

## CODS SCIENCE PROGRAM PRE-TRIP ACTIVITIES



Get ready to witness the amazing impact that outdoor education can have on your students! The following are some ideas that will enhance your students' experience while in Coloma.

- ⚙️ **Water, Water Everywhere:** Have students create a list of how water is used in their everyday lives. Challenge them to include the water used in producing food, clothing, and shelter.

- ⚙️ **Water Cycle in a Jar:**

Materials:

- 2 jars, same size
- sand
- 1 rock
- water
- duct tape

Procedure:

1. Have students fill one of the jars with a few inches of sand.
2. Place the rock on top of the sand and add just enough water to cover the sand.
3. Next, place the empty jar upside down on top of the one with sand in it and tape the two together. Make sure a tight seal is made so no moisture can escape.
4. Place the jars in a sunny window and observe several times a day for one week. Each time, have students record such things as the water level and amount of condensation. What conclusions can students make from their observations? What powers this process?

- ⚙️ **Liquid to Gas, Gas to Liquid:**

Materials:

- test tube or small jar
- 1 clothespin
- drinking straw or dropper
- 2 pieces of aluminum foil—6" square
- ice cube
- candle
- matches

Procedure:

- Light the candle and place it on wax paper. Place a small drop of water in the test tube and attach the clothespin to it. Use the clothespin to hold the tube at least 3 inches over the flame, and move the tube back and forth until the water disappears. What happened? Why?
- Next, wrap the ice cube in the foil. Stand the test tube on it. What happens to the air inside the tube and the air around it? Touch the bottom of the tube, what do you feel? What do you see inside the tube? What is this called?

- ⚙️ **Thought Museum:** What's so important about rocks? Gather a collection of well-known rocks and minerals. Label each rock and place on a piece of butcher paper. Scatter the papers about the room. Students should wander up to each "station" and write down what practical uses they think each rock has.

- ⚙️ **Earth's Layers:** Break students into 6 teams. Assign each team a layer of the Earth (atmosphere, crust, upper mantle, lower mantle, outer core, & inner core). After researching their layer, each team should present the characteristics of their layer through the use of a skit, song, poem, illustration, etc.

- ⚙️ **Animal Scrapbook:** Have each student choose an animal to research that lives in the Sierra Nevada foothills. Give each student a blank scrapbook page to decorate with pictures and facts about their animal. Information on its habitat and ecological role (herbivore, omnivore, carnivore) should be included.

- ⚙️ **Mealworm Beetles:**

Materials:

- mealworms (purchase at a pet store)
- a terrarium or large jar
- oatmeal and apple chunks
- paper towel

Procedure: Put oatmeal and apple chunks on damp towel in terrarium. Add the mealworms. Watch them grow, form pupas and become adult beetles. Once the life cycle is complete, have students draw a diagram illustrating each step in the life cycle.

- ⚙️ **Interrelationships:** Divide students into small groups and assign each group a section of the school yard to explore. Each group should record everything that is living in their section. Next, have them brainstorm what each item needs to survive. Do any of the organisms need non-living things to survive? If so, what? Do any of the living organisms depend on each other for survival? Bonus: Have students create a food web from their findings!

## CODS SCIENCE PROGRAM POST-TRIP ACTIVITIES

What? There's more? Students feel *empowered* at CODS--here are some ideas that will keep the momentum going at home.

### ⚙ **Your Local Watershed:**

Materials:

- ❑ Maps of the local area (topographical maps work best because they show the contours of the land; however, any map will work as long as streams and rivers are designated)

Procedure:

Have students place a piece of tracing paper over a map and choose a river or creek close to your school to trace—the river should be traced upstream and downstream and tributaries should be included. How large is the watershed? Why is it important to protect waterways that may be located hundreds of miles away?

### ⚙ **The Source:** Have students investigate the source of their drinking water. Determine the following:

- Where does it come from?
- What has been done to make it safe for drinking?

Bonus: Where does water used in sinks & drinking fountains travel to when it goes down the drain? How about in the toilet? In showers? In yards?

### ⚙ **Math Power:** Have student's journal their water use for one day. Use their daily usage as an average to determine how much water they use in one year, or an entire lifespan! The following will help with calculations:

Drinking water	1 cup is $\frac{1}{8}$ gallon
Flushing the toilet	5 gallons
Brushing teeth (with water running)	2 gallons
Dishwasher	20 gallons/number living in household
Dish washing (water running)	30 gallons/number living in household
Load of laundry	40 gallons/number living in household
Shower/Bath	5 gallons/minute
Hand washing	$\frac{1}{2}$ gallon

### ⚙ **What Rock are You On?**

Materials:

- ❑ Geologic map. Maps can be downloaded from:  
National Geologic Map Database: [http://ngmdb.usgs.gov/ngmdb/ngm\\_catalog.ora.html](http://ngmdb.usgs.gov/ngmdb/ngm_catalog.ora.html)  
California Department of Conservation:  
[http://www.consrv.ca.gov/cgs/information/geologic\\_mapping/index.htm#Geomaps](http://www.consrv.ca.gov/cgs/information/geologic_mapping/index.htm#Geomaps)

What types of rock do the students live on? How did the rock form? Where did it come from? Is it valuable? Do they live near a fault? Why is this information important to know? What type of careers might use this information?

### ⚙ **Food for Thought:** Have students write down one meal they ate in the past 24 hours. Have them break the ingredients down to their simplest form. Where did each ingredient come from? Bonus: Label the food items according their trophic level: producer, primary consumer (herbivore), and secondary consumer (carnivore, omnivore).

### ⚙ **Lights, Camera, Action!** Break the students into groups and have them act out some of the processes or vocabulary they learned at CODS. This can be done with any of the cycles; water, rock or life.

### ⚙ **Disappearing Flora & Fauna:** Break the students into teams to research endangered animals or plants native to California. Have the teams present to the class why these species are disappearing and what is being done to try and protect them. Bonus: Find local organizations that specialize in the preservation of wildlife or plants and find out what activities or programs they offer for schools—get involved!