

Module 1 • Overview • Creating an Urban Ecology Center in Our Neighborhood

Brief Overview

This module introduces the world of urban ecology found right in the students' schoolyard and neighborhood. Children will learn about key ecological concepts as they explore their immediate surroundings. They will begin to hone observation and classification skills as they become expert in seeing and describing their surroundings. Children will set up long-term research projects for the school year. They will transform their classroom into their own Neighborhood Urban Ecology Center, a place where they will learn, do investigations, and share what they've discovered about the urban ecosystem in which they live, learn, and play. They will identify potential stewardship projects in their school or neighborhood and do them throughout the year.

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Time

9–12 sessions

Desired Outcomes

Students will:

- Exhibit enthusiasm about their Neighborhood Urban Ecology Center.
- Realize that their surroundings are rich in a variety of living and non-living things.
- Learn to use their senses to compare and contrast different things in their environment.



- Understand that any place is an ecosystem, with living and non-living things that interact with each other.
- Gain skills to classify correctly things in their environment as people, other living things, things that were alive but are now dead, and things that are not alive and were never alive. (i.e., living, dead, never living)
- Develop the rudiments of a comprehensive plan for the research, education, and stewardship missions of their Neighborhood Urban Ecology Center.
- Create ecosystem inventories for their school building, schoolyard, and neighborhood ecosystems

What You'll Need

Materials

- Poster board or large chart paper (to make posters)
- Drawing paper
- Crayons or markers
- Scissors
- Paper bag (large enough for students to reach in and pull out paper strips)
- Clipboards (with pencils attached)
- Colored construction paper
- Pencils
- Pens
- Tape or glue sticks
- Sandpaper (optional)

If you do a schoolyard cleanup project:

- Large trash bags
- Inexpensive or disposable gloves for students to wear



Worksheets:

In the Worksheets and Handouts Section:

- What Does a Scientist Do?
- Invitation to Create a Neighborhood Urban Ecology Center
- Is Our Schoolyard an Ecosystem?
- Is Our School an Ecosystem?
- Is Our Neighborhood an Ecosystem?
- Walking Map of the Neighborhood

Posters

The leader prepares posters by writing the title only across the top of a poster board or a sheet of chart paper before the lesson.

- Questions about Our School, Schoolyard and Neighborhood Ecosystems
- Our Rules for Outside
- Walking Map of Neighborhood

People Power

Recruit volunteers for the neighborhood investigation. (Lesson 5–Part 3)

New Vocabulary

Abiotic

Referring to something that was never alive (water, rocks);
the physical environment

Biotic

Referring to something that is alive, or used to be alive

Characteristic

Referring to a trait or quality of something that makes it different from something else

Classify

To group things together based on certain qualities or characteristics they share

Ecologist

A scientist who studies ecology

Ecology

The study of how living things interact with each other and their physical environment



Ecosystem

An area where living things interact with each other and their physical environment

Ground truthing

Checking information to be sure it is right by going to the site yourself; a way to be sure information is correct by seeing or hearing it with your own eyes and ears

Historian

A scientist who studies the history of a time period, a place, or a group of people

Map

A representation, usually on a flat surface, of an area (e.g., schoolyard, neighborhood, city, state, country, etc.)

Microbes

Very tiny organisms that can't be seen with just the human eye, such as bacterium, fungi, protozoa, or viruses

Neighborhood

A local area that includes the people living near one another, bigger than one house or building but smaller than a whole city or region

Observation

Something that one notes or records after watching and paying careful attention to details or behaviors

Observe

To watch or look carefully especially with attention to details or behavior

Organism

A living thing (plant, animal, or microbe)

Senses

Those things (sight, hearing, smell, taste, or touch) that help an organism perceive or understand external or internal stimuli (things outside or inside itself)

Soil scientist

A scientist who studies soil

Stewardship

Protection and management of something entrusted to one's care, e.g., taking care of a natural resource like a schoolyard garden or the Chesapeake Bay



Texture

The surface characteristics and appearance of something; the way that it feels to the touch

Zoologist

A scientist who studies the part of biology that looks at the classification and the characteristics of animals

Careers

Students will learn about different occupations in ecology-related fields.

- Ecologist
- Historian
- Zoologist
- Soil Scientist

Preparing for the Lessons

Leaders will:

- Review the lesson sequences and the directions for lesson preparation.
- Prepare areas in the classroom and hallways for hanging student work.
- Set up a system for keeping student work.
- Clean/remove “unsafe” objects from outdoor areas where students will investigate.
- Review the background information on ecosystems found in Leader Tools.
- Make Walking Map of the Neighborhood.
- Look at the final lesson (culminating activities). Decide whether you’re going to pick a culminating activity for the students, or have them choose one during or at the end of the module. If you’re going to pick the activity, do so now. Then make sure you tell the students ahead of time what they’ll be doing and give them a chance to work on their culminating project throughout the unit.

Module 1 • Lesson 1 • Laying the Groundwork: Pre-Assessments

Action Synopsis

Students express their knowledge of and attitudes about science through two mediums, writing and drawing. They choose adjectives to describe a scientist and write five things that scientists do. They draw a scientist doing “science.”

Time

1 session

Desired Outcomes

Students will:

- Articulate their preconceptions of what character attributes scientists have.
- Articulate their preconceptions of what doing science is.
- Articulate their preconceptions of who a scientist might be in terms of gender, ethnicity, and age.

What You’ll Need

For Each Student

- Worksheet: What Does a Scientist Do?
- Drawing paper (for Draw the Scientist)
- Crayons or markers
- Pen or pencil



Preparing for the Lesson

Leaders will:

- Copy worksheet: What Does a Scientist Do? (Make enough copies for each student.)
- Gather Materials.

New Vocabulary

None for this lesson



Assessments

- Responses on the worksheet: What Does a Scientist Do? (*Look for the breadth of activities included, with an eye toward scientific work done outdoors.*)
- Pictures from the Draw the Scientist activity (*Look at the scientist's attributes, particularly gender and ethnicity.*)

Lesson Sequence

1. Explain to the students that we want to begin by finding out what they think about science and ecology. We are going to start with a couple of opinion sheets so we can get their thoughts. Reassure the children that there are no right or wrong answers.
2. Please pass out the worksheet: What Does a Scientist Do? Have the students work on this individually.
3. When the students have finished, pass out drawing paper and crayons. Ask the students to write on their paper the word, "scientist." Ask them to put their name on their paper. Instruct them to draw a picture of a scientist at work doing "science." They can use words if they want to describe what they have drawn, but this isn't necessary. Children can also make more than one drawing if they want to and time allows. When they are finished, collect both the worksheets and the drawings.



NOTE: *In this assessment, we are most interested in seeing the characteristics of the scientist as drawn by the children (i.e., will the scientist be male, female, black, white, etc.). We also want to see how the children visualize "doing science." Please don't give the children any tips! Encourage them to express their own ideas.*

Module 1 • Lesson 2 • Creating a Neighborhood Urban Ecology Center

Action Synopsis

Students learn about the Baltimore Ecosystem Study (BES) and talk about the BES invitation to set up a Neighborhood Urban Ecology Center. They brainstorm about what they want to do at their Center and what they are interested in learning about, investigating, and sharing with others. They begin to study the ecosystems around them, and what is in their schoolyard, school building, and neighborhood ecosystems. Working in small groups, they think about what they already know and remember about the schoolyard. They list and classify what is in the schoolyard ecosystem. Then they go outside to ground truth their work.

Time

1–2 sessions

However, if you want to have children work on creating artwork, banners, and posters to decorate the Ecology Center, this lesson can take more time. Be flexible and let the children be creative!

Desired Outcomes

Students will:

- Demonstrate investment in creating a Neighborhood Urban Ecology Center as a vehicle to learn about and investigate their ecosystem.
- Produce a preliminary list of what is in the local ecosystem.
- Classify what they find in their schoolyard as people, other living things, things that were alive but are now dead, or things that are not alive and were never alive.
- Gain skills in ground truthing their initial thoughts.

What You'll Need

For Each Student

- Invitation to Create an Ecology Center from IES/BES

For Each Small Group

- Worksheet: Is Our Schoolyard an Ecosystem?
- Clipboards with pencil attached



For Whole Class

- Poster: Questions about Our School, Schoolyard, and Neighborhood Ecosystems
- Poster: Our Rules For Outside
- Extra plain poster sheets

Preparing for the Lesson

Leaders will:

- Copy Invitation Letter. (Make enough copies for each student.)
- Copy worksheet: Is Our Schoolyard an Ecosystem? (Make enough copies for each small group.)
- Get clipboards ready. (Enough for each small group)
- On poster paper: Write heading only: *Questions about Our School, Schoolyard, and Neighborhood Ecosystems.*
- On poster paper: Write heading only: *Our Rules For Outside.*
- Go out to the schoolyard area where you'll be taking the students and try to clear it of "unsafe" objects, such as broken glass, needles, bottles, etc.

New Vocabulary

Abiotic

Referring to something that was never alive (water, rocks); the physical environment

Biotic

Referring to something that is alive, or used to be alive

Characteristic

Referring to a trait or quality of something that makes it different from something else

Classify

To group things together based on certain qualities or characteristics they share

Ecologist

A scientist who studies ecology

Ecology

The study of how living things interact with each other and their physical environment

Ecosystem

An area where living things interact with each other and their physical environment



Ground truthing

Checking information to be sure it is right by going to the site yourself; a way to be sure information is correct by seeing or hearing it with your own eyes and ears.

Historian

A scientist who studies the history of a time period, a place, or group of people

Microbes

Very tiny organisms that can't be seen with just the human eye, such as bacterium, fungi, protozoa, or viruses

Organism

A living thing (plant, animal, or microbe)

Soil scientist

A scientist who studies soil

Zoologist

A scientist who studies the part of biology that looks at the classification and the characteristics of animals

Assessments

- Responses on Poster: Questions about Our School, Schoolyard, and Neighborhood Ecosystems
- Responses on worksheet: Is Our Schoolyard an Ecosystem? (*Look for what children thought they would find, what they missed, and how they classified things.*)
- Children's additions/deletions after they ground truth their own answers on worksheet: Is Our Schoolyard an Ecosystem?

Lesson Sequence

1. Explain to the students that their after-school program has been invited to create a Neighborhood Urban Ecology Center. The invitation comes from the Baltimore Ecosystem Study (BES), which is a big project being conducted by a group of scientists studying Baltimore's urban ecosystem.
2. Please pass out the Invitation Letter and read it aloud to the students or have students read it aloud. (Please change readers after each paragraph or section.) Talk about the invitation with the students and generate enthusiasm for this venture. Explain that studying urban ecosystems is a new and exciting area of ecology. To be successful, the BES scientists need the participation of students and groups of interested adults!



3. Use a spider brainstorm diagram to spur your students' thinking about what kinds of activities or projects they might do in their Ecology Center along each of three lines: 1) investigation (research), 2) education (communication), and 3) stewardship (application). Then explain that for most of the rest of Module 1, they'll be focusing on the research facet of their Ecology Center, starting with a brainstorming session of questions they find interesting.
4. Show the students the poster, Questions about Our School, Schoolyard, and Neighborhood Ecosystems. Remind students of the definition of *ecology* and *ecosystems*. Then ask the students: What ecology questions do you have about the schoolyard and/or the neighborhood? (Example: Where in the schoolyard will the most earthworms be? How many gardens are in the neighborhood?) Encourage the students to give free rein to their curiosity. Write the students' ideas on the poster as they make suggestions. Use extra sheets as necessary. You can also continue to add student questions and ideas for investigations throughout the year. We will continue to refer back to these ideas in upcoming lessons.
5. When the discussion has finished, introduce the students to the next activity, finding out more about the schoolyard by doing a schoolyard ecosystem assessment.
6. Organize the class into small groups of three to six students. Give each group a copy of the worksheet: Is Our Schoolyard an Ecosystem? Explain the classification terms. While the students will understand the "people" category, they may need help with the other classifications. Feel free to provide an example for O = other living things (birds, plants), D = things that were alive but are now dead (dead insects, plants), and N = things that are not alive and were never alive (playground slide or swing). If you'd like, you can introduce the terms *abiotic* and *biotic* and use them in your discussion. If you do, have the students add a column to the worksheet and indicate whether each item is abiotic or biotic. Either way, try to make this into a memory challenge game: How many different things of each sort can they remember in their schoolyard?
7. Give the small groups a chance to complete this sheet together. At this stage, this activity is done in the classroom, based on what students remember/think is in their schoolyard.



8. When everyone has finished, have the students put their sheets to the side. Explain to the children that they will be going outside in a few minutes to look at the schoolyard. Explain that there is one more thing to do: They need to think about rules to keep everyone safe while outside doing investigations. Show them the poster, Our Rules for Outside. Have the students brainstorm about appropriate rules. Feel free to add your own suggestions for rules that will keep everyone safe and able to focus on the outdoor activity. (Sample rules include staying where the leader can see you, keeping hands to yourself, etc.) When you feel the list is complete, move on.
9. Pass out clipboards with pencils attached to each small group and have the children put their completed worksheet on the clipboard. Tell the students that they will now be going outside to ground truth their list of the different things they remembered that are in their schoolyard. Tell them that *ground truthing* means actually going to a place and checking what is there with your own eyes and ears. Scientists do this to be sure that information they remember themselves or have received from another source is correct. Explain that they will first be looking for the things they listed and putting a checkmark (✓) next to things they find and an (X) next to things they do NOT find. Next, they will be looking for things they see that were NOT on their initial list. They will write down these things on the back of the worksheet.
10. Assign a recorder or have each group select one. Go outside and have each small group begin ground truthing what is in the schoolyard ecosystem. The recorder will be writing down the group's findings. You should circulate among the small groups, encouraging the children to add lots and lots of things to their sheet.



11. When everyone has finished (usually about 20–30 minutes) go back inside. In their small groups, have the children classify any new things on their list as: (P) people, (O) other living things, (D) things that were alive but are now dead, and (N) things that are not alive and were never alive.
12. After the students have completed their group work, introduce the concept of organisms. What is an organism? See if the students have any ideas. Then explain that an organism is any living thing. Have them think a moment about the activity they have just completed. Then ask for examples of organisms in their schoolyard ecosystem. They will likely come up with examples of plants and animals.
13. After the children have categorized their responses as either plants or animals, ask them if they know of any other kind of organism. The answer you want is microbes, such as bacteria, fungi, protozoa, or viruses. Please explain to the students that there are microbes alive in the vegetation and soil in the schoolyard that are so tiny that we can't see them with just the human eye. Comment that although we often forget microbes are there, they play many useful roles in our ecosystem. Explain that we won't be studying them now, but we should know that they are there.

Module 1 • Lesson 3: Investigating Our School Ecosystem

Action Synopsis

Students think about the ecosystems around them, specifically their school ecosystem. Working individually, they think about what they already know and remember about the school building. They list and classify what is in the school ecosystem.

Time

1 session

Desired Outcomes

Students will:

- Produce a preliminary list of what is in the school building ecosystem.
- Classify what they find in their school building as people, other living things, things that were alive but are now dead, or things that are not alive and were never alive.

What You'll Need

For Each Student

- Worksheet: Is Our School an Ecosystem?

Preparing for the Lesson

Leaders will:

- Copy worksheet: Is Our School an Ecosystem? (Make enough copies for each student.)



New Vocabulary

None for this lesson

Assessments

Responses on worksheet: Is Our School an Ecosystem? (*Look for what children thought they would find, what they missed, and how they classified things.*)



Lesson Sequence

1. Remind the children that we are continuing to create our Neighborhood Urban Ecology Center. Introduce the students to today's activity, finding out more about the school building by doing a school ecosystem assessment.
2. Pass out the worksheet: *Is Our School an Ecosystem?* Have the students work on this individually. Go over the classification system with the students. While the students will understand the "people" category, they may need help with the other classifications. Feel free to provide an example for O = other living things (birds, plants), D = things that were alive but are now dead (dead insects, plants), and N = things that are not alive and were never alive (playground slide or swing). You can choose to limit this activity to your classroom or expand it to include the hall, auditorium, and cafeteria, etc.*
3. Continue using biotic and abiotic if you used these terms in Lesson 2. If not, feel free to introduce *biotic* and *abiotic* to the students today. (See Overview: New Vocabulary) Have students add a column and indicate whether each item is biotic or abiotic. You can also go back and talk about what was biotic and abiotic in the schoolyard now if you'd like to.
4. Give the students a chance to complete their sheets individually (usually about 10–15 minutes). After students have finished, have a class discussion about what things they found and how they classified them.
- *5. Formal ground truthing is not necessary if the activity is limited to the classroom. However, if you include other areas of the school building, please have the students ground truth their lists of the different things they remembered that are in these parts of the building.

Module 1 • Lesson 4: Sensing the Schoolyard Ecosystem • Part 1: Seeing Colors

Action Synopsis

Working in pairs, students do a Schoolyard Colors Treasure Hunt, searching for anything in the schoolyard that matches two colors they select. They talk with the class about their search and findings.

Time

1 session

Desired Outcomes

Students will:

- Demonstrate use of their “sense of sight” to identify things that are different colors in the schoolyard ecosystem.

What You’ll Need

For Whole Class

- Colored construction paper (paint sample strips or “chips” will also work)
- Scissors
- Paper bag (large enough for students to reach into and retrieve a strip of construction paper)



Preparing for the Lesson

Leaders will:

- Go out to the schoolyard area where the students will do the Schoolyard Colors Treasure Hunt and try to clear it of any “unsafe” objects, such as broken glass, needles, bottles, etc.
- Cut strips of construction paper and place them in the paper bag. Be sure to cut at least one strip for each child.
- Choose as many colors as can be found in the schoolyard. It is okay if you wind up having several strips of the same color. Color choices may vary with the season.



New Vocabulary

Observe

To watch or look carefully with special attention to details or behavior

Senses

Those things (sight, hearing, smell, taste, or touch) that help an organism perceive or understand external or internal stimuli (things outside or inside itself)



vo-cab-u-lar-y

Assessments

Selections of things in the Schoolyard Colors Treasure Hunt (*Look for a match between students' color strips and things they selected.*)

Lesson Sequence

1. Remind the children that we are continuing to learn about our neighborhood ecosystem today by using our senses to observe our surroundings. Ask the children to explain what they think you mean by “*senses*.” Then ask them to name our five senses (touch, sight, smell, hearing, and taste). Introduce the students to today’s activity, a Schoolyard Colors Treasure Hunt. Remind the children about outdoor rules and about what things are NOT safe to touch.
2. Have the children work in pairs. Each pair will pick two strips of paper from a bag of color strips. (It is okay for several children to have the same color.) Explain to the children that they will go outside to the schoolyard where each pair will look for things that match the color strips they have chosen.
3. Go outside and have the children do their Schoolyard Colors Treasure Hunt. Make sure that objects selected are safe for the children to touch. When everyone is finished have the children bring their discoveries back inside. If the children can’t take some of the things they find out of the schoolyard, have them think about how to describe these items.
4. Back inside, have each pair bring their objects to the front of the room, present them, and explain what they are. Have them also describe things they couldn’t bring inside. Continue until each pair has a turn.
5. Discuss some of these questions with the whole group: 1) What colors were easy and what colors were hard to find, and why do you think this was so? 2) What colors might you find in different seasons? 3) What colors might you find in different places? You may also add a discussion about other characteristics (sound, smell) of the students’ objects.
6. Explain that we will be using our five senses in future activities as well.

Module 1 • Lesson 4: Sensing the Schoolyard Ecosystem • Part 2: Touching Textures

Action Synopsis

Working in pairs, students do a Schoolyard Textures Treasure Hunt, searching for at least two things in the schoolyard that are different textures. They talk with the class about their search and findings.

Time

1 session

Desired Outcomes

Students will:

- Demonstrate use of their “sense of touch” to identify things that are different textures in the schoolyard ecosystem.

What You’ll Need

For Each Team

- Clipboard with pencil attached
- 2 sheets of lined paper

For Whole Class

- Sandpaper (optional)

Preparing for the Lesson

Leaders will:

- Get clipboards ready with 2 sheets of lined paper attached. (Enough for each team)
- Go out to the schoolyard area where the students will do the Schoolyard Textures Treasure Hunt and try to clear it of any “unsafe” objects, such as broken glass, needles, bottles, etc.

New Vocabulary

Texture

The surface characteristics and appearance of something;
the way that it feels to the touch



Assessments

Selections of things in the Schoolyard Textures Treasure Hunt (*Look for whether students selected pairs of similar objects with very different textures. Look at what each pair brought back inside and what they wrote down on their paper.*)

Lesson Sequence

1. Introduce today's activity, a Schoolyard Textures Treasure Hunt, by asking the children what *texture* means. Once you have clarified the definition, show the children an example of two of the same kinds of things that have different textures. An example found easily in a classroom might be two desks, one with a smooth surface and the other with a rough surface. For a more dramatic example, compare a piece of sandpaper with a piece of regular drawing or notebook paper, having the children feel each with their eyes closed. Have them look carefully at the pairs of objects and try to explain what, precisely, is causing the differences in texture, and how the texture of these objects might affect other things around the object.
2. The children will be working in pairs. Pass out a clipboard with a pencil attached and two lined sheets of paper to each pair of students. The class will go outside in the schoolyard where each team will find as many examples as they can of pairs of similar objects with very different textures. They should write down the things they find and describe the textures. Then have the children pick the pair of things they are most excited to share and bring them back inside. (Examples might be a rough and a smooth rock or a pointy and a blunt leaf). Make sure that objects selected are safe for children to touch. Then encourage the children to close their eyes and feel their objects. When everyone is finished, return to the classroom. It is fine if multiple pairs find the same things.
3. Back inside have each pair bring their objects to the front of the room and describe the differences between their textures. Ask the students to explain as best they can what causes the different textures. Then ask them to think about what effects these textures have in the environment. Continue until all students have presented.
4. After the students finish their presentations, have the whole class consider whether there is anything they'd like to add to their two lists — What's in Our Schoolyard Ecosystem and Questions about Our School, Schoolyard, and Neighborhood Ecosystems — based on things they discovered in their Schoolyard Colors and Textures Treasure Hunts.
5. Explain that we will be using our five senses in future activities as well.

Module 1 • Lesson 5 • Our Urban Neighborhood Ecosystem

Part 1: My Neighborhood Looks Like This!

Action Synopsis

Students draw pictures of their neighborhoods and describe the drawings to their classmates in as much detail as possible.

Time

1 session

Desired Outcomes

Students will:

- Express their feelings about their home neighborhood through a drawing and presentation.
- Produce a preliminary drawing of what is in their neighborhood ecosystem.

What You'll Need

For Each Student

- Drawing paper
- Crayons and markers

Preparing for the Lesson

Leaders will:

- Make sure you have drawing paper, crayons, and markers.



New Vocabulary

None for this lesson

Assessments

Drawings and description of neighborhood (*Look for the neighborhood attributes that are included in the children's drawings.*)



Lesson Sequence

1. Remind the children that we are working on our Neighborhood Urban Ecology Center. We are expanding now beyond our school building and schoolyard ecosystems. Explain that in order to be a Neighborhood Urban Ecology Center, we need to learn more about what makes up a neighborhood and, specifically, about our own neighborhoods. Introduce the students to today's activity, finding out more about the neighborhoods where each child lives.
2. Pass out the drawing paper and crayons. Ask the students to draw a picture of **their** neighborhood, the neighborhood where they live. (If a student lives in more than one place, just have her or him choose one place for this activity.) Challenge them to draw their neighborhood in a way that shows its distinctiveness — so they could use their drawing to help them tell another child what their neighborhood looks like. The children may ask questions like, What is a neighborhood? Do I include people? Animals? You can remind them of what we mean by *ecology* and *ecosystem*, but try not to provide any more details. Explain that you want to see what **they think** should be included in a picture of their neighborhood. What they include is up to each of them.
3. When the children are finished with their pictures, have them take turns standing up front and sharing their picture with the class. Ask them to describe what they have included in their picture.

Module 1 • Lesson 5 • Our Urban Neighborhood Ecosystem Part 2: Our School Neighborhood's Ecosystem

Action Synopsis

Students think about the ecosystems around them, specifically their school neighborhood's ecosystem. Working individually, they think about what they already know and remember about the school neighborhood's ecosystem. They list and classify what is in the school neighborhood's ecosystem.

Time

1 session

Desired Outcomes

Students will:

- Produce a preliminary list of what is in their school neighborhood ecosystem.
- Classify what they find in their school neighborhood as people, other living things, things that were alive but are now dead, or things that are not alive and were never alive.

What You'll Need

For Each Student

- Worksheet: Is Our Neighborhood an Ecosystem?

Preparing for the Lesson

Leaders will:

- Copy worksheet: Is Our Neighborhood an Ecosystem?
(Make enough copies for each student.)



New Vocabulary

Neighborhood

A local area that includes the people living near one another, bigger than one house or building but smaller than a whole city or region



Assessments

Responses on worksheet: Is Our Neighborhood an Ecosystem? (*Look for what children thought they would find, what they missed, and how they classified things*) This assessment continues in Lesson 5 – Part 3.

Lesson Sequence

1. Hand out the worksheet: Is Our Neighborhood an Ecosystem? Review the classification system with the students: P = people, O = other living things (birds, plants), D = things that were alive but are now dead (dead insects, plants), and N = things that are not alive and were never alive (playground slide or swing). Please clarify that we are now changing our focus: **We are now talking about the neighborhood where the after-school program is located.** This may or may not be every child's home neighborhood depending on where each child lives. Ideally, it will be the neighborhood most children think of as their own. Once again, you can frame this activity as a Memory Game — how many different kinds of things can they remember in the neighborhood around the school.
2. Give students a chance to complete this sheet individually. After everyone has finished, begin a discussion about just what makes a neighborhood a neighborhood. Get the children's initial ideas and then add the New Vocabulary definition of a neighborhood. Some concepts to touch on that could help define a neighborhood are: a school zone; a geographic boundary like a big street or a park; a legal or city definition; or a common tie between people, which could be a church they belong to, a common ethnicity, etc. Share your own thoughts with the children.
3. Let the children know that we will be going on a Neighborhood Walk to ground truth their list of the different things they remembered that are in the school neighborhood's ecosystem.

Module 1 • Lesson 5 • Our Urban Neighborhood Ecosystem Part 3: Exploring Our School Neighborhood's Ecosystem with a Map

Action Synopsis

Working in small groups, students ground truth their previous work by listing and classifying what is in their school neighborhood's ecosystem. They explore the school neighborhood using a simple map for orientation.

Time

1 session

Desired Outcomes

Students will:

- Gain skills in ground truthing their initial thoughts.
- Demonstrate ability to use a simple map.

What You'll Need

For Each Student

- Worksheet: Is Our Neighborhood an Ecosystem? (Completed)
- Walking Map of Neighborhood (See Preparing for the Lesson)

For Each Small Group

- 2 Clipboards with pencils; one with 2 sheets of lined paper and one with a Walking Map of Neighborhood

For Whole Class

- Poster: Walking Map of Neighborhood (See Preparing for the Lesson)



People Power _____

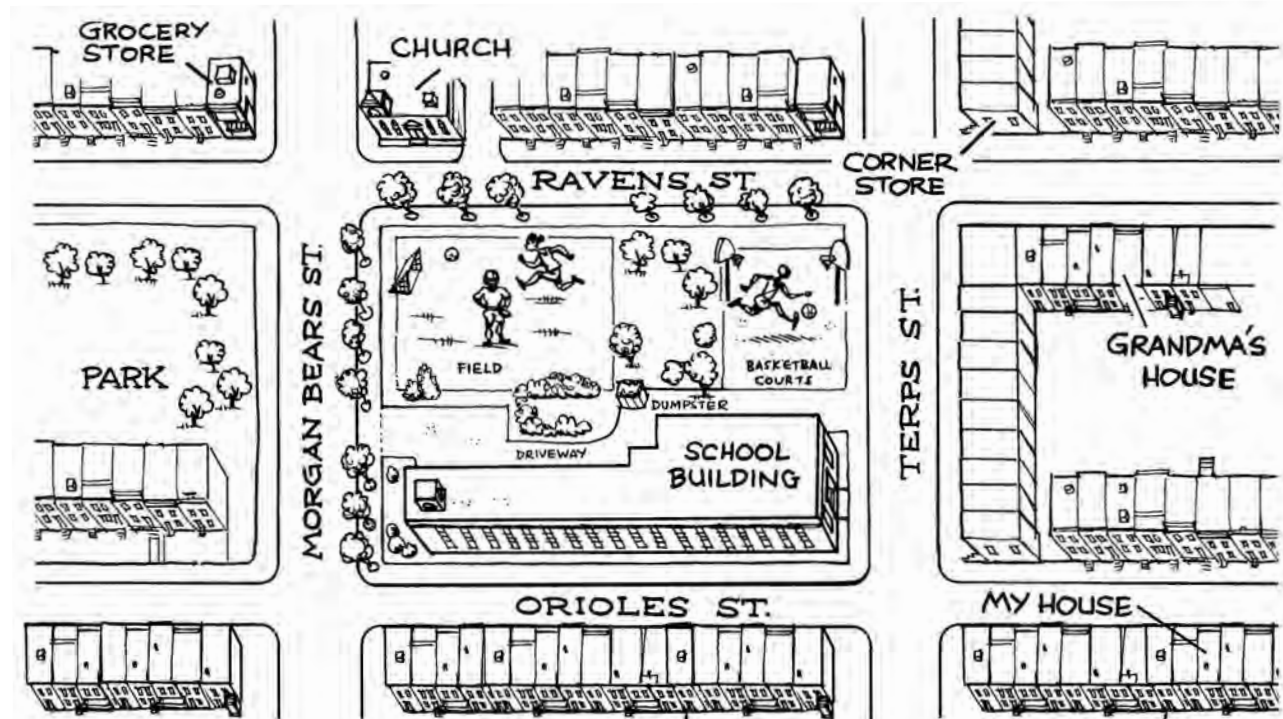
Recruit adult volunteers to accompany the class for neighborhood ground truthing. The number of volunteers will depend on the number of children in your class, the children's behavior, and specifics about your school's neighborhood (e.g., traffic, sidewalks, and crime). If possible, have enough adults to keep group size to 3 – 5 children.



Preparing for the Lesson _____

Leaders will:

- Schedule your volunteers.
- Orient volunteers to the lesson and their role.
- Go out in the neighborhood and decide what area you want to call “the school neighborhood” for this activity. Try to choose a 1–3 block area with different features, such as a park, carryout, corner grocery, backyard garden, etc. Make a Walking Map of the Neighborhood that the children will use, keeping the school in the middle and labeling the surrounding streets. (See sample map below.) Keep the map simple for this exercise. You may want to include 1–2 landmarks on your map to help the students get oriented.



- Copy the Walking Map of Neighborhood (Enough copies for each student).
- Get clipboards ready. (2 for each small group)
- Make Poster: Walking Map of Neighborhood (This will be a larger hand-drawn version of the Walking Map of the Neighborhood that you've made.)

New Vocabulary

Map

A representation, usually on a flat surface, of an area, e.g., neighborhood, city, state, country, etc.



Assessments

- Responses on worksheet: Is Our Neighborhood an Ecosystem? (*Look for what children thought they would find, what they missed, and how they classified things.*) This assessment began in Lesson 5 – Part 2.
- Children's additions/deletions after they ground truth their own answers on worksheet: Is Our Neighborhood an Ecosystem?
- Student behavior during activity (*Look for good behavior, cooperation, following leader's directions, etc.*)

Lesson Sequence

1. Have the children take out their completed worksheet: Is Our Neighborhood an Ecosystem? Ask them to name quickly some of the things they previously listed. Have the children take their worksheets with them when they go on the neighborhood walk. Remind them to be careful not to lose their worksheets!
2. Remind the children of the Rules for Going Outside and add any special rules for this particular activity, as the class will be leaving school grounds. Introduce volunteer chaperones and divide the class into the number of small groups that chaperones can safely supervise.
3. Pass out a clipboard with a pencil attached and two lined sheets of paper to each small group of students. Give a clipboard, pencil, and Walking Map of the Neighborhood to each group chaperone. Explain to the students that they will be going outside to ground truth their list of the different things they remembered that are in the neighborhood. Remind them that *ground truthing* means actually going to a place and checking what is there with your own eyes and ears. Scientists do this to be sure that information they remember themselves or have received from another source is correct.



4. Each group should select a recorder. When the children get outside, each small group will begin ground truthing what is in the neighborhood. They will first be looking to be sure that the things they thought were in the neighborhood are there. Second, they will be looking for things they see that they did NOT have on their initial list. **The recorder will write down all the things that are additions for any group member.**
5. The chaperone will work with each group to fill in details on the map, such as houses, vacant lots, parks, etc., as the group follows the route.
6. When the walk is completed, go inside. (The walk can take anywhere from 20 minutes to an hour or more.) Tell the students to put a checkmark (✓) next to things they found and an (X) next to anything they had on their initial list but did not find. If the children have anything to add to their worksheet, they should write it on the back. Please remind them to classify any new things as: (P) people, (O) other living things, (D) things that were alive but are now dead, and (N) things that are not alive and were never alive.
7. Draw the children's attention back to the poster: Walking Map of Neighborhood. Using the maps their group chaperone filled in, have the children suggest things to add to the poster.
8. Have each child add these things to their own copy of the Walking Map of Neighborhood.
9. Talk with the children about whether they now want to add anything to their poster: Questions about Our School, Schoolyard and Neighborhood Ecosystems.

Module 1 • Lesson 6 • Culminating Activities

Brief Overview

This is an opportunity for you and your students to identify one or more culminating projects. After you've completed your project, please be sure that you have collected all student work for the Module. Here are a few ideas to consider. Let your imagination run free! Have fun!



- **Submit a Neighborhood Urban Ecology Center Plan**

Take what the students came up with in their lists and then have them plan and produce a report to send to Dr. Pickett from the Baltimore Ecosystem Study. In your report, tell Dr. Pickett about:

1. Your school, after-school program, and details about the children.
2. Your ecosystem assessments of school building, schoolyard, and neighborhood — what's in them (biotic organisms, abiotic things, etc.) and what is unique or special about them.
3. Your research agenda (your questions from your Neighborhood Urban Ecology Center poster: Questions about Our School, Schoolyard and Neighborhood Ecosystems)
4. Your preliminary ideas for your Neighborhood Urban Ecology Center activities in
 - a. research
 - b. education
 - c. stewardship

- **Do a Stewardship Project**

Think about something that you've observed in your ecosystem assessments that you would like to help improve. Here are a few ideas to get you started:

1. Organize a schoolyard cleanup
2. Participate in a neighborhood cleanup
3. Plant a street tree and take care of it



• Host an Educational and Fun Open House

Plan an Open House for your family members! You may also want to plan one for students and teachers at your school who aren't part of the after-school program. Here are a few ideas to get you started:

1. Set up stations, one for each of the investigations you did (assessing the schoolyard, school building, neighborhood, etc., and share your work).
2. Have a bag with some “safe” things from the schoolyard that have different textures. Let your guests close their eyes, pull an item out, and describe the texture.
3. Do brief presentations highlighting what your plans are for your Neighborhood Urban Ecology Center.
4. Perform skits and raps about what you have discovered about your ecosystem!

Module 1 • Lesson 1 • Worksheet: What Does a Scientist Do?

Your Name: _____

Please list 5 things that scientists do:

1) _____

2) _____

3) _____

4) _____

5) _____

Please list 5 adjectives that describe a scientist:

1) _____

2) _____

3) _____

4) _____

5) _____

Module 1 • Lesson 2 • Invitation to Create a Neighborhood Urban Ecology Center

Institute of Ecosystem Studies

Dear Friends:

We are asking you to create something very special, a Neighborhood Urban Ecology Center at your after-school program site.

Your Neighborhood Urban Ecology Center will be a unique place where children, teachers, scientists, families and neighbors can work together to understand your school-yard and neighborhood. While you are learning, investigating and sharing, you also will be making your neighborhood a better place to live in and visit.

Your Neighborhood Urban Ecology Center will have three missions: 1) investigating local ecosystems, 2) teaching others about your ecosystems, and 3) taking care of and improving your ecosystem. Your activities may include:

- learning all about the environment around you
- carrying out investigations over weeks, months, and sometimes years
- collecting, saving, and sharing information and materials about the environment teaching others
- caring for your environment and doing special projects at your program site
- sharing what you learn with scientists and neighbors

Your Neighborhood Urban Ecology Center is an important part of the Baltimore Ecosystem Study (known as BES for short). BES is a project aimed at understanding the entire Baltimore ecosystem and how it works. We are looking at every part of the environment. This includes the parks, streams and flowers, and also includes things that people have built like roads, schools, and apartments. You are joining a team of many different kinds of scientists: A few examples are ecologists, historians, zoologists, and soil scientists. (If you are not familiar with these terms now, you will be as you continue your studies.) We hope that working to create a Neighborhood Urban Ecology Center will help you and other children in Baltimore grow to become leaders in your community.

As you develop your Neighborhood Urban Ecology Center, you will be joining the larger community of children and adults in Baltimore who want to make the City a better place.



We're really excited about your Neighborhood Urban Ecology Center and hope you are too. We can't wait to start hearing from you about your plans and accomplishments. We also look forward to helping you in any way we can. Thanks and good luck!

Sincerely,

Steward T.A. Pickett, Ph.D.
BES Project Director

Module 1 • Lesson 3 • Worksheet: Is Our School An Ecosystem?

Is Our *School* An Ecosystem?

Your Name: _____

First, list everything that you can think of in your **SCHOOL BUILDING**. Then in the right-hand column use this code to answer: What is it?

P = People, O = Other Living Things, D = Things That Were Alive but Are Now Dead, N = Things That Are Not Alive and Were Never Alive

What things are in our school building?	What is it?

Turn over if you need more room!

