

3RD Grade Curriculum: Concourse Lake Native Plant Park

SUMMARY

BEFORE YOUR VISIT: Students will learn about the basic needs of plants, plant structures, and the benefits of native plants. Students will prepare for a visit to the park by learning how to interact with nature responsibly and by discussing expectations for the visit.

VISITING THE PARK: Students will utilize nature journaling skills while observing flora and fauna at the park. Students will engage in guided exploration to locate and identify living systems at the park. Students will measure the health of the systems at the park.

AFTER YOUR VISIT: Students will plan their own native plant park using the information about plant needs and structures as well as their own journals and observations from their visit to the Concourse Lake Native Plant Park.

Before Your Visit

1. What is a plant?
2. Native Plant Meet and Greet
3. Staying Safe and Respecting the Space

1. What is a plant?

OBJECTIVES

- Identify and describe the parts of a flowering plant.
- Describe the needs of plants.

MATERIALS

For each pair of students:

1 flowering plant with the roots still attached
Tweezers
Scissors

For each student:

Piece of white paper
Crayons
Glue
Small piece of sponge
Straw
Food wrappers (from potato chip bags, cereal boxes, etc.)
Paper advertisements from magazines and newspapers
Sand
Glue Dots
Sunflower Seed

Give each student a piece of paper and some crayons and ask them to draw a plant.

- ✦ Allow each student to present their drawing to the rest of the class.
- ✦ What similarities do you notice in all the drawings?

Build a Plant

- ✦ Preface by explaining all plants are different, but we're going to be talking about the parts that most/some plants have.
- ✦ Give each student/pair of students a flower (with root attached) and a piece of blank paper.
- ✦ Talk about roots
 - ◇ Roots allow the plant to absorb water and minerals from the soil. They fan out into tiny root hairs that act like sponges to aid in absorption. Roots anchor the plant in the soil to help ensure that the plant does not fall over. Roots can also store food for use in the future.
 - ◇ Have the students give you words to describe the roots of the plant.
 - ◇ Give each student some sponge pieces to represent the roots on their plant. Ask them to glue the pieces at the bottom of their paper to represent the roots of their plant.
- ✦ Talk about stems
 - ◇ Stems give the plant shape and support. They also conduct water and nutrients up from the roots up the plant and food from the leaves to other parts of the plant. Stems can be bendable like the stem of a rose or woody like the trunk of a tree.
 - ◇ Have the students carefully pull apart the stems of their plants. Discuss their findings.
 - ◇ Have the students attach straws to their paper to represent the stems.
- ✦ Talk about leaves
 - ◇ Most plants' food is made in their leaves. Leaves use the energy from captured sunlight to make a form of sugar or food from carbon dioxide through a process called photosynthesis.
 - ◇ Have the students carefully pull apart the leaves of their plants. What do they notice?
 - ◇ Cut food wrappers (potato chips, candy bars, and cardboard food boxes) into the shapes of leaves for their plants and attach to the paper.
- ✦ Talk about flowers
 - ◇ Flowers are the reproductive part of many plants. Flowers have male parts called stamens that produce a sticky powder called pollen. They also have a female part called the pistil. The top of the pistil is called the stigma, and is often sticky. Seeds are made at the base of the pistil, in the ovule. Flowers attract pollinators to move their pollen from the stamen of one flower to the pistil of another with sweet smells and distinct colors.
 - ◇ Have them pull apart all the pieces of the flowers. How many distinct pieces do they see? What do they think each part's purpose would be?
 - ◇ Add magazine advertisements to their picture as the petals. Place a glue dot in the middle for the stamen and add some sand as pollen. Add a second glue dot and leave it uncovered for the pistil. Put a sunflower seed below the glue dots for the developing seed in the ovule.
- ✦ Have the students label all the parts of their plant diagram and present their very unusual flowers to the class.

EVALUATION

Use the rubric point system below to evaluate students' work during the lesson. Score on finished project.

Three points: Students were highly engaged in class and group discussions; used materials appropriately; and correctly identified all parts of a flowering plant.

Two points: Students participated in class and group discussions; used materials with little assistance; and correctly identified at least three parts of a flowering plant.

One point: Students participated minimally in class and group discussions; were unable to use materials without teacher assistance; and identified two or fewer parts of a flowering plant.

2. Native Plants Meet and Greet

OBJECTIVES

- Identify adaptations that help a native plant to thrive in its habitat
- Describe the benefits of planting native plants

MATERIALS

Blank paper
Crayons
Pre-cut "Native Plant Meet and Greet" cards (See attached)

- ✦ Ask the students to reflect on the plants they "built" in the previous lesson.
 - ◇ What were some things that we determined that plants needed? (sunlight, water, soil, etc.) How could having more or less of those things affect how a plant grows?
 - ◇ What other things in a plant's environment would affect how it grows and whether it thrives? (temperature, altitude, pollution and toxins, wildlife, people, etc.)
- ✦ Ask the students to again take a blank piece of paper to draw a plant, but instead, ask them to fold the paper into thirds.
 - ◇ In the first third, ask the students to draw a plant that they think would grow well in their neighborhood.
 - ◇ In the second third, ask the students to draw a plant that they think would grow well in the desert.
 - ◇ In the final third, ask the students to draw a plant that they think would grow well in a forest.
 - ◇ Unfold the paper and ask the students to look closely at plants they have drawn and compare and contrast all of the parts of their plants. How are the roots different? Did they draw different kinds of flowers on the plants? Was there a size difference in the plants they drew?
- ✦ Discuss how some plants have adaptations that allow them to thrive in certain environments.
 - ◇ The term 'native plant' refers to plants that are indigenous to a particular area at a particular point in time. Typically it refers to plants that have grown without human introduction for a very long time. Some plants need a very specific area complete with a very specific ecosystem to grow. Other plants can thrive in a variety of places. Native plants typically have structures and adaptations that make them well-suited for their areas. Native plants play an important role in the ecosystem and often are critical to the health of all wildlife in a given area.

- ✦ Play “Native Plant Meet and Greet”
 - ✧ Before you play: Print the cards so that the nametag on each card is printed or glued to the appropriate background card. For example, the “Hi, my name is Saguaro” card should be attached to the front of the “Saguaro Facts” card.
 - ✧ For the first round, pass out the cards labeled “Environment” and the cards labeled “Plant” to the students. Some students may not have a card this round. They will play an important role in the next round.
 - ✧ Students will be playing the role of a plant or an environment. Their goal is to find the student with whom they make a pair to represent a native plant in its native environment. They can find their match by asking each other questions and investigating the given picture. When they think they have found their match, they should sit down.
 - ✧ When all the plants are in their native homes, bring the group together to discuss the game. What did the students find challenging about the game? What revelations were important in figuring out if they matched?
 - ✧ Pass out the remaining ‘Wildlife’ cards. Have all the pairs stand up. This time, the animals need to find their habitats by comparing their needs with the plants and environment.
 - ✧ Discuss the next phase of the game. Was it easier or harder? What could matching up the animals and the plants with a given habitat tell us about how these plants and animals are interconnected? What would happen if you changed or eliminated one piece of the puzzle?
 - ✧ Take all the plant cards from the groups, shuffle them, and re-distribute them to the groups. What do the students think would happen if the plants that are best suited to their habitat have been switched out for these nonnative plants? What are some problems with this? (plants may not survive, animals will have a tougher time finding food, water, shelter, etc.)
- ✦ Discuss how native plants can be beneficial to all living things, including people and the other animals that live with them.
 - ✧ Concourse Lake Native Plant Park is not only a beautiful testament to native Pennsylvania plants, but also it provides various animals an appropriate habitat in the Centennial District. Review with your students some of the animals they might see while visiting the park. For a list, please see www.concourselake.org
 - ✧ The plants at this park also serve an important function for the humans of Philadelphia. A green space like this one helps reduce pollution, noise, and general congestion in a bustling city. More important, restoration of the plants to this park helps to improve the water quality of the lake, which is important for all the residents of Philadelphia. From the Concourse Native Plant Park website: “Storm water from Concourse Lake flows under the Avenue of the Republic into Centennial Lake. Surface water from this two-lake area of the watershed flows to the Japanese Tea House and ultimately to the Schuylkill River, supplying drinking water to a large part of Philadelphia and its surrounding community.”
 - ✧ For a quick demonstration of how soil and plants can help to filter water, see the Environmental Protection Agency’s website at http://water.epa.gov/learn/kids/drinkingwater/kids_4-8.cfm

EVALUATION

Use the rubric point system below to evaluate students' work during the lesson. Score on finished project.

Three points: Students were highly engaged in class and group discussions; used materials appropriately; and correctly matched native plants and animals to their native habitat.

Two points: Students participated in class and group discussions; used materials with little assistance; and correctly matched native plants or native animals to their native habitat.

One point: Students participated minimally in class and group discussions; were unable to use materials without teacher assistance; and repeatedly incorrectly matched native plants and animals with their native habitat.

3. Staying Safe and Respecting the Space

OBJECTIVES:

- Set expectations for the trip the park
- Determine appropriate ways of interacting with the natural space

MATERIALS:

"Our Trip to Concourse Lake Park" sheet (see attached)
Chart paper
Markers

- ✦ Ask the students to reflect on everything that has been discussed up to this point and think about what kinds of things (living and nonliving) they might see at the park. Write their ideas on the chart paper to compare to their experiences
 - ◇ What kinds of plants might they see? Are there some plants they definitely think they will not see?
 - ◇ Do they think they will see a lot of animals or only a few? Will there be large animals? Other than actually seeing the animals, what are some ways that they might be able to figure out if animals were present?
 - ◇ What do they think the water will look like at the park? Will it be blue and clear or brown and scummy? Will it smell a particular way?
- ✦ Talk with the students about some of the rules and important safety considerations on your visit.
 - ◇ Use the attached "Our Trip to Concourse Lake Park" to guide your discussion with the students. Have them brainstorm some ways of exploring the space without causing harm to the plants and animals that live there. Write these rules on the chart paper and review them before your trip.

Visiting the Park:

1. My Patch of Park
2. Healthy Habitat Hunt

My Patch of Park

OBJECTIVES

- Investigate environmental systems

MATERIALS

For each small group of students:

1 hula hoop or loop of rope
Magnifying Glasses
Rulers

For each student:

Notebook
Colored pencils

- ✦ Sit the campers in the amphitheater at the park and ask them to describe the park from that vantage point.
 - ◇ Ask for observations of the plants and animals in the park. How many different kinds of plants can they see? What about animals (or even evidence of animals)?
- ✦ Tell the campers that you'd like them to look more closely at the plants and animals that live in the park.
 - ◇ Split the class up into small groups and give each group a hula hoop or loop of rope. Tell them to find a small area in the park and place the hoop on the ground. That will be the location of their mini-hike. They are to look as closely as possible at that little patch of park for all the kinds of plants that live there as well as animals or any evidence of animals.
 - ◇ As they find interesting pieces of their patch, they should use their notebooks to record. Encourage them to write out their observations and draw detailed pictures. Use the magnifying glass to look more closely and the rulers to get precise measurements.
 - ◇ Remind the students to not only look for living animals in their patch but also for signs of animals. Does something look chewed on? Are there any tracks or scat?
 - ◇ Bring the groups back together and compare notes. Were they surprised by the things they found? How did their close investigations change their perception of the park as a whole? Did they find any nonliving items in their piece of the park? (Rocks, trash, etc.)
 - ◇ Repeat the activity again, but allow the students to choose a different piece of the park.
 - ◇ Some tips:
 - Remind students of the rules for respecting nature. They can move aside leaves or push into the dirt, but they should not damage their areas or hurt any of the animals (including insects) they might find in their hoop.
 - Encourage them to explore to find an area they think might be interesting. Consider including a shrub bed and mown grass in the same patch. What looks just like uniform and uninteresting grass can hold a wide variety of plant and animal life.
 - Steer clear of any areas that could contain dangerous plants or animals

EVALUATION

Use the rubric point system below to evaluate students' work during the lesson. Score on finished project.

Three points: Students were highly engaged in class and group discussions; used materials appropriately; and produced highly detailed notes that included at least 5 different plants/signs of animals.

Two points: Students participated in class and group discussions; used materials with little assistance; and produced detailed notes that included at least 3 different plants/signs of animals.

One point: Students participated minimally in class and group discussions; were unable to use materials without teacher assistance; and produced notes that included 2 or fewer different plants/signs of animals.

2. Healthy Habitat Hunt

OBJECTIVES

- Identify adaptations that help a native plant to thrive in its habitat
- Identify the signs of healthy and unhealthy plant habitats

MATERIALS

Copies of the "Healthy Habitat Hunt" handout (see attached); 1 for each student
Map of Concourse Lake Native Plant Park
Pencils

- ✦ Ask the students to think about what it means to be healthy.
 - ◇ When we say someone or something is "healthy" what do we mean? This conversation will most likely be focused on people, but encourage the students to think about other living things.
 - ◇ How would you determine if an ecosystem is healthy? Take some suggestions.
- ✦ Allow the students to work independently or in small groups to complete the "Healthy Habitat Hunt."
 - ◇ Some tips:
 - Designate an area for all the groups to work in to keep a closer eye on the independently working groups.
 - Allow the students to mark the places on their map where they find the evidence they need to complete each question. It will help in any follow-up discussions and allow you to better monitor their progress on the hand out.
- ✦ Come back together and discuss your findings.
 - ◇ First, lead a discussion of the hunt itself. Why were they asked the questions they were asked? For example, why is important to look at how many different kinds of plants are in a given area or if there is evidence of any animal reproduction? (If there is little plant diversity, that can mean that an environment is too hostile to allow a wide variety of plants, as only the hardiest survive. If animals are thriving in a healthy environment, they are capable of reproducing.) What other things could they look at to determine the health of an ecosystem?
 - ◇ What did they discover? Based on their results do they think this habitat is thriving? How do they think the choice to plant the plants that live here impacted the overall health of the park?
 - ◇ How many of the "unhealthy" signs are a direct result of people using and misusing the park?

EVALUATION

Use the rubric point system below to evaluate students' work during the lesson. Score on finished project.

Three points: Students were highly engaged in class and group discussions; used materials appropriately; and correctly found, described, and labeled at least 8 of the questions on the hunt.

Two points: Students participated in class and group discussions; used materials with little assistance; and correctly found, described, and labeled at least 5 of the questions on the hunt.

One point: Students participated minimally in class and group discussions; were unable to use materials without teacher assistance; were not able to correctly find, describe, and label the questions on the hunt.

After Your Visit

1. Plan your Park

2. Plan your Park

OBJECTIVES

- Plan a native plants park that utilizes plants that are native to this region, allows for animal habitats, and is beneficial to the community

MATERIALS

Paper for each student

General art supplies

- ✦ Talk about your visit to the park.
 - ◇ What did students think of the park? Was it a place they would like to visit again? Do they think it improves the neighborhood? How do they feel about the park now that they know it improves the quality of their drinking water? Does the fact that it is a habitat for so many animals impact how they feel about it?
 - ◇ Have the students make a list of the top 10 things they liked most about the park and share it with the class.
- ✦ Plan a park.
 - ◇ Alone or in small groups, ask the students to take everything they have learned—from the structures and needs of plants, to the adaptations of native plants to the signs of healthy systems—to create their own park. They should lay out their park in a drawing, and create a pamphlet/map much like the one that exists for the Concourse Lake Park. The pamphlet should include the following:
 - A detailed map of the plants, water systems, trails, and any other features of their park.
 - A mission statement for why the park was created
 - A list of some of the animals one might see on a visit to the park.
 - The top five reasons to visit the park.

✧ Things for students to consider:

- What are the goals of their park? Are they looking for the park to be a beautiful place for their neighbors to hang out? Do they want a wetland like the Concourse Lake Park in order to filter water? Is there a lake in their park at all? Do they want a wild animal habitat right in the middle of Philadelphia? Or is it some combination of all of these?
- How did they make the decisions about where to put their plants? How might that impact the health of all the plants in the system?
- What animals do they expect to live in their park? Have they given the animals the appropriate food, water, and shelter that will keep them happy and healthy?
- How will they keep their park healthy? What steps would they take to prevent some of the “unhealthy” signs they’ve discussed?
- Allow the students to present their new parks to the class.

✧ Tips

- Allow the students access to the Concourse Lake website for this activity. On the site you’ll find lists of plants and animals that would be appropriate for the students to use in their own parks.
- For this age group, you might find it helpful to limit the number of different plants to 8–10 so as not to be too overwhelming for the students.

EVALUATION

Use the rubric point system below to evaluate students’ work during the lesson. Score on finished project.

Three points: Students were highly engaged in class and group discussions; used materials appropriately; and produced a pamphlet with all key components: map, mission statement, animals list, and reasons to visit the park.

Two points: Students participated in class and group discussions; used materials with little assistance; and produced a pamphlet with at least three key components: map, mission statement, animals list, and reasons to visit the park.

One point: Students participated minimally in class and group discussions; were unable to use materials without teacher assistance; and produced a pamphlet with 2 or fewer key components: map, mission statement, animals lists, and reasons to visit the park.