

Nebraska Game & Parks Commission
Nebraska Project WILD

Using Nature to Meet Educational Standards

A guide for Elementary Educators



Effective Teaching...Outside

Tips for Teaching Outside and Using Your Outdoor Classroom

- Begin using the outdoor classroom early in the school year. Students will become accustomed to learning outside and soon it will not be viewed as “recess.”
- Establish rules for when you are in the outdoor classroom. Ask students to help establish the rules. Rules could include:
 - Stay with the group, don’t run off.
 - Respect all plants, animals, objects, and people in the outdoor classroom.
 - Always listen to speakers.
 - When you hear the whistle (or bell, or horn, etc.) it is time to meet to come in.
- Before heading outside, give directions for the activity. Explain all directions and timeline for students (“We will be in the outdoor classroom for 40 minutes, the first 20 minutes we will be exploring, the second 20 minutes, I would like you to investigate”).
- Once outside, remind students to stay on task. Walk around to help students explore and answer any questions they may have.
- Model the behavior you would like to see in students. Do not sit aside while students are exploring and investigating. Join students in their explorations – this validates the student’s learning and shows them that the learning they are doing is important.
- Give students a 5-minute warning when you are preparing to head inside. This allows students a chance to finish their activity and mentally prepare to transition to a new activity.
- If possible, provide students with choices of activities when in the outdoor classroom. For example, allow students to collect quantitative data (air temperature, wind speed) or qualitative data (sunny, cloudy, breezy). This will not be possible with each activity, but it is a nice option for students to be able to direct their own learning.
- Remember to allow students to have fun in the outdoor classroom. Try to have some time spent in the classroom with no direct result... just free time for exploration.

Using Nature to Meet Educational Standards

SCIENCE

Pre-Kindergarten

Activity #1:

Materials: measuring strings

Measuring is a fun way for young students to explore the outdoor classroom or school grounds. Each person would grab a string. Head outside to find objects - living and non-living - that are longer and shorter than your string.

Work with a partner (with a string of a different length) to compare both strings to the same object...

"My string is longer than this twig."

"My string is shorter than the twig, but my string is longer than this rock."

"So is my string."

Activity #2:

Materials: none

Head outside with a partner. Each partner should find an object in the outdoor classroom or school grounds - living or non-living - that they can pick-up. With your partner, compare the weight of each object ...

"Ohhh, my stick is heavy!"

"Yeah, but my rock is heavier!" "Let me feel!"

When you have compared your first two objects, move on to complete three more comparisons.

Using Nature to Meet Educational Standards

SCIENCE

Kindergarten

Activity #1:

Materials: buckets of water (provided), a sheet of paper and pencil/pen (one per group).

What does it mean to sink? What does it mean to float? Are there any objects that do not sink, but do not float on top of the water?

Outside

Head outside and find 3 natural objects from the outdoor classroom or school grounds. Examples include, but are not limited to, leaves, rocks or pebbles, sticks, pieces of mulch, etc.

Meet together as a group at the four dish pans filled with water.

Have one person present his or her object to the others and make a prediction as to whether it will sink or float ("This is a twig I found under the bush. I think it will sink."). Then, he or she should toss it in the container of water. Were they correct?

Have someone keep track on a piece of paper what items sank and what items floated.

Proceed to the next person who will do the same procedure. Take turns making predictions and testing your hypothesis. Be sure to record all items and whether they sank or floated.

When you are done, remove all the items from the water and put them back in the outdoor classroom where you found them. Dump out the water.

Inside

Head back inside and look at your data that you recorded on your sheet. How many items floated? How many items sank?

Work together to make a chart of your data.

SANK	FLOATED
pebble	maple leaf
large stick	small twig
	piece of grass

Work together to make a simple bar graph of your data.

Using Nature to Meet Educational Standards

SCIENCE

First Grade

Activity #1:

Materials: data sheet (one per person), pencil/pen

What is a habitat? What things are included in a habitat? Do all animals have a habitat?

All animals - big and small - have a habitat which includes food, water, shelter, and space. These four things must also be in the proper arrangement for the animal to survive (if the food of a squirrel is a mile from its water, and its shelter is 1 mile in the other direction, this will not work!).

Head outside and look for animals using the outdoor classroom or school grounds. Although you can work in groups, you should find a different animal for each person. Look for large animals - squirrel, rabbits, birds - and small animals - roly-polly bug, spider, worm, insect, etc. When you find an animal, record it on your data sheet.

Next, look for a source of food for your animal. What would your animal eat? When you find it, record it on your data sheet.

Then, keep looking for a source of water for your animal. When you find it, record it on your data sheet.

And, finally, look for a shelter for your animal. This may not be a build home or nest, but rather a safe spot hidden from predators. When you find this, record it on your data sheet.

Activity #2:

Materials: shovel or trowel, piece of paper, pencil/pen.

What kinds of animals live in the soil? Worms! Moles! Badgers! Can you think of any other animals which call soil home?

Head outside with a small shovel or trowel. Slowly move the mulch aside. Do you see any animals scurrying away? Try looking in the mulch out in the sun and again in the mulch under a bush or in the shade. Do you see anything?

Now, start digging SLOWLY into the soil... you do not need to dig down very deep. What do you see now. If you don't see anything, try digging in another place.

Record what you find on a sheet of paper... be sure to record everything as we will use this data later.



Habitat Data Sheet

Name: _____

Name of your animal: _____

Food

What kind of food would your animal eat?

Where did you find your animal's source of food?

Shelter

What kind of shelter would your animal prefer? A nest? A hole? In the mulch?

Where would your animal find its preferred shelter?

Water

Where would your animal find water?



Using Nature to Meet Educational Standards

SCIENCE

Second Grade

Activity #1:

Materials: none

What is a life cycle? Do all animals have a life cycle? What about a bird? A caterpillar? A squirrel? What about plants... do they have a life cycle, too?

List below some of the parts of a plant's life cycle.

Your list should include: seed, sprout, adult plant, and flower.

Head outside to find an example of each stage of a plants life cycle. The examples do not need to be from the same plant, you simply need to find seeds, a plant just sprouting, and adult plant, and a flower.

Activity #2:

Materials: One sheet of paper for each person, markers or crayons for each person.

After you have finished activity #1, remain outside. As individuals, venture through the outdoor classroom until you find an adult plant that you like. Any plant will do, but one with flowers would be best.

Draw the plant on your paper. Label the parts of the plant. Be sure to include the following labels: seed (if present), roots (you don't have to actually see them!), stem, leaves, flower, fruit (if present).

Using Nature to Meet Educational Standards

SCIENCE

Third Grade

Activity #1:

Materials: piece of paper and pencil/pen for each group of 2 students, thermometer.

Head outside into the outdoor classroom or school grounds. Using a thermometer (or a permanent weather station). Record on your piece of paper the air temperature.

Next, use your ground thermometer to measure the soil temperature in the open sun... measure the soil temperature about 1 inch below the surface. Push the thermometer farther into the ground, measure the soil temperature 4 inches below the surface. Is there a difference? Why?

Now, measure the soil temperature in a shady spot (under a bush, in the shade of a building). Measure the temperature 1 inch and 4 inches below the surface. Is there a difference between the 1 inch and 4 inch temperature? Why?

Is there a difference between the sunny soil temperature and the shady soil temperature? What has caused this difference? What is the source of heat?

Is this an example of radiation, conduction, or friction?

Using Nature to Meet Educational Standards

SCIENCE

Fourth Grade

Activity #1: Materials: Data Sheet (one per student)

What is an adaptation? Do both plants and animals have adaptation? Why are adaptations important?

An adaptation is either a physical characteristic that an animal or plant has (long legs, webbed feet, waxy leaves, thick fur, long leaves, long ears, etc) or a behavior that an animal or plant does (eating, migrating, closing its flower, dropping leaves, running from predators, etc) to help it survive. All plants and animals have adaptations.

Head outside into the outdoor classroom or school grounds. List 10 different plants or animals. For each species, list two adaptations for the species. Differentiate whether the adaptation is a physical (something you can touch) adaptation or a behavioral (something it does) adaptation.

Name: _____

Adaptations Data Sheet

Plant or Animal	Adaptation	Physical or Behavioral?
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		

Using Nature to Meet Educational Standards

SCIENCE

Fifth Grade

Activity #1:

Materials: piece of paper (one per group), pencil, colored pencils or markers

What is a watershed? Is it a small shack with water in it? NO!! A watershed is the area where water flows to the lowest point. Watershed can be small (a backyard) or large (the Missouri River watershed covering all or part of 8 states).

As water falls on the ground, it either soaks into the soil or runs-off over the surface of the ground. When water runs-off, it always flows downhill to the lowest point.

Divide into groups of two. Each group will need a sheet of paper and a pencil. Head outside to the outdoor classroom or school grounds.

Using your paper and pencil, draw a map of the outdoor classroom or school grounds. Make note of the building, fence, sidewalks, mulch/plant areas, and other identifiable items.

Next, start looking at the topography. Make a point on your map that marks the highest spot in the classroom or school grounds. Make another spot on your map for the lowest point in the outdoor classroom or school grounds (look for where the water pools). Make topographic lines between the highest spot and lowest spot showing how the ground is sloping.

Draw arrows on your graph indicating how water would flow from the highest point to the lowest point (it may or may not be a straight line!).

Answer the following questions:

What would happen if someone spilled a chemical in the outdoor classroom? What if it rained after they spilled the chemical?

Once water in the outdoor classroom reaches the lowest point, does it stop moving? Where does it go from there?

Where will water from the outdoor classroom eventually go?

How does the water cycle effect the flow of water?



Using Nature to Meet Educational Standards

MATH

Pre-Kindergarten

Activity #1:

Materials: Shape cards

Head out to the outdoor classroom or school grounds. Each person should take one shape card. Venture into the outdoor classroom to find something that is the same shape as your card. Gather as a group, share what you found.

Now, get a new card from the pile and again find something in the outdoor classroom that is the same shape as your card.

Play 4 rounds of the game.

Activity #2:

Materials: none

Remain in the outdoor classroom. Each person should gather 2 leaves. Come together as a group and arrange them from smallest to largest. Longest to shortest.

Using Nature to Meet Educational Standards

MATH Kindergarten

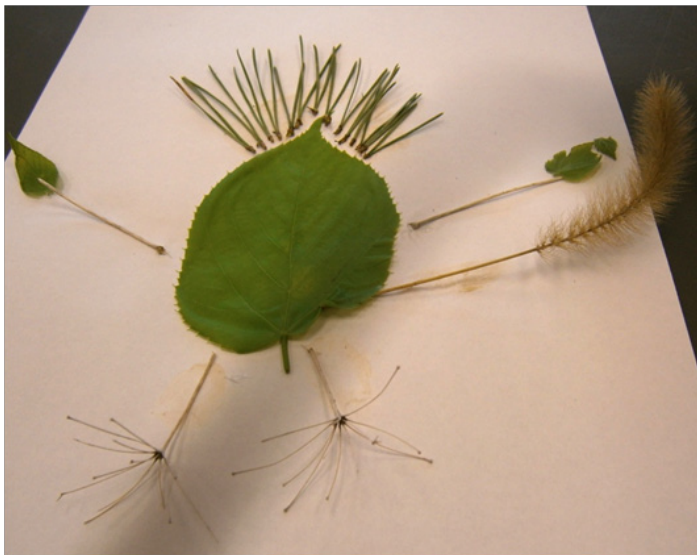
Activity #1:

Materials: paper, glue sticks

Head out into the outdoor classroom or school grounds. Each person should gather 10 leaves of different shapes, sizes, and species.

Come back into the classroom. As a group, look at your leaves. Do you see any shapes? A cottonwood leaf looks like a heart. Other leaves look like circles, ovals, triangles, and even rectangles.

Use your leaves and some glue to create animals or objects.



Activity #2:

Materials: none

Remain in the outdoor classroom or school grounds. Each person should gather 5 objects from the outdoor classroom (leaves, twigs, rocks, pieces of mulch, etc.).

Divide into groups of two. Mix the gathered items from both people into one pile. Sort the objects.

Sort them again, and again for a third time. Could you sort them in a fourth different way? Brainstorm all the different ways you could sort the objects.

Using Nature to Meet Educational Standards

MATH **First Grade**

Activity #1:

Materials: tape measure, piece of paper, pencil/pen

Divide into groups of 2. Each group should get a tape measure. Head out to the outdoor classroom or school grounds. Practice measuring things using the tape measure. Make measurements in both inches and centimeters.

Record your findings on a piece of paper.

Activity #2:

Using the data from Activity #1, make three charts: Items under 6 inches, items 6-18 inches, and items over 18 inches.

Create a bar graph using the data from your charts.

IDEA: Think of other measurements in the outdoor classroom or school grounds that you could make... number of plants with flowers vs. the number of plants without flowers.... number of plants found in the rain garden vs. plants found in the vegetable garden area.... etc.

Activity #2:

Materials: piece of paper, pencil/pen, markers/crayons

Using the data you collected from the "First Grade Science Activity," make a chart of your findings. Then, make a pictograph representing each of the different creatures you found in the soil.

Try making a bar graph, too.

Using Nature to Meet Educational Standards

MATH **Second Grade**

Activity #1:

Materials: piece of paper, crayons/markers, thermometer

Head outside to the outdoor classroom or school grounds every day to record the air temperature. Be sure to do this at about the same time each day (i.e. first thing in the morning).

Collect this data on a large chart at the front of the room.

Date	Temperature at 9:00am
October 11, 2012	71 degrees F
October 12, 2012	76 degrees F
October 15, 2012	82 degrees F
October 16, 2012	80 degrees F
October 17, 2012	74 degrees F
October 18, 2012	

Because you do not have data collected previously, today use the data in the chart above. Normally, you would have your students use the data that they have collected the previous week.

Create a bar graph and line graph using your temperature data..Would any other graph types work to represent this data?

What other weather data could you collect from the outdoor classroom or school grounds to graph?

Using Nature to Meet Educational Standards

MATH **Third Grade**

Activity #1:

Materials: tape measures

Head outside to the outdoor classroom or school grounds for a “geometry walk”

Find five examples of circles. Five examples of squares. Five examples of rectangles. Five examples of triangles.

Find five symmetrical leaves, plants, or flowers.

Find five asymmetrical leaves, plants, or flowers.

Activity #2 (for a later time)

Materials: Tape measures

Help students create a coordinate system for the outdoor classroom or school grounds. Have one group locate an object within the outdoor classroom or school grounds (tomato plant, bridge, arbor, etc) and assign coordinates to the object. Next, have that group switch coordinates with another group. Each group should use the coordinates given to identify the object at that location on the grid system.

Using Nature to Meet Educational Standards

MATH **Fourth Grade**

Activity #1:

Materials: tape measures, piece of paper, pencil/pen

Head outside to the outdoor classroom or school grounds. Before you begin, choose two objects in the outdoor classroom (bridge and arbor, hay bail and weather station, fence and arbor). Estimate the distance between the two objects using feet as your measurement.

Use the tape measure to determine the actual distance between the two objects. Was your estimate correct? Record the actual distance on a piece of paper.

Now, choose two more objects. Again, estimate the distance between the two objects. Use the tape measure to determine the distance between the two objects. Was your estimate correct? Record the actual distance on one piece of paper.

Back in the classroom, convert your measurements in feet to inches, to centimeters, and to meters.

Using Nature to Meet Educational Standards

MATH **Fifth Grade**

Activity #1:

Materials: rulers, pencil/pen, piece of paper

Head out to the outdoor classroom or school grounds. Have each group of two choose a plant - any plant.

Using the ruler, measure the length of 10 different leaves on the one plant (measure to 1/4 inch). Record the lengths on your piece of paper.

Choose another plant and again measure 10 different leaves on the one plant (measure to 1/4 inch). Record the lengths on your piece of paper.

Head back into the classroom. Calculate the mean, median, and mode for each plant. Which plant has the largest mode? Which plant has the largest mean leaf. What do the median lengths for each plant tell you?

Using Nature to Meet Educational Standards

LANGUAGE ARTS

Pre-Kindergarten

Activity #1:

Materials: none

Head out to the outside classroom..The teacher should shout a texture (bumpy, smooth, prickly, rough, slick, etc.). Students should run into the outdoor classroom to find an objects (plant, mulch, rocks, twig, etc) that has the texture that was called out.When a student has found something that matches, they do not need to pick it or bring it back, they simply need to return to the teacher and tell him or her what it is that they found. Once all students are back, the teacher should shout another texture for students to find. Continue the game for several rounds.

Next, try the same game with colors.The teacher should shout a color for children to find in the outdoor classroom.

Or, you can play the same game with shapes (a math lesson!) and sizes.

Using Nature to Meet Educational Standards

LANGUAGE ARTS

Kindergarten

Activity #1

Materials: piece of paper (one per student), pencil, (camera optional)

Write the letters of the alphabet on a piece of paper. Head outside to the outdoor classroom or school grounds. Go on an "alphabet walk through the classroom or school grounds looking for objects or plants that start with each letter of the alphabet. When you find one, cross off that letter on your sheet.

You may also want to take a picture of each object(s) and plant(s) you find for each letter. Then, make a classroom alphabet book for students to look at. Or, print off enough pictures for each student to have at least one picture per letter of the alphabet. Have students make their own book, use this as a means of measuring student's understanding and comprehension of letters.

Activity #2

Materials: small pieces of paper, pencils, pens, markers, crayons, camera

Head outside to the outdoor classroom, take pictures of lots of objects. Print the pictures. Help students make labels for each of the pictures.

Or, place the labels in the outdoor classroom or school grounds (make sure they are weather-proof).

Using Nature to Meet Educational Standards

LANGUAGE ARTS

First Grade

Activity #1:

Materials: paper, pencils, crayons

Head outside to the outdoor classroom or school grounds. Find an animal or plant in the area. Watch the animal or plant for several minutes. What is it doing? What are some words you would use to describe your plant or animal? Is it moving? How?

Then, find a spot to sit to write a short story about the plant or animal. Draw a picture to go with your story.

Using Nature to Meet Educational Standards

LANGUAGE ARTS

Second Grade

Activity #1:

Materials: paper, pencils, crayons, stapler

Create a journal. Be sure to put your name on it (this is your journal!).

Head outside to the outdoor classroom or school grounds. Walk around the classroom for five minutes. Then, find a spot by yourself to free-write in your journal.

Activity #2:

Materials: paper, pencils, crayons

Head outside to the outdoor classroom or school grounds. Find an animal or plant in the area. Watch the animal or plant for several minutes. What is it doing? What are some words you would use to describe your plant or animal? Is it moving? How?

Then, find a spot to sit to write a short story about the plant or animal.

When you head back inside to the classroom, proof read your story. Re-write your story and put it into a book format.

Draw pictures to go with your story.

Using Nature to Meet Educational Standards

LANGUAGE ARTS

Third Grade

Activity #1:

Materials: paper, pencils, crayons, camera (optional)

Create an informational brochure about the outdoor classroom or school grounds. Work individually or in groups of two.

Information in your brochure should include:

- two different plants found in the classroom or school grounds
- two different animals found in the classroom or school grounds
- three activities you can do in the outdoor classroom or school grounds
- where you can find the outdoor classroom or school grounds

Draw pictures for your brochure. As an alternative, you can take pictures and print them for your brochure.

Using Nature to Meet Educational Standards

LANGUAGE ARTS

Fourth Grade

Activity #1:

Materials: paper, pencils, crayons or markers, field guide template (one per student)

Head outside to the outdoor classroom or school grounds. Each person should choose a different plant found in the area. Using field guides, identify your plant.

Head back inside to research your plant.

Research should include:

- Where is your plant found (its range)?
- How tall your plant will grow?
- Does it produce flowers? What color? When?
- What shape are your plant's leaves (oval, rounded, toothed, lobed)?

Create a one-page guide to your plant using the template provided.

Draw a picture or take a picture and glue it to your field guide template.

Collect all the field guide sheets from all students. Create a book.

Make color copies of each page to make several books. Laminate the books. Place the books in the outdoor classroom or school grounds for other classes to use.

Guide to the Plants of Our School

Common Name: _____

Scientific Name: _____

Leaf Description: _____

Flower Description: _____

Bloom time: _____

Plant Height: _____

Using Nature to Meet Educational Standards

LANGUAGE ARTS

Fifth Grade

Activity #1:

Materials: paper, pencils/pens

Head outside to find three different plant species. Make notes about each species:

- What color is it?
- What shape is it?
- Where do you find it?
- Does it have flowers? What do they look like? What color are they?

List 10 words to describe each plant species.

Use the answers to the above questions and your descriptive words to write a poem about each plant.

Cinquain

1st Line: Title, 2 syllables

2nd Line: description of title, 4 syllables

3rd Line: description of an action, 6 syllables

4th Line: description of a feeling, 8 syllables

5th Line: Another word for title, 2 syllables

Windspark

Fine lines, each with a specific purpose.

Line 1: "I dreamed"

Line 2: "I was..." (something or someone)

Line 3: where

Line 4: an action

Line 5: how

Haiku

First Line: 5 syllables

Second Line: 7 syllables

Third Line: 5 syllables

Acrostic

The first letter in each line, when read vertically, spells the name of something or conveys a message.

Diamante

noun
adjective adjective
participle participle participle
noun noun noun noun
participle participle participle
adjective adjective
noun

Using Nature to Meet Educational Standards

SOCIAL STUDIES

Pre-Kindergarten

Activity #1:

Materials: piece of paper

Work together as a group to establish rules for when you are exploring outside. Help guide students to create reasonable and important rules. Examples include: treat the plants with respect, encourage and help other students to explore and learn, do not be disruptive, stay with the group, etc.

It is important that the students help establish these rules as they will be more likely to follow rules they helped establish.

Activity #2:

Head outside into the outdoor classroom or school grounds to look around. Do you see any trash? Help care for your outdoor classroom and neighborhood by picking up any trash. Can the trash be recycled? Talk about what things can be recycled and what items should simply be thrown in the trash.

While you are outside, take stock of any potential problems you may foresee with your students. Staying one step ahead of your students will mean the difference between a successful learning experience in the outdoor classroom or school grounds and a disaster!

Using Nature to Meet Educational Standards

SOCIAL STUDIES

Kindergarten

Activity #1:

Materials: none

Work together as a group to establish rules for when you are exploring outside.. Help guide students to create reasonable and important rules. Examples include: treat the plants with respect, encourage and help other students to explore and learn, do not be disruptive, stay with the group, etc.

It is important that the students help establish these rules as they will be more likely to follow rules they helped establish.

Head outside into the outdoor classroom or school grounds to look around. Do you see any trash? Help care for your outdoor classroom and neighborhood by picking up any trash. Can the trash be recycled? Talk about what things can be recycled and what items should simply be thrown in the trash.

While you are outside, take stock of any potential problems you may foresee with your students. Staying one step ahead of your students will mean the difference between a successful learning experience in the outdoor classroom or school grounds and a disaster!

Using Nature to Meet Educational Standards

SOCIAL STUDIES

First Grade

Activity #1:

Materials: none

Head outside to the classroom or school grounds. Look for animals. As a group, discuss what these animals would need to survive - food, water, shelter, and space. Is this the same or different as you? Same!

Look for homes in the outdoor classroom or school grounds. Homes could include bird or squirrel nests in trees, holes in the ground, a chrysalis or cocoon, a web in a protected area, etc.

Find five examples of animal's homes. How are these homes different from each other? How are they the same?

How are these homes the same as ours? How are they different?

Discuss that just like different animals have different kinds of homes, people have different kinds of homes, too. What are the different kinds of human homes? How are they similar? How are they different?

Using Nature to Meet Educational Standards

SOCIAL STUDIES

Second Grade

Activity #1:

Materials: trash bags, rubber gloves (optional)

Head outside to the outdoor classroom or school grounds. Look for garbage. Work together to pick-up any garbage found. (just in time for the start of school... you want the classroom look nice!)

As you pick-up the garbage, discuss if it is recyclable or not? If it is, be sure to help the environment by recycling the trash. Discuss why recycling is important (Science standard!)

Discuss what impact trash or garbage has on the school? Its students? The neighborhood? The animals?

Work with other second grade classrooms to make sure each classroom picks-up trash for the week (4 classrooms, once a month for each class).

Using Nature to Meet Educational Standards

SOCIAL STUDIES

Third Grade

Activity #1: piece of paper, pencil

Head outside. Working in groups of two, create a map of the outdoor classroom or school grounds.

Be sure to include the following things:

- sidewalks
- bridges
- planted beds
- raised beds
- weather station
- composing bins
- fences
- signs

Be sure your map includes a compass rose, key, and a title.

Using Nature to Meet Educational Standards

SOCIAL STUDIES

Fourth Grade

Activity #1:

Materials: none

Visit the outdoor classroom or school grounds. Look for:

- Nebraska's state flower (Goldenrod)
- Nebraska's state insect (bumble bee)
- Nebraska's state bird (Western Meadowlark)
- Nebraska's state tree (Cottonwood)
- Nebraska's state mammal (White-tailed Deer)
- Nebraska's state grass (Little Bluestem)

If you do not find the state flower, grass, or tree, work together to plant them in the outdoor classroom or school grounds.

If you do not see the state mammal, bird, or insect, do research into why you don't find them. Where are they located? What habitat requirements do these animals have that are not present at your school site?

Using Nature to Meet Educational Standards

SOCIAL STUDIES

Fifth Grade

Activity #1:

Materials: plant field guides

Head into the outdoor classroom or school grounds to learn about the plants. Record what native plants you see in the outdoor classroom or school grounds.

Come back inside to do research about the plants you found.

Learn about how native cultures used the plants. What plants did they use? How did they use them?

Funding for this workshop was provided in part by the Nebraska Natural Legacy Project and the Nebraska Environmental Trust

