

Lesson 1

Materials:

- Plastic cups (with small drainage holes at bottom)
- Multiple large plastic trays
- Seeding Soil
- Seeds (preferable bush beans)
- Water
- Sharpie

Resources:

The Needs of a Plant for Kids | What do Plants Need to Survive?
<https://www.youtube.com/watch?v=gIRR-VdIP1M> (3 min)

Plant Germination | Dr Binocs Show | Peekaboo
https://www.youtube.com/watch?v=JSe_VUMymjo (6:28)

Vocabulary:

Seed
Soil
Water
Sunlight
Nutrients
Survival
Germination
Root
Embryo
Outer Coating
Darkness

Modalities Used

Visual
Verbal
Spatial
Kinesthetic

National Standards

2-PS2-1 - Plan and conduct an investigation to determine if plants need sunlight and water to grow

LOS LUCEROS

HISTORIC SITE

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Introduction

The overall objective of this curriculum unit is to give students a better sense of understanding plants and how they interact with their environment. A deeper goal of these lessons is to instill a sense of structured exploration that students can then apply to other areas of science throughout their life.

This curriculum unit ties together life science learning focused on plants, animals, and their ecosystem for second graders. The lessons are organized in such a way to build off previous knowledge acquired. Tasks on the final project during a field trip to Los Luceros are similar to other tasks already practiced. The students are then using their prior knowledge and skills to compare and contrast to use higher order thinking to better understand the world around them and how it works. The lessons are also designed to slowly make the student more comfortable with group learning that is designed to allow them to lead their own learning.

Lesson Plan 1:

What Allows a Plant to Grow

Objectives:

Objective 1: Students will learn the parts of a seed.

Objective 2: Students will learn what is necessary for a plant to germinate and grow.

Objective 3: Students will be able to indicate why plants did or did not grow 2 out of 3 times.

Teacher Instruction:

The teacher can use the videos listed in Resources to the left as a hook to introduce the topic to the students. The teacher will then discuss the parts of the seed and what is critical for the seed to germinate. Numerous diagrams are available online that can be used as a worksheet or graphic organizer for seed parts and are encouraged to include with this instruction.

Student Practice:

Students will complete their graphic organizer while the teacher discusses. These sheets and additional plant related activity sheets can be used while students take turns in small groups choosing the variables in their study (from the tick tac toe sheet below) and planting their seeds. Students will be told to check their plants before or after school daily to see if they need any additional water.

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TO BE DONE TWO WEEKS AFTER PLANTING:

Group Practice

Students will work in groups of four with their plants in front of them. They will take turns going through the planting options (1-9) to see who did which ones in the group. They will discuss as a group the outcome of the seeds and what they think contributed to that outcome.

Student Practice

The students will write up the findings of their plants (which grew, and which did not) why they think this happened. During this time, the teacher will write key terms on the board to help them with their write up.

Assessment/Feedback:

Teacher will supervise the planting to make sure that students are picking appropriate options. During group work, the teacher will float around to make sure students are getting it. After group work, the teacher will ask the students to check in with level of understanding prior to individuals completing the write up. During individual work, the teacher will float around the room to make sure that students are not struggling with spelling or forming sentences. Students will turn in their short write up for feedback and grading.

Differentiation:

Students who want or need to be challenged more can easily include more plants in their study or look at additional variables mentioned on the tic-tac-toe sheet.



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What do plants need to live? Science Experiment!

To complete this assignment, you need to complete three in a row (horizontally, diagonally, or vertically).

All supplies are located at the lab table.

Make sure you label all three of your cups with your name and the number of the square you are testing the variables of.

You may do more than three squares if you wish!

After you have completed at least three from the tic tac toe squares, you may also choose to create additional cups with different kinds of "fertilizer": Fish Fertilizer, Coke, Gatorade, and Miracle Gro.

1. Put a seed in a cup (no soil). Keep seed in water. Place in full sun outdoors.	2. Put a seed in soil. Keep soil damp. Place by window.	3. Put a seed in soil. Do not water. Place in full sun outdoors.
4. Put a seed in soil. Keep soil moist. Place by window.	5. Plant a seed in soil. Keep soil damp. Place in full sun outdoors.	6. Put a seed in a cup (no soil). Do not water. Place by window.
7. Put a seed soil. Keep soil moist. Put in dark place.	8. Put a seed in cup (no soil). Keep seed in water. Put in dark place.	9. Put a seed in soil. Keep soil moist. Place by window.

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Lesson 2

Materials:

- Descriptive Card Game (see Activity)
- Descriptive Adjective List (see below)
- Pictures of Plants (see below)
- Copies of the Los Luceros Field Guidebooks for each group
- Two copies of graphic organizer for students to write descriptive words in.

Resources:

Vocabulary:

See Student Handout

Modalities Used

Visual
Verbal

National Standards

2-PS1-1 - Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

Lesson Plan 2: Describing Plants

Objectives:

Objective 1: Students will widen their vocabulary of descriptive words by accurately (8 out of 10 times) using new words supplied to them
Objective 2: Students will learn how descriptions are important to classifying plants by correctly identifying multiple plant species.

Activity:

Pair to Save or Steal (Card Game)

Students will be in groups of four. Each student will be given 4 index cards with object names created by the teacher. These four cards will be placed face up in front of the student and visible to other students in the group. Each group will also be given a stack of 30 descriptive cards in a pile face down. Students take turns flipping cards. They can either pick up the flipped card and pair it with one of the cards in front of them to save it or steal an object card from in front of another group member.

Teacher Instruction:

The teacher will discuss the importance of describing things with the students and how descriptions are the basis for how scientists then classify and talk about species of plants and animals as well as the world around them. The teacher will review different ways objects can be described which can be directed based upon the student vocabulary handout below. The teacher will show the class an object and walk them through how to describe it with participation from the class. The teacher will inform the students that they will work together in groups to describe the object they brought from home. Following that, they will be looking at pictures of plants. The teacher will then inform the students they will be using this skill on their future field trip to Los Luceros Historic Site. Coming up with descriptive words not on the list will be encouraged.

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Student Practice:

Students will be given at least two graphic organizers to record their descriptive words of plants. Students will be allowed to pick two plants (out of seven provided) that they will describe. They will be told that they must provide at least one word in four categories. They can choose to do more if inspired. They will be reminded to put the number of the photo into the center circle and leave “plant species” blank for now.

Group Practice:

Teacher will review the rules of group work including working quietly, supporting each other’s ideas, and doing their best job with their role and as a group participant. Teacher will break the students into groups of four and hand each group a copy of the Los Luceros Field Guide. Students will be told to work together to classify the plants they have described based on the pictures and the words they have used to describe them. When they classify the species, they are to put it into the center circle.

Assessment/Feedback:

Teacher will float around the groups during the anticipatory session and group work. During the activity time frame, the teacher can praise good answers and redirect students as needed. During the group work, the teacher will check in with them about how they are choosing the different objects. During individual work, the teacher will float around the room to make sure that students are not struggling to find descriptive words that match the objects. Students will turn in their descriptive graphic organizer for review and feedback from the teacher.

Differentiation:

Students in need of differentiation can challenge themselves to use words not on the handout, do more plants than required, and/or describe plants in greater detail.



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Plant Descriptive Adjective List

Shapes		Quantity	Color
Broad		Abundant	Red
Crooked		Bountiful	Orange
Circular	Size	Empty	Purple
Distorted	Big	Few	Green
Flat	Colossal	Many	White
Hollow	Great	Multiple	Yellow
Narrow	Gigantic	Numerous	Blue
Round	Huge	Substantial	Pale
Oval	Large,		Bright
Square	Miniature	Appearance	Dull
Triangular	Mammoth	Bushy	Dark
Skinny	Petite	Viny	Texture
Steep	Tall	Creeping	Bumpy
Wide	Thin	Diffuse	Smooth
Star	Tiny	Branching	Hairy
Square		Erect	Prickly
Boxy			Rough

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HISTORIC SITE Plant Activity Photos

1.



2.



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3.



4.



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NAME: _____

Try to pick a descriptive word for four of the six categories. If time allows feel free to add more!

A grid of six empty ovals arranged in two rows and three columns, intended for students to write descriptive words for the categories below.

Color

Shape

Size

A large, horizontally-oriented oval containing two lines of text: "Photo Number:" and "Plant Species:". This oval is positioned centrally below the "Shape" category and above the "Quantity", "Texture", and "Appearance" categories.

Photo Number:

Plant Species:

Quantity

Texture

Appearance

A second grid of six empty ovals arranged in two rows and three columns, identical to the first grid, intended for students to write descriptive words for the categories below.

Describe a Plant!

Lesson 3

Materials:

- Paper (white and various color construction paper)
- Glue Sticks
- Scissors
- Pencils
- Crayons
- Markers
- Class Library Books and/or Computer for Research

Resources:

Parts of a Plant |The Dr. Binocs Show | Learn Videos For Kids
<https://www.youtube.com/watch?v=p3St51F4kE8> (3:13)

What is Pollination?
|POLLINATION | The Dr. Binocs Show |Peekaboo Kids
<https://www.youtube.com/watch?v=W-daJxfe4As> (5:17)

Vocabulary:

Pollinator	Butterfly
Bat	Pollen
Fertilization	Flower
Fruit	Seed
Hummingbird	Bees

Modalities Used

- Visual
- Kinesthetic
- Verbal

National Standards

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

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Lesson Plan 3: Plant Fertilization

Objectives:

Objective 1: Students will be able to understand what a pollinator is and be able to name at least two pollinators.

Objective 2: Students will be able to understand the importance of the role pollinators have and what would happen without them.

Teacher Instruction:

The teacher will review the parts of a typical plant in relation to pollination, fertilization, and seed production. The teacher will also discuss the importance of pollinators and what the most common ones are. The teacher will ask the students to rate their level of comfort with what they have learned. The teacher will deal with any lingering questions or concerns about the topic before moving on.

Teacher will review the rules of group work including working quietly, supporting each other's ideas, and doing their best job with their role and as a group participant. Teacher will hand each group a copy the Choose Your Own Pollinator Adventure Sheet (below) and break the students into groups of four trying to sort them based upon the type of project they want to do.



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Group Practice:

Students will be told to choose a researcher (allowed to use the computer and book in classroom library), a questioner (is allowed to ask the teacher questions), a timekeeper, and an art director (guides artwork needed and encourages others of their artistic abilities) Students will be told to work together on their chosen final model.

Assessment/Feedback:

During the group work, the teacher will check in with them about how they are choosing their pollinator and plant and how they plan to model the pollination. The teacher will make sure that students are not struggling to label or graphically depict the model.

Students will turn in their group project or perform the dramatic reenactment in front of the class. The teacher will be sure to give constructive feedback where needed. Students can be given a survey of how they felt their group did and check in to see if they felt like they learned the concept or what they may have had difficulty with.



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Choose Your Own Pollinator Adventure!

Choose a pollinator and a plant

Pollinator	Some plants they typically pollinate
Bees	Fruits & Vegetables (you choose), sunflowers, poppies, lavender, nut trees, olives
Hummingbirds	Flax plant, Mexican Sage, Trumpet Vines
Bats	Cactus, Calabash, Banana Tree, Agave
Butterflies	Ashers, Butterfly Weed, Goldenrods, Sunflowers
Other (with teacher permission)	Other (with teacher permission)

Choose how you want to present your data as a group

Presentation of data
Diagram (labeling plant parts)
Act it out (with props such as masks and visuals)
Storyboard
Written description with pictures

If time allows and you want to do a deeper dive, consider how the seeds are then dispersed after fertilization: animals, wind, water, gravity, etc. Include your hypothesis or research results in your project.

Lesson 4

Materials:

- Various Maps of North America (i.e. political, landform, topographic, satellite imagery based, etc.)
- Paper, various textures and colors
- Glue
- Scissors
- Large piece of paper
- Maps of Los Luceros (historical, satellite aerial, and interpretive)

Resources:

See Next Page

Vocabulary:

Map	Legend
Compass rose	Symbol
Model	River
Mountain	Acequia
Bosque	Country
State	City
New Mexico	Arizona
Oklahoma	Utah
Colorado	Texas
Mexico	Canada

Modalities Used

- Visual
- Verbal

National Standards

2-ESS2-2 - Develop a model to represent the shapes and kinds of land and bodies of water in an area.

Social Studies 4 Cultures and Environment 2.20 - Using maps, identify and locate the United States, Canada, and Mexico as the countries that make up North America.

Social Studies 4 Cultures and Environment 2.21 - Identify and locate the bordering states to New Mexico and understand that New Mexico is in the Southwest.

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Lesson Plan 4:

Earth Systems and Understanding Maps

Objectives:

- Objective 1: Students will be able to understand critical parts of a map.
- Objective 2: Students will be able to orient themselves and where they are on a map of North America in relation to other states and countries.
- Objective 3: Students will be able to apply symbols to convey meaning to others via a model/map of a location.

Activity:

Explore, Question, Discuss

Break the class into groups of 4 students.

Tell the students they will all be handed an object they will explore, question, and discuss within their groups.

Review the questions on the board:

1. What is it?
2. What is its job/what does it do?
3. How do you relate to it?

Hand the students 4 different kinds of maps (one per student).

Tell them to quietly explore the map in front of them and reflect upon the questions.

After some time reflecting, encourage the students to take turns talking about the questions and how they relate to the map in front of them.

Teacher Instruction:

The teacher will discuss the types of maps used in the anticipatory set. The teacher will orient the students to the maps in terms of where bordering countries and states are. To help reinforce the names of the countries and states, the teacher will encourage the students to repeat the names after they are said. The teacher will discuss labels on maps and how they are used to symbolize larger things. This will allow for teaching of the different key vocabulary. The teacher will then inform the students they will be making a model/map of Los Luceros Historic Site (where they will have a future field trip) within their groups. Each map must at least include the Rio Grande, acequia, farm field, and bosque. Additional labeling of symbols is encouraged. Teacher will review the rules of group work including working quietly, supporting each other's ideas, and doing their best job with their role and as a group participant.

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Resources:

Possible Maps

<https://geology.com/world/north-america-satellite-image.shtml>

<https://www.jpl.nasa.gov/images/pi/a03377-shaded-relief-with-height-as-color-north-america>

https://en.wikipedia.org/wiki/File:North_america_terrain_2003_map.jpg

https://gaftp.epa.gov/EPADataCommons/ORD/Ecoregions/cec_na/NA_LEVEL_1.pdf

<https://www.freeworldmaps.net/untied-states/newmexico/map.html>

<https://www.google.com/maps/@36.1155837,-106.0375772,923m/data=!3m1!1e3?entry=ttu>

Student Practice:

As a class, the teacher will demonstrate the project by using a general political map of New Mexico to the board. Working with the class on picking colors and shapes to represent different features on the map, the teacher will place symbols on top of a transparency sheet that is laid over the map and create a legend as they go. Once done, the teacher will remove the underlying map leaving just the symbols and the legend. Students will be told that for their group project, rather than placing the symbols on top of a map, they will glue them to a piece of paper.

Group Practice:

Assign roles to the four students:

Resources – in charge of obtaining and returning supplies to the supply table.

Gluer – in charge of gluing symbols to their model.

Recorder – writes down all the elements in the legend.

Questioner – in charge of asking the teacher questions if needed.

All students are encouraged to make suggestions and give feedback within the group. Hand out three maps of Los Luceros (historical, interpretive, and an aerial satellite map) for students to reference in their creation of their own model/map

Assessment/Feedback:

Teacher will float around the groups during the anticipatory session and group work. During the anticipatory time frame, the teacher can praise good answers and redirect students as needed. During the group work, the teacher will check in with them about how they are choosing to symbolize their different labels on the model they are creating. Groups will present their models to the class and describe their models/maps and why they choose what they chose to symbolize things. Teacher will give students verbal feedback to each group letting them know what they did very well and ask them questions to make them reflect about their choices and what they learned from the assignment. The following day, the teacher will give a quick assessment quiz. Students will be handed a political map of North America and given verbal instructions to circle Canada, mark Mexico with an X, fill in the part of the map that represents New Mexico, and label the states Arizona, Colorado, Oklahoma, Utah, and Texas.

Differentiation:

Groups looking to challenge themselves can label the map in greater detail.

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SELF-GUIDED TOUR

The trail from the visitor center to the river and back is approximately half a mile over uneven surfaces.

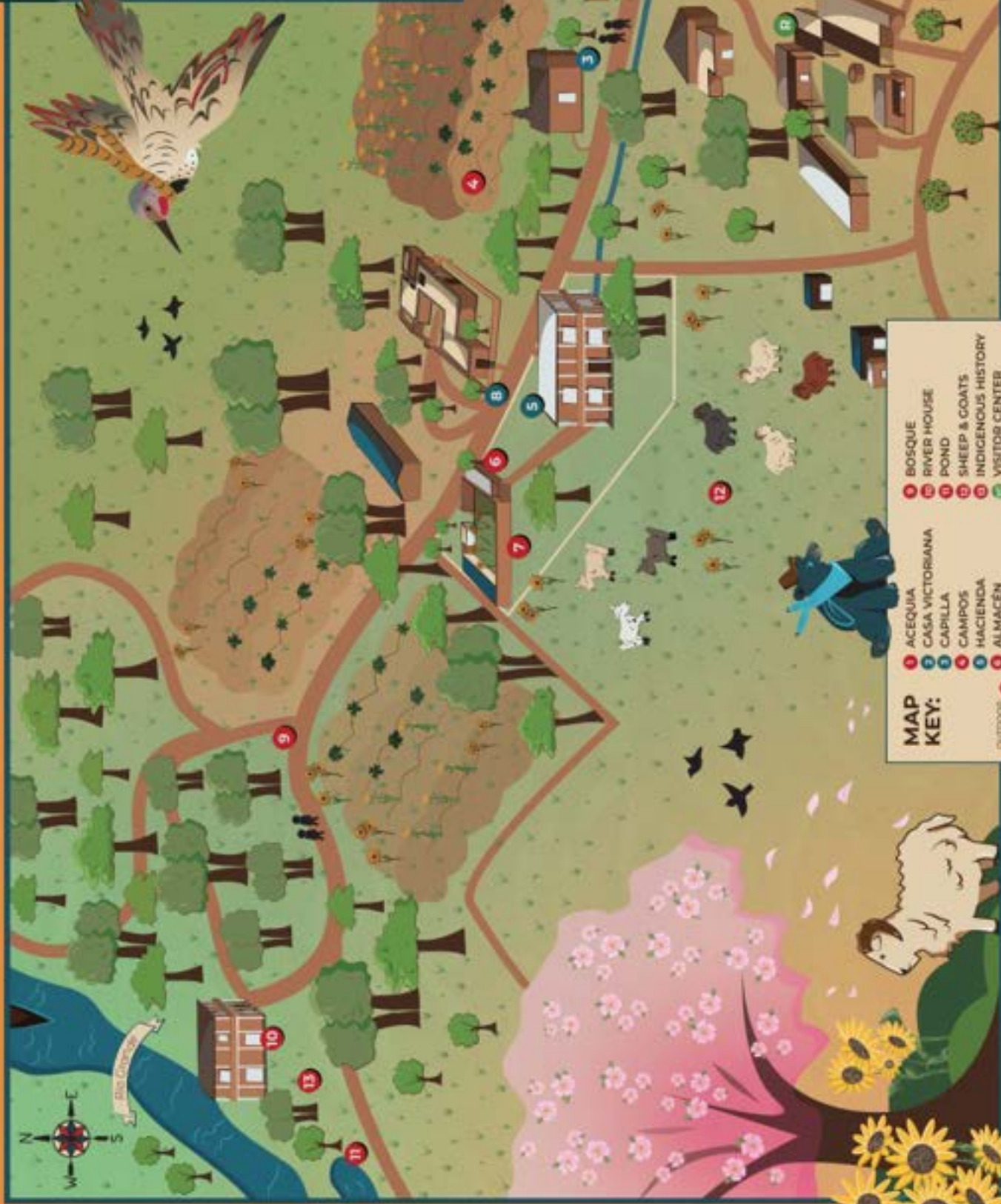
Outdoor Site Regulations:

1. Dogs are not allowed in historic buildings and must remain on leash at all times.
2. Do not enter the sheep paddock or fields.
3. Be aware of your surroundings—snakes, bears, mountain lions and other animals all call Los Luceros home.



NEW MEXICO HISTORIC SITES

Open Wednesday through Sunday
10am to 4pm
Front Desk Phone: (505) 476-1665
nmhistoricsites.org/los-luceros



MAP KEY:

- 1 ACEQUIA
- 2 CASA VICTORIANA
- 3 CAPILLA
- 4 CAMPOS
- 5 HACIENDA
- 6 ALMACEN
- 7 GARDEN
- 8 CASITA
- 9 BOSQUE
- 10 RIVER HOUSE
- 11 POND
- 12 SHEEP & GOATS
- 13 INDIGENOUS HISTORY
- A VISITOR CENTER
- B RESTROOMS
- C PARKING AREA
- D
- E
- F
- G
- H
- I
- J
- K
- L
- M
- N
- O
- P
- Q
- R
- S
- T
- U
- V
- W
- X
- Y
- Z

- OUTDOOR ENHANCEMENT
- ACCESSIBLE
- ENTRANCE

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Lesson Plan 5:

Field Trip to Los Luceros Historic Site to Study Habitat Diversity

Objectives:

Objective 1: Students will be able to describe at least one plant and one animal qualitatively and quantitatively in two out of three habitats on the site (the Bosque, the historic district, and the fields and corrals).
Objective 2: Students will be able to make comparisons between each animal and also between each plant they describe.
Objective 3: Students will be able to reflect upon their observations to answer questions.

Hook:

Either read sections of chapter books that discuss ecosystems/habitats or ask the students to reflect upon previous readings already done in class. Ask them to think about why certain animals and/or plants were in certain habitats and others were not. Suggested reading include the Wild Robot Series by Peter Brown and A Wolf Called Wander by Rosanne Parry. Videos in the resource section can also be used.

Teacher Instruction:

Reiterate that students need to stay on trails and roads while working on the task. Discuss the different areas of the worksheets and what is expected of the student to complete the worksheet.
Reintroduce the students to the Los Luceros nature guide and how to use it. Chaperones will be encouraged to limit students to observation time of 25 minutes per habitat area additional time will allow for travel between habitats. Inform the students that we will all meet up together in the community room to discuss findings afterwards.
The teacher will ask that students assign roles within their group:

- Photographer (in charge of the iPad),
- Recorder (in charge of writing descriptions),
- Artist (draws the pictures), and
- Researcher (looks up the plant in the field guide).

Ask if the students have any questions.
Dismiss them and direct groups to different habitats so that they are not all in the same habitat at once.

Lesson 5

Materials:

Worksheets (below)
Clipboards
Pencils
Colored Pencils
Los Luceros Nature Guide
Digital Cameras or iPads

Resources:

See Next Page

Vocabulary:

Habitat	Species
Wildlife	Animal
Domestic	Bird
Insect	Mammal
Population	Reptile
Fish	Tree
Flower	Leaf
Stem	Root
Forest (Bosque)	River
Acequia	

Modalities Used

Auditory
Kinesthetic
Visual
Verbal

National Standards

2-L S4-1 - Make observations of plants and animals to compare the diversity of life in different habitats.

W.2.7 Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).

W.2.8 Recall information from experiences or gather information from provided sources to answer a question.

Lesson 5

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Resources:

Welcome to Los Luceros Historic Site

<https://www.youtube.com/watch?v=u5yodJaMK0w>

Domesticated Animals of Los Luceros

<https://www.youtube.com/watch?v=oe-9fIRTvc&list=PLOrPtTWrM4tumhoaA7gQPVVZHZ4nDA4cj&index=24>

Los Luceros Pond (in the Bosque)

<https://www.youtube.com/watch?v=6h5fWyeqtnC&list=PLOrPtTWrM4tumhoaA7gQPVVZHZ4nDA4cj&index=33>

Los Luceros Bosque, Riparian Zone

<https://www.youtube.com/watch?v=9kNHeGRKPvE&list=PLOrPtTWrM4tumhoaA7gQPVVZHZ4nDA4cj&index=38>

Acequia Madre at Los Luceros

<https://www.youtube.com/watch?v=10pRHExmEqk>

Student Practice:

Guided Practice

Before going off to the three habitat areas all students will work on the practice worksheet with either an animal or a plant they observe. This worksheet will be completed by the entire group. The teacher going around between the groups to make sure they are filling out the worksheet correctly.

Independent Group Practice

Groups of 4 will find a plant and animal in each habitat to observe and describe on the associated worksheet.

Assessment/Feedback:

When the students regroup, they will be asked what animals and plants they saw. Students will be asked if they saw any differences between the plants and animals in the different habitats. Students will be asked where they saw the most and least plants and animals. Students will be asked why they think these differences in quantities occur. Worksheets filled out by paired buddy groups will be reviewed by the teacher and feedback provided on them.

Differentiation:

Groups looking to differentiate can either break into smaller groups and take on more roles, do more habitat areas, or do multiple plants and/or animals in a habitat.

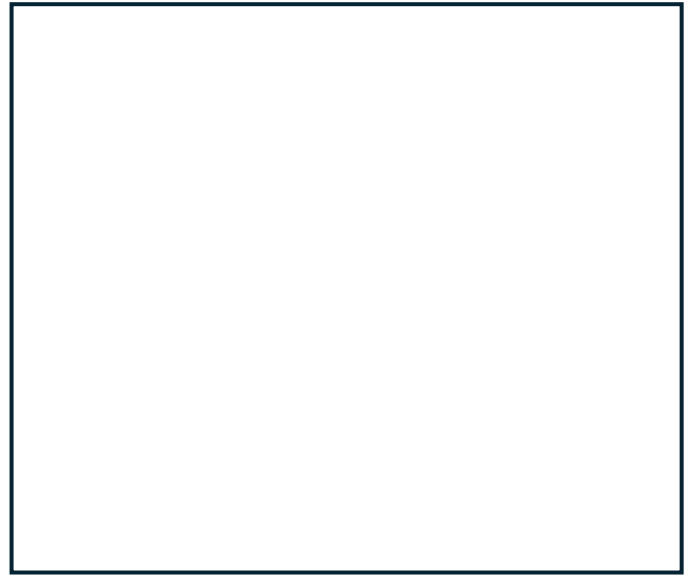
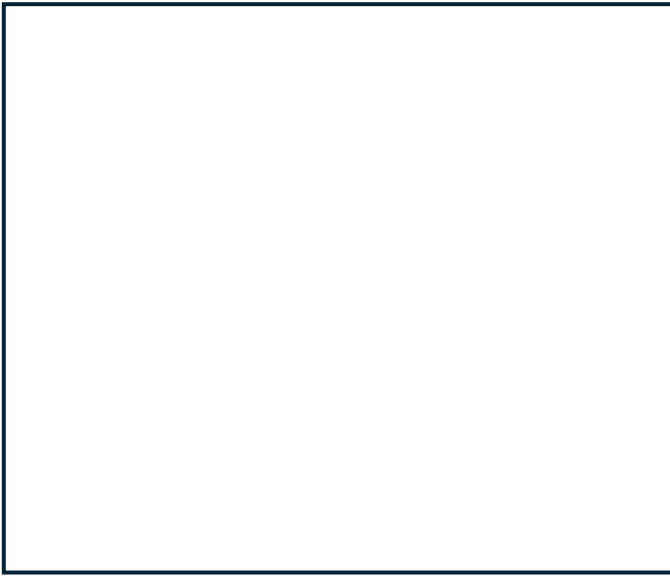


Pick an animal and a plant in this habitat to draw and describe.

Animal

Plant

Drawing



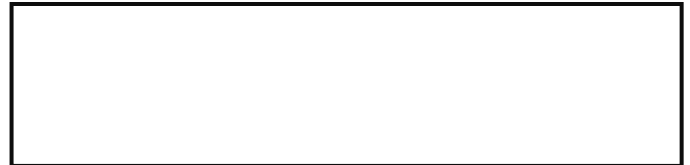
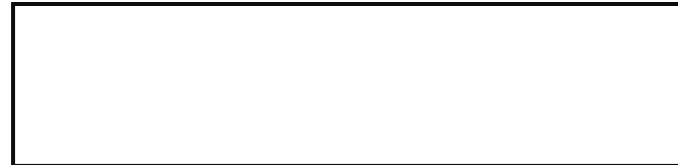
Size




Color(s)



Shape



Other

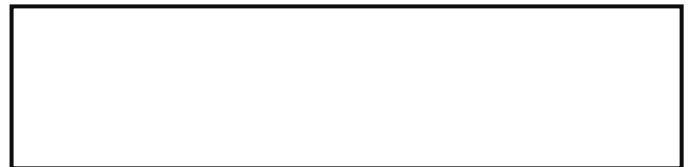


Compared to Historic District or Fields/Corrals (circle one)

Similar



Different



Pick an animal and a plant in this habitat to draw and describe.

Animal

Plant

Drawing



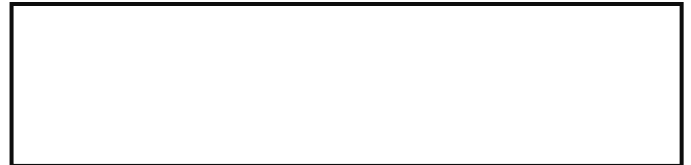
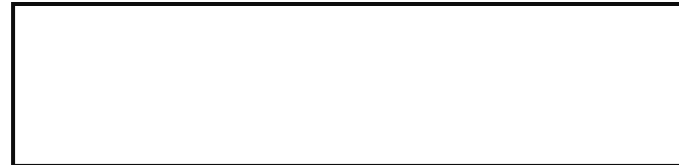
Size



Color(s)



Shape



Other Descriptor(s)



Compared to Bosque or Fields/Corrals (circle one)

Similar



Different

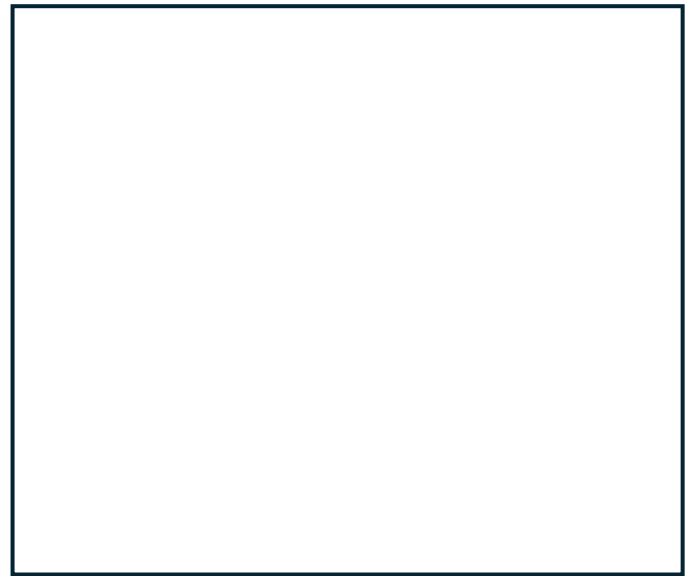
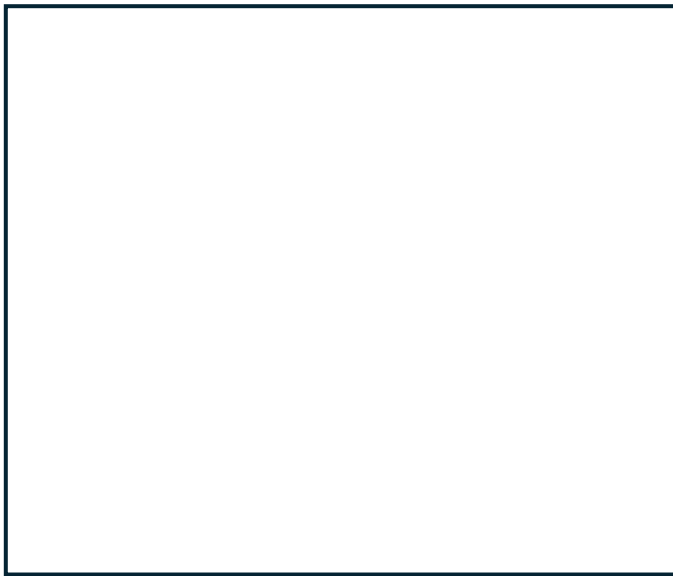


Pick an animal and a plant in this habitat to draw and describe.

Animal

Plant

Drawing



Size



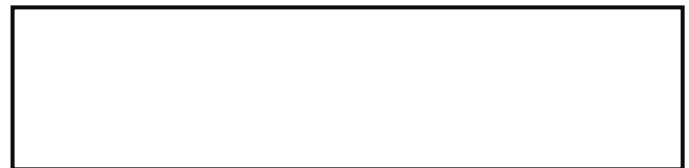
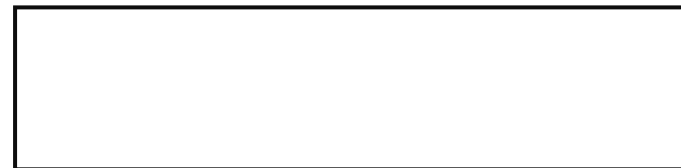
Color(s)



Shape



Other Descriptor(s)



Compared to Historic District or Bosque (circle one)

Similar



Different



Other