



DEERING ESTATE AT CUTLER

Native Flags

Native flags is participatory eco-art project
by FIU College of Architecture + The Arts
Artist-in-Residence
Xavier Cortada.



Eco-art by Xavier Cortada

Urban Reforestation

Sunshine State Standards:

SC. 1.L.14.2; SC.4.L.17.4; VA.1.S.1; VA.2.S.1.1; VA.2.S.1.1; VA.2.O.3.1; VA.2.O.2.1;
VA.K.0.3.1; VA.3.3.3.2; VA.5.S.3.1

Background

Career Focus:

- Botanist; Arborist

Objectives:

- Learn what Native Flags is
- Understand the importance of native plants
- Learn about the negative effects humans can have on the environment

Vocabulary:

- **Abiotic:** Nonliving things.
- **Arborist:** A person who takes care of individual trees by pruning, removing, or treating them
- **Biotic:** Living things.

- **Climate:** Encompasses the statistics of temperature, humidity, atmospheric pressure, wind, rainfall, and other meteorological elements in a given region over long periods of time. Climate can be contrasted to weather, which is the present condition of these same elements and their variations over periods up to two weeks.
- **Community:** The plants and animals living in an area.
- **Ecosystem:** An area that contains living and nonliving things existing together and interacting. Ecosystems come in all sizes. (e.g., forest, meadow, log).
- **Flooding:** The rising of a body of water and its overflowing onto normally dry land.
- **Forest:** An ecosystem that is characterized by a dominance of tree cover and contains a variety of other organisms (e.g., other plants, animals).
- **Invasive species** - 1) non-native (or alien) to the ecosystem under consideration and 2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health.
- **Native species** - a native species is one that occurs naturally in a particular region, state, ecosystem, and habitat without direct or indirect human actions.
- **Rural Forest:** A forest ecosystem found in the countryside outside of cities, towns, or neighborhoods.
- **Soil Erosion:** The displacement of soil by wind, water, or other moving currents, sometimes leading to landscape degradation, ecosystem damage, or waterway pollution.
- **Urban Forest:** A forest ecosystem that includes all the trees and other vegetation in and around a town, village, or city.
- **Urban Reforestation** is a movement which is occurring around the world, whereby people are cultivating, farming, and reforesting their own urban patch.
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General Information

Native Flags is a participatory eco-art project launched by Miami artist Xavier Cortada in 2006. It explores our ability to coexist with the natural world.

Mangroves

Since 2007, the coastal reforestation component of Native Flags has been based at the Miami Science Museum, where an installation of 1,100 mangrove seedlings is on permanent exhibit.



1 Photo Credit - The Reclamation Project

Annually, volunteers collect mangrove propagules in coastal areas. The propagules are then exhibited in clear, water-filled cups (see: Gallery of Installations) where they are nurtured into seedlings and eventually planted along coastal areas. This coastal reforestation creates new habitats above and below the water line.

Native Flags

Native Flags initiative aims to regrow native habitats in upland areas. Participants are encouraged to plant native tree and a green flag in their front yard, reclaiming it for nature.

Native Flags is based at Miami-Dade Park's Deering Estate at Cutler, as well as Florida International University, where visitors can purchase their green flag and see an exhibit of the 12 native trees featured for South Florida.

Reclamation Project Foundation

The Reclamation Project Foundation generates resources to help implement this participatory eco-art project. The Board's present emphasis is aimed at educating and engaging South Floridians in reforesting coastal and urban areas by bringing the Reclamation Project to local

communities, institutions and schools.
(Cortada)



2 Photo Credit - Xavier Cortada

Urban Forests

We may not think of the trees along our streets, in parks, along rivers, and in yards as part of a forest, but they are. All the trees, other plants, and animals in a city, town, or village are part of an urban forest.

A forest is an ecosystem. An ecosystem is all the living and nonliving things in an area interacting with each other. In an urban forest, the increased influence of humans means that in addition to plants, animals, sun, and soil there are people, buildings, asphalt, pets, utilities, and more. This makes the urban forest a unique type of forest, but still one that is connected to other ecosystems.

It is important to note that rural forest ecosystems are relatively large areas compared to urban forests. Rural forests are not devoid of human influence. However, there is a difference between urban and rural forest ecosystems in the degree of impact that people have on the forests.



3- Photo Credit USDA -Picture courtesy of USDA

When thinking about the interactions that occur in an urban forest, it may help to keep in mind that things that don't really seem "natural" to us are still part of this ecosystem. Just as rocks are part of other ecosystems, concrete and asphalt are part of urban forests. A squirrel in a

rural forest relies on nuts and seeds to eat. In an urban forest, they may also eat food dropped by humans. (good time to remind the students how harmful it can be to feed wildlife)

Trees face different challenges and receive different benefits from their locations. In a rural forest, trees compete for nutrients, sunlight, space, and water. A well-maintained tree in an urban forest may be watered and fertilized so it doesn't need to compete for those things. However, an urban tree may also be subjected to more air and water pollution. Trees in both places may have to compete with other trees for sunlight. Urban trees may also have to compete with shade from buildings.

1. Ask students to think of all the places in their town where trees grow. Accept any reasonable answer appropriate for the ability of the students.
2. After the places have been named, explain that all those areas help make up what we call an "urban forest." Explain that an urban forest is the trees and other plants, animals, and other things that live in cities and towns.

Urban forests play an important role in moderating energy use patterns, soil stabilization, storm water runoff, and temperature throughout a city. Trees help cool urban areas and buffer unfavorable climatic conditions. Humans play a critical role in the urban forest. We are responsible for deciding which trees will be removed during land development, what trees will be planted to replace them, and the overall care of urban trees. Trees provide many valuable services - slowing water, preventing flooding and soil erosion, adding nutrients to the soil, and adding aesthetic beauty to the world around us. (Lipkis)



4 - Photo credit: BILL HATCHER/National Geographic Stock; Carving trees can hinder their growth

Most people understand that rural forests are managed to maintain their health and provide the services people expect from them. We may not realize that urban forests are managed for the same reasons.

Management of urban forests does differ from that of rural forests. Urban forests have many more owners than rural forests do. Not only do municipalities own forests, but homeowners and businesses also own small pieces of the forest. Another

difference is that trees in urban forests face conditions such as soil compaction, pollution, poor soil, and limited space that rural trees are unlikely to face. These conditions can challenge an urban tree's ability to survive. The building of roads, homes, and other

construction can make keeping existing trees alive and growing new trees difficult. Proper management can help overcome these challenges.

Both urban and rural forests face insect, disease, invasive species, and damaging weather problems. Although these problems are not easy to address in either urban or rural forests, urban forests have additional challenges (e.g., soil compaction, pollution, limited space) that may make it even more difficult.

The biggest difference in managing urban and rural forests is the scale of the management techniques. It is rare for rural forests to be treated on a tree-by-tree basis; it is common in urban forests. Urban trees are located in places where people walk, live, sit, drive, and play, so they need regular inspection and attention to keep them from becoming dangerous. Many urban forests are managed by an urban forester hired by a municipality. The urban forester plans for trees in an entire city or town. Arborists are hired to care for individual trees to meet the management plans the urban forester has set. These professionals will continue to face new challenges. Urban sprawl and tree neglect will be among the things that will change the characteristics of urban forests in the future. (Duryea)

Importance of Native Trees

Trees provide many community benefits.

Healthy trees are critical to human well being and wildlife prosperity. Trees cool our cities, filter the air we breathe, provide homes and food for wildlife, and better water-related recreational activities. Their leaves produce life-giving oxygen, and their roots reduce soil erosion and absorb pollutants that would otherwise foul our rivers and streams. Their branches and trunks are home to a bird watcher's premier list including the great blue heron and American bald eagle.

Native trees are important.

Native trees are especially important because they are adapted to local soil, rainfall, and temperature conditions, and have developed natural defenses to withstand many types of insects and diseases. Because of these traits, native plants will thrive with a minimal amount of maintenance. Wildlife species depend on native plant communities for their habitat, so the use of native trees helps preserve the balance of nature. Plants and trees that are imported from other parts of the nation and the world can actually bring unintended harm, resulting in diminished wildlife and plant diversity.

Our communities have a tree shortage.

You may not know it, but according to American Forests, America's cities have a deficit of 634 million trees. In this region, the overall tree cover continues to decline and at the same time, areas with little or no tree cover continue to increase. Replanting trees and reforestation is the answer and you can help!

Trees address the problems of nonpoint-source pollution.

In the heavily urbanized counties of the Washington, DC, metropolitan area, nonpoint-source pollution from runoff of sediment, nutrients, and other toxins poses the greatest threat to water quality. Moreover, high-volume storm flow into stream valleys is a prime contributor to accelerated erosion of stream banks contributing to decline of in-stream habitat and

extensive sedimentation into the Potomac River and Chesapeake Bay. A significant amount of this runoff originates from individual yards and homes.
("Why Are Seeds and Trees So Valuable?")

Activity 1: Make Your Own Plant ID Guide

Objectives:

- Identify at least 5 of the Native Flagg plants
- Learn to identify plants based on leaves and characteristics
- Understand why it is important to plant native trees

Materials:

- Leaves (12 tree selected trees from the Native Flagg exhibit located at Deering Estate)
- White paper
- Crayons, coloring utensils

NOTE: to lessen the environmental impact, leaves should be collect ahead of time by the Naturalist, collect as few as possible (kids can share), reassure them that our naturalists are trained in how and when to collect plant material to minimize damage, and be sure to discuss the 4th principle of Leave No Trace – Leave What You Find: it may not seem like much to take a few leaves or flowers but think about the people who come here to visit, if each visitor took a few leaves, before long there wouldn't be any left and all the plants would quickly die. It's not only bad for the environment, but parks are protected areas and it's actually illegal to take and/or harm plants and wildlife. After the program is over the leaves can be composted and used here on-site so their nutrients are going back to the same area they were taken from, just as nature intended.

There are hundreds of different plants in Florida so it can be pretty hard to remember all their names. One way to help remember is to create a guide for yourself that you can refer back to at any time you need to jog your memory. Today you'll make a plant guide for yourself using the 12 plants featured in the Native Flagg exhibit.

Procedure:

1. On a piece of plain white paper, position leaves vein side up in a pattern that you like.
2. Lay another sheet of plain white paper over the top of the leaves.
3. Select the colored crayons that you would like to use to create your rubbing and peel off the paper wrappers.
4. Turn the crayon on its side and gently rub over the top sheet of paper. Use more than one color for great designs.

Native Flags - 12 Native Trees

Name: _____

Leaf Rubbing:	Name: _____ Scientific Name: _____ Characteristics: _____ _____ _____
Leaf Rubbing:	Name: _____ Scientific Name: _____ Characteristics: _____ _____ _____
Leaf Rubbing:	Name: _____ Scientific Name: _____ Characteristics: _____ _____ _____

Leaf Rubbing:	Name: _____ Scientific Name: _____ Characteristics: _____ _____ _____
Leaf Rubbing:	Name: _____ Scientific Name: _____ Characteristics: _____ _____ _____
Leaf Rubbing:	Name: _____ Scientific Name: _____ Characteristics: _____ _____ _____

Activity 2: Taking Care of Urban Forests

Objectives:

- Explain the need to take care of trees in an urban forest.
- List things that can make it difficult for trees to grow in an urban environment.
- List things management does to control problems in an urban forest.

Procedure:

Have students describe and identify locations for each of the following situations in the United States. Discuss what happens without trees and if it is due to natural causes (climatic factors) or caused by humans.

1. **Blowing Soil** – Wind easily picks up exposed topsoil and dust fills the air. What negative effects occur?
2. **Unprotected Soil** – Farm homes and other buildings catch the full strength of the wind and heat of the sun. What happens when there aren't trees around?
3. **Dirty, Flood-prone Rivers** – Eroded soil from hillsides raises the river beds, fills streams and destroys wildlife habitats. How would this make the river more likely to flood? What happens to surrounding lands?
4. **Rapid Runoff** – Rain flowing on the surface picks up speed and gathers more soil that has easily washed away on hillsides. Carrying topsoil, nutrients, pesticides, and herbicides, the soil and water quality decreases in an ecosystem. What does that mean in economic terms for the community?
5. **Degraded Habitat** – Tree dwellers, such as birds, insects, and squirrels would not have a place to live or obtain food without trees. How does this impact the entire ecosystem?
6. **Air Quality** – Dust particles linger in the air, while the burning of fossil fuels releases deadly pollutants into the atmosphere. What role do trees play as an air cleaning mechanism?
7. **Overheated Cities** - Streets, buildings and parking lots soak up the sun's heat and raise the overall temperature within the city. Known as the Urban Heat Island (UHI) effect, cities retain more heat than regional temperatures in surrounding rural areas, ultimately increasing energy consumption, air conditioning costs, and heat related illness. How do trees in the city make a difference during seasons such as summer?

Activity 3: Tree's Life Game

Objectives:

- Identify things in an urban forest that makes it difficult for trees to grow
- Learn how to manage an urban forest

Materials:

- 2 inch square pieces of paper
- Tree's Life Game board & cards

Procedure:

1. Explain to your students that there are things in the urban forest that make it challenging for trees to grow. Tell them that they will be playing a game to learn about some of those things, and what can be done to help trees deal with the challenges. In other words, they will see what can be done to manage urban forests.
2. Pass out the two-inch squares of paper. Ask the students to write their names on the paper and fold them in half. These will be used as game pieces.
3. Divide the class into groups of four or five. Give each group a Tree's Life game board with the Tree's Life game cards placed in the center. All students will place their game piece on "start." Have each group choose a student to go first.
4. Game cards are written as though students are trees. Each card has either a good thing done to help a tree or urban forest, or a bad thing that hurts it. The cards also have instructions to move back or ahead a specific number of spaces. If a card drawn while they are still on "start" tells them to go back, they must remain on "start." If they draw a card that tells them to go back more spaces than there are between the game piece and "start," they go back to "start." Each student draws one card per turn, reads it aloud, and follows the instructions. Place used cards in the discard pile marked on the game board. Play continues until all students reach "finish."
5. Wrap up with a brief discussion of some of the things they read on their cards. Ask what some of the challenges and solutions they saw were. (*Answers based on cards.*) Ask them to think of others.

TREE'S LIFE GAME CARDS

<p>Someone fertilized you.</p> <p>MOVE AHEAD 2 SPACES.</p>	<p>You are a short tree planted under power lines so you fit there.</p> <p>MOVE AHEAD 3 SPACES.</p>	<p>Someone mowed the lawn around you carefully so your trunk did not get hit.</p> <p>MOVE AHEAD 3 SPACES.</p>
<p>Someone carved their initials on your trunk.</p> <p>MOVE BACK 1 SPACE.</p>	<p>You were planted under power lines and have grown too tall to fit there.</p> <p>MOVE BACK 2 SPACES.</p>	<p>Someone hung on your small branch and broke it off.</p> <p>MOVE BACK 2 SPACES.</p>
<p>Someone cabled their bike to you and hurt your bark.</p> <p>MOVE BACK 1 SPACE.</p>	<p>You were pruned at the wrong time of year and got a disease.</p> <p>MOVE BACK 2 SPACES.</p>	<p>A car backed into you.</p> <p>MOVE BACK 1 SPACE.</p>
<p>People hit you with a lawnmower.</p> <p>MOVE BACK 2 SPACES.</p>	<p>An insect attacked you.</p> <p>MOVE BACK 1 SPACE.</p>	<p>You were planted too deep in the ground.</p> <p>MOVE BACK 2 SPACES.</p>
<p>You can't live in the soil you were planted in.</p> <p>MOVE BACK 2 SPACES.</p>	<p>The road was widened and your roots were cut off.</p> <p>MOVE BACK 1 SPACE.</p>	<p>A new house was built on your roots.</p> <p>MOVE BACK 2 SPACES.</p>
<p>There is too much pollution.</p> <p>MOVE BACK 1 SPACE.</p>	<p>There is not enough space for you to grow.</p> <p>MOVE BACK 1 SPACE.</p>	<p>There is concrete too close to your roots.</p> <p>MOVE BACK 2 SPACES.</p>

TREE'S LIFE GAME CARDS

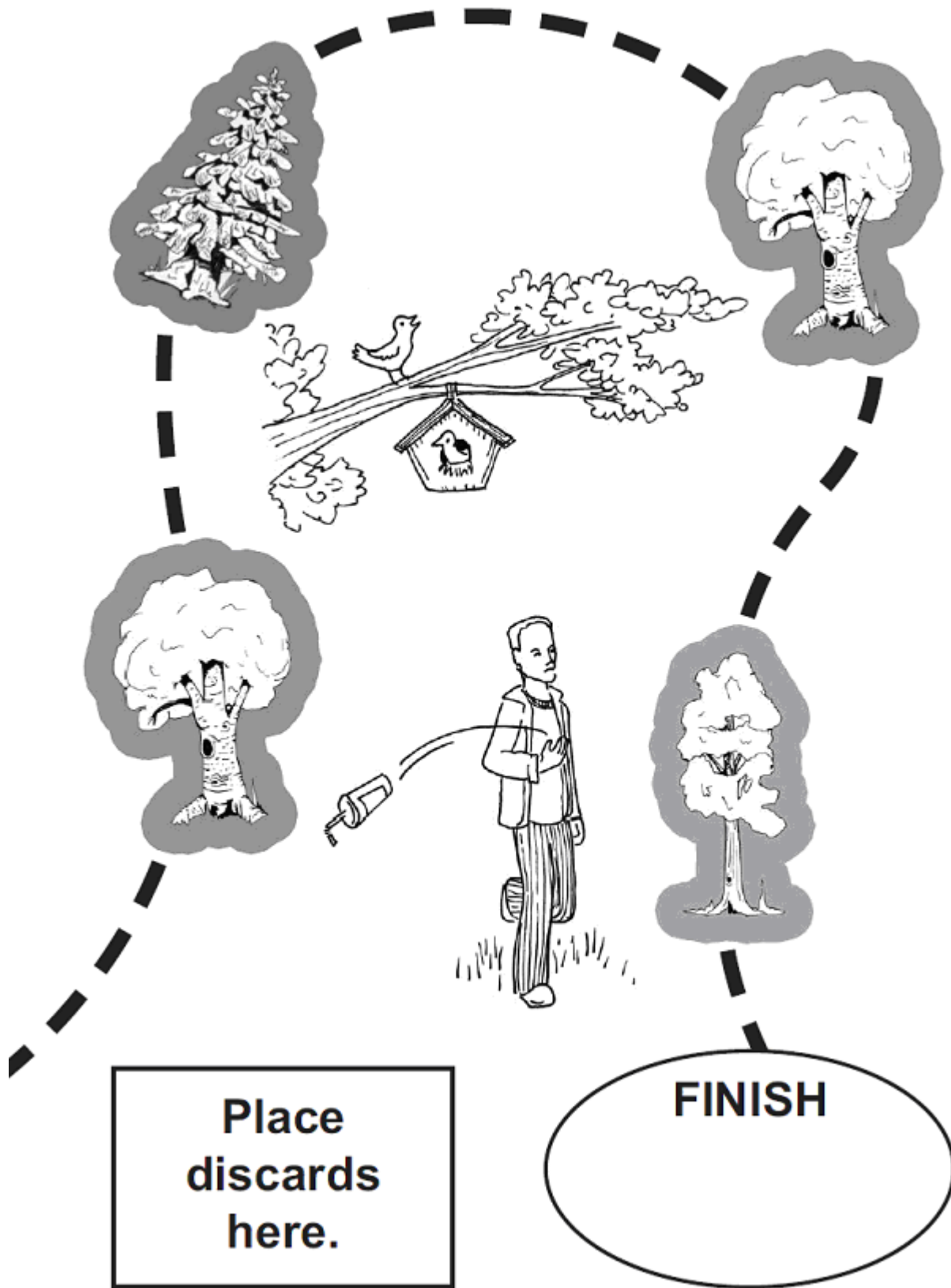
<p>You are not planted too close to a house.</p> <p>MOVE AHEAD 3 SPACES.</p>	<p>Your shade cooled someone's house.</p> <p>MOVE AHEAD 2 SPACES.</p>	<p>Your fruit is food for birds and they help you spread your seeds.</p> <p>MOVE AHEAD 2 SPACES.</p>
<p>You are properly taken care of by a family.</p> <p>MOVE AHEAD 3 SPACES.</p>	<p>You are a tree that grows well in Florida weather.</p> <p>MOVE AHEAD 2 SPACES.</p>	<p>Someone hung a bird house in your branches to help wildlife.</p> <p>MOVE AHEAD 3 SPACES.</p>
<p>You survived an ice storm because you were pruned.</p> <p>MOVE AHEAD 2 SPACES.</p>	<p>You were inspected for insects that could hurt you, and there were none.</p> <p>MOVE AHEAD 3 SPACES.</p>	<p>People prevented pollution from getting into the water.</p> <p>MOVE AHEAD 2 SPACES.</p>
<p>Someone put a fence around you when you were young to protect you.</p> <p>MOVE AHEAD 3 SPACES.</p>	<p>You were planted in good soil.</p> <p>MOVE AHEAD 2 SPACES.</p>	<p>You have plenty of room to grow.</p> <p>MOVE AHEAD 3 SPACES.</p>
<p>Someone hired an arborist to take care of you.</p> <p>MOVE AHEAD 2 SPACES.</p>	<p>Someone watered you during a dry summer.</p> <p>MOVE AHEAD 3 SPACES.</p>	<p>You were planted!</p> <p>MOVE AHEAD 2 SPACES.</p>
<p>Someone pruned off your broken branch.</p> <p>MOVE AHEAD 3 SPACES.</p>	<p>You have mulch on your roots to protect them.</p> <p>MOVE AHEAD 2 SPACES.</p>	<p>You are the right size for your spot.</p> <p>MOVE AHEAD 3 SPACES.</p>

START



Place
game cards
here.





Activity 4: Draw an Urban Forest

Objectives:

- Identify the characteristics that makes an urban forest what it is
- Visually learn the difference between an urban and rural forest

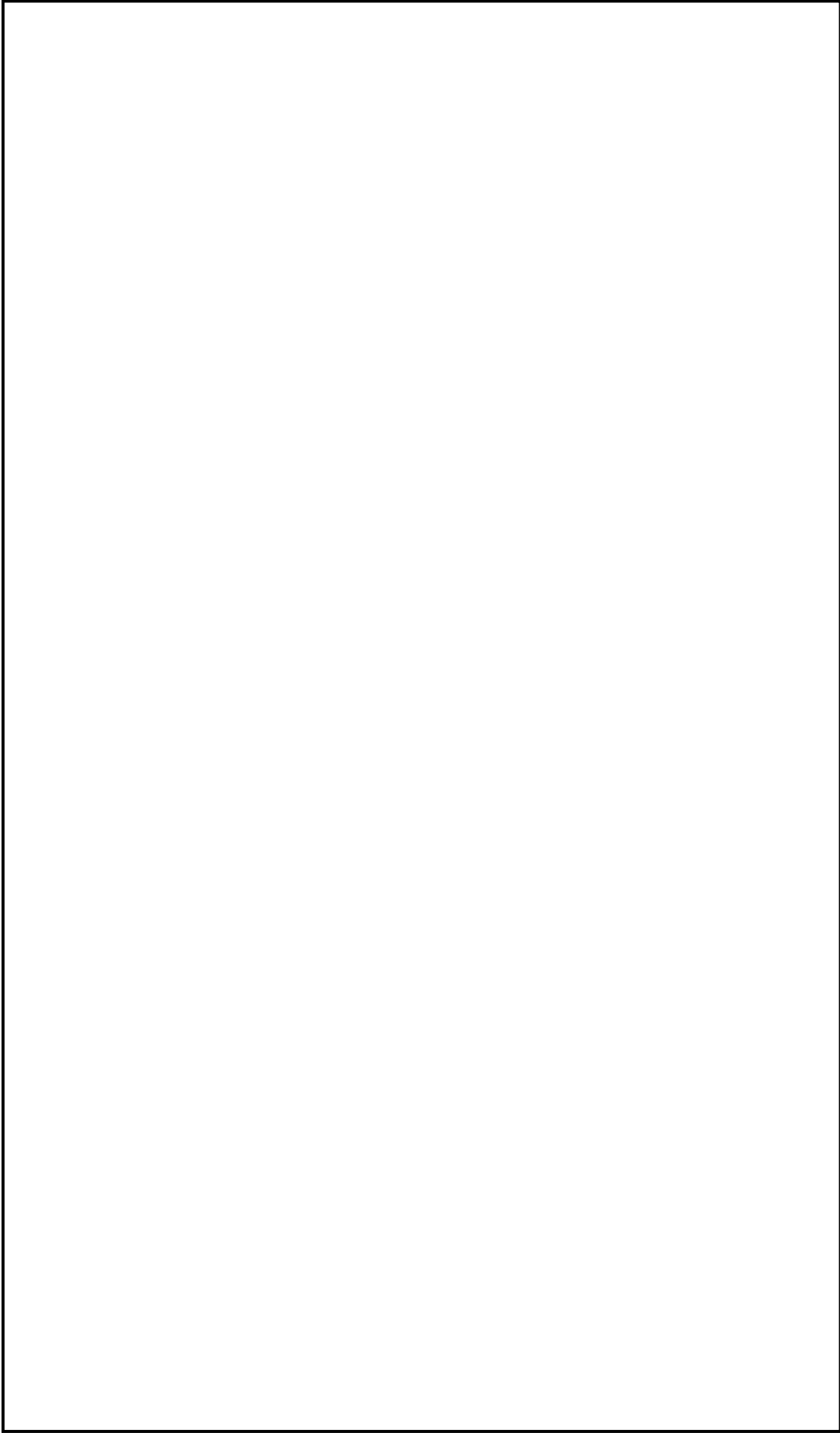
Materials:

- Drawing worksheets
- Pencils
- Clipboards

Procedure:

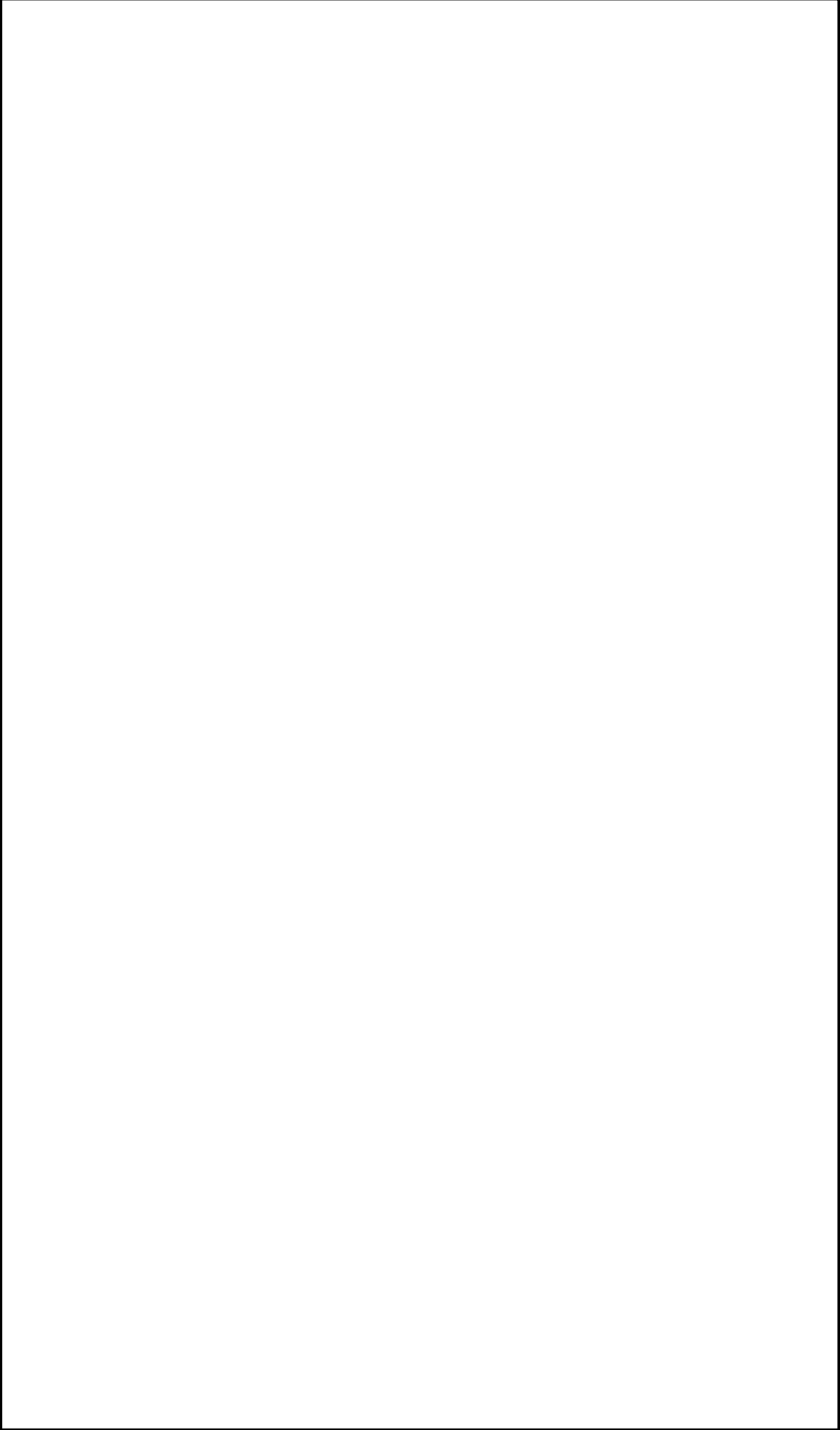
1. Explain to students what an urban forest and rural forest are
2. Pass out clipboards, paper, and pencils
3. Explain to them that we will take a hike through an urban forest (hike to Chinese Bridge from 72nd avenue)
4. Ask the students to observe the trees around them on this hike
 - How do they interact with people and buildings?
 - What are the pros and cons of having these trees there?
5. Stop at the Chinese Bridge and ask them to draw the urban forest they have seen on their way here
 - Also have them list the benefits of the urban forest they have walked through
6. Hike back and if time permits allow children to color in their drawings

Urban Forest



This Urban Forest is:

Rural Forest



This Rural Forest is:

Assessments

- Name 5 trees part of the Native Flags project
- How do we negatively impact Urban Forests?
- Why are native trees important?
- What kind of benefits can a tree provide for us? Our community?

Accommodations

Accommodations: Notebook Quick List

A general list of accommodations designed for lesson plan books

Instructional methodology and materials

- Needs alternate format to obtain information—Braille, large print, oral, simplified text
- Needs assistance with note taking – copy of notes, outline, note taker
- Needs concrete objects, pictures, or graphics
- Needs appropriate assistive technology: _____
- Needs advanced organizers or study guides
- Needs adapted materials—uncluttered, fewer items, highlighted
- Other: _____

Assignments and assessments

- Needs to use alternate response mode—tell, draw, write, point
- Needs appropriate assistive technology: _____
- Needs guides or prompts for specified tasks: _____
- Needs extended access to instructional resources and equipment
- Needs personal assistance – teacher, aide, peer, volunteer, interpreter
- Other: _____

Learning environment

- Needs adapted environment—acoustical treatment, lighting, barrier-free
- Needs preferential seating or study carrel
- Needs individual system for behavior management
- Needs to have instruction in small groups or one-to-one
- Needs individual planner or assistance with organization
- Other: _____

Time demands and schedules

- Needs additional time to complete course or grade
- Needs additional time to complete assignments and tests
- Needs to have independent or group work sessions in short time segments
- Needs reduction in number of required practice or assessment items
- Other: _____

Communication systems

- Uses Total Communication
- Uses American Sign Language, Finger spelling, or Signing Exact English
- Uses augmentative communication system: _____
- Needs instruction in home language other than English:
- Other: _____

Source: Beech, M., McKay, J. P., Frey, N., & Ward, T. (2000). Dealing with differences: Strategies that work! Trainer notebook, Tallahassee, FL: Florida Department of Education.

Resources

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