2nd Grade Unit 3
12 weeks

Interdependent Relationships in Ecosystems

Unit Planning Team:
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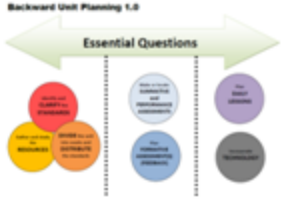
Haylee Pierce (JM), Stacie Mathis (RG)

Essential Questions



What do plants need to grow?

Why do living things exist in different places on land and in water?

Interdependent Relationships in Ecosystems

Students who demonstrate understanding can:

2-LS2-1 Plan and conduct an investigation to determine if plants need sunlight and water to grow.

[Assessment Boundary: Assessment is limited to testing one variable at a time.]

2-LS2-2 Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.*

2-LS4-1 Make observations of plants and animals to compare the diversity of life in different habitats.

[Clarification Statement: Emphasis is on the diversity of living things in a variety of habitats.]

[Assessment Boundary: Assessment does not include specific animal and plant names in specific habitats.]

The performance expectations above were developed using the following elements from the NRC document *A Framework for K-12 Science Education*.

Science and Engineering Practices

Developing and Using Models

Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.

- Develop a simple model based on evidence to represent a proposed object or tool. (2-LS2-2)

Planning and Carrying Out Investigations

Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.

- Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. (2-LS2-1)
- Make observations (firsthand or from media) to collect data that can be used to make comparisons. (2-LS4-1)

Connections to Nature of Science

Scientific Knowledge is Based on Empirical Evidence

- Scientists look for patterns and order when making observations about the world. (2-LS4-1)

Disciplinary Core Ideas

LS2.A: Interdependent Relationships in Ecosystems

- Plants depend on water and light to grow. (2-LS2-1)
- Plants depend on animals for pollination or to move their seeds around. (2-LS2-2)

LS4.D: Biodiversity and Humans

- There are many different kinds of living things in any area, and they exist in different places on land and in water. (2-LS4-1)

ETS1.B: Developing Possible Solutions

- Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. (2-LS2-2)

Crosscutting Concepts

Cause and Effect

- Events have causes that generate observable patterns. (2-LS2-1)

Structure and Function

- The shape and stability of structures of natural and designed objects are related to their function(s). (2-LS2-2)

Interdependent Relationships in Ecosystems

Background knowledge videos:

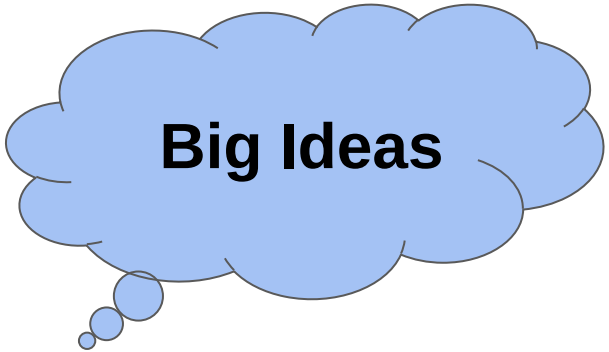
LS2A - Relationships in Ecosystems

LS4D - Biodiversity & Humans

These videos are designed to assist in providing background knowledge with the associated DCI. The information in the videos follows the progression through high school.

What do plants need to grow?

Why do living things exist in different places on land and in water?



★ Plants depend on water and light to grow.

★ Plants depend on animals for pollination or to move their seeds around.

★ There are many different kinds of living things in any area.

★ Living things exist in different places on land and in water.

★ Biodiversity is defined as the variety of life in a specific area, habitat, or on our planet.

★ Pollination is a key focus concept only in second grade.

Interdependent Relationships in Ecosystems

Students who demonstrate understanding can:

2-LS2-1 Plan and conduct an investigation to determine if plants need sunlight and water to grow.

[Assessment Boundary: Assessment is limited to testing one variable at a time.]

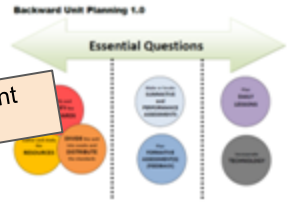
2-LS2-2 Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.*

2-LS4-1 Make observations of plants and animals to compare the diversity of life in different habitats.

[Clarification Statement: Emphasis is on the diversity of living things in a variety of habitats.]

[Assessment Boundary: Assessment does not include specific animal and plant names in specific habitats.]

Eventually should be student planned and conducted.



Identify and CLARIFY the STANDARDS

Clarifications:

Needs:

- Plants need: air, water, light, & minerals from the air and soil
- Animals need: food, water, shelter, appropriate temperature/climate

Interdependent relationship:

- Animals and plants rely on each other:
  - Animals need plants for food → energy
  - Plants need animals to pollinate and move seeds → reproduce (continue life cycle)

This idea is foundational to the concept of the food web of producers and consumers that students will encounter in 5th Grade.

Biodiversity:

- Variety of life on our planet - variety of animals and plants within a specific area or habitat

Disciplinary Core Ideas

LS2.A: Interdependent Relationships in Ecosystems

- Plants depend on water and light to grow. (2-LS2-1)
- Plants depend on animals for pollination or to move their seeds around. (2-LS2-2)

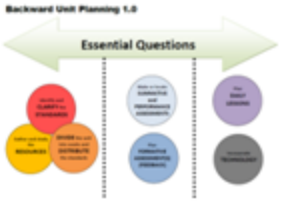
LS4.D: Biodiversity and Humans

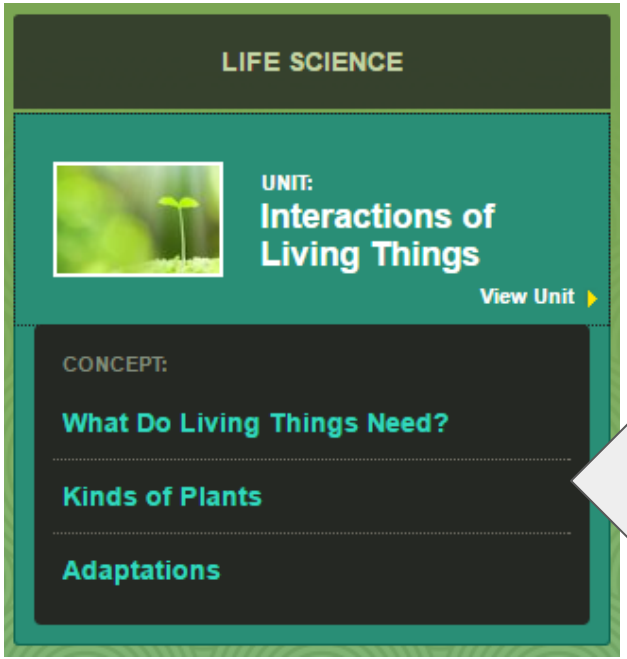
- There are many different kinds of living things in any area, and they exist in different places on land and in water. (2-LS4-1)

ETS1.B: Developing Possible Solutions

- Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. (2-LS2-2)

Gather and study the RESOURCES





Discovery Education Science Techbook Units

Resources from Discovery Education Techbook are noted with **"DE".**

Helpful Hint:

To access the Science Techbook links in the unit plan, make sure you are logged into Discovery Education before clicking on the link in this PowerPoint.

Overall Unit Layout

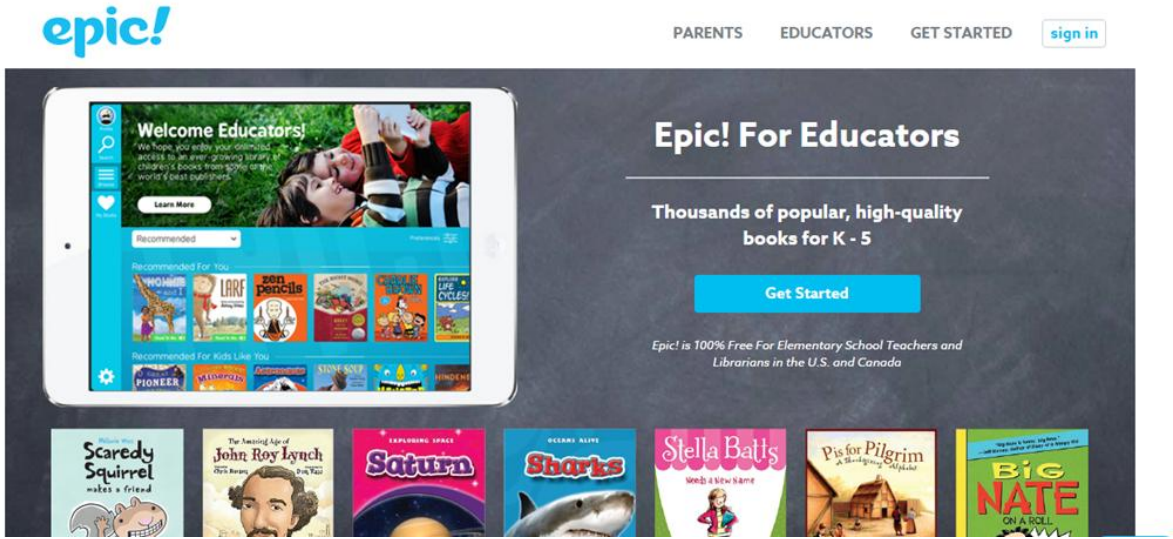
Weeks	Focus
1-2	Building background knowledge of plants and animals; Begin to understand the concept of habitat
3-8	Learning about biodiversity of plants and animals that exist in various habitats (Arctic, Forests, Desert, Rainforest, etc.)
9-12	Learning about how plants' parts function, what plants need to grow Learning about pollination and seed dispersal Interdependency between plants and animals

Get EPIC!

Epic! For Educators – FREE resource for books for Kindergarten – 5th grade.

Sign up for a FREE educator account: Create collections, add your class, assign books, read as read alouds, audio books, and more!

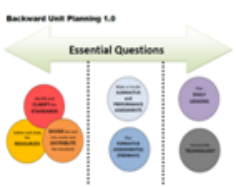
Go to www.getepic.com and click on the EDUCATORS tab to get started.



We have selected books for you to use in this science unit. In order to use these books, you will need to have an account.

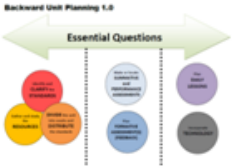
Books will be labeled throughout the unit with ***EPIC!*** and a picture of the book.

Week	Performance Expectation/ DCI	5E Model
1-2 Part 1	**2-LS4-1 Make observations of plants and animals to compare the diversity of life in different habitats.** Background Knowledge -living/non-living -plants/animals -parts -living things have needs	**Engage:** Living vs. Non-Living Assessment Probe: Is it Living? **Explore:** What are living things? Plants and animals Assessment Probes: Is it a plant? Is it an animal? **Explain:** ● Read book "Living Things" from *EPIC* ● Make a list of living vs. nonliving things and the characteristics that make them fit in each category **Elaborate/Extend/Evaluate:** Assessment Probes: Cucumber Seeds No Animals Allowed Assessment probes listed above can be found at: Assessment Probes for 2nd Grade WebPage *-intranet password protected*



DIVIDE the unit into weeks and DISTRIBUTE the standards

Week	Performance Expectation/ DCI	5E Model
1-2 Part 2	**2-LS4-1 Make observations of plants and animals to compare the diversity of life in different habitats.**	**Intro to Habitats** **Engage:** Compare/contrast Snowy Leopard and Toucan Photos PDF PPT *Questions to Ask:* ● Do these animals live in the same place? ● How do you know? *[students will make observations of animal's background and discuss]* ● Why do they not live in the same place? Could the leopard live with the toucan or vice versa? Why or why not? *(Conclusion: Animals and plants have different needs depending on where they live [their habitat].)* ● What is a habitat? *A habitat is the home of an animal or a plant. Almost every place on Earth—from the hottest desert to the coldest ice pack—is a habitat for some kinds of animals and plants. Most habitats include a community of animals and plants along with water, oxygen, soil or sand, and rocks.* DE Hands-On Activity: Inspecting your Spot Teacher Guide ● Discuss the things found in their school habitat- plants, animals.etc. *Conclusion: There are many different kinds of living things in any area, and they exist in different places on land and in water.*



Weeks	Performance Expectation/ DCI	5E Model
3-8	**2-LS4-1 Make observations of plants and animals to compare the diversity of life in different habitats.** Connection to ELA/Social Studies Unit 5 Tales From Around the World (see following slides for more information) ***Possible Habitats to Explore:*** Local Deserts Forests Rainforest Wetlands Savannah/Grasslands Urban Ocean/Fresh Water (You are not expected to cover every habitat. Focus should be on a diversity of plants and animals in a variety of habitats.)	**Explore/Explain:** **Research Habitats and the diversity of life** • Research and explore a variety of habitats • Create Habitat Book or Include in Science Journal (see following slides for resources and connections to ELA unit 5) Research questions: • *Where is the habitat on the map/in world?* • *What animals are found in that habitat?* • *What plants are found in this habitat?* • *How do the plants and animals interact?* **Explain/Elaborate:** • Further explore and research the diversity of life in various habitats Research should focus on the ***biodiversity*** *in the habitat* and the ***interdependence*** *between the habitat, animals, and plants that live there.* ** Students should compare the diversity of life within the habitats researched.* • *Optional Lessons:* Habitat Hunt Graph your diversity data **Evaluate:** Students create a habitat diorama or other representation of their researched habitat and present their findings to the class. - Other representation ideas: Chatterpix, DE Board, PPT/Google Slides, Storyboards, Animoto, Powtoon, Posters, etc.

DIVIDE the unit into weeks and DISTRIBUTE the standards

Habitat Diversity Research

GOAL: students to make observations of plants and animals to *compare* the diversity of life in the different habitats.

Students will record their findings in a habitat book or science journal. This book/journal should help facilitate student understanding of *how plants animals interact in their habitats.*

Questions to research:

- Where is the habitat located?
  - v(show on map, locate the country, continent, etc)
- What animals are found in that habitat?
- What plants are found in this habitat?
- How do the plants and animals interact?

Finally: Identify similarities and differences among habitats.

Possible Resources for Research:

EPIC books (see following slide)

Websites:

World Book for Kids – Variety of Habitats/Life forms:

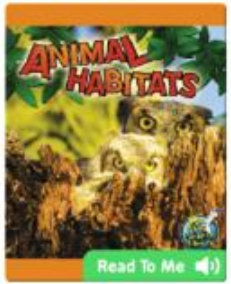
Desert Forest Rainforest Wetlands Savanna

Habitat Webquest (use research sites not the webquest itself)
Animal Habitats for Kids
National Geographic Habitats
World Wildlife Fund – Habitats
Science Trek – Habitats (info, games, resources)
WildKratts Habitats PBS
Interactive Learning Sites for Education – Habitats
Kids Do Ecology–World Biomes

Resources on DE: Interactives Videos Images
Habitat Boards *(a collection of boards found in the DE 2nd Grade District Content folder)*

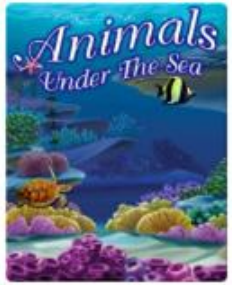
Videos: (not found in DE)
Grasslands Rainforest Layers Tropical Rainforest
Desert Animals Tundra Oceans Home Sweet Habitat

EPIC Books available for Habitat Diversity Research:

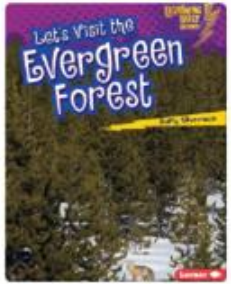


Animal Habitats
by Julie Lundgren

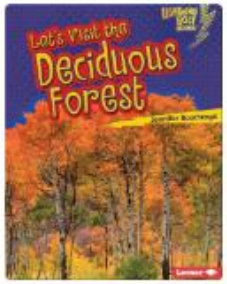
Animal Habitats
by Christian Lopetz



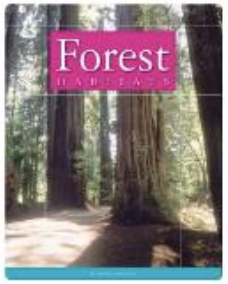
Animals Under The Sea
by Alan Walker



Let's Visit the Evergreen Forests
by Buffy Silverman



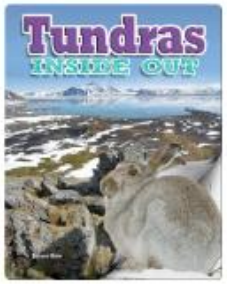
Let's Visit the Deciduous Forest
by Jennifer Boothroyd



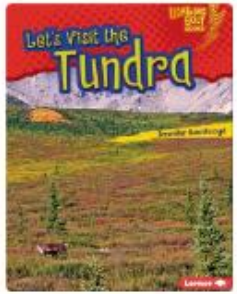
Forest Habitats
by Arnold Ringstad

Rain Forests: Learning About the Earth
by Colleen Sexton

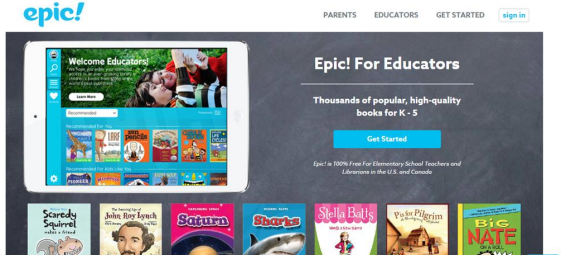
Let's Visit the Rain Forest
by Jennifer Boothroyd



Tundras Inside Out
by James Bow



Let's Visit the Tundra
by Jennifer Boothroyd



Get EPIC!

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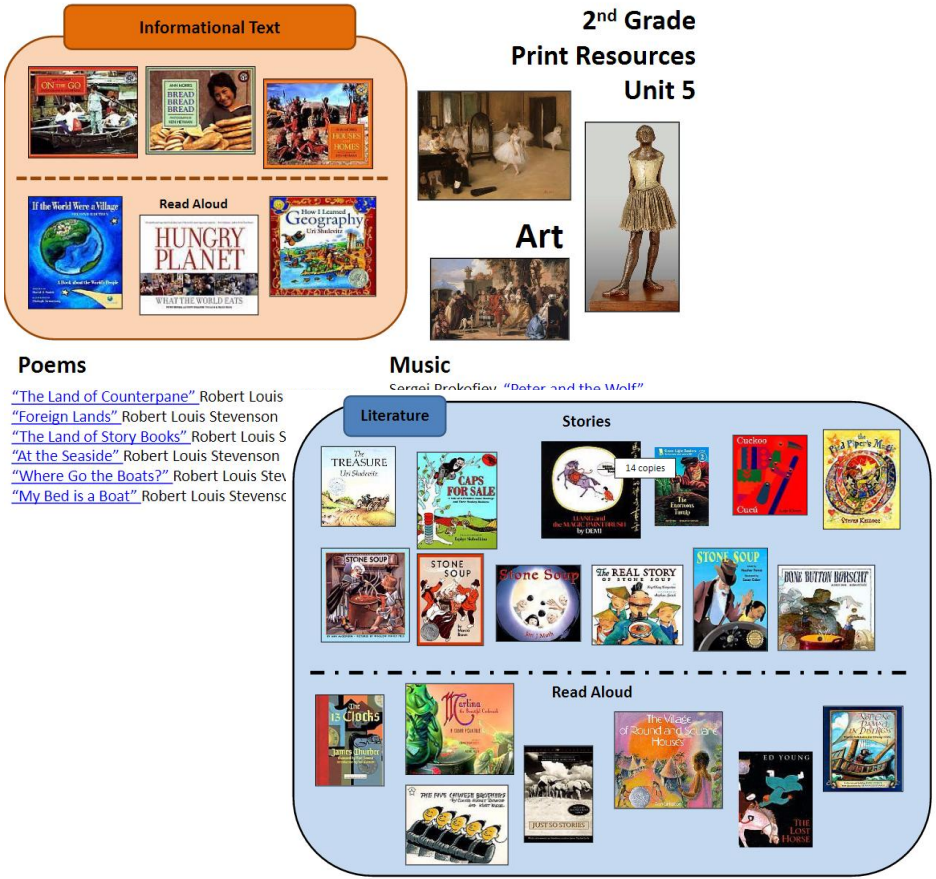
Connections to ELA Unit 5 – Tales From Around the World

As you read a book from each continent/country connect to science by discussing the habitats that can be found in that continent/country.

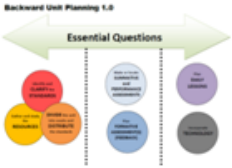
You have 6 weeks to research and discuss the different types of habitats.

Things to include in connection to ELA unit readings:

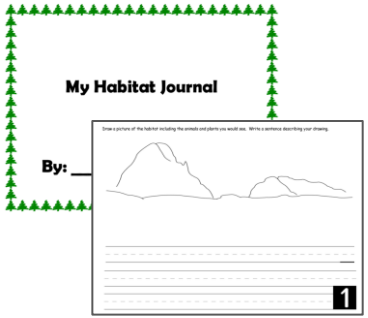
- Where is this country/continent on the map?
- What is/are the habitat(s) in that location?
- What animals are found in that habitat?
- What plants are found in this habitat?
- How do the plants and animals interact?



Resources for Habitat Diversity Research Notebooks or Journals



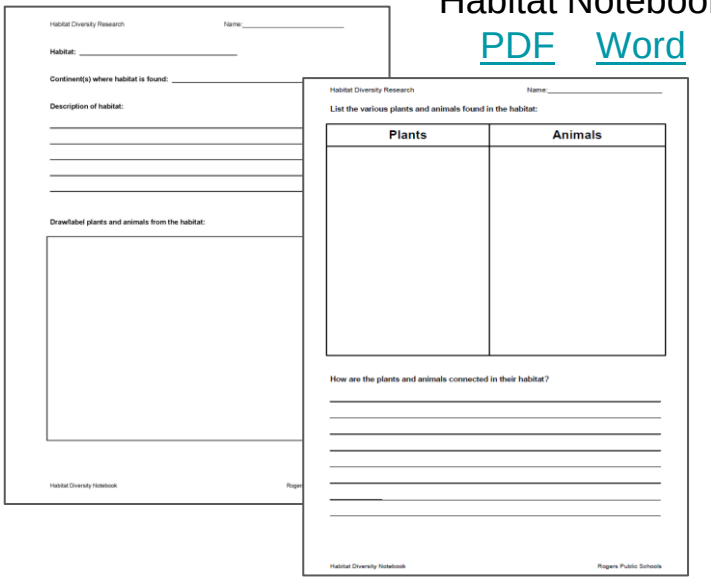
These are a few examples available for you to use:



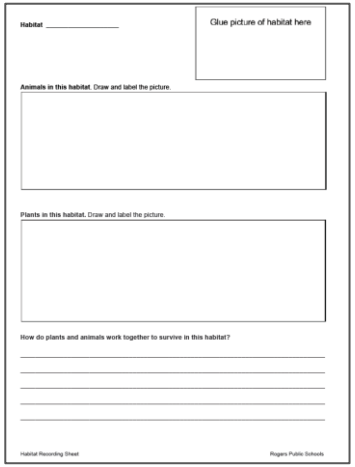
[Habitat Journal]

Habitat Journal: 7 pages
Includes one page with a "sketch of a background" from 7 different habitat options with handwriting lines to describe the drawing.
**this would be good at the beginning of study, but is too simplistic for depth of standards - would need additional prompts or writing supports added*

Habitat Notebook
[PDF] [Word]



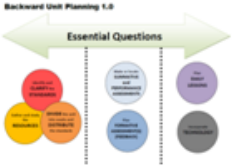
Habitat Notebook: Two pages about a habitat
includes: continent, description of habitat, draw/label plants and animals, list variety of plants and animals, describe how they are connected
**Copy front/back and then put multiple copies together for a complete notebook of habitats*



Habitat Recording Sheet
[PDF] [Word]

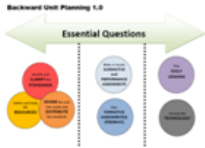
Habitat Recording Sheet: 1 page
1 page: includes area for picture of habitat, animals in habitat, plants in habitat, describe how they work together to survive in this habitat
**Idea for use: "note-taking" recording sheet - have student groups share presentations of their research - other students record what they learned from the presentations*

Week	Performance Expectation/ DCI	5E Model
9-12	**2-LS2-1 Plan and conduct an investigation to determine if plants need sunlight and water to grow.** **2.LS2-2 Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.**	**Plant Survival and Needs** **Engage:** DE Getting to Know Plants: All My Parts or DE Kinds of Plants **Explore/Explain/Elaborate/Evaluate:** Survival of a Plant Investigation (contains the entire 5E model- this investigation will be started and continued over multiple weeks with students recording their observations as they go… continue with lessons in the unit while recording data in this investigation and synthesize findings at the end) DE: Parts of Plants and Function Board *Discussions should be focused on:* • *Plants need air, water, nutrients, and light.* • *Plants use energy from sunlight to make their own food from water and carbon dioxide in a process called photosynthesis.* • *Plants have systems to move nutrients and water through them.*

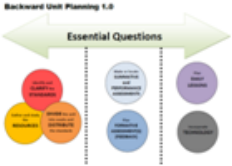


DIVIDE the unit into weeks and **DISTRIBUTE** the standards

Week	Performance Expectation/ DCI	5E Model
9-12	**2-LS2-1 Plan and conduct an investigation to determine if plants need sunlight and water to grow.** **2.LS2-2 Develop a simple model that mimics the function of an animal in dispersing seeds or pollination.**	**Plant Pollination/Seed Dispersal** **Engage:** Show picture of a bee, squirrel, a seed, wind, and a flower Photos: PDF PPT *Ask: How are these pictures connected? How do these aid in survival?* Begin KLEWS Chart on Pollination/Seed Dispersal DE video segment "Seed Dispersal" • View the segment once without stopping • View it again, pausing to discuss: ○ *What is the yellow powder on the bee?* ○ *What is the butterfly doing? How it is helping the plant?* ○ *What does "pollinate" mean?* ○ *How is the badger helping plants?* • Further discussion: ○ *Have you ever seen an animal pollinating a plant?* ○ *Have you ever noticed an animal dispersing seeds?* ○ *Have you personally ever helped pollinate a plant or spread plant seeds? How?* Add to KLEWS Chart *From the video and discussion, guide students to recognize the **interactions between plants and animals.**. The animals are helping the plants, but what are they getting in return? (food, shelter) Make sure students understand that the pollinators are spreading the pollen as they eat (it is not on purpose, it is something that happens naturally in the environment).*



Week	Performance Expectation/ DCI	5E Model
9-12	**2.LS2-2 Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.**	**Focus: Pollination** **Explore:** Pollination Experiment Students will explore pollination using cheetos and a model of a flower Flower parts for pollination experiment/model (recording sheet to go with experiment above)  *Possible Addition: Have students drink from juice box with flower poked through the straw to mimic drinking nectar.* Literacy Resources for Insects and Plants/Pollination



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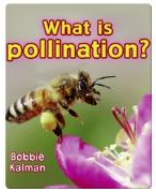
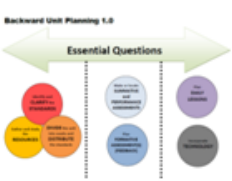
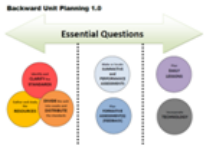




DIVIDE the unit into weeks and DISTRIBUTE the standards

Week	Performance Expectation/ DCI	5E Model
9-12	**2-LS2-1 Plan and conduct an investigation to determine if plants need sunlight and water to grow.** **2.LS2-2 Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.**	**Focus: Seed Dispersal** **Engage:** Show picture of a bee, squirrel, a seed, wind, and a flower Photos: PDF PPT *Ask: How are these pictures connected? How do these aid in survival?* **Explore/Explain/Elaborate:** DE: How are seeds dispersed activity DE: Animals Help New Plants Grow Have students write down ways that seeds are dispersed after watching the video and/or reading the passage above. *This can be in Science Journal or a writing station assignment.* Additional lessons: Seeds on the Move Part 1 Seeds on the Move Part 2 Creating a Model for Seed Dispersal Spreading Seeds Around the Forest *Activity option: Students can wrap a piece of packing tape around their hands and crawl across the ground outside to see what they collect. Discuss how this is similar to animals that collect seeds in their fur and how that disperses seeds. **Evaluate:** Assessments from Science Techbook Unit Concept Designing Hand Pollinators - Student Assessment (from EiE)

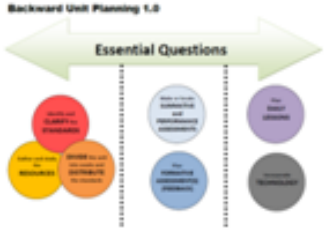


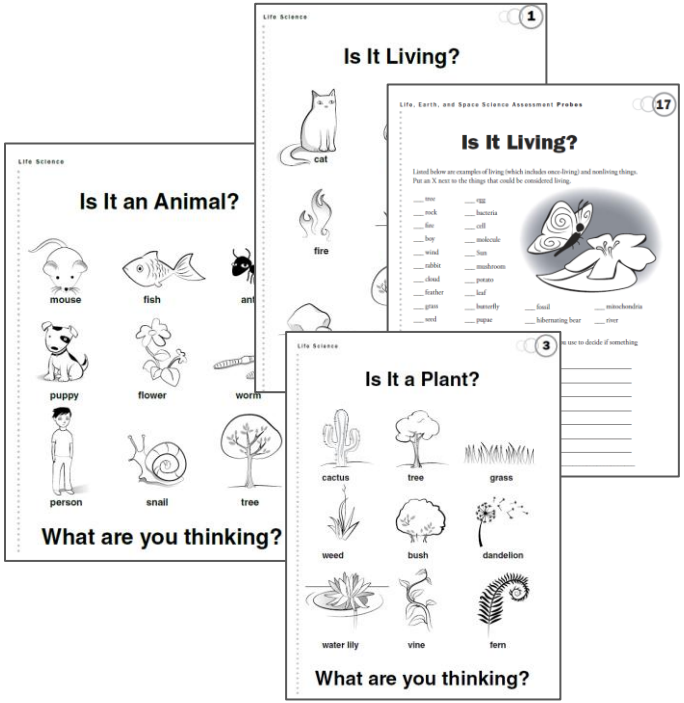
DIVIDE the unit into weeks and DISTRIBUTE the standards

Make or locate SUMMATIVE and PERFORMANCE ASSESSMENTS

Uncovering Student Ideas in Science

Formative Assessment Probes used in this unit:





[2nd Grade Science Assessment Probes]

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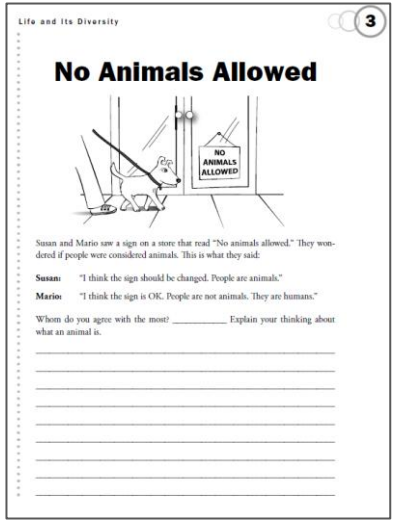
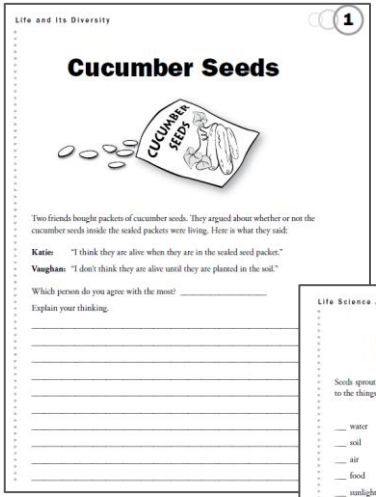
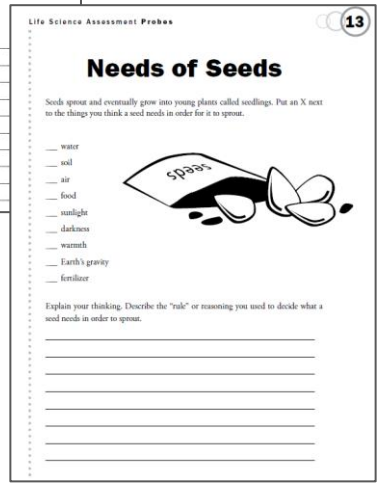
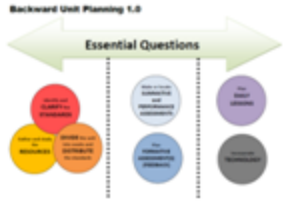






Make or locate
SUMMATIVE
and
PERFORMANCE
ASSESSMENTS

[Assessments from Science Techbook Unit Concept:]



Discovery EDUCATION SCIENCE

Name _____ Date _____

_____ **Constructed Response**

How Plants Are the Same and Different
How Animals Help Plants

Directions:
Write the answer to each question. Then draw a picture that shows your answer.

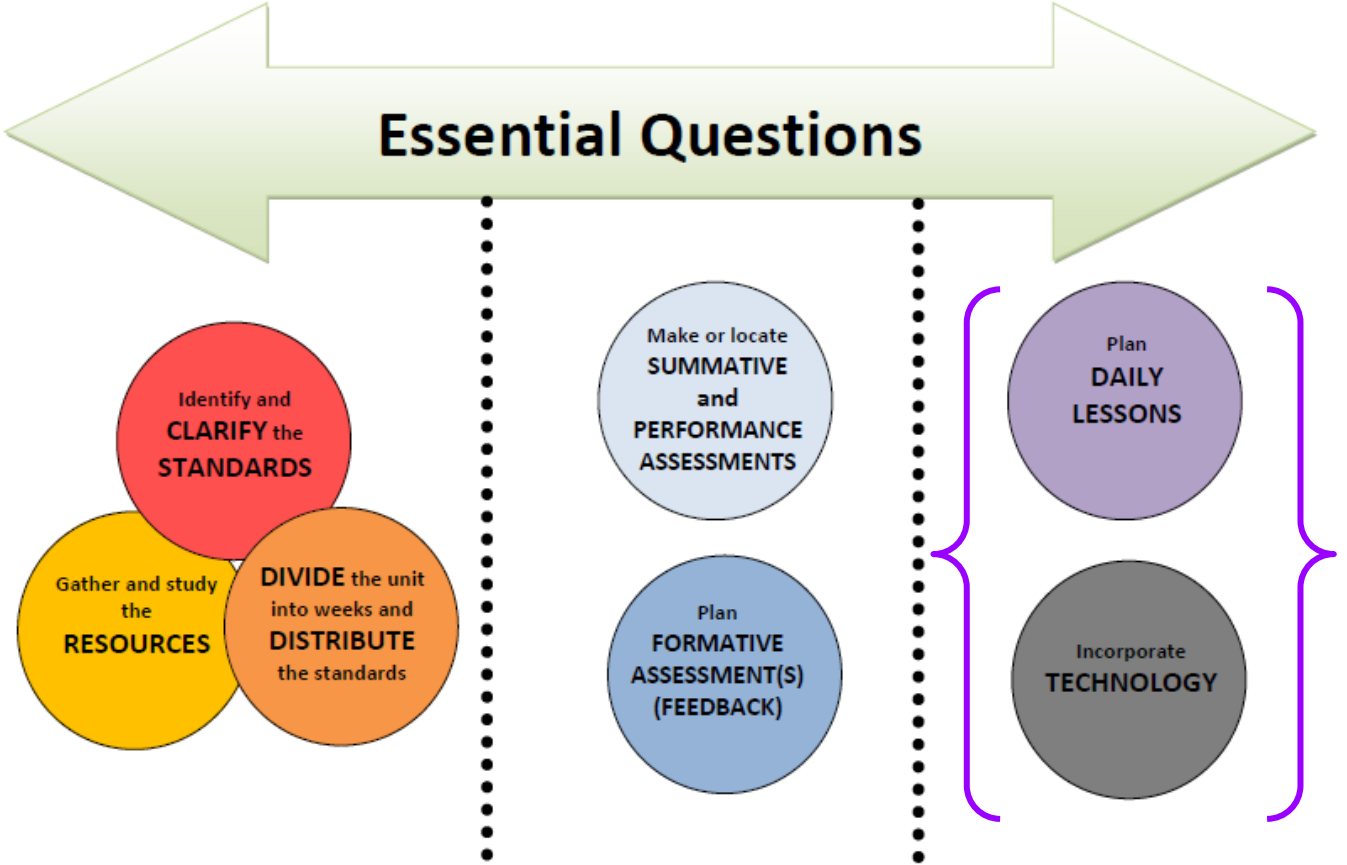
1. Give two ways that all plants are the same.

2. Give two ways that plants can be different from each other.

3. Give two ways that animals can help new plants grow.

Constructed Response: How Plants Are the Same and Different and How Animals Help Plants

Backward Unit Planning 1.0



Now you're ready to plan your daily lessons!