

Foothill Horizons Pre-Trip Activities for Teachers

The primary goals of Foothill Horizons are to assist students to learn about ecology, to learn to respect nature, and to learn to cooperate with others. By preparing students for their week of outdoor education, you can help us to achieve these goals!

We find that students are more interested in learning, feel better about themselves, and respect one another more when they are able to share and connect previous knowledge with their discoveries here at the outdoor school.

Enclosed are some simple ideas you can use to help students have a positive experience with nature, so they will feel good about being in it, taking care of it, and learning more about it!

When you arrive at Foothill Horizons, please share with your naturalist the things your class has done to prepare, so we can provide the best possible learning experience for your students.

If you have any questions, would like to discuss curriculum content and ideas with your naturalist before arriving, or would like more information in a specific area, please contact Pam Ivie, Director, at (209) 532-6673.

Earth Sciences

Geology

California Science Content Standards Addressed:

Grade 6: Plate Tectonics and Earth's Structure

Grade 6: Shaping the Earth's Surface

Grade 4: Earth Sciences

1. Give each student a peanut M&M, and have them carefully bite it in half. Use the layers in the M&M to discuss the layers of the earth (peanut=core, chocolate=mantle, candy coating=lithosphere).
2. Turn a map of the continents or tectonic plates into a puzzle by cutting it up and gluing it to poster board. Have students assemble the puzzle. Using this map, have students locate the major mountain chains of the world, and discuss their formation in terms of plate movements.
3. Obtain a geologic map of California. Using the different rock types, trace the geologic history of your area, and that of Foothill Horizons. Point out that limestone deposits are evidence of an inland sea, and that the igneous rock of the Sierra Nevada and earthquakes throughout California are evidence of plate movements.
4. Choose a river in your area and trace its path from its headwaters to the ocean. Obtain aerial photos of this river or its tributaries from different years, and compare the river's course, size, and location and size of the deltas formed where tributaries enter or where the river meets the ocean.

Vocabulary Words					
plate tectonics	continent	core	mantle	lithosphere	fossil
magma	lava	convection	limestone	granite	geology
subduction	erosion	fault	mineral	igneous	metamorphic
sedimentary	sediment	deposit	weathering	topography	stalagmite
stalactite	cavern				

Astronomy/Night Hike

California Science Content Standards Addressed:
Grade 5: Earth Sciences

1. How about reviewing the names and shapes of some constellations you may see when your class is here? A few are listed below:

Fall

Pegasus (the winged horse)
Andromeda

Winter

Orion (the hunter)
Taurus

Spring

Leo (the lion)
Gemini (the twins)

All Year

Big Dipper
Little Dipper

2. Display a star chart, wheel, or map in your classroom. They are available at Great Valley Museum and many bookstores. Discuss the composition of stars, and the relationship between our sun, other stars, planets, comets, and asteroids.

3. Read legends of some of the constellations. How the Stars Came to Be, by Ray Gallant, is an excellent mythology book.

4. Study the phases of the moon. Find out what time the moon will be up when you're here, and what shape it will be. The Night Sky Book, by Little Brown and Co., has lots of ideas for moon study.

Vocabulary Words				
constellation	meteorite	orbit	comet	nocturnal
galaxy	universe	waxing	waning	gibbous
hydrogen	helium	satellite	asteroid	gravity

Ecology/Life Sciences

California Science Content Standards Addressed:
Grade 6: Ecology (Life Sciences)
Grade 5: Life Sciences
Grade 4: Life Sciences

Animals

1. Research some of the common birds at Foothill. Here are a few:

white breasted nuthatch	acorn woodpecker	California towhee
dark-eyed junco	Anna's hummingbird	American robin
house finch	Stellar's jay	downy woodpecker
red-tailed hawk	brown creeper	mourning dove
screech owl	cowbird	black phoebe
northern flicker	house sparrow	turkey vulture
spotted (rufous-sided) towhee		Swainson's hawk

2. Research some of the common mammals at Foothill. Here are a few:

western gray squirrel	California bat	California ground squirrel
northern flying squirrel	little brown bat	striped skunk
bobcat	deer mouse	pocket gopher
gray fox	raccoon	California mole
coyote	mule deer	

3. Research some of the common reptiles and amphibians at Foothill. Here are a few:

garter snake	gopher snake	western fence lizard
alligator lizard	striped racer	California king snake
western skink	Pacific chorus frog	American bullfrog
western toad		

2. Study the characteristics and adaptations of birds, reptiles, amphibians, and mammals. Compare and contrast survival strategies, mouthparts, feet, habitat, food, wings, legs, color, etc., and discuss how these things are influenced by the function each animal plays in its environment.

3. Observe and learn about some of the birds in your area. Hang a feeder outside your classroom, or go to the playground or park and have students do a "lone sit" bird watch. Classify each bird as an herbivore, omnivore or carnivore. How does each bird's specific adaptations help it serve its function in the ecosystem?

Vocabulary Words

adaptation	habitat	migrate	camouflage	niche
nocturnal	diurnal	crepuscular	predator	reptile
raptor	talon	mammal	amphibian	venomous
constrictor	omnivore	carnivore	herbivore	

Plants

1. Research some of the common plants at Foothill and Calaveras Big Trees State Park. Have students learn how to identify them, and research how they are used by animals and people. Here are a few:

ponderosa pine	gray (foothill) pine	sugar pine
giant sequoia	manzanita	black oak
toyon	California buckeye	poison oak
big-leaf maple	soaproot	willow
white alder	milkweed	incense cedar
elderberry	mistletoe	California wild grape
canyon live oak	dogwood	miner's lettuce

2. Study some of the adaptations of plants. Compare habitat, bark, leaves, size, shape, etc. How are these related to the environment the plant lives in?
3. Study some of the trees and plants in your area. Do leaf rubbings or drawings to become familiar with them. Find out whether these plants are native. If not, where did they come from and how did they get here?

Vocabulary Words

deciduous	evergreen	heartwood	xylem	phloem
photosynthesis	cambium	pollen	acorn	native
invasive				

Ecology

Students should be familiar with the parts of the ecology cycle, and the concept of food chains and food webs.

- PRODUCERS:** Plants. These are the first organisms to produce energy using light from the sun (photosynthesis).
- CONSUMERS:** Animals that get their energy from eating producers (herbivores) and/or other consumers (omnivores and carnivores).
- DECOMPOSERS:** Organisms that break down dead plant and animal material, returning their nutrients to the soil.
- RAW MATERIALS/NATURAL RESOURCES:** The non-living (abiotic) parts of the ecology cycle that provide necessary nutrients and energy (examples: soil, water, sunlight, carbon dioxide, oxygen).

Vocabulary Words

produce	consume	decompose	natural resource	ecosystem
omnivore	carnivore	herbivore	nutrient	ecology cycle
energy	organism	biotic	abiotic	

Conservation

California Science Content Standards Addressed:
Grade 6: Resources

1. Do an inventory of the garbage in your classroom garbage can. Have students research where the things in your garbage come from, how they are made, and what happens to them when they are thrown away.
2. Set up recycling bins in your classroom. Weigh your classroom garbage can for a week before doing this, and compare the weight after recycling.
3. Find out where the water in your drinking fountain comes from. Put up a map of California, and find out where the rivers in your area start, and where they go.
4. Research where the electricity for your school and your houses comes from. Is it generated by dams? Is something burned to create it? What are the advantages and disadvantages of different methods of generating electricity?

		Vocabulary Words		
conserve	resource	pollution	erosion	development
habitat	endangered	recycle	landfill	pesticide
renewable	nonrenewable	wilderness		

Me-wuk/Cultural History

California History-Social Science Content Standards Addressed:

6.1

Reinforces 4.2

1. Most students remember something about the Me-wuk people from their fourth grade unit on California native people. It is helpful to review the names of some of the buildings and artifacts in the Me-wuk village:

Oo-ma-cha: A cone-shaped dwelling made of bark (not called a tipi).

Cha-pu-ya: The sweathouse, used by deer hunters to remove the human scent before going hunting.

Ha-nee: The round house, used for social gatherings such as dances, ceremonies, and important meetings.

Chaw-say: The mortar stone where acorns were pounded into flour.

2. Discuss the similarities and differences between the Me-wuk people and other native/ancient people you have studied in class. Compare their environments, the tools they use, dwellings, and way of life. Discuss how these have changed over time.

3. Compare the way Me-wuk people use their environment to the way we use our environment. What did the Me-wuk people get from the environment? What do we get? How did they change their environment? How do we change ours?

4. If your class has read Maroo of the Winter Caves, compare her culture to that of the Me-wuk people. What things were important to both cultures?

You can request a booklet from Foothill Horizons for more information about the Me-wuk people.

		Vocabulary Words			
indigenous	stereotype	artifact	obsidian	pestle	mortar