearheading solid waste reduction efforts in their community for a combined total of almost 30 years. Dedicated teachers have organized impressive projects that generate student, parent and community involvement. The school recycling clubs invited the community to monthly recycling days with an unbelievable outcome. Parents involved their businesses and results were greater than ever expected. The event taught all involved the benefit of working together to achieve greatness. Another positive outcome included the collecting and recycling of old linens for the county animal shelter. The elementary and junior high schools combined their program with the purpose of carrying good environmental practices and attitudes from one level to the next. For further information contact Nancy Joannes Strain at Rockport Heights (636) 464-2010 or Rachel Arbogast at Fox Junior High (636) 296-5077.

•Bridging the Gap, Storytellers, Inc and Andrew Drumm High School, Independence, MO

Storytellers, a non-profit arts organization, offers a drumming-based class with reused materials such as gas tanks, pots, pans, cans, etc from the Bridging the Gap collection center. This not only allows the artists to share their talents, but provides Andrew Drumm High students an opportunity to learn about recycling at the Bridging the Gap collection center. For further information email sam_w_hughes@hotmail.com

•Moreland Ridge Middle School, Blue Springs, MO

Eighth-grade students initiated an environmental service-learning interdisciplinary theme through the STREAM and other projects. The STREAM project encouraged students to adopt a local stream and study the stream dynamics by monitoring water quality and submitting data to the Missouri Department of Conservation. For further information call the school at (816) 224-1800.

Community Resources In Your Own Backyard

by: Syd Hime and Paulette Strader, Education Programs, Missouri Department of Conservation

"Every community, no matter what its location or size, is a learning laboratory. It's people; its animals and plant life; its places, processes and products are all resources for learning."
C.M. Williams
The Community as Textbook

In this age of technology, we sometimes forget to look "in our own backyard" for educational opportunities. Linking the school and community can provide exciting learning experiences as well as lay the foundation for youth to develop a real sense of purpose in their community. Resources available in a community include people, places, or objects. They are found in all sectors of the community and can provide teachers with teaching materials, project ideas, guest speakers, field trips, or community service projects. The use of community resources can greatly enhance the school curriculum and help teachers teach more effectively by providing new perspectives and experiences for students. For the student, community resources can provide motivation to achieve learning objectives, exposure to positive role models, a stimulating learning environment, and a connection between the classroom and the "real world".

Every community, no matter how large or small, holds cultural, natural, human, and technological resources that can be utilized by the students and teachers that live there. Three common ways for educators to use community resources include guest speakers, field trips, and community projects. Learning through community resources can involve short classroom sessions, one-day field trips, a week-long unit, or a year-long project. Lessons can be interdisciplinary or focus in-depth on a particular topic.

Once you start using a variety of community resources begin an inventory of those resources. Record the name of the resource, the appropriate subject areas, what the resource can be used for, contact name, address, and a list of restrictions or limitations related to the resource. This catalogue of community resources can be utilized by several educators to share their ideas and experiences with others.

Connect with the environment

Making students aware of environmental issues that surround them is not an easy task. It takes time and extra effort from the educator. The matrix printed on the following two pages provides a number of ideas that can be used to incorporate environmental education into the curriculum.

Topic ideas are listed to the left with additional information detailed in the mid-section. Specific content connections appear to the right. Although the matrix addresses urban situations, instructors from rural areas can translate the impact, opportunities, potential and connections into their own set of rural issues. While it is impossible to list specific locations across the state of Missouri that connect to the topics, it is hopeful that these ideas will stimulate instructors to relate to their own areas and incorporate relevant information into their curriculum.

Reprinted with permission of the North American Association of Environmental Education, Rock Spring, Georgia. "Teaching About the City Around You" **Urban Environmental Education**, University of Michigan School of Natural Resources and Environment, 1994, Ann Arbor, MI.

Environmental Education Matrix

Topic	Urban Relevance	Environmental Impact	Trip/Study Opportunities	Action Potential	Content Connections
Transportation	Complex multi-modal transportation systems allow movement of goods and large numbers of people	Over-dependence on personal transportation at the expense of public transportation has worsened air quality and reduced living space in most U.S. urban areas; demand for oil drives international politics.	Department of Health air quality monitoring stations; motor vehicle emissions inspection stations; office of local transportation planner.	Awareness campaign on environmental impacts of cars, political campaign to divert government funds to public transportation; awards for car dealers who specialize in fuel-efficient vehicles; promotion of carpooling among teachers and staff.	Land use, air pollution, energy, noise, envion-mental health.
Water	Surface and/or groundwater infrastructures allow urban populations to survive where local water supplies might be inadequate; sewage treatment speeds up natural purification process; many industries locate along waterways.	Increasing demand for water raises supply concerns; increased pressure on sewage treatment plants results in inferior pollution control; population expansion and poor land use practices threaten purity of water supplies.	Reservoir; pumping station; valve chambers, pollution control facilities (sewage plant); sludge composting facility; local water source (study water quality indicators).	Water conservation campaign; storm sewer drain stenciling ("Dump no waste - drains to river"), political campaign to protect watersheds; fire hydrant monitoring for leaks.	Land use, environmental health
Air	Air in cities is usually poorer than in non-urban areas; urban residents suffer from higher incidences of respiratory and related illnesses; indoor air quality concerns people who spend much time indoors (lack of ventilation; ground-level ozone from copiers).	While overall U.S. air quality has improved since 1970's, increased dependence on passenger cars has increased automobile-related emissions; increased electric demand has similar effect; new awareness of air toxins causes greater health concern; cities may be big contributors to global climate change.	Visit local hospital pulmonary unit or lung association; do "life-cycle analysis" or various energy-demanding mechanisms and energy sources. (See also trips in "Transportation").	Education campaign on the threat of ground-level ozone; air monitoring project; political campaign to limit indoor cigarette smoking; awareness campaign to increase use of mass transit or other alternatives.	Transportation, energy, environmental health, solid waste.
Energy	Urban people depend on external sources of energy (usually fossil fuel or nuclear) to meet their transportation, industrial, commercial, and residential needs; densely populated urban areas tend toward greater home-energy efficiency and public transport opportunities.	Burning fossil fuels contributes to local and regional air pollution, and possibly to global climate change; fossil fuel extraction may contaminate wild landscapes; disposal of spent nuclear fuel is still an impermanent and risky endeavor.	Electricity-generating facilities, natural gas storage facilities, energy museums, exhibits, and institutes.	School lighting conservation projects; home energy conservation; political/educational campaign to promote generation from alternative sources.	Air pollution, transportation, environmental health.

Topic	Urban Relevance	Environmental Impact	Trip/Study Opportunities	Action Potential	Content Connections
Food	Most food consumed by city people is grown outside the city and transported vast distances to reach urban mouths.	Population and growth pressures diminish agricultural land around cities; shipping food from remote sources is inefficient; foods may contain toxic residues from pesticides, herbicides, or bacteria.	Farmers' markets, regional farms; food warehouse, food packing plant, supermarket.	Bioregional shopping campaign; food awareness education initiatives, eating lower on the food-chain campaign; change lunchroom menus to reflect food awareness.	Transportation, energy, open space, environmental health.
Solid Waste	Americans produce 3 to 5 pounds of waste daily - and cities are at a loss for where to put it; much waste ends up in public places as litter.	Landfilling may produce toxic seepage (leachate); incineration contributes to air pollution; recycling may produce toxins, has had difficulty "closing the loop," and may have problems with participation; each solid waste management option is an undesirable land use (i.e., nobody wants an incinerator in their backyard).	Landfills, incinerators, recycling facilities, transfer stations, private waste-carter facilities.	Start a recycling program in school or neighborhood; education campaign to reduce solid waste (source reduction), community education program to increase participation in municipal recycling programs.	Land use, air pollution, water, environmental health.
Noise	A concentration of noise sources makes cities louder than non-urban counterparts: cars, trucks, airplanes, loud music, trains contribute to the problem.	Excessive noise leads to higher stress levels, possibly nervous and heart disorders, and hearing impairment; students subjected to excessive noise perform worse in school than students working in quiet environments.	Subways, airports, heliports, Department of Health.	Awareness campaign on the health effects of noise, political campaign to have city agencies reduce noise levels on trains, buses, etc.; noise monitoring with decibel meters.	Environmental health, transportation, land use.
Land Use/ Open Spaces/ Housing/ Neighborhoods	Increases in urban populations necessitate additional housing; more urban people have inadequate shelter; development in housing, commerce, and transportation converts soft ground to asphalt or concrete, rendering it useless for agriculture, wildlife habitat, or recreation; plant, animal, and abiotic elements of the urban environment raise awareness of urban dependence on natural systems.	Housing development may lead to wildlife habitat destruction and segmentation, or loss of agricultural lands. Also, soil erosion, water quality and resource use may be affected; loss of green areas leads to lower quality of life, decreased species abundance, and diversity	Local, parks, preserves, greenbelts; new housing developments, old neighborhoods, alternative living arrangements, homeless shelters, development corporations; zoos, botanical garden.	Organize to create gardens and parks on vacant lots; political campaign to control development in ecologically sensitive area; education campaign on ecological value of "unused" land; create model of sustainable urban community; historical exploration and research about neighborhood's past; threatened or endangered species protection campaign, biological inventories and monitoring.	Water, energy, transportation.
Environmental Health	Lead, airborne toxins, asbestos, impure drinking water are widespread risks to city residents, especially the poor.	Environmental contaminants can lead to sickness, difficulty in school, mental retardation.	Health professionals, "green" buildings.	Environmental health fair, lead awareness project, air and water monitoring.	Air pollution, water pollution, transportation.

Conservation Curriculum

Outdoor Learning Experiences

This issue of the curriculum insert has a modified format. Instead of grade level specific activities, we are providing you with information that may be useful for different types of field trips. Each activity can be adjusted for grade level.

Missouri FORESTKEEPERS Network
Missouri Forestkeepers Network was started in 1996 as a program to monitor forest health in the state. It's designed to educate Missourians about the care and management of Missouri's trees and forests and to enlist volunteer support in monitoring forest health.

For more information or to join the Missouri Forestkeeper Network, call toll-free, (888) 9-FOREST (888-936-7378) or check out the Forest ReLeaf Website, <www.moreleaf.org>.

STREAM TEAMS
Missouri's Stream Team Program is an excellent opportunity to get involved and show you care about Missouri's streams. You can take part in stream clean-ups, do water quality monitoring and many other projects for stream conservation.

If you are interested in starting a Stream Team, call 1-800-781-1989 (message system) or check out the web site, <www.mostreamteam.org>

Show-Me Conservation Outdoor Classroom Grants

Application Deadline - May 3, 2002

School administrators across the state received specific information detailing the two types of available grants:
Development Grant of up to $2,500
Enhancement Grant of up to $500
Have questions? Call Syd Hime
573-751-4115 ext 3370

Teacher resources

Two excellent tools for planning field trips are offered for sale through the Missouri Department of Conservation:

CONSERVATION HIKING TRAILS
$4.00 cost
A variety of trails are available on conservation grounds throughout the state. You can take your classes to forest, prairie, glades and savannas, as well as aquatic regions with streams, lakes or wetlands. The updated version of this book lists 86 of Missouri's most popular trails to explore.

MISSOURI CONSERVATION ATLAS 2001 EDITION
$16.00 cost
This is a comprehensive guide to Missouri's beautiful and abundant conservation areas. The guide contains 114 detailed county maps. It includes a fact-filled index listing activities, facilities, natural features, handicap access and other useful information. This is sure to enhance your enjoyment of the outdoors. 264 pages

Media loan list

You may borrow the following item by contacting our Media Librarian at (573) 751-4115 x3837, fax (573) 751-2260 or write: Media Librarian, Missouri Department of Conservation, PO Box 180, Jefferson City, MO 65102-0180.

EXPLORING OUTDOOR MISSOURI
26 min VHS video
Explore Missouri's scenic lands where a variety of recreational opportunities await. See great places to fish, hike, observe nature and more. Plus, learn what to take with you for an outstanding outdoor adventure.

IS IT DEAD YET?

Diagram of a Rotting Log

Dead trees are recycled back into the forest soil through decomposition. The stages of decomposition may be classified in three main categories:

Invaders- Invaders attack dead, dying or weakened trees and start the process of decomposition. Wood-eating insects enter the tree by boring holes into the bark. They pave the way for other "invaders," such as bacteria and fungi, that dissolve the wood structure and allow moisture to enter. This moisture makes the tree a suitable place for mosses, lichens and other plants to live. As they grow, they penetrate the wood, causing it to break apart and decompose even further. Many insects find this an ideal environment for laying their eggs.

Consumers- Fungi and bacteria provide many nutrients for consumers, such as insect larvae, which feed on other organisms and their remains. Insects like the moist habitat of the rotting log where they can find shelter and food. At this stage of decomposition, more plants, insects and animals are inhabiting the tree, causing further decay. Some wood-eating insects leave the decaying tree in search of newly fallen logs.

Scavengers- Scavengers eat dead plant and animal material and often choose decaying logs for their food and home. Snails and slugs come in and break down the log until it has virtually disintegrated. At this point, it is covered with plant debris, new seedlings and leaves. It is almost impossible to differentiate the decayed log from the litter of the forest floor.

The Fallen Log: Activity 1

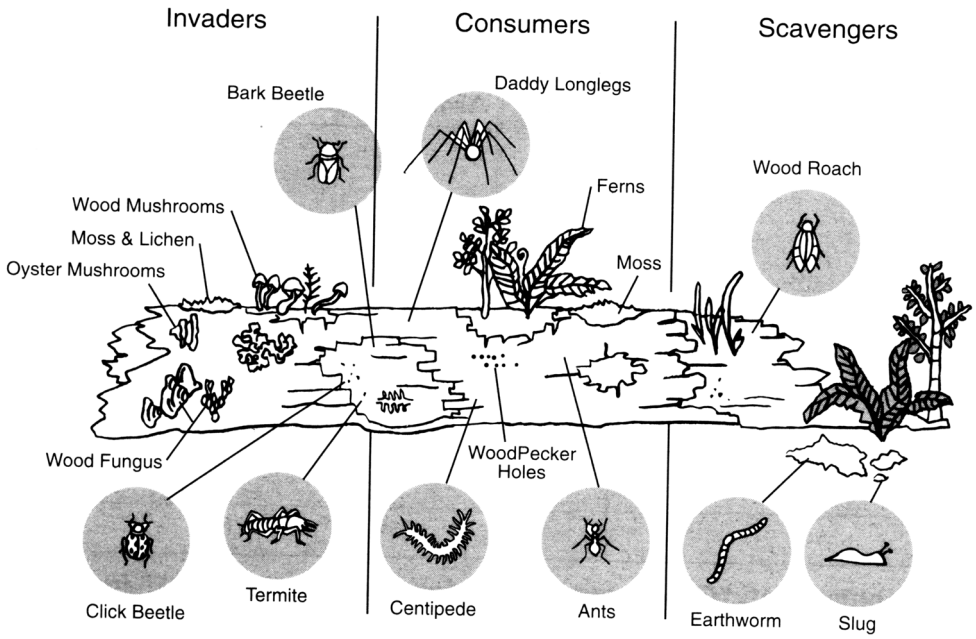
Divide the class into teams of four or five students. Each team will examine a different fallen tree and keep a record of their findings. Records include answers to these questions:

A. Does the fallen log appear to have died recently or some time ago? How can you tell?
B. What kinds of plants are growing on the log?
C. What kinds of animals are found under the bark? Inside the wood? Under the log?
D. What other evidence of decomposition do you see?
E. What evidence of animal activity do you see on or around the log?
F. What other organisms are found near the log (under the surrounding leaves or rocks)?
G. What may have caused the death of the tree you are studying?

Each team presents their findings to the class. After each presentation, students should discuss these questions and record in their journals.

A. What similarities and differences were there between logs? How might the differences be explained?
B. Why is it important that the logs and other organisms of the forest eventually decompose?
C. Produce at least one example of a food chain that is taking place in your log.

Credit: Adapted from the activity, "The Fallen Log," in Project Learning Tree and "Adopt a Forest" in Project Learning Tree's high school unit "The Changing Forest: Forest Ecology," American Forest Foundation.



Nature Journaling

Lewis and Clark, John J. Audubon and Aldo Leopold are only a few of the notable explorers that trekked across Missouri and other parts of the United States of America recording their findings. Much of what we know about the history of Missouri's habitat comes from writing or artwork by pioneers fascinated with the land. We call this special type of record keeping "nature journaling."

SHOW-ME STANDARDS
Performance: 1.6, 1.9, 2.1, 2.2 Knowledge: CA1, CA4, FA1, FA4, FA5, SC3, SC4, MA2

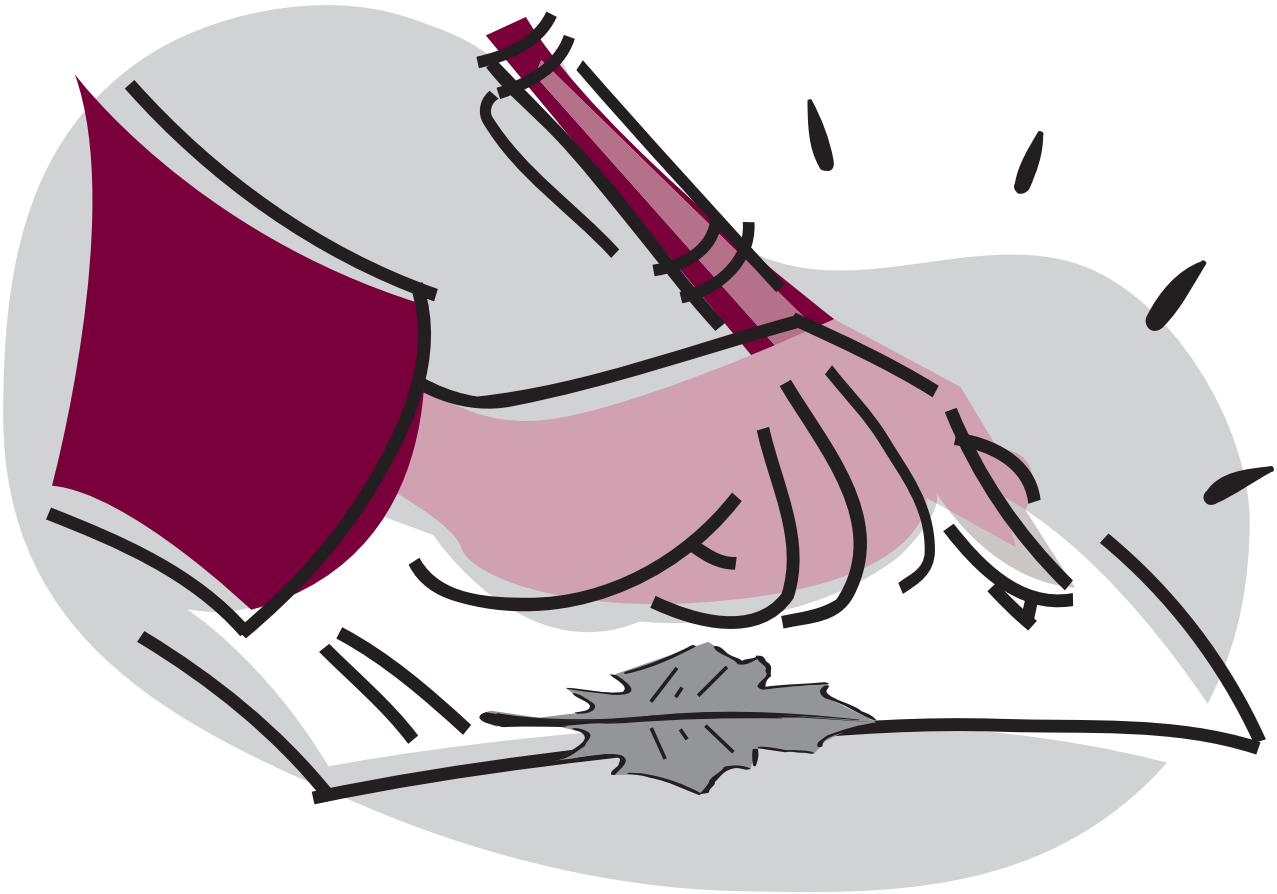
PROCEDURE:
Warm-Up: As with any expedition, adequate preparation is essential. Exercises below are designed to strengthen the student's observation skills.

1. First, have the students draw a circle using their whole arm. Make sure the circle fills the entire sheet of paper. Keep going over the circle. Each time, try to make it a perfect circle. After 30 seconds or so change directions. This is a warm-up to get your hand and eye working together.

2. Next, draw a natural object such as a bone, leaf, bark, etc. that has been collected from outdoors ahead of time. Have students save this for future reference.

3. ***Gesture sketching*** is a good way to summarize information quickly. Give the students 30 seconds to draw any object completely. This is obviously not enough time to complete the task, but crucial information can be observed quickly. Some potential subjects may not linger long enough for a full portrait. Do as many of these as needed.

4. ***Blind contour*** is another tool that helps students develop their observation skills. For this, time is not a factor. Students will draw natural objects without looking at their paper. After placing the object where they can see it clearly, the student sketches an outline of the object. The only time they are allowed to look at their work is if they stop and need to place their pencil back on the paper. The images created will not look very good and they should not. Detail, however, will be intense! That is the point. A good sign this warm-up is working well is total silence.



Creating Your Journal

1. Students need to have a journal. Three-ring binders with loose leaf paper, journal books or 8.5 X 14 paper stacked, folded in half and stapled into a book can be used for a journal. Be creative, allow students to decorate the cover of their journal to make it more personal. Students will also need writing tools.

2. Here is an assortment of nature journaling exercises that may provide some direction.

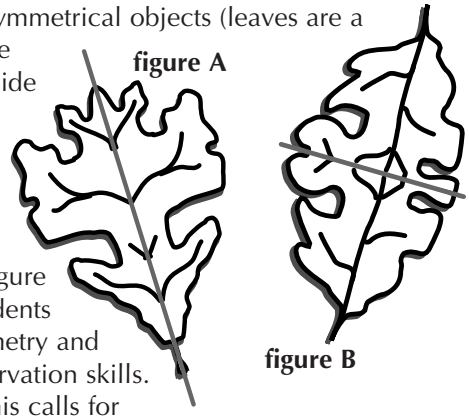
CREATIVE WRITING: The study of an organism can be enhanced by writing a story drawn from the information discussed in class. For example, after discussing trees and their use as homes for many animals, you may suggest a story that describes "Things a Tree Sees." The story may incorporate pictures or vocabulary words you have chosen.

LANDSCAPE: This is a great way to get students to pay attention to what is around them. Have them describe the landscape of the school yard or scenes from a field trip. Have them label interesting parts.

OUTDOOR POETRY: Inspiration may occur from an outdoor classroom or while on a field trip. Get students to write poetry inspired by the outdoors.

ANIMAL/PLANT PROFILES: Have students keep a weekly log profiling a particular nature item. This can give a short, but informative, look into the life of some unknown creature. Have them draw their nature item and try to answer these questions in their animal profile: 1) Where does it live? 2) When is it active? and 3) What does it eat? In the plant profile, have them answer the following questions: 1) Where does it live? 2) What could eat this plant? 3) What are the fruit or seeds like? 4) How tall does it grow? and 5) Who pollinates this plant?

SYMMETRY: Find symmetrical objects (leaves are a simple choice) have them draw the left side of the object. Then take away the object and have them draw the opposite side as a mirror image (see figure A). This allows students to understand symmetry and increases their observation skills. A modification of this calls for changing the line of symmetry so the mirror images will not be complimentary (see figure B).



ASSESSMENT: Assignments can be made daily and collected every two weeks. You can then spot grade a few key assignments, thus reducing your work load. The students will not know which assignment you will or will not grade.

Assessing the Field Trip

by: Ned Miller, Heart of Missouri Regional Professional Development Center
Leslie Smith, Osage High School,
Lake Ozark, MO

Taking time to evaluate an action project helps students understand what they have accomplished. Listed below are ideas for developing relevant assessments.

All Students
Performance assessments – The best strategy is to have an ongoing performance assessment that starts in the classroom and continues on the field trip, where students find information and develop skills that are unique to the field trip site. The assessment is concluded in the classroom.

Younger Students
•Create drawings or posters made individually or in groups depicting specific items or ideas for the field trip
•Create a game using the concepts learned
•Create performances or exhibitions
•Develop flow charts about topics from the trip
•Create venn diagrams connecting items or ideas from the trip to otherareas of their life

Older students
•Any of the above when appropriate
•Journals or Logs- Field Log, Learning Log, Reflective Log- all are valuable assessment tools. *Note: providing students with a checklist or benchmark for items to go into their journal is imperative for quality.*
•FAQ (Frequently Asked Questions) Direct students to write a pamphlet or brochure for visitors that covers all topics. Challenge them to experiment, design, test, interpret results, stretch their minds and explore new topics.

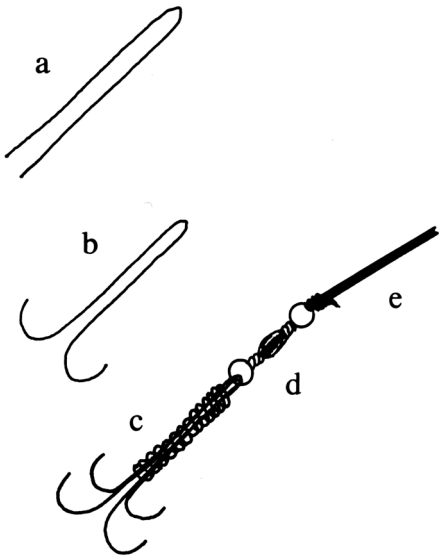
aquatic sampling

How to construct your own aquatic sampling equipment.

weed grapple

A *weed grapple* is used to collect samples of submerged aquatic plants that are not otherwise accessible from shore. To construct a weed grapple, you will need:

- two 3-ft. lengths of No. 9 wire (or two heavy coat hangers that have been taken apart- use wire cutters to remove the hook and wire twist and then straighten the hangers)
- lightweight, rust-proof wire
- a large, brass fishing swivel
- a 25-ft. length of nylon cord
- a pair of pliers
- a large lead sinker (optional)



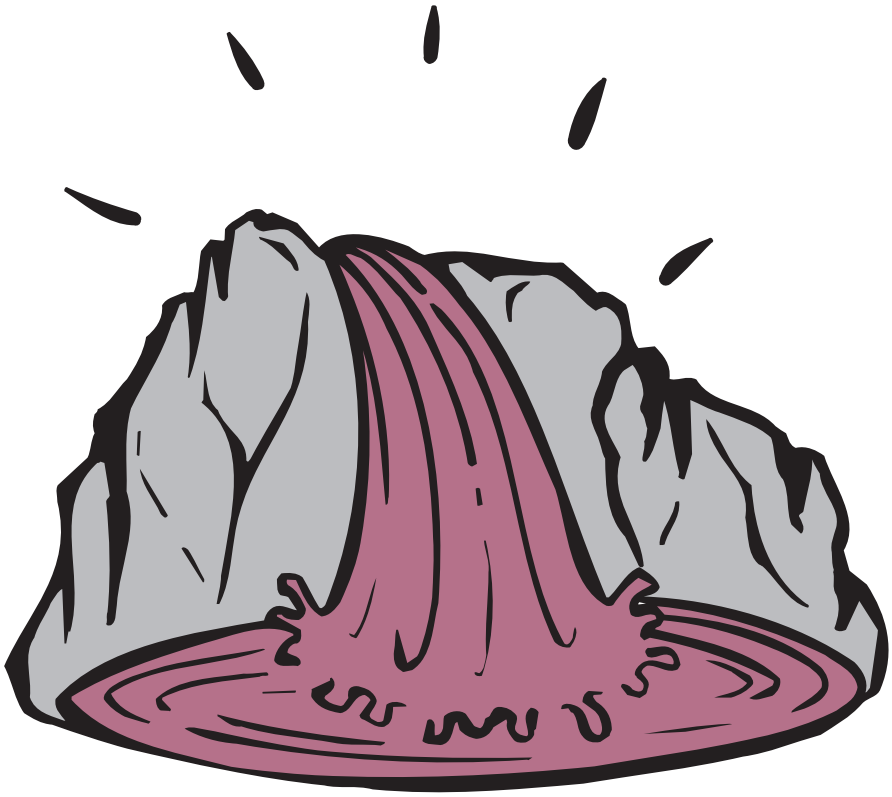
1. Use pliers to bend each wire in half (a) and then form a large hook at both ends of each wire (b).

2. Securely fasten the two sections together with lightweight wire so that the grapple has four arms or hooks (c).

3. Use lightweight wire to attach a swivel to the top loop of the grapple (d). The swivel prevents the line from twisting.

4. Tie one end of the nylon cord to the swivel (e).

5. Optional: A large lead sinker may be attached to the grapple so that is will sink to the bottom of the water more easily.



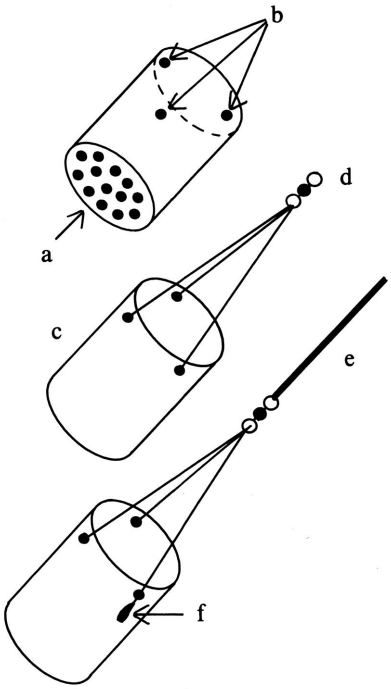
How to use the weed grapple:
Toss the grapple into the water and allow it to settle to the bottom. Be sure to hold the free end of the cord to avoid losing the grapple. Retrieve the grapple, pulling it along the bottom of the pond or stream. Examine the vegetation that has been hooked and look for vegetation types and animal life (larva, eggs, inadvertently trapped adult invertebrates, etc.)

CAUTION: Use the weed grapple safely. Toss it so as to avoid others working near you.

Bottom Dredge

A *bottom dredge* is used to collect mud and debris from the bottom of a body of water. To construct a bottom dredge, you will need:

- one empty can (coffee cans are ideal) with one end removed and the burrs filed off
- medium-wight wire
- a large brass fishing swivel
- an 8 oz. lead sinker
- hammer and nail
- wire cutters



1. Use the hammer and nail to make several holes in the bottom of the can (a). Make three equally- spaced holes in the side of the upper edge of the can (b).

2. Cut three 8-10 inch lengths of medium-weight wire. Attach each piece of wire to one of the three holes at the top of the can (c). Attach the fishing swivel to the wires where they come together (d).

3. Attach the heavy cord to the swivel (e).

4. Attach the lead sinker to one side of the can (f).

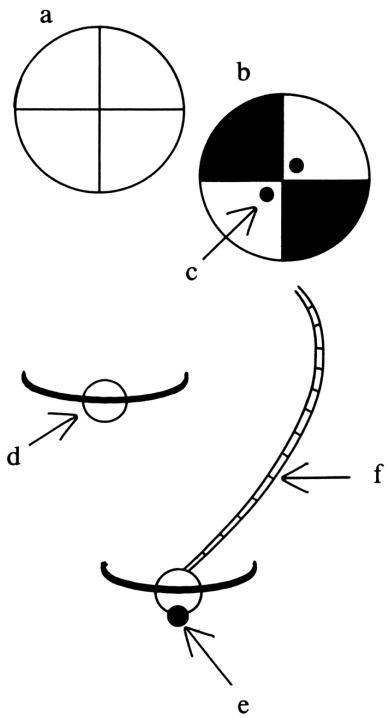
How to use the bottom dredge:
Toss the dredge into the water and allow it to settle to the bottom. Be sure to hold the free end of the cord to avoid losing the dredge. Retrieve the dredge, pulling it along the bottom of the pond or stream. The dredge scrapes mud and debris samples from the bottom as excess water drains through the holes. Examine mud and debris samples carefully with a hand lens, looking for minute movement and other signs of animal life.

CAUTION: Use the bottom dredge safely. Toss it so as to avoid others working near you.

Secchi Disc

A *Secchi disc* is used to determine water visibility and light penetration. To construct a Secchi disc, you will need:

- a lid cut from one end of a 3 lb. coffee can, with burrs filed off
- white and black water-proof paint
- hammer and nail
- medium-weight wire
- 8 oz. lead sinker
- pre-measured and marked cord (cord marked at one inch intervals with water-proof ink)



1. Divide the lid into four equal parts (a). Paint the quadrants, alternating with black and white paint (b).

2. Use the hammer and nail to make two holes near the center of the lid (c). Use the medium- weight wire to make a loop through the holes (d).

3. Attach the lead sinker to the wire loop on the bottom of the disc (e).

4. Attach the pre-measured and marked cord to the wire loop on the top of the disc (f).

How to use the Secchi disc:
Lower the Secchi disc into the water just until it can no longer be seen. Note the water mark on the line and count the increments to obtain the measurement. Record the measurement for water visibility and light penetration.

Project Resource Guide:
Connecting Schools and Community

Get set, get ready, take action with these great classroom ideas. Selected from Projects WILD, Learning Tree, and WET these interdisciplinary, hands-on, easy to use activities are guaranteed to get you and your students ready to start your own community action project. To receive these outstanding education materials, along with their Standards correlations, attend the next training workshop near you. Contact the coordinators listed for more information.

PROJECT WILD

Can Do! - Page 322, 2001 Edition Page 443 - Students identify a problem involving wildlife in their community, conduct research, suggest alternatives to either solve or improve the situation, and take action to accomplish the project. *(Grades 9-12)*

Improving Wildlife Habitat In the Community - Page 324, 2001 Edition Page 447 - Students design and accomplish a project to improve wildlife habitat in their community. *(Grades 5-8)*

Enviro-Ethics - Page 326, 2001 Edition Page 450 - By distinguishing between actions that are beneficial and harmful to the environment students develop and use a "Personal Code of Environmental Ethics". *(Grades 5-8)*

Plastic Jellyfish - Aquatic Page 170, 2001 Edition Page 136 - Describe the potential effects of plastic waste on aquatic wildlife and identify specific actions to remedy the problem. *(Grades K- 12)*

Playing Lightly On the Earth - Page 292, 2001 Edition Page 432 - Distinguish between games that are damaging and not damaging to the environment, then invent and play games with a benign effect on the environment. *(Grades K-3)*

Sustainability: Then, Now, Later - 2001 Edition Page 436 - After identifying the components of a sustainable community students take action to improve the sustainability of their own community. *(Grades 9-12)*

PROJECT Learning Tree

Did You Notice? - Page 366 - Students study changes in their local community over short and long periods and identify patterns of change. *(Grades K-8)*

Improve Your Place - Page 369 - For human beings, the community they live in is their habitat. In this activity students are encouraged to take action to improve their community by making some positive environmental changes. *(Grades 5-8)*

People, Places, Things - Page 280 - A closer look at the local community provides an appreciation for its structure and complexity resulting in a deeper understanding of the many people, places, and things on which we are dependent. *(Grade K-3)*

There Ought To Be A Law - Page 201 - While finding out how local laws are made students discover that they, as citizens, have the power to influence the lawmaking process. *(Grades 3-8)*

For more information on Project WILD and Learning Tree workshops and materials contact; Bruce Palmer, State Coordinator, Missouri Department of Conservation, PO Box 180, Jefferson City, MO 65102-0180, (573) 751-4115 extension 3113, <palmeb@mail.conservation.state.mo.us>

PROJECT WET

Every Drop Counts - Page 307 - Identify and implement water conservation habits to learn how this essential resource can be shared with other water users of today and tomorrow. *(Grades 6-8)*

Hot Water - Page 388 - Using debate strategies, students learn how to present a valid argument regarding a water-related issue. *(Grades 9-12)*

Super Bowl Surge - Page 353 - In-depth research leads to action plans for solving problems relayed to increased demands on a community's waste water treatment plant. *(Grades 6-12)*

What's Happening - Page 425 - By conducting a survey students determine what the community thinks and feels about an important water issue. *(Grades 6-12)*

For more information on Project WET workshops and materials contact; Joe Pitts, State Coordinator, Missouri Department of Natural Resources, PO Box 176, Jefferson City, MO 65202 (800) 361-4827, <nrpittj@mail.dnr.state.mo.us>

Please tell us what you THINK about your newsletter.

Educators, this is your newsletter and we would like to have your thoughts on how we're doing. Are we getting useful information out to you? What do you like and dislike?

To receive a "thank-you" gift from the Missouri Department of Conservation please return this survey by **April 11, 2002**. Simply clip along the dotted line, include your name and complete mailing address on the return address corner of the survey page, tri-fold the survey page, tape it shut, and drop in the mail - the postage is paid. ***Thank you!***

1. Overall how important is this newsletter to your educational programs?
   ❑ very important ❑ somewhat important ❑ not important

2. Which part of the newsletter do you find useful?

A. Feature Articles	❑ very useful	❑ somewhat useful	❑ not useful	❑ don't read
B. Curriculum Insert	❑ very useful	❑ somewhat useful	❑ not useful	❑ don't read
C. Projects Guide	❑ very useful	❑ somewhat useful	❑ not useful	❑ don't read
D. The Library	❑ very useful	❑ somewhat useful	❑ not useful	❑ don't read
E. EE Calendar	❑ very useful	❑ somewhat useful	❑ not useful	❑ don't read

3. What topics would you like to see in the newsletter and curriculum inserts?

4. How many times have you used the curriculum insert in your educational program or classroom?
   ❑ 4 or more ❑ 3 ❑ 2 ❑ 1 ❑ 0

5. What grade level do you most commonly teach (mark all that apply)
   ❑ PreK-2 ❑ 3-4 ❑ 5-8 ❑ 9-12

6. What suggestions do you have for improving *The Resource*?

Service Learning Grants

Service experiences that enhance academic achievement can receive financial aid through a grant program administered by the Missouri Department of Elementary and Secondary Education. For more information about the Missouri Service-Learning Grants Program contact Karen White at 573-526-5395 or <kwhite3@mail.dese.state.mo.us>

Mailing Reminders

- ❑ Return this survey by April 11, 2002
- ❑ To receive your "thank-you" gift from the Missouri Department of Conservation be sure to include your name and complete mailing address on the return address corner of the survey page
- ❑ Clip along the dotted line
- ❑ Tri-fold the survey page
- ❑ Tape it shut, and
- ❑ Drop in the mail - the postage is paid.

Thank you - your input is appreciated!

Tape

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 89 JEFFERSON CITY, MO

POSTAGE WILL BE PAID BY ADDRESSEE

Att: Syd Hime
MISSOURI CONSERVATION DEPARTMENT
PO BOX 180
JEFFERSON CITY MO 65102-9706

The Library

Conservation and Environmental Education Resources

web resources

Learn and Serve
<www.learnandserve.org>
Information about the national Learn and Serve program, resources for programs, honors and scholarships for youth who serve their community, profiles of successful Missouri programs, research materials and much more.

National Service Learning Clearing House
<www.servicelearning.org>
Primary repository of service learning resources.

CARES - Community, Activities, Resources, Environment, and Service
<http://library.thinkquest.org/50017/community>
CARES is a comprehensive course designed to enable teachers to implement community service learning projects, which will connect their students to each other and their communities, while they master important academic skills.

101 Ideas For Combining Service and Learning
<http://www.fiu.edu/~time4chg/Library/ideas.html>
From art and environment to history and sociology, this site contains a wealth of ideas and resources for developing effective service learning projects that meet education objectives.

PUBLICATIONS

The following publications are available from Acorn Naturalists, PO Box 2423, Tustin, CA 92781-2423 or 800-4222-8886, <http://acornnaturalists.com>

Into the Field: A Guide to Locally Focused Teaching
Leslie, Tallmadge, Wessels. Guide provides middle school through undergraduate teachers with curriculum ideas for engaging students in the natural and cultural history of their communities. #EE-8019 ($7.95)

The Kid's Guide to Service Projects
Lewis. From simple projects involving one or two people to large scale commitments that involve entire communities this guide contains over 500 ideas for young people who want to make a difference. #EE-7014 ($12.95)

Enriching Curriculum Through Service Learning
Kinsley, McPherson. Student achievement skyrockets when connections are made between classroom learning and the community. Twenty-one contributors describe specific projects that you can apply to service learning programs in your own community. #B-9116 ($18.95)

Taking Action: An Educator's Guide to Involving Students in Environmental Projects
Project WILD. Analyzes over thirty successful projects around the country and synthesizes the results into an action matrix for success. #EE-4003 ($6.95)

Environmental Education Toolbox Series
The Toolbox was developed to help educators understand the steps and the resources available to develop an environmental education program as part of the school curriculum. The following booklets and other Toolbox materials can be ordered from the North American Association for Environmental Education (NAAEE), Publications and Membership Office, 410 Tarvin Rd., Rock Spring, Georgia, 30739 or online at <http://www.naaee.org> ($16 non-member/$12 NAAEE member)

Using Community Resources
Guidelines, ideas and workshop formats to help educators reach beyond the walls of the classroom for educational experiences.

Urban Environmental Education
A look at the goals of urban environmental education (EE) and approaches to integrating EE into schools and the community.

EE Calendar

Check It Out

Look in the education section of **<www.conservation.state.mo.us>** for up-to-date information on more than seventy Missouri Department of Conservation's teacher workshops for 2002. There's something for everyone!

April 13

Recycling and The Bottom Line$:
Green Practice = Green Profit
EarthWays Home, 3617 Grandel Square, St. Louis, MO
9:00 am -12:00 noon
Fee: $15 per person
Covers the potential economic impacts of recycling and provides concrete examples and explanations to teach about economics and the importance of "Closing The Loop".
Contact: 314-577-0220

April 19-21

Leopold Education Project Facilitator Training
Presley Conservation Education Center, Eminence
Training in the Leopold Education Project and presenting LEP workshops.
Fee: $50.00
Contact: Janice Greene, 417-836-5306, <janicegreene@smsu.edu>

April 20

Earth Day at the Zoo
Dickerson Park Zoo, Springfield
9:00 am - 5:00 pm
Fee: Zoo admission $4/adults, $2.50/children 3-12
Activities for children throughout the day. The annual Earth Heroes award will be presented.
Contact: Melinda Mancuso, 417-833-1570

April 27

Earth Day Walk 2002
10:00 a.m.
Kansas City Zoological Park
Fee: $10 adults, $5 children 3-11, $25 family (2 adults, 2 children). Children under 3 free.
Take a 3-mile fun walk through the zoo and help raise money for environmental education and action projects in Kansas City. Includes Party for the Planet, free food and daylong entry into the zoo.
Contact: Bridging The Gap, 816-561-1087

April 27

Party for the Planet
9:00 am - 4:00 pm
Kansas City Zoological Park
Free with regular zoo admission.
Over 50 local environmental organizations, businesses and government agencies show you simple steps to help the environment. Enjoy local environmental performers, children's activities, and more!
Contact: Kansas City Zoo, 816-513-5800.

April 27-28

Sedimentary Geology
Route 66 State Park, Eureka
Fee: $30.00
Geology field experiences in the Eureka, Missouri area.
(Graduate credit, Lincoln University or SMSU)
Contact Joe Pitts, Jim Lubbers or Bryan Hopkins at the MO Dept. of Natural Resources, 1-800-361-4827 or 573-526-6627

May 3-4

Environmental Rendezvous 2002 Water Festival
Camp Cuivre, Cuivre River State Park
Open to anyone who would like to start a Stream Team Program. Introductory and Level One Stream Team Certification training. Teachers are encouraged to receive this valuable training for supplemental use in the classroom. (Graduate credit, Lindenwood University)
Contact: Gerry Boehm, 636-447-0522

June 8

Mark Twain Forest Adventure Race
Mark Twain National Forest
7:00 am - dark
Fees: To be announced
Teams compete together in a day-long race including running, mountain biking, canoeing, orienteering and mystery tests. All proceeds go to the Ozark Greenways.
Contact: Lori Tack, 417-864-2015, www.ozarkgreenways.org

June 9-12

Forestry Institute for Teachers
Jerry J. Presley Education Center, near Eminence
4:00 pm, June 9 - 5:00 pm, June 12
Emphasizes field studies, group projects and hands-on activities to teach about forest ecosystems. Participants receive reference materials, activities, a complete set of forestry tools and PLT modules on Forest Ecology and Forest Issues.(Graduate credit, SMSU)
Reservations required by, June 1
Contact: Bruce Palmer, 573-751-4115 x3113 or Carl Hauser, 573-751-4115 x3299

June 11 & 14

Animal Artistry For Teachers-I
Saint Louis Zoo
8:30 am - 4:30 pm
For teachers of grades 4-8 (lower grades by permission)
Hands-on, take-home art class connects science and art. Colors, textures and patterns in nature are turned into art projects to use in the classroom.
Fee: $40 (Graduate credit, Lindenwood University)
Contact: Saint Louis Zoo Education Department, 314-768-5466.

June 17-19

Stream Environments
Presley Conservation Education Center, Eminence
Focus of this course explores ecology

and hydrology of Missouri streams and their relationship to the environment.
Fee: $30.00 (Graduate credit, Lincoln University or SMSU)
Contact Joe Pitts, Jim Lubbers or Bryan Hopkins at the MO Dept. of Natural Resources, 1-800-361-4827 or 573-526-6627

June 23-28

Investigating and Evaluating
Environmental Issues and Actions
Focuses on the process of investigating and evaluating environmental issues and actions using higher order thinking skills. Sessions will prepare educators on instructional methods of issue investigation
Fee: $30.00 (Graduate credit, Lincoln University or SMSU)
Contact Joe Pitts, Jim Lubbers or Bryan Hopkins at the MO Dept. of Natural Resources, 1-800-361-4827 or 573-526-6627

June 24-25

Summer Flora for Teachers
Kirksville
Field identification of common prairie plants, prairie soils, and wildlife. Hands-on activities and lesson plans will help teachers bring the prairie alive for their students. Scholarships available. (Graduate credit, Truman State University)
Contact: Karen Armstrong, MO Dept. of Conservation, 660-785-2420

June 25-27

Animal Adaptations And Behavior
Saint Louis Zoo
June 25; 8:30 am - 3:30 pm
June 26; 10:00 am - 4:00 pm; 6:30 - 8:30pm
June 27; 8:30 am - 12:30 pm
For teachers of grades K-8
An introduction to the myriad ways animals survive and thrive in our complex world.
Fee: $30, (Graduate credit, Lindenwood University)
Contact: Saint Louis Zoo Education Department, 314-768-5466.

June 28-29

Classification and Taxonomy
Saint Louis Zoo
8:30 am - 4:30 pm
For Teachers of grades 3-8
Covers both knowledge and skills surrounding the major science concept of classification. Classroom and Zoo-ground activities for elementary and middle school students explore the scientific method and processes and provide animal information.
Fee: $40 (Graduate credit, Lindenwood University)
Contact: Saint Louis Zoo Education Department, 314-768-5466.

July 9 & 12

Animal Artistry for Teachers-II
St. Louis Zoo
8:30 am -4:30 pm
For teachers of grades 4-8 (lower grades by permission)
The sequel to ANIMAL ARTISTRY-I. New and different projects, and extensions of previous projects.
Fee: $35 (Graduate credit, Lindenwood University)
Contact: Saint Louis Zoo Education Department, 314-768-5466.

July 9-12

Missouri River Conservation & Culture
Jefferson City
The habitat and history of the lower Missouri River with emphasis on the Lewis and Clark Expedition. Past and current river issues will be discussed along with lessons for classroom use.
Fee: $45 (Graduate credit, Lincoln University or SMSU)
Contact Joe Pitts, Jim Lubbers or Bryan Hopkins at the Missouri Department of Natural Resources, 1-800-361-4827 or 573-526-6627

July 10-11

Spineless Wonders: Monarchs, Mantids & More
Saint Louis Zoo
July 10; 8:00 am - 4:00 pm & July 11; 8:30 am - 4:30 pm
For teachers of grades 4 - 8
Introduction to the invertebrate world and butterflies. Topics include: life cycles and other life processes of invertebrates, adaptations, behaviors, biodiversity, conservation, and classroom curriculum.
Fee: $40 (Graduate credit, Lindenwood University)
Contact: Saint Louis Zoo Education Department, 314-768-5466.

July 12 & 19 and August 2

Exploring Animal Behavior
Saint Louis Zoo
9am-2pm.
Orientation to the "Exploring Animal Behavior" curriculum, and activities for students to conduct their own animal behavior research at the Zoo. (Graduate credit, Washington University)
Contact: Amy O'Brien, Washington University Science Outreach Office, 314-935-6846 or Saint Louis Zoo Education Department, 314-768-5466.

July 15

Solid Waste and Recycling Issues and Actions
St. Louis
Offered in conjunction with the joint conference of the Illinois and Missouri Recycling Associations. Hands-on classroom activities, recycling project problem-solving, resource sharing, and a field trip.
Contact: 314-577-0246 or jean.ponzi@mobot.org

July 17-18

Endangered Species And Zoo Conservation
Saint Louis Zoo
8:30 am - 4:30 pm
For teachers of grades 6-12
A close-up look at how the Saint Louis Zoo and modern zoos throughout the world work to conserve species. Activities, background information, a presentation by key staff and tours of selected areas of the Zoo.
Fee: $40 (Graduate credit, Lindenwood University)
Contact the Saint Louis Zoo Education Department, 314-768-5466.

August 3-4

Energy For Missouri: Today and Tomorrow
St. Louis
A look at the impacts of energy use on both a regional and global level along with the role of energy conservation, alternative fuels, and other innovative practices. Includes a tour of a local power production facility.
Fee: $30.00 (Graduate credit, Lincoln University or Southwest Missouri State University)
Contact Joe Pitts, Jim Lubbers or Bryan Hopkins at the MO Dept. of Natural Resources, 1-800-361-4827 or 573-526-6627

Arbor Day
Memorial

The terrorist attacks of September 11, 2001 have forever changed our country. Like many Americans, school children from across the state have sent money, supplies and letters to the victim's families. This Arbor Day the Missouri Department of Conservation is providing students with another way to honor the heroes in New York and Washington D.C.. Schools across the state will receive a Shumard Oak tree to be planted as a memorial. The oak has particular meaning because it was chosen as our national tree last year. In the words of J. Sterling Morton, founder of Arbor Day, "other holidays repose upon the past, Arbor Day proposes for the future." The simple act of planting a tree can make the future brighter for everyone.

PRSRT STD.
U.S. POSTAGE PAID
MO DEPT OF CONSERVATION

Mission Statement:

The Resource is published in October, December, February and April by the Office of Environmental Education. Its purpose is to provide: current information on conservation and environmental education resources and events; suggestions for integrating environmental subjects into teaching; a forum for environmental education discussion and networking in Missouri; and a clearinghouse for bringing together environmental education resources and partners.

For a free subscription or to submit information to the newsletter, write to: Office of Environmental Education, Missouri Department of Conservation, P.O. Box 180 Jefferson City, MO 65102-0180.

Editors: Syd Hime, Ginger Gray, Paulette Strader
Missouri Department of Conservation
Layout and Design: Firehouse Design

OFFICE OF ENVIRONMENTAL EDUCATION
Missouri Department of Conservation
P.O. Box 180
Jefferson City, MO 65109-0180

RETURN SERVICES REQUESTED