Journey, An Ecological Discovery of Native American Habitats

Grade Level: Third Grade
Presented by: Margaret Davenport and Pamela Lee
Length of Unit: Eight Lessons

I. ABSTRACT

This ecology unit was designed to correlate with the Third Grade Core Knowledge Sequence on Native Americans. There are eight lessons and a culminating activity that develop al of the ecological concepts listed in the core Knowledge Sequence. The unit provides specific information about the desert and the woodlands. Many of the literature selections use Native American folklore, history or themes. Once the introductory lesson on habitats has been taught lessons two through six can be aligned in the order that individual teachers choose to present Native American content. Geography content is also connected to the theme. The assessments consist of student-constructed projects.

II. OVERVIEW

A. Concept Objectives
   1. Understand that there are many structure in the natural world (Diversity of Life)
   2. Understand that there are many kinds of interactions in systems
   3. Understand the concept of region

B. Content Covered from the *Core Knowledge Sequence*
   1. A habitat is an ecosystem with interdependent organisms
   2. Maps have keys or legends with symbols
   3. An atlas, as well as on-line sources, can provide students with geographical information
   4. Geographic knowledge includes a specialized and specific vocabulary
   5. Producers, consumers, and decomposers comprise the food chain
   6. The "balance of nature" is constantly changing and is not static
   7. Man-made threats such as air pollution and water pollution pose threats to the environment
   8. Ecosystems can be affected by changes in the environment
   9. There are measures people can take to protect or improve the environment

C. Skill Objectives
   1. The student observes and describes the habitats of organisms within an ecosystem
   2. The student observes and identifies characteristics among species that allow each to survive and reproduce
   3. The student collects information by observing and measuring
   4. The student analyzes and interprets information
   5. The student describes how living organisms modify their physical environment
   6. The student uses critical thinking to make decisions
   7. The student speaks appropriately to different audiences for different purposes and occasions
   8. The student communicates clearly by putting thoughts and feelings into spoken words

III. BACKGROUND KNOWLEDGE

A. Teachers
   1. Hirsch, E. D., Jr. *What Your Third Grader Needs to Know*
   2. Knowlton, Jack *Geography From A to Z*
   3. Thorndike, E. L. and Barnhart, Clarence L. *Children's Dictionary*

B. Students
   1. Hirsch, E. D., Jr. *What Your First Grader Needs to Know* pages 271 – 281

IV. RESOURCES

A. Steptoe, John *The Story of Jumping Mouse*
B. Spence, Guy *A Living Desert*
C. Cole, Joanna *The Magic School Bus Gets Dried Up*
D. Yolen, Jane *Welcome to the Sea of Sand*
E. Baylor, Byrd *The Desert Is Theirs*
F. Baylor, Byrd *Hawk, I'm Your Brother*
G. Bash, Barbara *The Desert Giant*
H. Lauder, Patricia *Who Eats What? Food Chains and Food Webs*
I. Cole, Joanna *The Magic School Bus Meets the Rot Squad*
J. The Ontario Science Center, *Plants*
K. Norris, Louanne & Smith, Howard E. *An Oak Tree Dies and A Journey Begins*
L. Cherry, Lynne *A River Ran Wild*
M. Collard, Sneed, III *Our Natural Homes*
N. Cooney, Barbara *Miss Rumphius*
O. Robinson, Fay *Recycle That*
P. Nelson JoAnne *Don't Throw It Away*
Q. The Earth Works Group *Simple Things Kids Can Do to Save the Earth*
R. Kurusa *The Streets Are Free*

V. LESSONS

Lesson One: What is a Habitat?

A. *Daily Objectives*
   1. Concept Objective(s)
      a. Understand that there are many kinds of interactions in systems
   2. Lesson Content
      a. A habitat is an ecosystem with interdependent organisms
   3. Skill Objective(s)
      a. The students will observe and describe the habitats of organisms within an ecosystem

B. *Materials*
   1. Chart Paper
   2. Overhead Transparency – Appendix A
   3. Student Handout – Appendix B
   4. Marker
   5. Overhead Marker
   6. Overhead Projector
   7. Book: *The Story of Jumping Mouse* by John Steptoe or any book that develops the concept that different habitats exist and have specific characteristics

C. *Key Vocabulary*
   1. habitat – a place where a plant or animal naturally lives and grows
   2. biome – a large habitat such as a rainforest or desert, each biome has its own weather

D. *Procedures/Activities*
   1. Introduce the unit of study. Tell the students that they are going to learn about the environment beginning with a study of habitats.
   2. Read the book: *The Story of Jumping Mouse* by John Steptoe.
   3. After reading the selection, distribute the student handout (Appendix B) and have the students identify some of the habitats that were mentioned in the story.
   4. Place the transparency (Appendix A) on the overhead and record some of the students' responses. Children may add to their handouts as needed

5. Then brainstorm and list the characteristics of the habitats. The students will write on their worksheets as the teacher scribes on the transparency.
6. Develop a classroom definition of a habitat. Students will record their definitions on the handout. The teacher will write the definition on chart paper and post it in the room for use during this unit.

E. Assessment/Evaluation

1. The teacher will evaluate the student's learning through verbal responses during the class discussion.
2. The teacher will collect and review the handouts.

Lesson Two: Desert Geography

A. Daily Objectives

1. Concept Objective(s)
   a. Understand the concept of region
2. Lesson Content
   a. Maps have keys or legends with symbols
   b. An atlas, as well as on-line sources can provide students with geographical information
   c. Geographic knowledge includes a specialized and specific vocabulary
3. Skill Objective(s)
   a. The students will identify, draw and use maps and globes to locate places and regions using title, key with symbols and a compass rose

B. Materials

1. One of the following books:
   a. *A Living Desert* by Guy Spence
   b. *The Magic School Bus Gets Dried Up* by Joanna Cole
   c. *Welcome to the Sea of Sand* by Jane Yolen
   d. *The Desert Is Theirs* by Byrd Baylor
   e. *Hawk, I'm Your Brother* by Byrd Baylor
2. Class set of Children's atlases
3. Blank map of the United States with political boundaries
4. Map pencils
5. Map of the USA transparency or large map of the United States
6. Overhead projector
7. Overhead markers
8. Vocabulary transparency – Appendix C
9. Student handout – Appendix D
10. www.desertusa.com/

C. Key Vocabulary

1. plateau – a large highland plain that rises sharply above the surrounding land, plateaus are also called tablelands
2. mountains – a rugged upthrust mass of rock that looms high above the surrounding land
3. desert – a very dry and desolate land that receives less than 10 inches of precipitation annually
4. arroyo – a dry desert gully or ditch
5. semiarid – receiving between 10 to 20 inches of precipitation annually

D. Procedures/Activities

1. Introduce desert geography by reading one of the books from the materials list. Discuss the desert habitat emphasizing geographic terms.
2. Tell the students the names of the four major deserts and using a large map or transparency point out their locations

3. Using the vocabulary transparency (Appendix C) have the students define the vocabulary on the student handout (Appendix D)
4. Distribute blank maps and atlases, or allow using o-line sources. Tell the students they are to locate and label the following states on a blank map of the United States:
    a. California
    b. Arizona
    c. New Mexico
    d. Texas
    e. Nevada
    f. Utah
    g. Colorado
5. Have the students draw a compass rose and a map key on the map. The key needs symbols for:
    a. Desert
    b. Mountains
    c. Rivers
6. Have the children locate and label the following items. They need to use the correct symbols.
    a. Sierra Nevada Mountain Range
    b. Rocky Mountains
    c. San Gabriel – San Bernadino Mountains
    d. Rio Grande
    e. Sonoran Desert
    f. Mojave Desert
    g. Great Basin
    h. Chihuahuan Desert

E. Assessment/Evaluation

1. Collect the maps and assess using the rubric.

    Rubric

    3 Accurate information
    Neat drawings that are correctly labeled

    2 Most information is correct
    Drawing correctly labeled

    1 Information present
    Drawing attempted

Lesson Three: Desert Plants

A. Daily Objectives

1. Concept Objective(s)
    a. Understand that there are many structures in the natural world (Diversity of Life)
2. Lesson Content
    a. A habitat is an ecosystem with interdependent organisms
3. Skill Objective(s)
    a. The students will observe and identify characteristics among species that allow each to survive and reproduce
    b. The students will collect information by observing and measuring
    c. The students will analyze and interpret information

Day One

B. Materials

1. 2 Cactus for each group (one optunia and one cereus)
2. 4 Hand lenses per group

3. Observation sheet – Appendix F
4. Book: *The Desert Giant* by Barbara Bash
5. Transparency with key vocabulary listed – Appendix E
6. Overhead projector
7. Overhead markers

C. Key Vocabulary

1. glochids – the tiny bristles that grow on optunias, they stick in skin when touched
2. optunia – a cactus family that has tiny bristles growing out of each areole, the spine are not always fully grown on optunia cactus
3. cereus – a cactus family that has bald areoles, but there are many spines
4. areole – a wartlike growth on cactus
5. spines- the thorns or stickers on a cactus

D. Procedures/Activities

1. Tell the students they are going to learn how plants have successfully learned to adapt to the harsh desert environment
2. Read the book *Desert Giant* by Barbara Bash to the class.
3. Have the children identify the type of plant that was featured in the story and discuss the role it played as part of a desert ecosystem
4. Place the transparency (Appendix E) on the overhead and explain to the children that there are two distinct groups of cactus, the optunia and the cereus. Using the transparency go over the differences so students will be able to identify both types.
5. Explain to the students that they will work in groups of four to learn more about cactus. First they will observe each cactus using a hand lens. Next identify and classify the two cacti. Then using the student handout they will draw and label each cactus. (Appendix F) Last they will describe a natural defense cactus have which helps them survive.
6. Distribute the supplies (Cactus, lenses, handouts)

E. Assessment/Evaluation

1. The teacher will collect and review the handouts.

Rubric

3 Accurate information
Neat drawings that are correctly labeled

2 Most information is correct
Drawing correctly labeled

1 Information present
Drawing attempted

Day Two

B. Materials

1. Cactus for each group
2. 1 Geranium per group, similar in size to the cactus
3. Student Handout – Appendix G
4. Cup of water
5. Tablespoon

C. *Key Vocabulary*- none introduced

D. *Procedures/Activities*

1. Tell the students they are going to observe which plant will more successfully survive in a harsh desert environment.
2. Explain to the students that they will work in groups of four to learn more about the two plants. They need to draw both plants and describe how they look today. Then pour 15 ml. Of water on each plant. Place both plants in a sunny location for 7 days. Next week they will observe and record how the plants look.
3. Distribute the supplies.

4. Complete activity after 7 days have passed. Students must explain which plant is better adapted to a desert habitat and support their responses with data they collected during the experiments

E. *Assessment/Evaluation*

1. The teacher will collect and review the handouts.

Rubric

3 Accurate information
Neat drawings that are correctly labeled
Logical evidence

2 Most information is correct
Drawing correctly labeled
Support present

1 Information present
Drawing attempted

Lesson Four: The Food Chain

A. *Daily Objectives*

1. Concept Objective(s)
   a. Understand that there are many kinds of interactions in systems
2. Lesson Content
   a. Producers, consumers, and decomposers comprise the food chain
   b. The "balance of nature" is constantly changing and is not static
3. Skill Objective(s)
   a. The student observes and identifies characteristics among species that allow each to survive

B. *Materials*

1. *Who Eats What? Food Chains and Food Webs* by Patricia Lauder
2. Poster board – one per group
3. Drawing paper (4 ½" x 6")

C. Key Vocabulary

1. producer – a living thing that can make its own food from minerals, water, and sunlight
2. consumer – anything that has to eat to stay alive
3. food chain – several kinds of living things that are linked because each kind uses another kind as food

D. Procedures/Activities

1. To introduce the concept of a food chain, ask the children what they had for breakfast this morning. Explain to them that they were consumers at the top of a food chain.
2. Read the book *Who Eats What? Food Chains and Food Webs* by Patricia Lauder to the children and discuss the concepts that were introduced. Review what happened when hunters killed nearly all the Pacific sea otters and discuss why that has significance.
3. Divide the children into groups of four or five to make food chain posters using menus form the school cafeteria. Each group will be assigned a particular week to illustrate. Use page 10 of the book as an example.
4. Each child will illustrate one lunch. All foods should be drawn and labeled. Every food must be part of a food chain. The child should be at the top of each chain and labeled as a consumer.
5. All pictures from a group will be glued to the poster. Print the title and the week selected in the middle of the poster and glue a copy of the menu onto the poster. All students in the group need to write their names on the poster.

E. *Assessment/Evaluation*

1. The posters will be evaluated using a rubric

Rubric

3 accurate information
Neat drawing that are correctly labeled
All items on the menu are represented

2 Most information is correct
Drawing correctly labeled
1 mistake or item missing from the menu

1 Information present
Drawing present

Lesson Five: Decomposers

A. Daily Objectives

1. Concept Objective(s)
   a. Understand that there are many kinds of interactions in systems
2. Lesson Content
   a. Producers, consumers, and decomposers comprise the food chain
   b. The "balance of nature " is constantly changing and is not static
3. Skill Objective(s)
   a. The student describes how living organisms modify their physical environment

B. Materials

1. Empty cardboard milk carton – one per group
2. Waterproof tape
3. Vegetable peels, vegetable scraps, fruit peels and scraps
4. Large spoons – one per group
5. Knife for teacher use only
6. Garden soil
7. *The Magic School Bus Meets the Rot Squad* by Joanna Cole
8. *Plants* by the Ontario Science Centre
9. *An Oak Tree Dies and A Journey Begins* by Louanne Norris and Howard E. Smith
10. Student handout – Appendix H

C. Key Vocabulary

1. decomposer – a living thing that acts on dead animals and plants and puts the material stored in them back into the soil

D. Procedures/Activities

1. Before class prepare the milk cartons. Seal the open end of the milk carton with tape. Lay the carton on its side. Cut a flap on the upper side of the milk carton. The opening must be big enough to reach inside with a large spoon.
2. Divide the children into groups and distribute the handout (Appendix H), milk cartons, spoons, food scraps and soil to each group
3. Students will spread a thin layer of scraps over the bottom of the carton. Then cover it with a thin layer of soil
4. Using the worksheet students will describe what they did and predict what will happen
5. Each day the students need to stir the mixture and add another layer of scraps and soil. Do this everyday until the soil mixture is 3 cm from the top.
6. Read and discuss the suggested books or any other stories about decomposition
7. Set the cartons aside. The students should stir the mixture once a day for three weeks. If it starts to get dry they can add a small amount of water to the mixture. Soon you will have nutrient rich soil.
8. At the end of the experiment have the students complete Appendix H. They need to describe what happened and explain why. They also need to explain why they think this is important.

E. Assessment/Evaluation

1. The teacher will collect and review the handouts.

Lesson Six: Man–made Threats

A. Daily Objectives

1. Concept Objective(s)
   a. Understand that there are many kinds of interactions in systems
   b. Understand the concept of region
2. Lesson Content
   a. Man-made threats such as air pollution and water pollution pose threats to the environment
   b. Ecosystems can be affected by changes in the environment
   c. Maps have keys or legends with symbols
3. Skill Objective(s)
   a. The students will identify, draw and use maps and globes to locate places and regions using title, key with symbols and a compass rose
   b. The student describes how living organisms modify their physical environment

B. Materials

1. *A River Ran Wild* by Lynne Cherry – one copy per group
2. Student blackline map of the eastern USA that shows political boundaries
3. Transparency of the Eastern USA or a large classroom map
4. Adding machine tape – one roll per group
5. Student handout – Appendix I

C. Key Vocabulary

1. pollute – to make air or water dirty
2. conserve – to protect from harm or loss

Activity One

D. Procedures/Activities

1. Briefly explain the history of the Nashua River
2. Using a large map or transparency locate New Hampshire, Massachusetts, the Nashua and Merrimack Rivers
3. Distribute maps
4. Students need to label the two states then draw and label the rivers. Next they title the map, draw a compass rose and make a map key for the river symbol.

E. Assessment/Evaluation

1. The map will be assessed by using the following rubric

   <u>Rubric</u>

   3 All information correct
   Map Key
   Title

   2 Most information correct
   Map
   Title

   1 Project attempted

Activity Two

D. *Procedures/Activities*

1. Introduce the book by pointing out the timeline at the front of the book. Tell the students that after hearing the story they will work in groups to develop linear timelines that explain what happened to the river as time passes
2. Read the book *A River Ran Wild* to the class
3. Divide the class into groups. Each group needs to construct a timeline.

4. Students must carefully sequence the events and document the ecological changes that occur
5. Distribute the books and adding machine tape to the groups.
6. After a reasonable work period have the students share their timelines with the class. Groups may revise their timelines during this discussion.
7. Collect the timelines for use tomorrow.

Activity Three

D. *Procedures/Activities*
   1. Distribute Appendix I to the students.
   2. Each child has an individual evaluation but the group works together to complete the papers

E. *Evaluation/Assessment*
   1. The handout will be graded in a conventional manner. Each question is worth 25 points. Partial credit can be given for answers

Lesson Seven: The Woodlands

A. Daily Objectives
   1. Concept Objective(s)
      a. Understand that there are many kinds of interactions in systems
   2. Lesson Content
      a. A habitat is an ecosystem with interdependent organisms
   3. Skill Objective(s)
      a. The students will observe and describe the habitats of organisms within an ecosystem
      b. The student observes and identifies characteristics among species that allow each to survive

B. Materials
   1. *Our Natural Homes* by Sneed Collard III or any book(s) that describes the varieties of forests that exist
   2. 24 or 36 inch roll of white paper
   3. Paint
   4. 4" x 6" index cards
   5. Glue
   6. Chart titled "What W Think We Know About Forests"
   7. Atlases and on-line forest sites
   8. Checklist – Appendix J

C. Key Vocabulary
   1. forest – a region thickly covered with trees and underbrush, some are called woods or woodlands
   2. boreal forest – a northern arctic forest with poor soils and cold winters
   3. deciduous forest – a forest where most of the trees shed their leaves in the winter
   4. coniferous forest – a forest that has evergreens trees and shrubs which keep their leaves all year, sometime called an evergreen forest
   5. warm temperate forest – a forest with year-round sunshine and frequent rain, these forests are located a long the southeastern coast of the United States
   6. tropical rain forest – a forest with broad leafed trees that grow close together, the trees keep their leaves, and a thick tangle of other plants grows in and around the trees
   7. tropical dry forest – a forest with two seasons, wet and dry, deciduous trees lose their leaves in the dry season

D. Procedures/Activities

Day One

1. Ask the students to name the habitat where the native people lived in the book *A River Ran Wild*
2. Display the chart paper with the heading "What We Think We Know About Forests". As students give responses record them oh the chart. Turn the chart over and write, "What We Want to Learn about Forests". Record student responses.
3. Introduce the different types of forests to the students. Tell them they will be doing a mini research project on one type of forest. Let them sign up for the forest they want to research. Let them work with their groups researching information about forests. Have them record facts about their forests on index cards, one fact per card.

Day Two

1. Have the students work in groups to paint murals of the forests.
2. When the paint has dried they need to title the murals and glue the fact cards onto the mural.

E. Assessment/Evaluation

1. The students will assess their own murals using a checklist.

Lesson Eight: Make the World a Better Place

A. Daily Objectives

1. Concept Objective(s)
   a. Understand that there are many kinds of interactions in systems
2. Lesson Content
   a. There are measures people can take to protect or improve the environment
3. Skill Objective(s)
   a. The student uses critical thinking to make decisions

B. Materials

1. *Miss Rumphius* by Barbara Cooney – a classroom set
2. Reading journals

C. Key Vocabulary

1. Lupines – a plant with mostly blue, white or purple flowers

D. Procedures/Activities

1. Distribute the book *Miss Rumphius* to the students. Explain to them that the main character set three goals for herself when she was a child. The students need to identify these goals as they read and determine whether or not Miss Rumphius successfully achieved her goals. Students should record this information in their reading journals.
2. When the students have finished the assignment discuss the goal setting and the outcome. Have the students identify the theme of the selection and help them relate the idea of making the earth a more beautiful place to live.
3. Tell them to carefully think of something that children can realistically accomplish to help improve our environment. Have them record their ideas in their reading journals.

E. Assessment/Evaluation

1. Collect the journals and evaluate the reasonableness of the responses and if the student critically thought about his suggestions.

VI. CULMINATING ACTIVITY

A. Daily Objectives

1. Concept Objective(s)
   a. Understand that there are many kinds of interactions in systems
2. Lesson Content
   a. There are measures people can take to protect and improve the environment

3. Skill Objective(s)
    a. The student uses critical thinking to make decisions
    b. The student speaks appropriately to different audiences for different purposes and occasions
    c. The student communicates clearly by putting thoughts and feelings into spoken words

B. Materials

1. *Recycle That* by Fay Robinson
2. *Don't Throw It Away* by JoAnne Nelson
3. *Simple Things Kids Can Do to Save the Earth* by The Earth Works Group
4. *The Streets Are Free* by Kurusa
5. Reading journal
6. Chart paper
7. Markers
8. Student handout – Appendix K

C. Procedures/Activities

1. The culminating activity for this unit will be a group project in which students work as Environmental Action Teams to solve problems.
2. Give the children about twenty minutes to browse through the books that deal with environmental problem solving. Let them reread their journal entries from yesterday.
3. Brainstorm some small ways children can help improve the world. The teacher will scribe on the chart paper as the students identify problems and suggest possible solutions.
4. Discuss and modify the suggestions. Then select 5 problems for the Actions Teams to solve
5. Write each problem on a separate sheet of chart paper and draw 5 slots for children to sign up for a team. Title each sheet. (Action Team I, Action Team II, etc.)
6. Each team will
    a. Restate the problem
    b. Plan the solution
    c. Organize what team members will do
    d. Carry out the Plan
    e. Give a short oral presentation about the project to the class/parents
7. Each student will be responsible for filling out an Action Team Sheet.
8. Then develop guidelines, a timeline, and a presentation date.
9. Invite parents to the oral presentations if possible

D. Evaluation/Assessment

1. Use a rubric to assess the oral presentation

    <u>Rubric</u>

    3 The child looks at the audience while speaking
    The child speaks clearly
    The information is presented in a clear manner

    2 The child has some eye contact
    Most of the presentation is audible
    The information can be understood, but the order may not always be logical or sequential

    1 The child rarely looks at the audience while speaking
    The child speaks too softly or indistinctly to be understood
    The information presented may be confusing
2. Assess the team using this checklist
    a. Did all team members complete their team sheets?

b. Did team members cooperate?
c. Did they only attempt or did they actually solve the problem?
d. Record anything significant to help you enhance the students' learning experience.

VII. HANDOUTS/STUDENT WORKSHEETS

Appendix A - Habitats- Teacher Transparency
Appendix B – Habitats – Student Handout
Appendix C– Vocabulary Lesson 2 – Teacher Transparency
Appendix D – Vocabulary Lesson 2 - Student Worksheet
Appendix E - Transparency
Appendix F – Cacti identification
Appendix G – Plant Observation Sheet
Appendix H - Decomposers
Appendix I – A River Ran Wild – Student Worksheet
Appendix J – Forest Murals
Appendix K – Action Team Student Planning Sheet
Appendix L- Background Notes

VIII. BIBLIOGRAPHY

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Habitats

Appendix B:

Name the habitats and list some of their characteristics.
Define the word habitat

Habitats

Name_____

Habitat	Habitat	habitat	Habitat

Habitat_____

_____

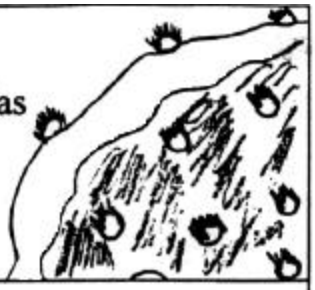
Vocabulary Lesson 2

Plateau A large highland plain that rises sharply above the surrounding land
Mountains A rugged upthrust mass of rock that looms high above the surrounding land
Desert A very dry and desolate land that receives less than 10 inches of precipitation annually
Arroyo a dry desert gully or ditch
Semiarid Receiving between 10 to 20 inches of precipitation annually

Appendix D: Student worksheet.
The student will write and define the vocabulary words from lesson 2.

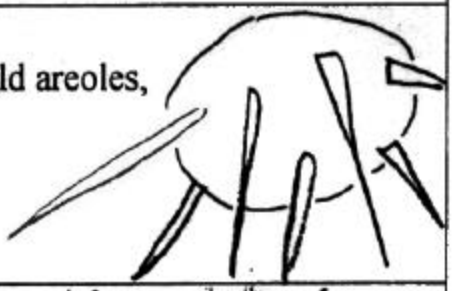
Vocabulary Lesson 2

glochids
the tiny bristles that grow on optunias

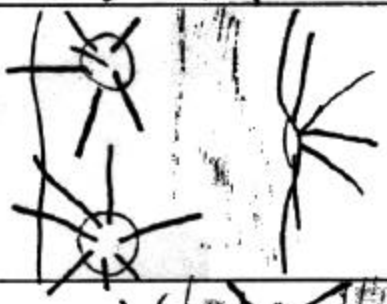


optunia
a cactus family that has bristles growing out of each areole

cereus
a cactus family that has bald areoles, there are many spines



areole
a wartlike growth on cactus



spines
the thorns or stickers on a cactus

Discovering Types of Cactus

1. Draw each cactus. 2. Title each drawing. (Optunia or Cereus) 3. Label areole, spines and glochids (if present).

Describe a natural defense that cactus have.

_____

_____

Plant Observation Sheet

Name_____

Plant one Date	Plant two Date

_____ _____

_____ _____

_____ _____

Plant one Date	Plant two Date

_____ _____

_____ _____

_____ _____

Decomposers

Name_____

Observation I: Date_____

1. Describe what you did to start this experiment.

2. Predict what you think will happen to your mixture.

Observation II: Date_____

1. Describe what happened to your mixture.

2. Tell why you think this happened.

_____

_____

_____

_____

3. Why do you think this might be important to the environment?

_____

_____

_____

_____

Appendix I
Student worksheet

A River Ran Wild

Directions: Answer these questions on notebook paper. You may work with your group to find the answers. Each group member must turn in his/her own answers. Make sure you write in complete sentences.

1. Describe what the Nashua River looked like when Chief Nash-a-way and his tribe settled in the region.

2. What changes did the English make when they settled the area?

3. How did the Industrial Revolution affect the river?

4. Describe what the people did to improve the river.

Appendix J
Student worksheet

Forest Murals

1. Names of the students:

2. Type of Forest:

3. Did everyone help to complete this project?

4. Is your mural neat?

5. Does your mural have a title?

6. Are your facts easy to read?

7. Did you use correct spelling?

8. How many facts did you put on your mural?

9. What grade do you think your group earned?

10. What was your favorite part of this activity?

Appendix K
Student worksheet

Action Team Student Planning Sheet

Name_____

Action Team_____

The Problem:

Our Solution:

What I need to do:

Appendix L

Background Notes (Lesson Two)

1. The Chihuahuan Desert receives less than 10 inches of precipitation annually.
2. The Mojave Desert receives less than 5 inches of precipitation annually.
3. The Great Basin Desert receives less than 7 to 12 inches of precipitation annually. It is considered a cold desert.
4. The Sonoran Desert receives precipitation from winter storms from the Pacific and rain from summer monsoons.

Background Notes (Lesson Six)

1. Read the "Authors Note" before introducing *A River Ran Wild* to the class. It will help the teacher prepare the introduction. This lesson helps children understand that an environment can be damaged by pollution but be restored through effort. It has three activities.