Gone Green: Ecology

Grade Level: 3rd Grade
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Length of Unit: Eight lessons (45 minutes each)

I. ABSTRACT
In this science unit, students explore ecology through a variety of activities. They learn the importance of the balance of nature, the food chain, and the potential threat humans pose to the environment. They also learn how they can help protect the environment. The students also participate in a variety of writing exercises, adapted from the Step Up to Writing program.

II. OVERVIEW
A. Concept Objectives (adapted from Colorado State Standards for Reading/Writing and Science)
   1. Students will understand how living things interact with each other and their environment.
   2. Students will understand how to respond to literature in a variety of ways.
   3. Students will understand how to write for a variety of purposes and audiences.
B. Content from the Core Knowledge Sequence (page 83)
   1. Basic needs of all living creatures
   2. Interdependence of organisms and their environment
   3. Food chain
   4. Concept of “balance of nature”
   5. The effect of man-made threats to the environment
   6. Recycling and conservation
C. Skill Objectives
   1. Students will generate questions regarding ecology.
   2. Students will identify environments versus organisms.
   3. Students will list the five basic needs for all living things.
   4. Students will draw pictures depicting a human and an animal in their respective environments.
   5. Students will be able to describe the role of interdependence in an environment.
   6. Students will be able to identify producers, consumers, and decomposers.
   7. Students will be able to create an example of a 4-step food chain.
   8. Students will write a newspaper article describing what happens when the balance of nature is interrupted in an environment.
   9. Students will discuss the possible dangers of man-made threats to the environment such as water pollution and pesticides.
   10. Students will identify ways they can help reduce pollution.
   11. Students will identify the various parts of a friendly letter.
   12. Students will write a persuasive letter.

III. BACKGROUND KNOWLEDGE
A. For Teachers
   2. What are Food Chains and Webs? by B. Kalman and J. Langille
   3. Step Up to Writing (or Read-Write Connection) by Maureen Auman
B. For Students
   1. Students should be familiar with first grade Core Knowledge terminology: habitats and food chain.
2. Students should be familiar with basic Step-Up-to-Writing terminology: colors and what they represent, transitions, restating questions.

IV. RESOURCES
A. Step Up to Writing (or Read-Write Connection) by Maureen Auman (Lessons Two and Eight)
B. What Your Third Grader Needs to Know, by E.D. Hirsch, Jr. (Lesson One)
C. Cactus Hotel, by Brenda Z. Guiberson (Lesson Three)
D. What are Food Chains and Webs, by Bobbie Kalman
E. Birds of Killingworth, by Robert San Souci
F. River Ran Wild, by Lynne Cherry
G. A True Book: Recycling, by Rhonda Lucas Donald

V. LESSONS
Lesson One: Ecology 101
A. Daily Objectives
   1. Concept Objective(s)
      a. Students will understand how living things interact with each other and their environment.
   2. Lesson Content
      a. Ecology is the study of the behavior of living things in their natural surroundings.
      b. Review habitats from first grade Core Knowledge.
   3. Skill Objective(s)
      a. Students will generate questions regarding ecology.
      b. Students will identify environments versus organisms.

B. Materials
   1. K-W-L chart (Appendix A) reproduced on an overhead
   2. Book What Your Third Grader Needs to Know (see bibliography)
   3. Activity sheet (Appendix B) reproduced for each student
   4. Overhead projector
   5. Overhead marker

C. Key Vocabulary
   1. Ecology: the study of the behavior of living things in their natural surroundings
   2. Organisms: any living thing (people, plants, animals, etc.)
   3. Environment: the natural surrounding of a living thing

D. Procedures/Activities
   1. Activate prior knowledge using K-W-L chart overhead (Appendix A).
   2. K = What We Know. Ask students to list what they already know about habitats and animals (from first grade). List their suggestions on the overhead under the first column.
   3. W = What We Want to Know. Explain to students that they will be studying about how we affect animals and nature. Ask them what kinds of questions to they hope to have answered in this unit. Write several responses on the overhead.
   4. Save this overhead! You will use it at the end of each lesson to help summarize in the “L” (What You Have Learned) column. By the end of the unit you should have a bullet for each day.
   5. Tell students you will be using the chart each day to list the main idea of each lesson.
Lesson Two: What Do We need?

A. Daily Objectives
   1. Concept Objective(s)
      a. Students will understand how living things interact with each other and their environment
      b. Students will understand how to write for a variety of purposes and audiences.
   2. Lesson Content
      a. Five basic needs for all living things: food, water, shelter, space, air
   3. Skill Objective(s)
      a. Students will list the five basic needs for all living things.
      b. Students will draw pictures depicting a human and an animal in their respective environments.

B. Materials
   1. Chalkboard/chalk or overhead/marker
   2. K-W-L chart from first lesson
   3. Lined paper (two sheets per student)
   4. Large (9” x 11”) drawing paper (one piece per student)
   5. Crayons (one box of 24 per student)
   6. Pencil (one per student)

C. Key Vocabulary
   1. Survival: the act of remaining alive (staying alive)
   2. Wildlife: any organism that lives in the wild (includes animals, plants, fish, parasites, etc.)

D. Procedures/Activities
1. Ask students, “What does the word survival mean to you?” Discuss the student’s answers and then give them the definition from above (write it on the board). Make sure they understand the concept before moving on.

2. Make a two-column chart on the board (or overhead). Label the top of one column “People” and the other column “Wildlife.”

3. Brainstorm as a class the various things people need to survive (food, water, air, shelter, space). As the students make suggestions, be sure to help them understand the difference between a “need” and a “want” (i.e. They don’t need a Playstation to survive.). Prompt them as necessary.

4. Once the “People” list is complete, help the students combine things that are similar (i.e. “warmth” would relate back to shelter). Hopefully, the list should be able to get down to the five main things necessary for survival (food, water, air, shelter, space).

5. Explain the definition of wildlife (see Key Vocabulary). Make sure the students understand that the term is not limited to animals, but that plants and microscopic organisms are also wildlife.

6. Complete the “Wildlife” column of the chart. Remind the students that plants need a few things we may think people don’t need (sunlight and soil).

7. Again, reduce the list to as few things as possible by combining like suggestions, hopefully coming down to the same (or very similar) list as “People.”

8. Ask the students, “What five things have we come up with that all organisms need?” (food, water, air, shelter, space) Circle or underline these things on the board (or overhead).

9. Pass out two sheets of lined paper per student. Have them fold one sheet into quarters, length-wise (“hot dog” style). Have the students use a black crayon or their pencil to draw a line on each fold so that there are 4 boxes on each side.

10. Tell the students they are going to write a 6-sentence summary describing the five basic needs of every organism. Write the prompt on the board: “What five things do all organisms need to survive?”

11. In the left margin of the first box, have the students make a large green dot with their green crayon, about the size of a quarter. (Per Step-Up-to-Writing, this indicates a topic sentence.) In the box they should write a topic sentence that restates the prompt. An example might be, “There are five things every organism needs for survival.”

12. In the left margin of the second through sixth boxes (5-6 on the backside of the paper), have the students make a large yellow dot. (Per Step-Up-to-Writing, this indicates a fact.) Instruct the students to write one sentence in each box using a transition (first, second, next, last) in each box. Each sentence should tell a different thing necessary for survival. There is no definite order to this. An example might be, “First, every organism needs water to survive.”

13. Instruct the students to copy their sentences into the form of a paragraph onto the second sheet of lined paper. Be sure to remind them to indent their paragraph (we use a “thumbprint” to indent).

14. Pass out large (9” x 11”) drawing paper. Have the students fold the paper in half like a card. Again, have them draw a line down the fold so they have two equal halves.

15. Instruct the students to use one half of the paper to draw a picture of themselves in their environment, being sure to show all five of the things necessary for survival. Tell them to use the other half to draw an animal or plant in their own environment, again showing the five things necessary for survival.
16. Use K-W-L chart from the first lesson. Have students come up with (and agree upon) a statement for the “L” column that tells the main idea of what they learned today.

E. Assessment/Evaluation
1. Review the paragraphs and pictures. Correct paragraphs for punctuation, grammar and spelling mistakes. Use the rubric in Appendix C.

Lesson Three: What is Interdependence?

A. Daily Objectives
1. Concept Objective(s)
   a. Students will understand how living things interact with each other and their environment.
   b. Students will understand how to write for a variety of purposes and audiences.
   c. Students will understand how to respond to literature in a variety of ways.
2. Lesson Content
   a. Interdependence of organisms and their environment
3. Skill Objective(s)
   a. Students will be able to describe in writing the role of interdependence in an environment.

B. Materials
1. Picture of an animal in its habitat
2. Book Cactus Hotel (see bibliography)
3. Chalkboard/chalk
4. Large ball of yarn
5. Pencil (one per student)
6. Student science journal or a sheet of lined paper for each student
7. K-W-L chart from first lesson

C. Key Vocabulary
1. Interdependence: the relationship between wildlife and its environment

D. Procedures/Activities
1. Display picture of an animal in its habitat. Ask students what they see (an animal in their habitat/environment).
2. Ask the students to orally identify some of the things they see in the picture (possible answers: pond, plants, animal, etc.)
3. Ask students if the animals have all of their five basic needs in this environment (yes).
4. Ask the students to think about what might happen if something in their environment disappeared (like the pond) (animals may die or have to leave the environment).
5. Write the word “interdependence” on the board with its definition.
6. Explain that interdependence means that everything in an environment depends on everything else in that environment.
7. Introduce the book Cactus Hotel. Tell the students the book is about the interdependence between a cactus in the desert and all of the animals and other plants around it.
8. Read Cactus Hotel aloud to the class.
9. Use the following questions to discuss the story as a class (you may want to go back an re-read certain pages to help prompt for answers):
a. When the cactus first started growing, what did it depend on? (the paloverde tree for shade from the sun)
b. After fifty years, the cactus is ten feet tall and for the first time, what happens? (it sprouts yellow and white flowers)
c. Who starts depending on the cactus now? (insects, birds, and bats)
d. Next, the flowers dry up and someone comes to eat from the seeds. Who? (a woodpecker)
e. What does the woodpecker do next? (makes a hole in the cactus for his home)
f. What does the cactus rely on the woodpecker to do? (the woodpecker eats the insects that can bring disease to the cactus)
g. Who else comes to live in the “cactus hotel?” (an owl, a dove, insects, rats, and bats)
h. Finally, the cactus dries up and falls to the ground. Who moves into the “cactus hotel” now? (a millipede, a scorpion, ants, and termites)

10. Invite the students to participate in a game. First, have the students make a large circle. Select one student to stand in the middle. Have the rest of the students in the circle count off by fours.
11. Tell the class that the student in the middle is the cactus from the story.
12. Tell the class that all of the “ones” are the leaves of the paloverde tree from the story.
13. Tell the class that all of the “twos” are the raindrops sand the cactus needed to grow.
14. Tell the class that all of the “threes” are the birds, insects, bats, and other animals that made the cactus their home.
15. Tell the class that all of the “fours” are the millipedes, scorpions, and other animals that made the cactus their home when the cactus fell.
16. Now, take the ball of string. Hand the end of it to the “cactus” in the middle. Have the cactus toss the ball of string to a “one” in the circle. Have the “one,” while holding on to a piece of the string, toss the string to someone else. Repeat this until everyone is holding onto a piece of the string, with the final person handing the ball of string back to the “cactus.”
17. Tell the students they have created a web that interconnects every organism in the environment to each other.
18. Ask what they think might happen if someone disappeared from the web (the web might collapse).
19. Have one group (ones, twos, threes or fours) drop their piece of string. Ask the class what happened (the web collapsed). Tell the students that if even one part of the environment changes, it can affect everything and everyone.
20. Have the students return to their seats.
21. Write the following prompt on the board, “Why was the paloverde tree important to the cactus in the story? Who depended on the cactus in the story?” Tell the students they should have at least five ideas to answer the question and to remember to answer in complete sentences. Have the students respond in their science journals (or on a sheet of lined paper). Collect the responses when they are finished.
22. Use K-W-L chart from the first lesson. Have students come up with (and agree upon) a statement for the “L” column that tells the main idea of what they learned today.

E. Assessment/Evaluation
1. Review journal responses, checking for understanding of the concepts taught. Check and correct errors in spelling, grammar, and punctuation.

Lesson Four: The Food Chain

A. **Daily Objectives**
   1. Concept Objective(s)
      a. Students will understand how living things interact with each other and their environment.
   2. Lesson Content
      a. The food chain
   3. Skill Objective(s)
      a. Students will be able to identify producers, consumers, and decomposers.
      b. Students will be able to create an example of a 4-step food chain.

B. **Materials**
   1. A four to five link chain made of paper links (example for students)
   2. Book *What are Food Chains and Webs?* (see bibliography)
   3. Four sentence strips
   4. Marker
   5. Stapler
   6. Large (9” x 11”) drawing paper (one piece per student)
   7. Pencil (one per student)
   8. Scissors (one pair per student)
   9. Glue sticks (one per student)
   10. K-W-L chart from first lesson

C. **Key Vocabulary**
   1. Food chain: the pattern of eating and being eaten
   2. Food web: when food chains cross
   3. Ecosystem: a community of plants, animals and other organisms all located in the same environment
   4. Producers: organisms that make their own food (mostly plants)
   5. Primary consumers: animals that eat mostly plants (i.e. small fish, insects, squirrels, elephants, giraffes)
   6. Secondary consumers: animals who eat primary consumers (i.e. lions, hawks, snakes, and people)

D. **Procedures/Activities**
   1. Show the paper chain to the class. Ask them what it is (a chain). Ask them what we use chains for (securing/locking things, towing things, etc.)
   2. Tell the class that today they are going to learn about a different kind of chain - food chain.
   3. Introduce the book *What are Food Chains and Webs?* Tell the students the book is about food chains.
   4. Read *What are Food Chains and Webs?* pp. 4-5, 8, 12, 14-15, and 20-29.
   5. Review the vocabulary (outlined above) with the students to ensure their understanding of the concepts. Write the word on the board and ask the students to give you a possible definition of each word. Prompt them if necessary.
   6. Explain to the class that they are going to make their own food chains. Ask the class to give you an example of a producer (possible answer might be a flower). Write their answer on a sentence strip using a marker.
   7. Then, ask them to give you an example of a primary consumer (possible answer might be an ant). Again, write their answer on another sentence strip.
8. Ask them to give you an example of a secondary consumer (possible answer might be a bird). Write their answer on a third sentence strip.

9. Finally, ask the class for an example of a decomposer (possible answer might be an earthworm). Write the last answer on the last sentence strip.

10. Using a stapler and the sentence strips, make a paper chain to illustrate your food chain. Take the first strip and create a loop (with the writing on the outside) by stapling the ends together. Take the second sentence strip and loop it through the first, again stapling the ends of strip 2 together, and thereby forming two links of a chain. Link the third strip to the second and the fourth strip to the third, following the same procedure. When completed, you will have a food “chain.”

11. Pass out a sheet of drawing paper and a pair of scissors to each student. Have them fold the paper in half length-wise (“hot dog” style) once, and then again, so they have four, narrow boxes that are the length of the paper.

12. Instruct the students to cut out each strip on the fold. They should have four strips when they are finished. Have them write their name on one side of each strip.

13. Instruct the students to first think of a producer. It can be as specific as they want (i.e. the tomato plant in our garden). Have them write their producer on one of their strips of paper.

14. Instruct the students to think of a primary consumer (i.e. a mouse). Have them write their primary consumer on a second strip.

15. Instruct the students to think of a secondary consumer (i.e. an eagle). Have them write their secondary consumer on the third strip.

16. Last, instruct the students to think of a decomposer (i.e. mushrooms). Have them write their decomposer on the last strip.

17. If desired, the students can also draw small pictures of the animals on each strip.

18. Pass out the glue sticks.

19. Instruct the students in creating their chain (see above #10), having them use their glue stick instead of stapling them.

20. Collect the chains.

21. Use K-W-L chart from the first lesson. Have students come up with (and agree upon) a statement for the “L” column that tells the main idea of what they learned today.

E. Assessment/Evaluation

1. As students are working, walk around and check for understanding by observing their work and asking questions about their chain. Ask them to explain their chain (tell about the animals they chose) to check their understanding. Redirect and make suggestions as necessary.

Lesson Five: Balance of Nature

A. Daily Objectives

1. Concept Objective(s)
   a. Students will understand how living things interact with each other and their environment.
   b. Students will understand how to respond to literature in a variety of ways.
   c. Students will understand how to write for a variety of purposes and audiences.

2. Lesson Content
   a. The balance of nature

3. Skill Objective(s)
a. Students will write a newspaper article describing what happens when the balance of nature is interrupted in an environment.

B. Materials
1. Balance scale
2. Three small plastic bags of 25 beans each
3. Book *Birds of Killingworth* (see bibliography)
4. Chalkboard/chalk
5. Copies of Appendix D (one per student)
6. Pencil (one per student)
7. Crayons (one box of 24 per student)
8. K-W-L chart from first lesson

C. Key Vocabulary
1. Balance of nature: the need to have everything in an environment stay balanced so as not to disrupt the cycle of life
2. Imbalance: not balanced

D. Procedures/Activities
1. Show the class the balance scale. Ask them what we use it for (to find objects of equal weight or to find out if objects have the same weight).
2. Put one bag of beans on each side of the balance. Ask the kids if the scale is “balanced” (yes).
3. Ask: “What will happen if I put another object on one side of the balance?” (one side will go down and the other will go up)
4. Put the third bag of beans on one side of the balance. Tell the class: “Adding more beans on one side has created an “imbalance” on the scale. Imbalance means not balanced. One side is lower than the other. So having too much of something creates an imbalance.”
5. Ask: “What will happen if I remove two bags of beans?” (imbalance)
6. Remove two bags of beans from the balance. Say: “Having too little of something creates an imbalance, too.”
7. Say: “Today we are going to talk about the balance of nature. The balance of nature is just like our balance scale. When you have too much or too little of something, nature becomes imbalanced and the environment can become difficult to live in for wildlife.”
8. Introduce the book *Birds of Killingworth*. Tell the students the book is about a town who forced an imbalance of nature and what happened because of it.
9. Read *Birds of Killingworth* aloud to class.
10. Use the following questions to discuss the story as a class (you may want to go back an re-read certain pages to help prompt for answers):
   a. Why did Squire Case want to get rid of the birds? (because they were eating the town’s crops)
   b. What did Almira and Noah do to save the birds? (they rescued the baby birds and hid their nests in the schoolhouse)
   c. What happened because there were no birds? (insects infested everything and ate all of the crops)
   d. What happened at the end of the story? (Almira and Noah are able to release the birds to eat all of the insects)
11. Say: “The balance of nature in Killingworth was disturbed by killing all the birds. There were no consumers to eat the insects that were feeding on all of the plants. In the end, the only way to save the crops in the town was to let the birds free to feed on the insects and re-balance the ecosystem.”
12. Pass out copies of Appendix D.
13. Explain to the students that they are to write a summary of the story in the form of a newspaper article.
14. Pass out Appendix D.
15. Ask: “What do you think will go on the first, long line?” (headline/title)
16. Say: “The headline of a news article is always short and tried to explain the entire story in as few words as possible. Something like ‘Song Birds Save the Day!’ would be great. You may want to leave the headline until after you write your story.”
17. Say: “News articles always tell the who, what, where, when, why, and how of a story.” Write “Who:” on the board. “Who are the main characters of this story?” (Squire Case, Almira, Noah) Write the character names on the board after “who.”
18. Write “What:” on the board below “Who.” Ask: “What is the story about?” (People getting rid of birds from an environment.) Write this on the board after “what.”
20. Write “Why:” on the board. Ask: “Why do the people want to get rid on the birds?” (because they were eating the crops) Write this on the board after “why.”
21. Write “When:” on the board. Tell the class that for the purposes of this activity, we will say this happened last week. Write “last week” after “when.”
22. Write “How:” on the board. Ask: “How does this story end?” (Almira and Noah free the birds they had been raising.)
23. Tell the students: “Now that we have all of the facts, we can write our article. Our first sentence should tell who, when, where, and how. Who can give me a sentence that we can start our article with?” (possible answer: Last week, Almira and Noah let loose several cages full of birds they had been raising, right in the middle of Killingworth.) Write the sentence on the board.
24. Say: “After we write our first sentence, we need to write a sentence telling the why and what of the story. Who thinks they can come up with a sentence to do this?” (possible answer: Almira and Noah saved the birds last spring when Almira’s own father hired hunters to come and kill the parents of the still baby birds, who were eating from the town’s crops.)
25. Say: “Now we need to tell the rest of the story. We should tell about the town meeting and how Almira tried to stand up for the birds, but the townspeople disagreed. We should tell how Almira and Noah saved the birds and hid them in the schoolhouse. We should also explain what happened when there were no more birds. Your job now is to finish the article. When you finish, you may use the box in the upper right corner to draw a picture to go with your article.” You may want to let students work together in pairs for this.
26. Circulate the classroom as the students work to answer questions and help when needed.
27. Use K-W-L chart from the first lesson. Have students come up with (and agree upon) a statement for the “L” column that tells the main idea of what they learned today.

E. Assessment/Evaluation
1. Review the newspaper articles. Correct paragraphs for punctuation, grammar and spelling mistakes.
Lesson Six: Man Oh Man!

A. Daily Objectives
   1. Concept Objective(s)
      a. Students will understand how living things interact with each other and
         their environment.
      b. Students will understand how to respond to literature in a variety of
         ways.
   2. Lesson Content
      a. The effect of man-made threats and changes to the environment
   3. Skill Objective(s)
      a. Students will discuss the possible dangers of man-made threats to the
         environment such as water pollution and pesticides.

B. Materials
   1. Book River Ran Wild (see bibliography)
   2. Poker chips (20 per student is recommended, 2/3 of which should be white, the
      rest should be colored)
   3. Whistle or bell
   4. Chalkboard/chalk
   5. Plastic sandwich bags (one for each grasshopper)
   6. Large playing area such as a playground, field or gymnasium
   7. Pencil (one per student)
   8. Sheet of lined paper (one per student)
   9. K-W-L chart from first lesson

C. Key Vocabulary
   1. Pollution: harmful things (such as chemicals) that are deposited into the air,
      water, or land, which leads to unsafe conditions for living things
   2. Pesticide: a chemical used on plants to kill insects, can be harmful or deadly to
      animals

D. Procedures/Activities
   1. Prior to the activity, you should go to the designated playing area and distribute
      all of the poker chips around. Be sure to spread them out well, as they will be
      “food” in this activity.
   2. Begin lesson by asking the class to brainstorm ways that we can damage the
      environment. Possible answers might include littering, dumping garbage and
      other things into water supplies, driving a car instead of walking, etc. Write the
      class’ answers on the board.
   3. Tell the class that today they are going to learn about the affects of pollution and
      to the environment.
   4. Introduce the book River Ran Wild. Tell the class the book is a true story about a
      river and how people polluted it to the point that it nearly died.
   5. Read River Ran Wild straight through.
   6. Use the following questions to discuss the story as a class (you may want to go
      back an re-read certain pages to help prompt for answers):
      a. How did the Nashua people treat the river and forest? (nicely; they
         respected the river; they only took what they needed to survive)
      b. When the settlers came, how did they treat the river and forest? (they cut
         down the forests, killed more animals than they needed, and built
         sawmills on the river)
      c. When the paper mills were built, what happened to the river? (leftover
         pulp, dye and fiber was dumped into the river)
d. Eventually, chemicals and plastics were dumped into the river, too. What happened then? (the fish and wildlife who lived in and drank from the river became sick)

e. Oweana had a dream about Chief Weeawa and the river. What was the dream about? (the chief cried over the river and his tears cleaned it until the river was clean again)

f. Because of the dream, Oweana and his friend Marion went and spoke to the townspeople who lived along the river. What did they decide to do? (they signed petitions, spoke to government officials, protested and, ultimately, helped get new laws passed)

7. Tell the class: “Although the river did get cleaned up and is now safe again for wildlife, it took a very long time for this to happen.”

8. Tell the class: “This story talked about water pollution, but there are other kinds of pollution, too. Does anyone know of a different kind of pollution? What about other things we do that harm the environment?” Write their answers on the board. (possible answers: air pollution, littering, over-hunting certain animals, etc.)

9. Invite the class out to the area where they will be playing a game.

10. Explain to the class they will be playing a game called “Chain of Pollution.”

11. In a class of 26 children, assign two children to be “hawks.” Assign six children to be “shrews” and the remaining 18 children to be “grasshoppers.” (work with three times as many shrews than hawks and three times as many grasshoppers than shrews)

12. Explain the rules of the game completely before beginning:
   a. Grasshoppers will begin. Tell them they will have about 30 seconds to get as much “food” as they can find (show them a poker chip so they know what they’re looking for).
   b. After 30 seconds, the whistle will blow and the shrews will be allowed onto the playing field. The shrews are to chase and tag as many grasshoppers as they can, while the grasshoppers are still collecting food. When a grasshopper is tagged, the grasshopper needs to hand its food bag to the shrew that tagged him/her and sit out for the rest of the game. Shrews can collect as many bags as they want.
   c. After 30 seconds of the shrews being on the field, the whistle will blow again. Now the hawks will be allowed onto the playing field. The hawks should chase the shrews, while the shrews are still chasing the grasshoppers, which are still looking for food. When a hawk tags a shrew, the shrew hands all of its food to the hawk and sits out for the rest of the game. The hawks will have about 60 seconds to “hunt.”
   d. After 60 seconds, the whistle will blow again. All of the students should then come back and form a discussion circle on the floor/ground.

13. Give each grasshopper a plastic sandwich bag. Make sure everyone understands the rules and begin the game.

14. After the students are sitting in the circle, ask them to raise their hand if they are “dead,” having been consumed by someone else on the playing field.

15. Next, ask the “survivors” to dump their bags of “food” on the floor/ground in front of them. They should count the total number of white chips they have and then the total number of colored chips they have. Put them in to stacks in front of them.

16. Inform the students that there is something called a “pesticide” in the environment. Explain that a pesticide is a chemical that was sprayed on the
plants the grasshoppers were eating to keep bugs away. The farmer did this because if there is a lot of crop damage by the grasshoppers, he would have fewer crops to sell. In this activity, all of the multi-colored chips represent the pesticide.

17. Tell the class: “Any surviving grasshopper who has any colored chips in their pile is now dead because the pesticide killed them.”

18. Tell the class: “Any shrews whose chips are more than half colored are also now dead. They ate the grasshoppers who were already infected, and got the pesticide into their bloodstream.”

19. Tell the class: “The hawk who has the most colored chips are not dead yet, but because there is so much of the pesticide in its body, their eggs next hatching season will not survive. The other hawks have no visible signs of the pesticide yet.

20. Discuss the activity with the students using the following questions:
   a. How did the pesticide first enter the food chain? (farmer sprayed the crops)
   b. How was the pesticide passed on through the chain? (the grasshoppers ate the infected food, the shrews ate the infected grasshoppers and the hawks then ate the infected shrews)
   c. What might happen to the hawks if they continue to hunt in this environment and the farmer continues to spray? (they may become sick from eating other infected animals)

21. Use K-W-L chart from the first lesson. Have students come up with (and agree upon) a statement for the “L” column that tells the main idea of what they learned today.

E. **Assessment/Evaluation**
   1. Teacher observation during discussion and game.

**Lesson Seven: What Can We Do?**

A. **Daily Objectives**
   1. Concept Objective(s)
      a. Students will understand how living things interact with each other and their environment.
      b. Students will understand how to write for a variety of purposes and audiences.
   2. Lesson Content
      a. Recycling and conservation
   3. Skill Objective(s)
      a. Students will identify ways they can help reduce pollution.

B. **Materials**
   1. Chalkboard/chalk
   2. Book *A True Book: Recycling* (see bibliography)
   3. White copy-paper (two sheets per student)
   4. Scissors (one pair per student)
   5. Pencil (one per student)
   6. Crayons (one box of 24 per student)
   7. K-W-L chart from first lesson

C. **Key Vocabulary**
   1. Reuse: to use again
   2. Recycling: to reuse
   3. Reduce: to make less
4. Conservation: to protect from waste or destruction
5. Compost: a nutrient-rich part of soil made of the remains of living things

D. Procedures/Activities
1. Ask students to raise their hands if they recycle at home.
2. Ask class what the word recycle means to them. Write responses on chalkboard.
3. Put all vocabulary words (see above), with their definitions, on the board. Explain the meanings of each word as described above.
4. Introduce the book *A New True Book: Recycling*. Tell the class that the book is about recycling, and other things they can do to help the environment.
5. Read *A True Book: Recycling* all the way through.
6. Ask the class: “What are some things we can do here at school to help the environment?” (possible answers: recycle paper, cans, and plastic; reuse the backside of paper for scratch paper before recycling; convince the kitchen to make a compost pile; etc.) Write all of their suggestions on the board. Make sure to get quite a few up there, and add you own ideas if necessary. This list is important for the next step.
7. Pass out the white copy paper (two sheets per student).
8. Pass out scissors (one pair per student).
9. Instruct students to make a book with the copy paper. Have them fold both sheets in half length-wise (“hot dog” style). Fold in half width-wise (“hamburger” style). Fit one “book” into the middle of the other one to form an 8-page book.
10. Tell students they are going to make a book to share with children in other grades explaining several ways they can help the environment.
11. Instruct the students to think of a title for their book (i.e. *Recycling and You*). Have them write their title and their full name on the front of their book. They may add a picture to the front if they wish.
12. On each of the remaining pages, the students should write one idea at the bottom of the page, leaving space to draw a picture above it. Urge them to write their sentences in pencil so they can go back and make changes, if necessary.
13. When they finish, they can trade with a friend to help look for mistakes in spelling and punctuation.
14. Have them hand in their books for review. Once they have made the necessary changes to them, you may want to invite a class of kindergarten or first graders into your room so your children can share their books with someone younger.
15. Use K-W-L chart from the first lesson. Have students come up with (and agree upon) a statement for the “L” column that tells the main idea of what they learned today.

E. Assessment/Evaluation
1. Review collected books. Do not grade, but check and make corrections in spelling, grammar, and punctuation so the students can fix their books before sharing them with someone else.

Lesson Eight: Tell a Friend!

A. Daily Objectives
1. Concept Objective(s)
   a. Students will understand how living things interact with each other and their environment.
   b. Students will understand how to write for a variety of purposes and audiences.
2. Lesson Content
a. Recycling and conservation

3. Skill Objective(s)
   a. Students will identify the various parts of a friendly letter.
   b. Students will write a persuasive letter to a friend telling them what they can do to help protect the environment.

B. Materials
1. Appendix E (copy made into overhead)
2. Appendix E (one copy per student)
3. Appendix F (copy made into overhead)
4. Appendix F (one copy per student)
5. Pencil (one per student)
6. Overhead projector
7. Overhead marker
8. Appendix G (one copy per student)

C. Key Vocabulary
1. Persuade: to try to get someone to see things your way
2. Greeting: the part of a letter where you greet the reader (Dear Joe,)
3. Body: the part of a letter that gives the information you want the reader to know
4. Closing: the part of the letter that ends the letter (Your friend,) and includes your signature

D. Procedures/Activities
1. Review K-W-L chart with students. Briefly discuss each point in the “learned” column to reacquaint students with all topics discussed.
2. Ask students: “What does it mean to persuade someone?” Take the student ideas to try to arrive at a definition. If necessary, prompt the student using the language from the definition above.
3. Ask students to give you examples of a time they tried to persuade someone (possible answers: tried to get mom to buy them candy at the grocery store, tried to convince you to give them an extra recess, etc.)
4. Tell students: “Today we are going to write a letter to a friend. We’re going to try to persuade them to start caring for the environment by giving them examples of what they can do to help.”
5. Display overhead of Appendix E. Pass out copies of Appendix E.
6. Tell students: “This is what a letter looks like. There are several parts to a letter. This kind of letter is called a ‘friendly’ letter because we use language that is friendly and not formal.”
2. Describe the parts of the letter:
   a. Say: “First, we begin with the date. The date goes on the top line. You can spell out the month, if you wish, or you can just use numbers with dashes. Go ahead and write the date.” Demonstrate writing the date on the appropriate line on the overhead.
   b. Say: “Next is the greeting. This is where you would say ‘Dear So-and-So.’ Make sure to use a comma at the end of their name. Go ahead and write your greeting to the friend you are writing to.” Demonstrate writing the greeting.
   c. Say: “Now we write the body of the letter. The body is the information you want the reader to know. In this case, we will be telling our friend about the environment. For right now, I’m going to leave it blank.”
   d. Say: “Last is the closing. You can close your friendly letter any way you wish. You can use ‘Your friend,’ or ‘Love,’ or ‘Your friend,’ or anything else you can think of on the first line of the closing. The second
line of the closing is for your signature. This is where you would sign your name. I’m going to close my letter with ‘Your friend,’ and then sign my name. Go ahead and write your closing.” Demonstrate completing the closing.

7. Say: “Now I need to plan the rest of my letter. What did I say I was going to talk about?” (the environment and how to take care of it)

8. Say: “I’m going to use a separate piece of paper for that.” Display Appendix G.

9. Pass out Appendix G.

10. Say: “When we write, we always plan before we begin. Sometimes we use folded paper and boxes to plan, but this time we’re going to use stars, dashes, and dots to plan.”

11. Say: “The star is the topic of my paragraph, so it is the green of my letter. I will write ‘protecting the environment’ on the line next to the star as my topic. You should write the same thing on your paper after the star.”

12. Say: “I’m supposed to tell my friend how we can protect the environment. What is one way we talked about yesterday that we can help?” (possible answers: recycle paper, make a compost pile, donating old clothes) Write the answers the students give you on the board so they have something to reference later.

13. Say: “After my first dash, I will write ‘recycle paper.’ You should pick something from our list to write down after your first dash. The dashes are the yellows, or facts, of our letter.” Write “recycle paper” after the first dash.

14. Say: “Leave the dots for later. We’ll come back to those. What’s something else we can do?”

15. Say: “After my second dash, I will write ‘donate old clothes.’ You should pick a second yellow for your letter and write it after the second dash.” Write “donate old clothes” after the second dash.

16. Say: “The last dash is our last yellow. I’m going to use ‘make a compost pile’ as my last yellow. Pick something for your last yellow and write it after the last dash.” Write “make compost pile” after last dash.

17. Say: “The dots are, of course, the reds, or details, of my letter. My first dot should have something to do with recycling paper. What are some reasons we should recycle paper?” Take one student suggestion and use it as your first dot.

18. Say: “My second dot should have something to do with donating old clothes. Why should people donate old clothes?” Take one student suggestion and use it as your second dot.

19. Say: “The last dot should have something to do with making a compost pile. Why should people make compost piles?” Take one student suggestion and use it as your last dot.

20. Say: “Now I need to write my letter. We’ll go back to the first form now.” Display overhead of Appendix E.

21. Say: “I need to turn my star, dashes, and dots into sentences, which will be the body of my letter.”

22. Ask: “How can I take my topic sentence and turn it into a sentence?” (possible answer: There are three things you can do to help the environment.) Write a student suggested sentence as the first sentence in your body.

23. Continue to take student suggested sentences for each dash and dot until you have a complete paragraph. Don’t forget to ask for an ending green that restates the topic sentence. A possible ending green might be: “As you can see, there are many reasons why you should help protect the environment.”

24. Have students write their own letters using the notes they have made (stars, dashes and dots). Keep the example posted on the overhead. Circulate to answer
questions and check for understanding. Have them hand in their letters when they are finished.

E. Assessment/Evaluation
   1. Review the letters. Correct them for punctuation, grammar and spelling mistakes. Use rubric (Appendix G) to assess final grade.

VI. CULMINATING ACTIVITY
   A. Ecology Test (Appendix H)
   B. Take a trip to a national park or wildlife preserve; organize a schoolyard trash pickup.

VII. HANDOUTS/WORKSHEETS
   A. Appendix A: K-W-L chart
   B. Appendix B: Lesson One Activity Sheet
   C. Appendix C: Paragraph Rubric
   D. Appendix D: Lesson Five Newspaper Activity Sheet
   E. Appendix E: Friendly Letter Format
   F. Appendix F: Stars, Dashes, and Dots
   G. Appendix G: Friendly Letter Rubric
   H. Appendix H: Ecology Test

VIII. BIBLIOGRAPHY
Appendix B: Lesson One Activity Sheet

Environments and Organisms

Ecology is the study of organisms in their natural environments. An organism is any living thing, including people, animals, plants, and fungi. An environment is the natural habitat or surrounding of any living thing. Your environment may be your bedroom, while the environment of a shark is the ocean.

Directions: Identify each picture below as either an organism or environment by writing the correct word on the line below the picture.

1. 

2. 

3. 

4. 

5. 

6. 

7. 

8. 

9. 

## Appendix C: Paragraph Rubric

### Student Name: ________________________________

### Directions: Select one column for each row. Multiply points as shown to arrive at a total grade.

<table>
<thead>
<tr>
<th></th>
<th>Not Proficient 1 point</th>
<th>Developing 2 points</th>
<th>Emergent 3 points</th>
<th>Proficient 4 points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has topic sentence that restates prompt</td>
<td>No topic sentence.</td>
<td>Has topic sentence but it does not restate prompt.</td>
<td>Has topic sentence that restates prompt.</td>
<td></td>
</tr>
<tr>
<td>______ x 5 = ______ pts.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Content relates to concepts taught</td>
<td>Very little</td>
<td>Somewhat</td>
<td>Adequately</td>
<td>Completely</td>
</tr>
<tr>
<td>______ x 5 = ______ pts.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>States five facts</td>
<td>One fact</td>
<td>Two facts</td>
<td>Three-four facts</td>
<td>Five facts</td>
</tr>
<tr>
<td>______ x 5 = ______ pts.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indented paragraph</td>
<td>No</td>
<td></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>______ x 5 = ______ pts.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanics (spelling, punctuation, capitalization, grammar)</td>
<td>Errors make the letter difficult to understand.</td>
<td>Frequent errors, but still readable. May take away from meaning.</td>
<td>Few errors, appropriate for grade level. Does not take away from meaning.</td>
<td>Few to no errors.</td>
</tr>
<tr>
<td>______ x 5 = ______ pts.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Grade Points</td>
<td>Comments:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>______/100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade: ______</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Adapted from *Assessment: Time-Saving Procedures for Busy Teachers* (see bibliography)
Appendix E: Friendly Letter Format

Greeting

Date

Body

Closing
Appendix F: Stars, Dashes, and Dots

<table>
<thead>
<tr>
<th>★</th>
</tr>
</thead>
<tbody>
<tr>
<td>_ _ _ _ _ _ _ _</td>
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<td>• • • • • • • •</td>
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<td>_ _ _ _ _ _ _ _</td>
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<td>_ _ _ _ _ _ _ _</td>
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<td>• • • • • • • •</td>
</tr>
</tbody>
</table>

Adapted from Step Up to Writing (see bibliography).
Appendix G: Friendly Letter Rubric

Student Name: __________________________________

Directions: Select one column for each row. Multiply points as shown to arrive at a total grade.

<table>
<thead>
<tr>
<th></th>
<th>Not Proficient 1 point</th>
<th>Developing 2 points</th>
<th>Emergent 3 points</th>
<th>Proficient 4 points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Included all parts of letter</td>
<td>Only one part</td>
<td>Two parts</td>
<td>Three parts</td>
<td>All parts</td>
</tr>
<tr>
<td>______ x 5</td>
<td>= ______ pts.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Content relates to concepts taught</td>
<td>Very little</td>
<td>Somewhat</td>
<td>Adequately</td>
<td>Completely</td>
</tr>
<tr>
<td>______ x 5</td>
<td>= ______ pts.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>States three facts</td>
<td>None</td>
<td>One fact</td>
<td>Two facts</td>
<td>Three facts</td>
</tr>
<tr>
<td>______ x 5</td>
<td>= ______ pts.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has at least one detail for each fact</td>
<td>None</td>
<td>One detail</td>
<td>Two details</td>
<td>Three details</td>
</tr>
<tr>
<td>______ x 5</td>
<td>= ______ pts.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanics (spelling, punctuation, capitalization, grammar)</td>
<td>Errors make the letter difficult to understand.</td>
<td>Frequent errors, but still readable. May take away from meaning.</td>
<td>Few errors, appropriate for grade level. Does not take away from meaning.</td>
<td>Few to no errors.</td>
</tr>
<tr>
<td>______ x 5</td>
<td>= ______ pts.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Grade Points</td>
<td>Comments:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>______/100</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Grade: ______</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Adapted from Assessment: Time-Saving Procedures for Busy Teachers (see bibliography)
Appendix H: Ecology Test

Name: ___________________________________

Ecology Test

Organisms and Environments
Directions: Circle a letter to tell if each item is either an environment (E) or an organism (O).

E O 1. a pond   E O 2. a dog

E O 3. your best friend   E O 4. your bedroom

E O 5. a forest   E O 6. a tree

What Do We Need?
Directions: List the five basic needs of all living things.

a. __________________________

b. __________________________

c. __________________________

d. __________________________

e. __________________________

We All Depend on Each Other
Directions: Write a short paragraph telling what might happen if all of the plants in an environment died suddenly.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Appendix H, page 2: Ecology Test

The Food Chain
Directions: Name the three primary members of the food chain, then give an example for each.

1. _____________________  Example: _____________________
2. _____________________  Example: _____________________
3. _____________________  Example: _____________________

Balance of Nature
Directions: Write a short paragraph telling why it is important to have a balance of nature.

______________________________________________________________
______________________________________________________________
______________________________________________________________
______________________________________________________________
______________________________________________________________

The Environment
1. Tell three things we do that can harm the environment.
   a. _____________________  
   b. _____________________  
   c. _____________________  

2. Tell three things we can do to help the environment.
   a. _____________________  
   b. _____________________  
   c. _____________________  

2003 Core Knowledge® National Conference, Gone Green, Grade 3 26