

This year-long project is organized around an interdisciplinary theme. The project is outlined in this lesson design and actually encompasses over 30 individual lessons.

Goals/Objectives/Student Outcomes:

Fifth grade science and language arts students will study the Redtail Wetland Area along the Little Sioux River.

Students will:

- Gain an understanding of the interdependence of all aspects of nature, the importance of healthy habitats, and the factors that cause changes in animal populations.
- Learn to appreciate the diversity of all living things.
- Develop research skills such as indexing, using resource materials, and classification by collecting samples of plant and animal specimens found in the wetland region.
- Develop communication skills that will include: speaking, listening, reading, writing and presenting information.
- Use a "real life" situation to observe, gather, and analyze data and to make predictions concerning wetland preservation in the future.
- Learn to embrace and understand immersion principals.
- Learn to carry out real and meaningful work and to participate in interactive learning situations.
- Demonstrate the ability to function in a philosophical classroom.

Materials:

Equipment

1. Collecting nets
2. Sorting pans
3. Water collection devices
4. Cameras
5. Underwater viewers
6. Microscopes
7. Water quality test kits/ 1 per every 4 students
8. Thermometers
9. Waders and boots
10. Trundle wheel

Model

1. Graph paper
2. Frame materials
3. Plaster or alternate materials for model
4. Paints

Literature

1. Professional field guides
2. Wetland resource materials (available from the Department of Natural Resources)
3. Nature journals
4. Literature from 19th and 20th century naturalists
5. Environmental literature and stories

Other

Materials to build wood duck and bluebird boxes

Background:

During the 1994-95 school year the fifth grade science and language arts classes, in partnership with the Cherokee County Conservation Service, developed a comprehensive study of the Cherokee County wetland area known as Red Tail Ridge. The purpose of this study was to evaluate the present site and then consider options for additional restoration and development.

The full-scale project included studies of the area's water quality, water pollution, and the amount and diversity of invertebrates, vertebrates, birds, and plant life. We began immediate development by building bluebird and wood duck nesting boxes to be placed in the area. Long-term development and ongoing projects will be determined by the health of the habitat and the inclusion of technology-based research and authentic evaluation.

Wetland regions have decreased in Iowa at a deplorable rate. In recent years we have lost at least 90 percent of our original wetland regions. Drainage of these wetlands for agricultural and development purposes has depleted one of the most diverse ecological communities in our state. We are only beginning to realize the devastating consequences facing wildlife and our own loss due to the destruction of wetland habitats.

Cherokee County, where the school is located, has access to and maintains several wetland regions. The Redtail Ridge Area is a nearby wetland of particular interest to the Cherokee fifth grade class. The science and language arts classes, in partnership with the Cherokee County Naturalist, propose that this project continue as a comprehensive study for educational and stewardship purposes. The students are learning about the environment with the help of community members and other resources. The implementation of the project is founded on environmental concerns and Sense of Place objectives.

Using local resources and developing a local wetland area increase the likelihood that the children will have a better understanding of stewardship and a commitment to the community. Historians, storytellers, artists, and environmental groups donate their time and services to help create a meaningful and interactive program for the students.

The project itself is completely centered around a "sense of place" philosophy. Children learn to respect and take care of their "place" when they establish a sense of belonging and begin to invest in an area. Central to this project's success is the development of lessons and rituals that allow the students opportunities to so invest.

Procedure:

1. During the course of the year, 130 students in the fifth grade class participated in five field trips to Red Tail Ridge. Students were divided into groups of 30 members and separated for individual English and science activities. Each group of 30 students was facilitated by two or three instructors or volunteers and lessons were presented to groups of 10-15 students. All lessons were interactive.

2. Activities included:

- water sampling for quality indicator
- invertebrate/vertebrate classification
- pollution identifiers
- Native American studies, literature, and constellation legends
- field identification of trees, grasses and wildflowers
- importance of the connections between natural ritual and the environment
- mapping
- wetland models
- photo studies
- art projects, observations and poetry, Sense of Place activities

3. In addition to the five field trips, students visited the Sanford Museum display on Mill Creek Natives, built bluebird, wood duck, and kestrel nesting boxes, documented changes in local environments, and developed a final presentation for the museum program board and community.

Assessment of Outcomes:

Students had a variety of learning experiences in the course of this project. We were able to successfully incorporate the following activities:

English

- Naturalist observations recorded in journal
- Journaling specific changes and cause/effect events
- Field identification: sample collection and recording

Indexing

Presentation of research in speeches, written stories, simulations, and demonstrations

- Photography displays of seasonal changes
- Team collaboration and processing of activities/reflective assessment
- Cherokee history and stories
- Native American studies and appreciation
- Discussion activities of environmental issues

Science

- Invertebrate classification
- Vertebrate classification
- Wetland dynamics/models, mapping
- Stewardship/environmental connections
- Scientific method/analysis in science journals
- Pollution controls

Food chain

Indexing, cataloguing, data organization

- Research/environmental posters, endangered species
- Presentation of research in a simulation exercise of a city council public hearing

Research

Extensions and Adaptations:

The entire fifth grade class developed a program and display presentation for the local Sanford Museum. Artwork, photography, poetry, field artifacts, and water samples were among the featured presentations. In addition, the students demonstrated a city council public hearing simulation concerning wetland endangerment.

Collaborators, including other educators, agencies, and organizations:

- Cherokee County Conservation Board
- Pheasants Forever
- Ducks Unlimited
- Division of Natural Resources
- Sanford Museum staff
- Soil Conservation Services
- Master Birdbanding Association
- Cherokee County School Board
- Dr. Jerry Kjergaard, Superintendent
- Mr. Larry Weede, Principal
- KCHE Radio Station
- The Chronicle
- Duane Kent, Bruce Hopkins, AEA staff

Resources:

Michael J. Caduto and Joseph Bruchac. *Keepers of the Earth: Native American Stories and Environmental Activities for Children*. Golden, Colorado: Fulcrum, 1989.

Michael J. Caduto and Joseph Bruchac. *Keepers of the Animals. Native American Stories and Wildlife Activities for Children*. Golden, Colorado: Fulcrum, 1991.

Joseph Bruchac. *Thirteen Moons on a Turtle's Back: A Native American Year of Moons*. New York: Philomel Books, 1992. Debra Frasier. *On the Day You Were Born*. San Diego: Harcourt Brace Jovanovich, 1991.

Chief Seattle. *Brother Eagle, Sister Sky*. New York: Dial Books, 1991.

Dr. Seuss. *The Lorax*. New York: Random House, 1971.

Toby Speed. *One Leaf Fell*. New York: Stewart, Tabori, & Chang, 1993.

Chris Van Allsburg. *Just a Dream*. Boston: Houghton Mifflin, 1990.

Rachel Carson. *Silent Spring*. Greenwich, CT: Fawcett Publications, 1964.

Henry David Thoreau. *Walden*. Philadelphia: Courage Books, 1990.

Lynne Cherry. *The Great Kapok Tree: A Tale of the Amazon Rain Forest*. San Diego: Harcourt Brace Jovanovich, 1990.

Shel Silverstein. *The Giving Tree*. New York: Harper & Row, 1964.

Jill Fairchild. *Trees, A Celebration*. New York: Weidenfeld & Nicolson, 1989.

Gay Matthaei. *The Ledgerbook of Thomas Blue Eagle*. Charlottesville, VA: Thomason-Grant, 1994.

John Gile. *The First Forest*. Rockford, IL: John Gile Communications, 1989.