

Earth Kids: Kindergarteners Taking Care of the Earth

Grade Level or Special Area: Kindergarten

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Length of Unit: Nine lessons, 13 days, 30 minutes per day plus additional five-ten minutes of time at recess or other times throughout the unit and after it is complete)

I. ABSTRACT

This unit helps students understand conservation-related vocabulary while they participate in hands-on activities for learning how to take responsibility for the environment. Through read alouds and activities, students will learn to be responsible Earth Kids. Activities include making a compost pile and tallying the amount of trash used daily while trying to reduce it each week. In the end, students will take responsibility for ongoing jobs in the classroom to care for the Earth.

II. OVERVIEW

A. Concept Objectives

1. Students understand the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations. (Colorado State Science Standard #1)
2. Students understand that interactions can produce changes in a system, although the total quantities of matter and energy remain unchanged. (Colorado State Science Standard #2.3)
3. Students understand interrelationships among science, technology, and human activity and how they can affect the world. (Colorado State Science Standard #5)
4. Students recognize how to use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems. (Colorado State Mathematics Standard #3)

B. Content from the *Core Knowledge Sequence*

1. Kindergarten Science: Taking Care of Earth (page 20)
 - a. Conservation: Some natural resources are limited, so people must be careful not to use too much of them.
 - b. Practical measures for conserving energy and resources (for example, turning off unnecessary lights, tightly turning off faucets, etc.)
 - c. Some materials can be recycled (for example, aluminum, glass, paper).
 - d. Pollution (for example, littering, smog, water pollution) can be harmful, but if people are careful, they can help reduce pollution.

C. Skill Objectives

1. Students will state predictions (hypotheses) that can be addressed through scientific investigation.
2. Students will name at least one resource provided by the Earth.
3. Students will describe resource-related activities in which they could participate that can benefit their communities.
4. Students will show their understanding of what one type of pollution is by identifying and collecting litter.
5. Students will describe an observed change.
6. Students will interpret data using the concept of most often.

III. BACKGROUND KNOWLEDGE

A. For Teachers

1. *What Your Kindergartener Needs to Know* by E.D. Hirsch Jr.

2. *Core Knowledge: Teacher Handbook, Grade K*
- B. For Students – Not Applicable

IV. RESOURCES

- A. *Where Does Garbage Go?* by Isaac Asimov (Lesson Two)
- B. *Why Does Litter Cause Problems?* by Isaac Asimov (Lesson Seven)
- C. *Why is the Air Dirty* by Isaac Asimov (Lesson Seven)
- D. *50 Simple Things Kids Can Do To Save The Earth* by The EarthWorks Group (Lessons One and Six (optional))
- E. *Earth Friends At School* by Francine Galko (Lesson One)
- F. *Garbage* by Robert Maas (Lesson Four)
- G. *Recycle That!* by Fay Robinson (Lesson Six)

V. LESSONS

Lesson One: Thinking About the Earth and Its Resources (two days, 30 minutes a day)

- A. *Daily Objectives*
 1. Concept Objective(s)
 - a. Students recognize how to use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.
 - b. Students understand interrelationships among science, technology, and human activity and how they can affect the world.
 2. Lesson Content
 - a. Conservation: Some natural resources are limited, so people must be careful not to use too much of them.
 3. Skill Objective(s)
 - a. Students will interpret data using the concept of most often.
 - b. Students will name at least one resource provided by the Earth.
- B. *Materials*
 1. *50 Simple Things Kids Can Do To Save the Earth*, pages 150-152
 2. Chart paper and markers
 3. Chart paper with drawing of Sample Chart of Things We Think About (Appendix C, page 1), kept out of sight for the first part of the lesson
 4. Chart paper with drawing of Sample T-Chart of Things We Think About (Appendix C, page 2)
 5. Science journals, one for each student (8 ½ x 11 notebooks are fine)
 6. Coloring utensils
 7. *Earth Friends at School* by Francine Galko
- C. *Key Vocabulary*
 1. *Natural resources* are resources contained by Earth such as air, water, etc. that are needed for humans.
 2. *Nonrenewable resources* are natural resources, such as fossil fuels and minerals that cannot be replaced in our lifetime.
 3. *Renewable resources* are natural resources that are naturally recycled so more become available for use such as trees, water and soil.
- D. *Procedures/Activities*

Day One:

 1. Have students join you on the carpet.
 2. Tell them that today you need them to do some thinking so they better put their thinking caps on.

3. Ask them to close their eyes and just spend some time thinking about things they want to do and when they want to do them.
4. Tell students they each need to say at least one thing, but they can also say more if they want.
5. Ask students to take 30 seconds to think before anyone answers.
6. After 30 seconds, call on students to tell you What they were thinking about doing and When they want to do it
7. Record their answers on the T-chart paper under the columns What and When.
8. When all students have answered, show them your chart (modeled after Appendix C, page 1).
9. Tell students the labels for each category and explain that these are all the different things we might think about and the different times we might want to do them.
10. Tell students that you will know chart everyone's thoughts to see what the class spends their time thinking about.
11. Show students how to chart one example.
12. Call students to come up and place their name or initials in the correct box for their thoughts. Write yourself a separate note for any student you help to place their thought on the chart.
13. After all students have charted their thoughts, tell them that you want them to look at the chart and decide what the class thinks about most often.
14. Tell them that when you send them back to their seats, their job is to:
 - a. get out their science journal and open to the next blank page
 - b. finish the sentence "Our class think of _____ most often." which they can look at on chart paper
 - c. draw a picture about the thoughts of their classmates
15. Send students to their seats and allow them 15 minutes to work.
16. Once students have finished working, tell them to read their sentence one last time to remember it in their head.
17. Collect science journals and have students return to the carpet.
18. Ask students to share, verbally, what they wrote.
19. Accept a few responses.
20. Tell students what the chart says that the class mostly thinks about (*the results should show they think about self, family and friends*).
21. Now, tell students that these are the same results everyone gets, but when we only think about ourselves and our families and friends, we sometimes forget to think about other important things.
22. Tell students that in the next few weeks, they will be learning about one really important other thing they should be thinking about... the Earth.
23. Tell students they will learn how to be Earth Friends and hold up the book *Earth Friends at School*.
24. Tell the class that you will read this story to them tomorrow so they can learn what it means to be an Earth Friend.
25. Say, before you tell them what an Earth Friend is, you want them to make a guess.
26. Record students' responses about what an Earth Friend is on chart paper.
27. Next, tell students that there are some very big words you want to practice first so they will understand the story even better.
28. Say natural resources.
29. Have students repeat it a few times.
30. If you want, take a few guesses about what this word means.

31. Tell students that natural resources are the things that make up Earth that are used by humans.
32. Have students say the definition with you.
33. Tell students there are two kinds of natural resources, renewable and nonrenewable.
34. Say renewable resources.
35. Have students repeat it a few times.
36. If you want, take a few guesses about what this word means.
37. Tell students that renewable resources are natural resources that keep growing or cleaning themselves so they can be used and used and used.
38. Tell students that one example of a renewable resources is a tree because it drops seeds that make more trees grow.
39. Say nonrenewable resources.
40. Have students repeat it a few times.
41. If you want, take a few guesses about what this word means.
42. Tell students that nonrenewable resources are natural resources that cannot be replaced in our lifetime.
43. Tell students that one example of a nonrenewable resource is oil because once we use it all up, there will not be anymore left.
44. Tell students that now they know three words for the things that make up the Earth: natural resources, which are all the things, that make up the Earth, renewable resources that are the ones that re-grow over and over, and nonrenewable resources, which are gone once, we use them up.
45. Tell them that tomorrow when you read the story, it will be their job to remember at least one kind of resource.

Day Two:

46. Have students join you on the carpet.
47. Tell them that today they will read the story to learn how to become Earth Friends.
48. Ask them if they can remember any of the words they learned yesterday about the things that make up our Earth that humans need.
49. Take a few responses.
50. Review the words natural resources, renewable resources and nonrenewable resources from the day before.
51. Tell students that it is their job to remember at least one kind of resource they hear in the story.
52. Read the story *Earth Friends at School* aloud.
53. When you finish the story, remind students that resources are things that make up the Earth that humans need.
54. Tell them that their job when you send them to their seats is to:
 - a. find the next blank page in their science journal
 - b. write the words for one or more resources that make up the Earth that humans use.
 - c. draw a picture to go with the words
55. Send students back to their seats (as you pass back journals if you have not already done so) and allow them 15minutes to work.
56. After 15 minutes, have some or all students share what they wrote and drew.
57. Collect journals.

E. *Assessment/Evaluation*

1. **Day One:** Look at students' guesses about what Earth Friends are to assess their prior knowledge. This will inform you as to how much background knowledge

you may need to add and/or if you can move more quickly over certain topics. Also, see if students correctly use the term most often to interpret the chart. Check off box 1 on the Assessment Checklist (Appendix A) for each student.

2. **Day Two:** See if students accurately named a resource. Check off box 2 on the Assessment Checklist (Appendix A) for each student.

Lesson Two: Conservation and the Three R's: Reduce (one day, 30 minutes)

A. *Daily Objectives*

1. Concept Objective(s)
 - a. Students understand the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations.
 - b. Students understand interrelationships among science, technology, and human activity and how they can affect the world.
2. Lesson Content
 - a. Conservation: Some natural resources are limited, so people must be careful not to use too much of them.
 - b. Practical measures for conserving energy and resources (for example, turning off unnecessary lights, tightly turning off faucets, etc.)
3. Skill Objective(s)
 - a. Students will state predictions (hypotheses) that can be addressed through scientific investigation.
 - b. Students will describe resource-related activities in which they could participate that can benefit their communities.

B. *Materials*

1. *Where Does Garbage Go?* by Isaac Asimov
2. Chart paper and markers

C. *Key Vocabulary*

1. *Conservation* is taking care of something and being careful about how it is used.
2. *Reduce* means to use less of things so you do not waste them.
3. *Natural resources* are resources contained by Earth such as air, water, etc. that are needed for humans.
4. *Nonrenewable resources* are natural resources, such as fossil fuels and minerals that cannot be replaced in our lifetime.
5. *Renewable resources* are natural resources that are naturally recycled so more become available for use such as trees, water and soil.

D. *Procedures/Activities*

1. Have students join you on the carpet.
2. Ask them to remind you what resources are.
3. Take a few responses and remind them that resources are things that make up the earth that humans need. Also, remind them that some resources can be used and used while others will run out if we use them all.
4. Tell students that if we want to be Earth Friends we have to take care of the Earth and all its resources.
5. Tell students that the big word for taking care of Earth is conservation.
6. Have students say conservation.
7. Tell students they will learn the Three R's for taking care of Earth or conserving. The Three R's are reduce, reuse and recycle.
8. Have them say the Three R's.
9. Tell students that today they will learn about the first R – reduce.
10. Ask students if they know what it means to reduce.

11. Tell them that to reduce means to use less so you make less trash and do not waste.
 12. Tell students you will read them the story *Where Does the Garbage Go?* so they can see why it is so important to reduce how much trash you make.
 13. Before you read, tell students you want them to think for a minute about where garbage goes.
 14. Tell them to think about their trashcans at home and the ones at school and try to guess where all that trash ends up.
 15. Have each student make a prediction and record it on chart paper.
 16. Read the story *Where Does the Garbage Go?*
 17. When you finish, have a discussion about whether the predictions were right or if they need to be changed.
 18. Also, ask students to tell you ways they can reduce the amount of trash they use.
 19. At the top of a new piece of chart paper, write REDUCE. Underneath it, record the ways kids think of to reduce trash and waste and write the name of the student who suggests each way.
 20. Tell students that you will keep this list so they can add to it as they learn more.
- E. *Assessment/Evaluation*
1. Look at your chart paper recordings to see if children made reasonable predictions and to see if they each thought of a way to reduce waste. Check off boxes 3 and 4 on the Assessment Checklist (Appendix A) for each student.

Lesson Three: The Great Garbage Guessing Game (one day, 30 minutes plus five minutes a day for at least a month)

A. *Daily Objectives*

1. Concept Objective(s)
 - a. Students understand the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations.
 - b. Students understand interrelationships among science, technology, and human activity and how they can affect the world.
2. Lesson Content
 - a. Conservation: Some natural resources are limited, so people must be careful not to use too much of them.
 - b. Practical measures for conserving energy and resources (for example, turning off unnecessary lights, tightly turning off faucets, etc.)
3. Skill Objective(s)
 - a. Students will state predictions (hypotheses) that can be addressed through scientific investigation.
 - b. Students will describe resource-related activities in which they could participate that can benefit their communities.

B. *Materials*

1. Chart paper and markers
2. Trash Tally Chart (see Appendix B for sample)

C. *Key Vocabulary*

1. *Conservation* is taking care of something and being careful about how it is used.
2. *Reduce* means to use less of things so you do not waste them.
3. *Natural resources* are resources contained by Earth such as air, water, etc. that are needed for humans.
4. *Nonrenewable resources* are natural resources, such as fossil fuels and minerals that cannot be replaced in our lifetime.

5. *Renewable resources* are natural resources that are naturally recycled so more become available for use such as trees, water and soil.

D. *Procedures/Activities*

This lesson is best done on a Monday.

1. Have students join you on the carpet.
2. Review the vocabulary they have learned so far as you see fit.
3. Tell students that know that they know what it means to reduce, they are going to see as a class, whether or not they can reduce the amount of trash they make in the classroom.
4. Note: If you already have a recycling program at your school, you may want to include that as part of the waste you can reduce in your tally.
5. Show students the Trash Tally chart and explain that over the last week you have counted how many bags of trash the class made each day.
6. Show students how to read the data by saying on Monday we had ___ bags of trash so I made ___ little lines called tally marks. Next, show them the total for the week.
7. Tell students that now you will keep track of trash for this week and write the data next to Week 2.
8. Tell students it is up to them to reduce the amount of trash they make as a class.
9. Hold up the REDUCE chart you started the day before and re-read the ways to reduce waste.
10. Ask students if they have any more ideas about ways to reduce trash.
11. Add responses to the list with each student's name next to their response.
12. By now, the list of responses should be pretty big, but if students need help generating ideas, you can prompt them to make sure they have things like:
 - a. use fewer paper towels after hand washing
 - b. bring a cloth towel instead of using paper towels
 - c. draw on two sides of art paper before throwing away or recycling, it
 - d. use found objects to make art
 - e. bring snacks in containers that are reusable and do not get thrown away
 - f. bring your own spoon instead of using a plastic spoon(One way to prompt students is to empty the contents of a trashcan and let them see what is thrown away each day – in my classroom it is always amazing how many paper towels are used.)
13. You may also want to encourage students to think about reducing in other ways at home and at school by not leaving the water running when brushing teeth and washing hands, by taking showers instead of baths, by using less toilet paper, by turning off lights when leaving rooms, by keeping the heat low and wearing a sweater, etc.
14. Ask students to look at all the ways they can reduce trash and to think about how many bags of trash they think the class will use this week.
15. Ask each student for his or her prediction or hypothesis on how many bags of trash will be used that week.
16. Record predictions on another piece of chart paper and write each student's name by their prediction.
17. At the end of the school day, count how many bags of trash you used as a class. If you have two half full bags, combine them to make one.
18. Continue to tally your trash for at least a month and have students discuss whether they are reducing trash and more ways they can practice reducing trash.

- E. *Assessment/Evaluation*
1. Look at list of predictions and use it to complete box 5 on the Assessment Checklist (Appendix A). Also, complete box 4 on the Assessment Checklist (Appendix A) for students who added ways to reduce.

Lesson Four: Conservation and The Three R's: Reuse (one day, 30 minutes)

- A. *Daily Objectives*
1. Concept Objective(s)
 - a. Students understand interrelationships among science, technology, and human activity and how they can affect the world.
 2. Lesson Content
 - a. Conservation: Some natural resources are limited, so people must be careful not to use too much of them.
 - b. Practical measures for conserving energy and resources (for example, turning off unnecessary lights, tightly turning off faucets, etc.)
 3. Skill Objective(s)
 - a. Students will describe resource-related activities in which they could participate that can benefit their communities.
- B. *Materials*
1. *Garbage* by Robert Maas
 2. Chart paper and marker, top of one page should be labeled REUSE
- C. *Key Vocabulary*
1. *Conservation* is taking care of something and being careful about how it is used.
 2. *Reuse* means to use something again.
 3. *Reduce* means to use less of things so you do not waste them.
 4. *Natural resources* are resources contained by Earth such as air, water, etc. that are needed for humans.
 5. *Nonrenewable resources* are natural resources, such as fossil fuels and minerals that cannot be replaced in our lifetime.
 6. *Renewable resources* are natural resources that are naturally recycled so more become available for use such as trees, water and soil.
- D. *Procedures/Activities*
1. Have students join you on the carpet.
 2. Congratulate them on all they have learned so far about being Earth Friends.
 3. Ask them to tell you about what they have learned so far and accept some responses.
 4. If they do not say it, remind them about the meaning of conservation and practice the Three R's.
 5. Tell the class that today they will learn about another of the Three R's, which is reuse.
 6. Tell students that to reuse means to use something again, more than once.
 7. Show students the book *Garbage*.
 8. Tell students that while you read they should be watching for ways to reuse things and they should be thinking of their own ideas about how to reuse things.
 9. Read *Garbage*. In some places where they use the word recycle, you may want to substitute the word reuse.
 10. When you finish ask students to tell you ways to reuse. They can tell about something from the story, or think of their own idea.
 11. Record their ideas on the chart paper you labeled REUSE and put each child's name next to their idea.

12. Tell students that tomorrow, they will get to make their very own compost pile just like the book described.
- E. *Assessment/Evaluation*
1. Complete box 4 on the Assessment Checklist (Appendix A) for students who suggest ways to reuse.

Lesson Five: Do-It-Yourself Compost Pile (two days, 30 minutes per day and a few minutes each day at lunch and recess)

A. *Daily Objectives*

1. Concept Objective(s)
 - a. Students understand that interactions can produce changes in a system, although the total quantities of matter and energy remain unchanged.
 - b. Students understand interrelationships among science, technology, and human activity and how they can affect the world.
2. Lesson Content
 - a. Conservation: Some natural resources are limited, so people must be careful not to use too much of them.
 - b. Practical measures for conserving energy and resources (for example, turning off unnecessary lights, tightly turning off faucets, etc.)
3. Skill Objective(s)
 - a. Students will name at least one resource provided by the Earth.
 - b. Students will describe an observed change.

B. *Materials*

1. Large trash can or an area of the playground where you can make a compost pile
2. Tupperware or other container to collect food trash in all day
3. Pitcher of water to add to the compost
4. Science journals, one for each student

C. *Key Vocabulary*

1. *Compost* is a mixture of organic waste that breaks down into fertilizer.
2. *Fertilizer* is food for plants and flowers.
3. *Conservation* is taking care of something and being careful about how it is used.
4. *Reuse* means to use something again.
5. *Natural resources* are resources contained by Earth such as air, water, etc. that are needed for humans.

D. *Procedures/Activities*

Have students save their food trash all day in a container you designate.

Day One:

1. Take students outside and have them sit in a circle.
2. Show them the compost container/area.
3. Remind them that the purpose of compost is to make fertilizer, which is food for plants and flowers.
4. Tell students that they can add natural resources from food or the yard.
5. Have each student name one kind of food waste or yard waste that could be put in the bin and one thing that could not go in the bin.
6. Write down the name of any student who cannot think of these things.
7. Have one or two students add the food waste from the day.
8. Have another couple of students pour water over it to keep it moist.
9. Tell students that it will be their job to keep the compost pile moist and to collect food trash to add to the pile.
10. Also, tell them that they should watch the compost to see how it changes.

11. Tell them each to look carefully at the compost pile before they go inside because when they get inside they need to draw a picture of how the compost pile looked at first. Then, they can see how it changes later.
12. When you get inside, let students draw their observation for about 10-15 minutes.
13. Each day, encourage students to collect food trash from friends at lunch and add to the compost pile at recess each day.

Day Two:

14. After a month or so, take students outside for a few minutes (perhaps at recess) and show them what the compost pile looks like at the bottom.
 15. Give students 10-15 minutes to record their observations.
 16. Have them write words about how it changed in their science journal.
 17. You may want to record the thoughts of students whose writing is hard to read in your own handwriting so you can assess it later.
 18. Collect journals.
- E. *Assessment/Evaluation*
1. **Day One:** Complete box 6 on the Assessment Checklist (Appendix A) to tell which students could name natural resources that go in the compost pile.
 2. **Day Two:** Complete box 7 on the Assessment Checklist (Appendix A) while looking at each child's description of the observed change in the compost pile.

Lesson Six: Conservation and the Three R's: Recycle (one day, 30 minutes and one optional supplementary activity)

- A. *Daily Objectives*
1. Concept Objective(s)
 - a. Students understand interrelationships among science, technology, and human activity and how they can affect the world.
 2. Lesson Content
 - a. Conservation: Some natural resources are limited, so people must be careful not to use too much of them.
 - b. Practical measures for conserving energy and resources (for example, turning off unnecessary lights, tightly turning off faucets, etc.)
 - c. Some materials can be recycled (for example, aluminum, glass, paper)
 3. Skill Objective(s)
 - a. Students will describe resource-related activities in which they could participate that can benefit their communities.
- B. *Materials*
1. Chart paper and marker
 2. Piece of chart paper labeled RECYCLE at the top
 3. *Recycle That!* by Fay Robinson
 4. Recyclable item that has the three arrow recycle logo on it
 5. *50 Simple Things Kids Can Do To Save The Earth*, page 153 (optional) by The EarthWorks Group
- C. *Key Vocabulary*
1. *Recycle* means to re-make all or part of something to be used again.
 2. *Conservation* is taking care of something and being careful about how it is used.
 3. *Reuse* means to use something again.
 4. *Reduce* means to use less of things so you do not waste them.
 5. *Natural resources* are resources contained by Earth such as air, water, etc. that are needed for humans.
- D. *Procedures/Activities*
1. Have students join you on the carpet.

2. Congratulate them on all they have learned so far about being Earth Friends.
 3. Ask them to tell you about what they have learned so far and accept some responses.
 4. If they do not say it, remind them about the meaning of conservation and practice the Three R's.
 5. Tell the class that today they will learn about the last of the Three R's, which is recycle.
 6. Tell students that to recycle means to re-make all or part of something to be used again.
 7. Show students your recyclable item.
 8. Tell students that one way to know if something can be recycled is to look for the three arrow symbol, which means that item can be recycled.
 9. Show students the book *Recycle That!*
 10. Tell students that while you read they should be watching for things that can be recycled and they should be thinking of their own ideas about what they think can be recycled.
 11. Read *Recycle That!*
 12. When you finish ask students to name things that can be recycled. They can tell about something from the story, or think of their own idea.
 13. Record their ideas on the chart paper you labeled RECYCLE and put each child's name next to their idea.
 14. Supplementary Activity: Have students recycle their own paper by following the experiment on page 153 of *50 Simple Things Kids Can Do To Save the Earth*.
- E. *Assessment/Evaluation*
1. Complete Box 4 on the Assessment Checklist (Appendix A) by looking at the students' list of things that can be recycled and noting students who made good suggestions.

Lesson Seven: Pollution Prevention Patrol (two days, 30 minutes per day)

- A. *Daily Objectives*
1. Concept Objective(s)
 - a. Students understand interrelationships among science, technology, and human activity and how they can affect the world.
 2. Lesson Content
 - a. Pollution (for example, littering, smog, water pollution) can be harmful, but if people are careful, they can help reduce pollution.
 3. Skill Objective(s)
 - a. Students will show their understanding of what one type of pollution is by identifying and collecting litter.
- B. *Materials*
1. *Why Is the Air Dirty?* by Isaac Asimov
 2. *Why Does Litter Cause Problems?* by Isaac Asimov
 3. Trash bags, enough for each pair of students to get one - with a masking tape label on each bag that says the names of the pair of students
- C. *Key Vocabulary*
1. *Pollution* is substances that harm the environment or make the environment unclean.
 2. The *environment* is all of our natural resources, or all the things Earth gives us.
 3. *Natural resources* are resources contained by Earth such as air, water, etc. that are needed for humans.
 4. *Recycle* means to re-make all or part of something to be used again.

5. *Conservation* is taking care of something and being careful about how it is used.
6. *Reuse* means to use something again.
7. *Reduce* means to use less of things so you do not waste them.
8. *Litter* is when people leave trash laying around.

D. *Procedures/Activities*

Day One:

1. Have students join you on the carpet.
2. Practice saying the Three R's and review what conservation means.
3. Tell them that now that they know the Three R's of Conservation, they have one last thing to learn about being an Earth friend.
4. Tell students today they will learn about something called pollution, which is what happens when we are not Earth Friends.
5. Tell students that pollution means stuff that hurts the environment or makes it unclean.
6. Let them know that the environment means the word around us, all of the things Earth gives us, our natural resources.
7. Tell students there are many kinds of pollution.
8. Give a few examples of types of pollution like air (smog), water (chemical runoff), and ground (litter).
9. Tell students that today you will read to them about air pollution.
10. Hold up the book *Why Is the Air Dirty?*
11. Read the book aloud.
12. When you finish, ask students to tell you how they feel about air pollution and what they can do to help it.
13. Let students share some responses.
14. Tell them that tomorrow they will learn about another type of pollution called litter.

Day Two:

15. Have students join you on the carpet.
16. Practice saying the Three R's and review what conservation means.
17. Remind students that today they will learn about something called pollution, which is what happens when we are not Earth Friends.
18. Ask students to tell you what pollution is.
19. If they are not sure, remind them that pollution means stuff that hurts the environment or makes it unclean.
20. Remind them know that the environment means the word around us, all of the things Earth gives us, our natural resources.
21. Tell students there are many kinds of pollution.
22. Give a few examples of types of pollution like air (smog), water (chemical runoff), and ground (litter).
23. Tell students that today you will read to them about litter.
24. Hold up the book *Why Does Litter Cause Problems?*
25. Read the book aloud.
26. When you finish, ask students to tell you how they feel about litter and what they can do to help it.
27. Let students share some responses.
28. Tell students that today they will really get to do something about litter.
29. Tell them they will be going outside and their job will be to work with a partner to fill a trash bag full of litter that they find.
30. Give pairs of students trash bags and have them line up to go outside.
31. Give students 15 minutes to collect litter.

32. When students are finished, collect their trash bags.
- E. *Assessment/Evaluation*
1. Peak inside the trash bags and look to see that students correctly identified which things are litter (in other words, make sure they were not throwing away sticks and leaves, but real trash). Use this information to complete box 8 on the Assessment Checklist (Appendix A).

Lesson Eight: Earth Friends Take Responsibility (two days, 30 minutes per day)

A. *Daily Objectives*

1. Concept Objective(s)
 - a. Students understand interrelationships among science, technology, and human activity and how they can affect the world.
2. Lesson Content
 - a. Conservation: Some natural resources are limited, so people must be careful not to use too much of them.
 - b. Practical measures for conserving energy and resources (for example, turning off unnecessary lights, tightly turning off faucets, etc.)
 - c. Some materials can be recycled (for example, aluminum, glass, paper)
 - d. Pollution (for example, littering, smog, water pollution) can be harmful, but if people are careful, they can help reduce pollution.
3. Skill Objective(s)
 - a. Students will describe resource-related activities in which they could participate that can benefit their communities.
 - b. Students will interpret data using the concept of most often.

B. *Materials*

1. *50 Simple Things Kids Can Do To Save the Earth*, pages 150-152 by The Earth Works Group
2. Chart paper and markers
3. Chart paper with drawing of Sample Chart of Things We Think About (Appendix C, page 1), kept out of sight for the first part of the lesson
4. Chart paper with drawing of Sample T-Chart of Things We Think About (Appendix C, page 2)
5. Science journals, one for each student (8 ½ x 11 notebooks are fine)
6. Coloring utensils
7. Job chart or a piece of chart paper, with places to write students names and their jobs
8. Appropriate writing utensil for job chart or chart paper

C. *Key Vocabulary*

1. *Pollution* is substances that harm the environment or make the environment unclean.
2. The *environment* is all of our natural resources, or all the things Earth gives us.
3. *Natural resources* are resources contained by Earth such as air, water, etc. that are needed for humans.
4. *Recycle* means to re-make all or part of something to be used again.
5. *Conservation* is taking care of something and being careful about how it is used.
6. *Reuse* means to use something again.
7. *Reduce* means to use less of things so you do not waste them.
8. *Litter* is when people leave trash laying around.

D. *Procedures/Activities*

Day One:

1. Have students join you on the carpet.

2. Congratulate them on knowing everything they need to know to be Earth Friends.
3. Tell them that today you need them to do some thinking so they better put their thinking caps on.
4. Ask them to close their eyes and just spend some time thinking about things they want to do and when they want to do them.
5. Tell them they each need to say at least one thing, but they can also say more if they want.
6. Ask students to take 30 seconds to think before anyone answers.
7. After 30 seconds, call on students to tell you What they were thinking about doing and When they want to do it – record their answers on the chart paper under the columns What and When.
8. When all students have answered, show them your chart.
9. Ask students if they remember this project from before when they were Earth Friends.
10. Tell students the labels for each category and explain that these are all the different things we might think about and the different times we might want to do them.
11. Tell students that you will now chart everyone’s thoughts to see what the class spends their time thinking about.
12. Show students how to chart one example.
13. Call students to come up and place their name or initials in the correct box for their thoughts. Write a note to yourself for any student you help to place their thought on the chart.
14. After all students have charted their thoughts, tell them that you want them to look at the chart and decide what the class thinks about most often.
15. Tell them that when you send them back to their seats, their job is to:
 - a. get out their science journal and open to the next blank page
 - b. finish the sentence “Our class think of _____ most often.” which they can look at on chart paper
 - c. draw a picture about the thoughts of their classmates
16. Send students to their seats and allow them 15 minutes to work.
17. Once students have finished working, tell them to read their sentence one last time to remember it in their head.
18. Collect science journals.
19. Tell students what the chart says that the class mostly thinks about (*the results should show they think more about world*).

Day Two:

20. Have students return to the carpet.
21. Ask students to share, verbally, what they wrote.
22. Accept a few responses.
23. Tell students what the chart says that the class mostly thinks about (*the results should show they think more about world*).
24. If students had more thoughts about the world, congratulate them on being good Earth Friends.
25. If students still thought about friends and family, tell them that they have not yet changed their thinking to consider the Earth.
26. No matter what their results were, tell them that it is very important to always keep thinking about the Earth and to continue being an Earth Friend.
27. Tell students that they will get to be an Earth Friend every day in the classroom from now on because they will have jobs to do to take care of the Earth.

28. Tell the students that today they need to think together of jobs to do to help the Earth.
29. Tell the students they can think of job to do and as soon as they know of something to do in the classroom to help the Earth every day, they should come up and get in line to tell you.
30. Explain that the job they think of will be their job for a while, and then they will rotate jobs with other people so they can try out lots of things.
31. Write down on a piece of paper the jobs that students come up with. Later, transfer them to the job chart or chart paper so all students can see. When students finish, ask them to try to think of more jobs in case two people had the same idea. Write the extra ideas down too. Be sure to write the name of each child next to the idea(s) they give you for jobs.
32. Jobs can include but are not limited to:
 - a. Paper Towel Patrol (reminds classmates not to use more than one)
 - b. Faucet Friend (makes sure all faucets are off tightly after use)
 - c. Light Leader (turns off lights when class leaves the room)
 - d. Recyclers (in charge of taking out recyclables and/or collecting from other classrooms – you could put one student in charge of each classroom pickup)
 - e. Compost Controllers (collects food trash to add to compost pile at lunch and makes sure it stays wet)
 - f. Litter Leaders (pick up litter from the playground daily or weekly at recess)
 - g. Paper Patrol (check things in paper recycle bin to make sure both sides were used and if not returns them to a scrap paper bin)
 - h. Reusables Reminder (reminds friends with throw-away containers or utensils to bring reusable items if possible).
33. Provide time as needed each day for students to do their Earth Friends jobs. Change jobs weekly or monthly.

E. *Assessment/Evaluation*

1. Use your list of students' job ideas to complete boxes 9 and 10 on the Assessment Checklist (Appendix A).

Lesson Nine: Summative Assessment (one day, 30 minutes)

A. *Daily Objectives*

1. Concept Objectives:
 - a. Students understand the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations.
 - b. Students understand that interactions can produce changes in a system, although the total quantities of matter and energy remain unchanged.
 - c. Students understand interrelationships among science, technology, and human activity and how they can affect the world.
 - d. Students recognize how to use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.
2. Lesson Content
 - a. Conservation: Some natural resources are limited, so people must be careful not to use too much of them.
 - b. Practical measures for conserving energy and resources (for example, turning off unnecessary lights, tightly turning off faucets, etc.)
 - c. Some materials can be recycled (for example, aluminum, glass, paper)

- d. Pollution (for example, littering, smog, water pollution) can be harmful, but if people are careful, they can help reduce pollution.
3. Skill Objective(s)
 - a. Students will state predictions (hypotheses) that can be addressed through scientific investigation.
 - b. Students will name at least one resource provided by the Earth.
 - c. Students will describe resource-related activities in which they could participate that can benefit their communities.
 - d. Students will show their understanding of what one type of pollution is by identifying and collecting litter.
 - e. Students will describe an observed change.
 - f. Students will interpret data using the concept of most often.
- B. *Materials*
1. Summative Assessment (Appendix D, pages 1 and 2) one copy for each student or summative assessment from Core Knowledge website titled “Taking Care of Earth”
- C. *Key Vocabulary*
1. *Pollution* is substances that harm the environment or make the environment unclean.
 2. The *environment* is all of our natural resources, or all the things Earth gives us.
 3. *Natural resources* are resources contained by Earth such as air, water, etc. that are needed for humans.
 4. *Conservation* is taking care of something and being careful about how it is used.
 5. *Recycle* means to re-make all or part of something to be used again.
 6. *Reuse* means to use something again.
 7. *Reduce* means to use less of things so you do not waste them.
 8. *Litter* is when people leave trash laying around.
 9. *Nonrenewable resources* are natural resources, such as fossil fuels and minerals that cannot be replaced in our lifetime.
 10. *Renewable resources* are natural resources that are naturally recycled so more become available for use such as trees, water and soil.
- D. *Procedures/Activities*
1. Congratulate students on being Earth Friends.
 2. Tell them that today they will get to show you all the things they have learned about taking care of the Earth by taking a test.
 3. Have students prepare for test taking (this may mean putting up folders or sitting in different spots or just getting out pencils; that is up to you.)
 4. If students have not taken many tests you may want to review the rules for a test with them:
 - a. no talking at all
 - b. eyes on your own paper
 - c. do your very best
 5. Tell students that starting now they need to be quiet and keep their pencils down until you tell them the directions.
 6. Pass out the summative assessment to each student.
 7. Tell students that you will be reading each question to them and then they will make their answer.
 8. Tell students to put their finger on the number one.
 9. Read the question and tell students to complete their answer.
 10. Repeat steps eight and nine for each question on the assessment.

11. Explain to students that a Bonus is when you can get extra points, but it is okay to get it wrong too.
 12. Read the Bonus.
 13. Tell students to give their best answer and then check their answers when they are finished.
 14. After a few minutes of letting students work, tell them to raise their hands when they are finished.
 15. Collect finished tests.
 16. **Supplementary Activity:** You may want to present each student with a congratulatory certificate for becoming an Earth Kid... on recycled paper of course.
- E. *Assessment/Evaluation*
1. Grade each assessment and add extra points onto the total for correct bonus answers. Put the point total on each child's Assessment Checklist (Appendix A) to find the student's unit grade. Attach the final assessment to the back of the Assessment Checklist for reference.

VI. CULMINATING ACTIVITY

- A. Visit a recycling center to watch the process in action.
- B. If your school does not have a recycling program, start one. If you already have a paper-recycling program at your school, see if you can expand it by adding plastic and/or aluminum recycling. Alternatively, if you already have a recycling program, have your class take responsibility for collecting recyclables on a regular basis.
- C. Write a letter to the principal asking her to buy recycled products like paper and reusable items like spoons and cups.
- D. Read a biography of Theodore Roosevelt and discuss how he was a conservationist.
- E. Read *The Lorax* by Dr. Seuss so students can see what happens when they are not Earth Friends.

VII. HANDOUTS/WORKSHEETS

- A. Appendix A: Assessment Checklist
- B. Appendix B: Trash Tally
- C. Appendix C: Things We Think About T-Chart and Chart
- D. Appendix D: Summative Assessment

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Appendix A
Assessment Checklist

(copy one for each student; instead of just a check, you may find it useful to write the date in either the Yes or No box, so that way if you get more up to date data, you can tell by the date)

Student Name:			
Assessed Item:	Yes	No	Comments
1. Used most often correctly to interpret graph.			
2. Wrote and/or drew at least one resource.			
3. Stated a reasonable prediction about where garbage goes.			
4. Named one resource-related activity they can do.			
5 Made a reasonable prediction about how much trash would be used that week.			
6. Named one natural resource that could be put in the compost pile.			
7. Through before and after pictures and/or words written, student described an observed change in the compost pile.			
8. Accurately identified litter.			
9. Named one job to help the Earth at school.			
10. Thought of extra job to help the Earth at school.			
Total Number with "Yes"	_____	out of 10	
Total Points from Summative Assessment	_____	out of 10	
Total Unit Score	_____	out of 20	Score as a Percentage: _____

Appendix B

Sample Trash Tally Chart

(The first row should be filled in with data you collected yourself the week prior to the lesson.

Note: If you already have a recycling program at your school, you may want to include that as part of the waste you can reduce in your tally.)

TRASH TALLY

	Monday	Tuesday	Wednesday	Thursday	Friday	TOTAL
Week 1						
Week 2						
Week 3						
Week 4						
Week 5						

Sample Chart of Things We Think About

(adapted from *50 Simple Things Kids Can Do To Save the Earth*)

World					
Country					
City/State					
Family/Friends					
Self					
	Tomorrow	Next Week	Few Years	When I Grow Up	Life Time

Sample T-Chart for Things We Think About

Things We Think About

What

When

Our class thinks most often about _____.

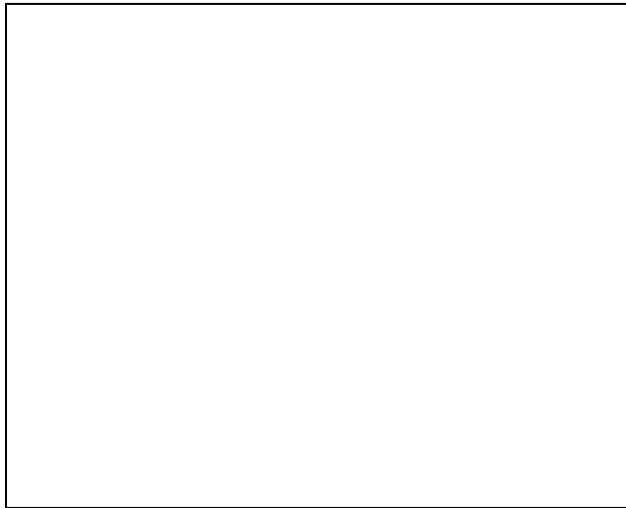
Appendix D, page 1
Summative Assessment

How to Help the Earth

Name: _____

1. Draw and write one way to help the Earth:

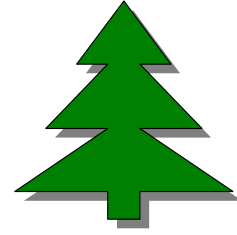
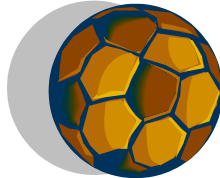
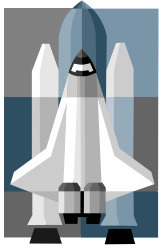
Draw:



Write: _____

Appendix D, page 2
Summative Assessment

2. Circle the picture that shows one of Earth's natural resources:



3. Circle the three words that are the three R's of Conservation:

Reduce

Run

Ripe

Recycle

Reuse

4. Circle the best way to tell what conservation means:
- a) littering everywhere
 - b) using a lot of paper
 - c) taking care of Earth
 - d) taking care of your family
5. Circle the thing that a person who is conserving would do:
- a) leave the lights on when they leave a room
 - b) use a cloth towel instead of a paper towel
 - c) throw paper with only a few marks in the trash can

Appendix D, page 3
Summative Assessment

6. Pollution is when the Earth is clean.

TRUE

FALSE

7. Circle the names of two things that can become polluted:

Air

Water

Metal

Books

Running

BONUS:

Draw or write the name for one renewable resource:



Appendix D, page 4
Summative Assessment Answer Key

1. Award one point if the drawing OR the writing tells one way to help Earth. Accept all reasonable answers. Sample answers: recycle paper, use cloth towels, turn the lights off, etc...
2. Award one point if the tree is circled.
3. Award one point for each of the following words that are circled: Reduce, Reuse, Recycle.
4. Award one point if choice C is circled
5. Award one point if choice B is circled
6. Award one point if FALSE is circled.
7. Award one point if Air is circled and one more point if Water is circled.

Bonus: Add one point onto the student's total score if either the drawing or writing tells about one renewable resource. Accept all reasonable answers. Sample answers: trees, water, etc.

Total points are out of 10 possible. A student may score 11 out of 10 if they got the Bonus correct.