



Third Grade Ecuadorian Rainforest

National Standards for Grade 3 Lessons

Language Arts Writing

Standard 4 Level 2 Grade 3-5

2. 3. 4. Gathers and uses information for research purposes (encyclopedias, dictionaries, electronic media).
Uses multiple representations of information (maps, charts, diagrams, tables) to find information for research topics.
7. Uses strategies to compile information into written reports or summaries.

Reading

Standard 7 Level 2 Grade 3-5

- Uses reading skills and strategies to understand a variety of informational texts.
5. Summarizes and paraphrases information in texts.
6. Uses prior knowledge and experience to understand and respond to new information.

Listening and Speaking

Standard 8 Level 2 Grade 3-5

- Contributes to group discussions.
Asks questions in class.
Responds to questions and comments.
1. Listens to classmates and adults.
7. Makes basic oral presentations to class.
10. Organizes ideas for oral presentations.

Reading

Standard 6 Level 2 Grade 3-5

- Uses reading skills and strategies to understand and interpret a variety of literacy texts.
9. Makes connections between characters or simple events in a literary work and people or events in his or her own life.

Thinking and Reasoning

Standard 3 Level 2 Grade 3-5

4. Makes comparisons between countries in terms of relatively concrete characteristics (size, population, products).

Standard 1 Level 2 Grade 3-5

1. Uses facts from books, articles and databases to support an argument.
7. Recognizes when a comparison is not fair because important characteristics are not the same.

Standard 5 Level 2 Grade 3-5

1. Identifies issues and problems in the school or community that one might help solve.

Mathematics

Standard 1 Level 2 Grade 3-5

1. Uses a variety of strategies to understand problem situations.
2. Represents problems situations in a variety of forms.

Standard 3 Level 2 Grade 3-5

7. Solves real world problems involving number operations.

Standard 4 Level 2 Grade 3-5

1. Understands the basic measures perimeter, area, volume and circumference.
2. Selects and uses appropriate tools for given measurement situations.
4. Understands relationships between measures.
1. Uses specific strategies to estimate quantities and measurements

Standard 9 Level 2 Grade 3-5

2. Understands that mathematical ideas and concepts can be represented concretely, graphically, and symbolically.

Life Science

Standard 6 Level 2 Grade 3-5

1. Knows the organization of simple food chains and food webs.
2. Knows the transfer of energy.
3. Knows that changes in the environment can have different effects on different organisms.
4. Knows that all organisms (including humans) cause changes in their environments and these changes can be beneficial or detrimental.

Standard 1 Level 2 Grade 3-5

Understands atmospheric processes and the water cycle.

Standard 4 Level 2 Grade 3-5

5. Knows that the characteristics of an organism can be described in terms of a combination of traits; some traits are inherited and others result from interactions with the environment.

Standard 5 Level 2 Grade 3-5

3. Knows that living organisms have distinct structures and body systems that serve specific functions in growth, survival and reproduction. (body structures for walking, flying, or swimming).

Standard 7 Level 2 Grade 3-5

3. Understand the concept of extinction and its importance in biological evolution.
4. Knows ways in which living things can be classified.

Standard 9 Level 2 Grade 3-5

Understands the sources and properties of energy.

Standard 11 Level 2 Grade 3-5

5. Knows that good scientific explanations are based on evidence (observations) and scientific knowledge.
6. Knows that scientists make the results of their investigations public.

Standard 13 Level 2 Grade 3-5

1. Knows that people of all ages, backgrounds and groups have made contributions to science and technology throughout history.

Standard 12 Level 2 Grade 3-5

3. Plans and conducts simple investigations.
4. Uses appropriate tools and simple equipment.



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Lesson 1: Dependence and Interdependence

Concept

In every environment plants and animals depend on each other for food and shelter, protection and community. The survival of different species depends on the health of ecological systems that may be near or far away. The complex relationships within one ecosystem can be hurt when one of the components is threatened or one of the species becomes extinct.

Essential Question

What can't one live without the other?

Additional Resources

- **Resource Index-** Check out this page at <http://www.rainforest-alliance.org/programs/education/teachers/curriculum/resources/index.html> for additional supplemental materials that complement these dynamic units and to access many of the resources listed below.
- **Slideshow** – The Learning Site provides a slideshow and script about Ecuador that includes background information about the animals, people and landscape of this region. The slideshow can be downloaded for viewing in the classroom, printed out and read as a story, or viewed online with the students.
- **Unit-Specific Story:** The Rainforest Alliance has developed an original story for use with these units, available in English, Spanish and Portuguese. The story is available to download and print or can be viewed onscreen.

Romel's Rainforest Home

- **From the Bean to the Bar: Chocolate Slideshow** - Where does chocolate come from? Take a journey that follows the production of a chocolate bar from the bean to your supermarket. The slideshow can be downloaded for viewing in the classroom, printed out and read as a story, or viewed online with the students.
- **Species Profiles** – The species profiles, available to view on screen or download from the beginning of the unit or the Resource Index, include photos, habitat, foraging behavior, group relationships, threats and many more facts.
 - Bromeliad
 - Ocelot
 - Great Curassow
 - Capuchin Monkey
 - Three-Toed Sloth

- **Rainforest Poster:** Download and print out this colorful two-page poster, which is available for you to use in explaining the layers of the rainforest, its products and the environmental threats facing many rainforests around the world.

Inside the Canopy – Structure and species of the rainforest

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- **Terrarium Instructions** – Download directions for making a terrarium in your classroom.
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Informational Introduction for the Teacher

This lesson guides students in an exploration of sustainable agricultural practices directly related to the lives of people living in the rainforest. The connection is made through chocolate and cocoa farming. By engaging students in a study of the origins of chocolate, we will introduce the impact of increased need/want for chocolate on the environment where it is grown and species that surround those farms. The unit focuses specifically on the Chachi people, who protect their forest from destruction by sustainably harvesting cocoa. The Chachi participate with the Rainforest Alliance in developing sustainable farming techniques that conserve the rainforest while providing the local people with a means for earning an income.

Informational Introduction for the Students

Go into almost any backpack in your school and you will find empty chocolate wrappers or chocolate treats waiting to be eaten. Chocolate is a favorite candy of American children and children all over the world. Where does all this chocolate come from? Who produces the ingredients for this treat? As the desire for more chocolate increases, farming of chocolate increases. What effect does chocolate farming have on the landscape, the people and the different animals that live around those farms? What happens when trees are cut down in an area that is rich in biodiversity and replaced with farms that grow only cacao plants? How might these changes affect our lives so far away?

Step 1 - CONNECT (The Concept to Prior Knowledge)

Challenge

Students begin to explore what happens when one of the essential players in a dynamic ecological process disappears.

Materials

- Paper, pencils

Procedure

1. Have students list all the different species referred to as pets that they interact with or observe each day.
2. Talk about the relationship that each of these animals has with the human counterpart, paying close attention to reciprocal relationships and dependency. (A dog, cat, bird or fish usually depends on a human for their food, water, shelter, health care and companionship.)
3. Discuss what might happen to those pets if your family didn't come home for a week. Where would they find food? Water? Would they be lonely?
4. Discuss how we have created these "ecosystems" for our pets and if not maintained, the pet would lack the necessary things needed for survival.
5. Ask the students to list the things they need to survive each day.
6. In small groups have students create a diagram (concept map) that describes where each of the things they need for survival comes from. This is called developing a concept map. Put the key word (food) in the middle of a sheet of paper. The kinds of food they commonly eat would make up the second concentric circle around the key word, 'food'. Then have students brainstorm a list of the places the foods come from by extending outward as new ideas emerge. For example, apples might be the first word on the second level out. Extending out from the word apple, the children might list the different stores they go to for apples. Then in a concentric circle, list where the in the store originates.

Example: Apple – Hannaford – Fruit Section – California.

7. When students have exhausted their lists ask them to imagine trucks disappearing from the scene. What would change? Would their favorite food still be available in the store?

8. Imagine that apple trees do not produce fruit one year. What might disappear from the stores? What if all the cows went on strike? What might not be in the store if cows refused to cooperate with humans? Have students read the labels on their food for one night and list all the food that is dependent on cows.

Step 2 - LITERATURE/DISCUSS (Give Expert Information Book; Ask Questions)

Challenge

Students consider how a missing part in an ecological system might upset the balance that is necessary for elements of that system to live.

Materials

- Art supplies (crayons, stickers/labels)
- Book: **The Great Kapok Tree**, by Lynne Cherry
- Large world map
- Smaller map of Brazil

Procedure

1. Using a large map, locate the Brazilian rainforest. Move from a large global map to show where the children live to a smaller map of Brazil.
2. Explain that a story called **The Great Kapok Tree** takes place in Brazilian Amazon. Relay facts about the kapok tree that are listed in the teacher background information.
3. Read Lynne Cherry's **The Great Kapok Tree** aloud and discuss the story with the children.
4. On chart paper, list all the rainforest inhabitants that are mentioned in the book.
5. Discuss how the survival of rainforest plants and animals are interdependent. Identify each inhabitant from the story on a separate sticker/label, so that each student in the class can wear a sticker to eventually act out a part. Inhabitants mentioned in the story include the following: boa constrictor, bee, flower, tree, monkey, soil, toucan, macaw, cock-of-the-rock, tree frog, jaguar, birds, four tree porcupines, several anteaters, three-toed sloth and a Yanomami child.
6. The child who is acting out the role of the kapok tree will stand in the middle of a circle holding one piece of yarn for each child in class. Each piece should be about 6 feet long.
7. Reread the story aloud. Whenever a creature in the book's name is mentioned, have the kapok tree child toss one end of a length of yarn to the animal mentioned, while the kapok tree continues to hold onto the other end of each piece of yarn. (The yarn symbolizes the tie that these two inhabitants have and how they depend on each other for survival.)
8. At the end of the story, take time to look at the web of interdependence that was created. Have the kapok tree lightly tug on his collection of yarn. Ask the other

children to give a thumbs-up if they feel a tug on the yarn. Those that did (which would be everyone) can say thank you to the kapok tree for helping them to survive.

9. Now, explain that not all people respect the importance of a single tree. Pretend to chop down the kapok tree. The kapok tree falls to the ground. Ask all the other characters to also drop to the ground if their yarn was pulled when the kapok tree fell.
10. Discuss the impact of cutting down one kapok tree on other plants and animals of the rainforest.

Step 3A - PRACTICE

Challenge

Students will isolate one factor in an ecosystem and determine how much the loss of that one factor will impact the full ecological system and, as a result, the different species in that ecosystem.

Materials

- Instructions for making a terrarium
- Large soda bottles (1 per group of 3 or 4)
- Scissors
- Potting soil or soil from outside
- Plant seeds or seedlings
- Water

Procedure

1. In groups of three or four, students will design terrariums that represent local ecosystems. (Use soil and plants from the local area to build them.) Each terrarium will have the same amount of soil and the same plants. The closed terrarium will have plants and soil and water (no animals).
2. Students are directed to use water as the determining factor for survival of the plants in their terrarium.
3. Each group will give their terrarium different amounts of water over a two-week period. Some will receive only a teaspoon full of water each, some five teaspoons of water each day, some a cup of water and some none at all.
4. After two weeks, students will report on the conditions in their different terrariums.

Discussion:

How did rainfall affect the health of the ecosystem?

What would be affected in your local neighborhood if no rain fell for a year?

What if it rained everyday for a month, would things change in your area?

5. Math Task: Using an encyclopedia or the Internet, look up the average rainfall in your local area.
 - a. List the rainfall for different seasons of the year.

- b. Look up the average rainfall for different seasons in the Ecuadorian rainforest and compare them.
- c. How much more rain falls in the rainforest than in your local area.
- d. What do you think would happen to your local area if the rainfall was like the Ecuadorian rainforest?

Step 3B - CREATE (Performance Tasks Related to Standard Indicators)

Challenge

Students will be able to identify all the components that are necessary for their survival in their current location.

Materials

- Poster-sized paper
- Colored markers

Procedure

1. Students will create a poster that puts their silhouette in the center of a piece of paper. In spokes that surround the silhouette, students name all the things that they NEED to survive.
2. In a different color marker have students list all the things they WANT to make their lives comfortable.
3. Putting the posters up in a gallery around the room, students review all the posters and list questions that address the difference between needs and wants.
4. Students will ask questions that address the difference between what people NEED and what they WANT to be comfortable. Have students outline the needs in green and their wants in red after the discussion if they change in classification after the discussion.
5. In a discussion led by the teacher, students will address what could be crossed off the list and what is necessary to keep for their individual survival on each of the posters.

Discussion:

- a. What might happen if one of the basic needs is threatened or disappears?
- b. How might students react?
- c. Would they be able to stay in the place where they live if this component disappeared?
- d. How might they adapt?

Step 4 - PRESENT (Edit Work/Students Orally Present Projects)

Challenge

Students will present the difference between necessary components of their lives and the ones that are wanted but not necessary for survival.

Materials

- Needs/Wants posters from step 3B
- Magic markers

Procedure

1. Students stand in front of their posters of survival needs and cross off the WANTS explaining why these are not necessary and expressing the NEED for certain components and why.
2. Students might do this activity in a short written paragraph instead of a public announcement.

LESSON 1 ASSESSMENT RESULTS:

Teacher observations of tasks with rubrics as listed below, as well as collected work samples.

Assessment Guidelines	3 = P (Proficient)	2 = S (Satisfactory)	1 = NW (Needs Work)
1. Student creates a list of survival needs that include examples of nutrition, shelter, water, relationships, safety and compares their 'needs' to 'wants'.			
2. Student can trace, through a concept map, the source/origin of two different needs through raw material, production, dissemination and consumption.			
3. Student constructs a likeness of a local microclimate and region within a terrarium.			
4. Student constructs a graph that charts the rainfall in the local ecosystem and compares the results of different amounts of water on survival of microclimates.			



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Lesson 2: Surviving in Our Ecosystems

Concept

Each species has different survival needs. The balance of each ecosystem is a delicate web of interdependence and every species of plant or animal is affected by changes in that balance. Knowing how we, as humans, are the same and/or different than other species informs us of our role in the larger ecosystem.

Essential Question

What do we need to live in the trees?

Additional Resources

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Step 1 - CONNECT (The Concept to Prior Knowledge)

Challenge

Students identify the characteristics of a frog and compare them to a human child.

Materials

- Photos of frogs
- Sketch of frog in its environment
- Sketch of human in its environment

Procedure

What makes a frog a frog?

1. Show children pictures of different frog species and discuss the characteristics all frogs share: moist skin, wide mouth, large eyes and nostrils on top of the head, eardrums on sides of head, long hind legs and long toes.

2. In a discussion led by the teacher, have children talk about how the frog's shape helps it survive. For example, a frog's strong hind legs help it jump, swim or climb to escape predators or catch prey. Eyes and nostrils on top of the head enable a frog to stay underwater and still breathe and see.
3. In a teacher-led discussion, have children talk about the environment that a frog needs to survive. For example, a frog will need moisture to keep its skin from drying out. Frogs need camouflage to hide from predators. Frogs need to be near a food source or be able to draw insects to their environment so as to eat without endangering themselves.
4. Hand out an outline of a frog (or a picture of a frog) to small groups of students. Working in small groups, have students list the characteristics of 'frogs' and the elements of their environment on the paper.

What makes a human different from a frog?

1. Put a picture of a human child next to the picture of a tropical tree frog.
2. Discuss the ways that human children are the same or different than the tree frog.
For example:
 - Humans are mammals, not amphibians.
 - Human skin adapts to a wider range of moisture but won't last long underwater.
 - Humans have eyes and a nose that is designed for their upright posture and dry environment.
3. Give students a worksheet with a human figure on one side and a tree frog on the other. Have students describe the best environment for a human to live in and the best environment for a frog to live in based on their physical characteristics.
4. Have students draw a 'house' that a frog might live in.

Step 2 - LITERATURE/DISCUSS (Give Expert Information Book: Ask questions)

Challenge

Students identify a wide range of "homes" appropriate for a diversity of frogs in both tropical and temperate locations.

Materials

- Book: **Flashy Fantastic Rainforest Frogs**, by Dorothy Hinshaw Patent and Kendahl Jan Jubb
- Book: **Frogs: A Chorus of Colors** by John L. Behler and Deborah A. Behler
- Paper, art supplies

Procedure

1. Read aloud **Flashy Fantastic Rainforest Frogs** by Dorothy Hinshaw Patent and Kendahl Jan Jubb for an in-depth look at various species of rainforest frogs, discussing their habits, life cycle and needs for survival.

2. Compare the home of the red-eyed tree frog and other tropical frogs with the frogs from temperate regions that are described in **Frogs: A Chorus of Colors** by John L. Behler and Deborah A. Behler.
3. Have students draw pictures or cut out/paste pictures of temperate and rainforest frogs on a sheet of paper. Have students identify the differences between the frogs and describe how their homes might be different based on the reading.
4. Additional References:
Frogs: Inside their Remarkable World by Ellin Belts
Tropical Rainforest: A golden Guide from St. Martin's Press by Allen Young

Step 3A – PRACTICE (Math and Learning Centers)

Challenge

Students will learn the interrelationship between bromeliads and tree frogs and rainfall in tropical rainforests.

Materials

- Internet access or encyclopedia
- Paper, pencils
- Bromeliad activity: <http://www.rainforest-alliance.org/programs/education/kids/hands-on-projects/bromeliad.html>
- Bromeliad pattern: <http://www.rainforest-alliance.org/programs/education/kids/hands-on-projects/pattern.html>

Procedure

1. Using the Web (weather.com) or an encyclopedia, look up the average rainfall in the rainforest of Ecuador, as well as the temperate region that children live in.
2. Make a graph reflecting the rainfall. Find the difference between the amounts of rainfall in each country.
3. Find out how much rain must fall in a region for it to be considered tropical or temperate.
4. Calculate how much more rainfall would have to fall in your area for it to be considered a rainforest.
5. Using the technology resources from the Rainforest Alliance find links to activities that define the interrelationship between bromeliads and tree frogs: **Bromeliad: A Plant with its Own Water Tank** (Available at <http://www.rainforest-alliance.org/programs/education/kids/hands-on-projects/bromeliad.html>)
6. Have students research the characteristics of a bromeliad and identify which tree frogs use this as a home.
7. Using the Paper Bromeliad Pattern from the bromeliad activity, have children make their own model of a bromeliad and describe how this is an appropriate home for a tree frog.

- Children will describe the micro-system of a bromeliad, identifying at least four essential characteristics of this home.

Step 3B – CREATE (Tasks Related to Standard Indicators)

Challenge

Students will compare and contrast the characteristics of a tree house for human children in the rainforest with the bromeliad “tree house” of the frog.

Materials

- Books: **How to Build Treehouses, Huts and Forts** and **Treehouses You can Actually Build** by Stiles Designs
- Book: **Afternoon on the Amazon** by Mary Pope Osbourne
- Paper, pencils

Procedure

- Discuss the design of a tree house that might be built in the children’s home environment.
- Read and show: **How to Build Treehouses, Huts and Forts** and **Treehouses You can Actually Build** by Stiles Designs.
- Read aloud the Magic Tree House book **Afternoon on the Amazon** by Mary Pope Osbourne.
- Have students draw a tree house that they would like to build using a tree from their local environment.
- Students each write a short adventure story that uses the local tree house as a magic doorway that transports them to a tree house in the rainforest.
- Draw the treehouse in the rainforest that students are transported to, describing the issues of:
 - Where to Build
 - Finding Lumber
 - Safety
 - Rope Bridge
 - Emergency Escape Hatch
 - Trolleys, Pulleys, & Swings
 - Railings and Steps
 - Ropes & Ladders
 - Tree Movement
 - Tree Injury
- Compare and contrast the rainforest tree house that is suited for human children with the bromeliad “tree house” that is suited for the tropical tree frog.

Discussion questions:

- How would the tree house in the rainforest be different than the one in your neighborhood?

- b. What kind of tree would it be in?
- c. What kinds of animals, insects, weather, plants would they encounter from their rainforest treehouse?
- d. How is your tropical treehouse different than that of the tree frog?

Step Four – PRESENT (Edit work/Students Orally present project)

Challenge

Students describe the survival needs of the tropical tree frog and how the bromeliad provides these needs. Students describe how their rainforest treehouse is different than the bromeliad home and how it provides survival needs for humans.

Materials

- Treehouse drawings from Step 3B

Procedure

1. In a gallery display, present the different models of treehouses that have been created by students.

LESSON 2 ASSESSMENT RESULTS:

Teacher observations of tasks with rubrics as listed below, as well as collected work samples.

Assessment Guidelines	3 = P (Proficient)	2 = S (Satisfactory)	1 = NW (Needs Work)
1. Student depicts four biological characteristics of each species – tree frogs and humans - comparing and contrasting the reasons for such characteristics based on environmental conditions.			
2. Student represents the different environments that exist for temperate and tropical frog species through a drawing.			
3. Student researches and charts the rainfall and resulting environmental conditions in temperate and tropical environments.			
4. Student constructs a paper bromeliad from the provided model.			
5. Student constructs or represents pictorially a treehouse for humans suited for both a temperate and a tropical environment and compares them to the frog shelters.			



**Third Grade
Ecuadorian Rainforest
Lesson 3: If the Forests Could Talk**

Concept

Insects are essential elements of any ecosystem as they serve as pollinators for plants. Insects may be regarded as a nuisance to humans, but if they all disappeared every ecosystem would feel the impact of this loss.

Essential Question

What if the forest could talk?

Additional Resources

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Step 1 – CONNECT (The Concept to Prior Knowledge)

Challenge

Students identify one of the essential elements from their environment that must be protected in order to maintain the effective balance of the ecosystem. Insects are critical to the survival of many ecosystems.

Materials

- Internet access or insect field guides
- Poster paper
- Art supplies

Procedure

1. Students research different pollinating insects that live in their local environment on the Internet or field guide books.

For example, bees work to pollinate plants that provide essential botanical species within certain areas. Bees may be necessary for the production of honey or for certain vegetables in gardens.

2. Students create posters that describe their insect and show its connection to plants in their area.
3. Have students identify how the insects may interact by sharing plants or insuring that a food source is present for another insect.
4. Display the posters.
5. Remove one of the insects at a time and discuss the impact this might have on the environment, especially on the types of plant and animal life (vegetable gardens and honey producers) that live in the area.
6. Identify which plants and animals would have to move to another location or would die as a result of the changes on insect life.
7. Discuss what other changes might affect plants and animals that children have identified, for example, changes in rainfall or temperature.

Step 2 – LITERATURE/DISCUSS (Give expert Information/Book: Ask questions)

Challenge

Students find out what changes in the Ecuadorian landscape will impact the productivity of cacao trees.

Materials

- Book: **The Story of Chocolate** by DK Publishing
- From the Bean to the Bar: Chocolate Slideshow – Available at: http://www.rainforest-alliance.org/programs/education/teachers/curriculum/ecuador/slideshow/cocoa_slideshow.pdf
- Paper, pencils

Procedure

1. Read aloud: **The Story of Chocolate**
2. Read the ***From the Bean to the Bar: Chocolate Slideshow***, available from the Resource Index, to take a delicious journey that follows the production of a chocolate bar from the bean to your supermarket.
3. Discuss with students the interaction of different elements in the rainforest environment and how these might impact the growth and productivity of cacao plants.
4. Have students research the growth cycle and conditions of the cacao plant.

5. Draw a diagram of the cocoa growth cycle and conditions answering the questions:
- How much water does a plant need in a year?
 - What kind of soil is best?
 - Do plants grow better in shade or in full sun?
 - What pollinators come to cacao plants?
 - What is missing from cocoa farms that occur naturally in the forest?
 - What birds use the cacao plant for shelter or food?

Step 3A – PRACTICE (Math and Learning Centers)

Challenge

Students calculate the ratio of chocolate to the productivity of cacao plants and their farmers.

Materials

- Research tools (Internet, encyclopedia)
- Paper, pencils

Procedure

1. Students research how many cocoa beans are produced on one cacao plant.
 - a. Calculate how many beans are necessary for one pound of chocolate.
 - b. Calculate how many cacao plants are necessary to supply the chocolate consumed by one student over a week, a month and a year. (Students will have to keep a record on their chocolate consumption and estimate the weight in pounds.)
 - c. If a cacao plant takes up X amount of room, how big would a field of cacao plants have to be to supply chocolate to your class?
 - d. Estimate how heavy a bag that carries the number of cocoa beans for one pound of chocolate is.
 - e. Figure out how many pounds a worker in a cocoa field would have to carry in order to supply a pound of chocolate for a student.

Step 3B – CREATE (Performance Tasks)

Challenge

Students will understand how their supermarket habits impact the communities of people like the Chachi in Ecuador.

Materials

- Paper
- Art supplies

Procedure

1. Students will create a mock store that sells chocolate of different kinds.
2. Each student in the class will design a package for their chocolate product that shows the amount/weight of the chocolate and lists all the "ingredients" necessary to grow chocolate, or cocoa beans...

For example: What insects are necessary, how much rainfall, how much land is required for the number of plants to produce the right amount of beans, etc.

3. Each label will be illustrated with a picture that shows (either with a map or a drawing) where the cacao plant grows and how it is related to the Ecuadorian rainforest.
4. Students will draw posters for their "store" that advertise shade grown versus full sun/plantation cocoa and list at the bottom the benefits and problems with each approach to farming.

Step 4 - PRESENT (Edit Work/Students Orally Present Projects)**Challenge**

Students have a mock open house for their store and advertise their 'products' to other students.

Materials

- Chocolate labels from Step 3B

Procedure

1. Students organize their packaging by setting up a mock chocolate store for other students to visit.
2. Students write and present commercials/advertisements for their products that they present orally/dramatically in front of the class.

LESSON 3 ASSESSMENT RESULTS:

Teacher observations of tasks with rubrics as listed below, as well as collected work samples.

Assessment Guidelines	3 = P (Proficient)	2 = S (Satisfactory)	1 = NW (Needs Work)
1. Student demonstrates an understanding, through his/her poster, the relationship between local pollinators and plant reproduction and the effects of shrinking insect populations.			
2. Student draws a diagram of the cacao plant growth cycle that shows the interrelationship among different elements of the rainforest environment on the health and productivity of cacao plants.			
3. Student calculates the ratio of cocoa beans to the production of locally consumed chocolate candy.			
4. Student displays knowledge of 'full cost' elements in the production of consumable products like chocolate (raw materials, processing, transportation, marketing) through the created product labels.			
5. Student creates an oral presentation that illustrates the 'full cost' of products consumed on a daily basis.			



Third Grade Ecuadorian Rainforest

Lesson 4: The Tropical Supermarket

Concept

Everything has a source. When we consume products from the shelves of supermarkets we are intricately connected to the ecosystem in which the natural resources originated and to the lives of those people who produced them.

Essential Question

Whose lives are we eating?

Additional Resources

- **Resource Index-** Check out this page at <http://www.rainforest-alliance.org/programs/education/teachers/curriculum/resources/index.html> for additional supplemental materials that complement these dynamic units and to access many of the resources listed below.
- **Slideshow** – The Learning Site provides a slideshow and script about Ecuador that includes background information about the animals, people and landscape of this region. The slideshow can be downloaded for viewing in the classroom, printed out and read as a story, or viewed online with the students.
- **Unit-Specific Story:** The Rainforest Alliance has developed an original story for use with these units, available in English, Spanish and Portuguese. The story is available to download and print or can be viewed onscreen.

Romel's Rainforest Home

- **From the Bean to the Bar: Chocolate Slideshow** - Where does chocolate come from? Take a journey that follows the production of a chocolate bar from the bean to your supermarket. The slideshow can be downloaded for viewing in the classroom, printed out and read as a story, or viewed online with the students.
- **Species Profiles** – The species profiles, available to view on screen or download from the beginning of the unit or the Resource Index, include photos, habitat, foraging behavior, group relationships, threats and many more facts.
 - Bromeliad
 - Ocelot
 - Great Curassow
 - Capuchin Monkey
 - Three-Toed Sloth

- **Rainforest Poster:** Download and print out this colorful two-page poster, which is available for you to use in explaining the layers of the rainforest, its products and the environmental threats facing many rainforests around the world.

Inside the Canopy – Structure and species of the rainforest

Status Report – What is happening to the rainforest

- **Terrarium Instructions** – Download directions for making a terrarium in your classroom.
- **Rainforest Products** – Visit <http://www.rainforest-alliance.org/resources/forest-facts/lives.html> for a summary of products found in our homes and supermarkets that either originated in tropical forests or are currently produced there.
- **Teacher summary/Chachi Community Profile** – The Rainforest Alliance Learning Site provides a downloadable overview of Chachi cocoa farmers in Ecuador with useful information to introduce you to the lesson topic.
- **Conservación y Desarrollo (Conservation and Development)** – Check out this online resource for more information about how the Rainforest Alliance’s partner group in Ecuador, *Conservación y Desarrollo*, is helping the Chachi protect their precious ecosystems:
<http://www.rainforestalliance.org/programs/aar/ecuador.html>
- **Profiles in Sustainability** – Visit <http://www.rainforestalliance.org/programs/profiles/index.html> for case studies on companies who work closely with the Rainforest Alliance to ensure that their practices protect wildlife, workers and communities.
- **Certificate of Accomplishment** – Print out colorful rainforest certificates for your students to commemorate their completion of these units.

Step 1 - CONNECT (The Concept to Prior Knowledge)

Challenge

Students will understand that farmers organize their lives around growing, harvesting and delivering products to markets for other people to enjoy.

Materials

- Locally produced food (brought in by students)
- Local map

Procedure

1. Students identify and bring in to school a food that is produced locally. It may be a vegetable, fruit, honey, grain, meat, etc.
2. Using a map of the local area, locate where these foods are grown and how much land each takes to grow, how much time it takes to grow and what kinds of ingredients are necessary for its production. For example: How much rainfall, temperature, fertilizer or feed, soil, etc.

3. Students study a local food producer. (This will be different for each geographical area.) Have the producer come into the classroom or have children visit the local farm/garden to discuss how much of their time and energy goes into producing the item of study.
4. Have students write a report of the food item and all the ingredients that go into its production, including the time of the farmer.

Step 2 – LITERATURE/DISCUSS (Give expert Information/ Book: Ask questions)

Challenge

Students will understand that many lives of people in Ecuador are part of their chocolate.

Materials

- Story: **Romel's Rainforest Home**, a Rainforest Alliance story
- Chachi Community Profile – Available at:
<http://www.rainforestalliance.org/programs/education/teachers/curriculum/ecuador/pdfs/ecuador-summary.pdf>

Procedure

1. Read **Romel's Rainforest Home**, a Rainforest Alliance story. Use the pictures in the story to compare and contrast the students and communities the students know to those that Romel knows.
2. Read the ***Chachi Community Profile***, available from the Resource Index, to share information with students about the Chachi and the social and environmental benefits of growing cocoa in the shade.

Discussion:

- a. What food products are the same or different in Romel's community than what you find in your supermarket?
- b. How is Romel's life the same and/or different than yours?
- c. How is his home different?
- d. How is the school different?
- e. Do you do chores at home? Are they the same as Romel's?
- f. How much time do you think Romel spends helping produce cocoa beans?
- g. Did you learn anything new about cocoa beans than you knew before after reading the story?

Step 3A – PRACTICE (Math and Learning Centers)

Challenge

Students will calculate the amount of space necessary to produce chocolate for their classroom.

Materials

- Paper, pencils

Procedure

1. Research how much space is needed to grow 10 – 20 – 30 – or 100 cacao plants.
2. How big will Romel’s farm have to be to supply enough chocolate for your classroom?
3. How much space will it take to supply chocolate for 20 classrooms?
4. How many acres of Ecuadorian Rainforest are left?
5. Romel’s family grows cocoa in the shade of the rainforest. How many acres of rainforest will have to be cut down if a farmer decides not to use shade-grown cocoa techniques in order to triple the amount of chocolate being produced now?
6. How many acres would that leave for protected rainforest?

Step 3B – CREATE (Performance Tasks Related to Standard Indicators)**Challenge**

Students understand the difference between the impact of shade-grown cocoa beans and plantation cocoa production.

Materials

- Profiles in Sustainability (Available at <http://www.rainforest-alliance.org/programs/profiles/index.html>)

Procedure

1. Students research different types of growing practices for cocoa.
2. Students read Profiles in Sustainability and Conservation and Development sites at <http://www.rainforest-alliance.org/programs/profiles/index.html>.
3. Students give 2-3 minute speeches pretending they are Romel’s uncle, the president of San Salvador, to explain the benefits of growing cocoa beans using sustainable farming practices.

Step 4 - PRESENT**Challenge**

Students describe the benefits of shade-grown/sustainable growing practices to manufacturing companies who buy cocoa beans from Ecuador.

Procedure

1. Students develop research papers that describe the process and benefits of sustainable practices in the rainforest of Ecuador especially regarding cocoa beans.
2. Students create an alternative buying strategy for manufacturers that supports the use of sustainable growing techniques by showing how much of the rainforest can be saved and highlighting the value of preserving its integrity for the lives of plants, animals and Chachi communities.

LESSON 4 ASSESSMENT RESULTS:

Teacher observations of tasks with rubrics as listed below, as well as collected work samples.

Assessment Guidelines	3 = P (Proficient)	2 = S (Satisfactory)	1 = NW (Needs Work)
1. Student creates a portrait, through his/her report, of a local food through its production and understands the relationship of the grower to the process.			
2. Student compares and contrasts their daily lives to the lives of the Chachi Indian.			
3. Student calculates the amount of physical space necessary for the production of cocoa using two different farming techniques.			
4. Student researches and orally delivers information on sustainable cocoa farming.			
5. Papers will include a description of the sustainable farming techniques and its benefits to the rainforest environment and conservation.			