Teaching Ideas: Ways to Use a School Natural Landscape Project as an "Outdoor Classroom"

Biology/Botany/Geology/Ecology/General Science:

- studying native plants (grasses, forbs, shrubs and trees) and plant communities (woodland, riparian, grassland, wetland, etc.);
- studying native plant propagation (in nature, and also growing plants from seed or cuttings, transplanting, care requirements);
- predicting proper habitat of plants according to leaf and stem type;
- studying "natural" functions of various plants (i.e.. ground cover, soil protection, food source for insects, birds, other animals);
- looking at plant growth and changes, and effects of light, soil type, water, proximity of other plants;
- studying plant reproductive strategies (seeds, spores, rhizomes) and categorizing the different types of seed dispersal;
- studying pollination;
- studying photosynthesis;
- studying native and non-native insects and animals (identification, characteristics and behavior, food sources of, population dynamics, interactions with other species);
- studying symbiotic relationships between plants, insects, and animals;
- studying native birds, and designing, with research, appropriate bird houses or habitats.
- studying life cycles of "weeds" and the use of various natural controls (i.e., shade, competition, biological controls such as flea beetle or cinnabar moth releases to control tansy ragwort) and/or non-chemical weed control methods (cutting and importance of timing; mulching/smothering/solarizing);
- examining the effects of monocultures (i.e. lawns or fields of one type of plant);
- studying soil types (clay, loam), and the effects of composting and/or mulching;
- studying the physical and biological makeup, and drainage characteristics, of soil on the site;
- examining the effects of pesticides or fertilizers on soil microorganisms;
- examining erosion, percolation, drainage, transpiration, and other parts of the water cycle;
- learning about the local watershed, how water arrives at and leaves the site, and where it ultimately ends up;
- learning about wetland habitats and their importance in healthy ecosystems;
- learning about weather effects (i.e., measuring rainfall, studying ice, etc.);
- learning about microclimates, sun, shade, wind;
- looking at light and shadows;
- examining the problems of pollution and waste in our world (e.g., fuel consumption; water consumption; pollution caused by pesticides, fertilizers, and burning of fossil fuels; value of composting and native landscapes).

Language Arts:

- writing business letters to prospective contributors to the natural landscaping project;
- writing plays, brochures, or announcements to communicate information about the project/outdoor classroom throughout the school;
- improving sensory expression in writing and poetry;

- using ecological and interrelationships of plants and animals to promote non-fiction writing;
- writing directions for planting and care of individual plants;
- writing text for interpretive signs describing natural landscape project and individual plants;
- community of readers (groups together);
- reader's theater;
- writer's workshop.

Art/Graphic Arts/Photography:

- drawing or painting of individual native grasses, flowers, shrubs and trees;
- drawing or painting of landscapes;
- taking closeup photos of native plants, and photos of landscape;
- studying effects of natural light on drawing or photography subjects;
- designing and producing individual plant identification signs, or signs describing the landscape;
- designing and producing brochures or other informational materials for the school or the broader community about the landscaping/outdoor classroom project.

Social Studies/Geography:

- learning about native peoples and pioneers of the area and how they lived, what they ate, etc.;
- examining the history of various plants in relationship to humans (i.e., horsetail as medicine, tea, dye, for scouring; or camas bulbs as food);
- helping set up and guide tours of the site for the school or broader community;
- studying about the effects of various natural and human-created landscapes on human learning and behavior;
- diagramming of the landscape (and/or local watershed) using various mapping skills such as contour lines and legends;
- looking at past, present, and future geography.

Mathematics:

- using perimeter, angles, ratio and scale in design maps of the landscape;
- charting and graphing growth rates of plants;
- using fractions and decimals in comparison of plant height;
- using percentages in calculating canopy cover of individual plants;
- measuring diameter, circumference, and radius of areas of landscape, or individual plants or plant parts (leaves, seeds, fruits, acorns, nuts);
- estimation of insect speed;
- measurement of site, and calculation of materials needed to build a boardwalk, path, or fence along a given path.
- examining area of triangles and rectangles when constructing bird houses in the garden, or signs;
- calculating the rates of flow of water from a hose, volumes of buckets, and time or number of buckets needed to provide a given volume of water to a plant;
- using problem solving during all of the above processes.

(compiled by Becky Riley from various sources)

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