

# The Environmental Learning Center

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Join us for our virtual Nature Near You meetups!

NNY unboxing Monday, June 22nd from 11am-Noon

NNY show & tell Friday, June 26th 11am-Noon

(To register for the virtual meetups look for the  
ZOOM information in your follow up e-mail)

Questions? E-mail [heatherk@discoverelc.org](mailto:heatherk@discoverelc.org)

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Nature Near You Kits were made possible by generous support from:



**Association of Science  
and Technology Centers**



# *The Environmental Learning Center*

# **NATURE NEAR YOU**

## *Be a Scientist.*

### Materials Included:

- Pencil
- Observation notebook
- Hand lens
- Tube
- Big dipper card
- Crayons
- Clay
- STEM supplies
- Construction paper
- String
- Gemstones

When you think of a scientist, you might think of someone working in a laboratory with chemicals, but did you know that there are many types of scientists? Some do work in laboratories, but others work on coral reefs studying fish. Others work near volcanoes or even at the North Pole. Some even work in outer space!

Even though scientists may study lots of different things, all scientists have a few things in common:

1. *They are curious and ask lots of questions.*
2. *They are also very good at making observations.*
3. *Scientists use the observations they make and the information they gain from doing experiments to help them answer questions about the world.*

The activities in this kit will help you explore different types of science. As you are working, remember to ask lots of questions and record your observations in your notebook.

Happy exploring!

### VOCABULARY

- **Astronomer:** a scientist who studies space
- **Biologist:** a scientist who studies living things
- **Botanist:** a scientist who studies plants
- **Entomologist:** a scientist who studies insects
- **Geologist:** a scientist who studies the Earth





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# ASTRONOMER

Humans have been observing, tracking and recording the night sky for over 5,000 years, making astronomy the oldest science. The stars, moon, sun and planets have not only shaped our day-to-day and our yearly calendar but have also helped us to navigate this planet we call home.

### Materials Needed:

- Tube (provided)
- North Star card (provided)
- Crayons (provided)
- Glue
- Tack



### How to make a constellation kaleidoscope

1. Cut out the circle from the blue piece of paper.
2. Use a tack to poke a hole for each one of the stars.
3. Tightly glue the blue circle onto the tube, printed side facing in. Hot glue works best for this. If you use Elmer's glue, put something heavy (like a book) on the disc and the tube to help it dry flat.
4. After glue dries take your constellation kaleidoscope to a bright place.
5. Look through it! This will help you practice finding the Big Dipper and the North Star. Can you find it?
6. Decorate the outside of your tube with your crayons. If you are not sure how to decorate your constellation kaleidoscope, here are some questions you can research that will help to spark your creativity and tell you more about the history of this very important star:

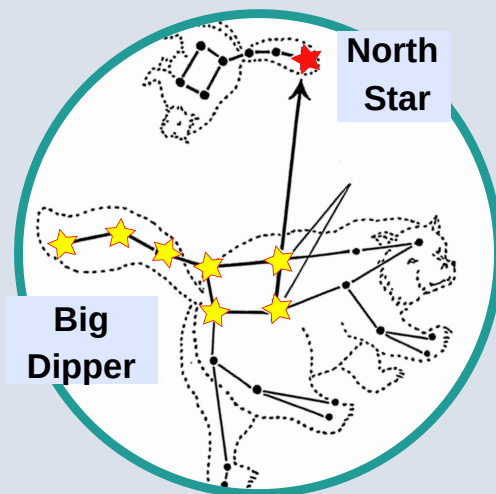
- *Why do these bears have long tails?*
- *How have people used the Big Dipper and the North Star to navigate in the past?*
- *Why is the North Star always in the North?*

*Safety tip: Never point your constellation kaleidoscope directly at the sun.*

### How to find the North Star

Although very useful, the North Star is not very bright and hard to spot. A trick to locating this guiding star is to use the 7 bright stars of the Big Dipper to point you in the right direction.

1. Go outside at night and locate the Big Dipper
2. Use the two stars at the far end of the "dipper" to draw a straight line.
3. This line points to the North Star.
4. Can you see it?



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# BIOLOGIST

Biologists study living things. Some biologists work in nature making observations about plants and animals. Biologists who study **ethology** ask questions about **animal behavior**. One tool that these biologists use to study animal behavior is an **ethogram**. In this activity, you will conduct an ethogram to learn about the behavior of an animal in your neighborhood.

### Materials Needed:

- Ethogram data sheet (provided)
- Pencil (provided)
- Timing device



### Instructions:

1. Gather your materials and choose the animal that you will observe for your ethogram. Think about what behaviors you might expect to see, and if needed, change the ethogram template to make it more specific for your animal.
2. How much time are you going to wait between each observation? Will you observe every 30 seconds? Every five minutes? Every fifteen minutes? The ethogram template provided uses a five minute interval, but feel free to change it.
3. Find a spot to observe your animal. Make sure you are not too close to the animal or your presence might change the animal's behavior. Always be respectful and give animals plenty of space.
4. Begin your observation. Think of the ethogram as a snapshot of animal behavior. Record the behavior that your animal is doing at your set time interval only, rather than the behaviors you may see between the time intervals. For example, if you are recording the animal's behavior every five minutes, and the animal is resting at your 5 minute and 10 minute time intervals, you would record resting. Even if your animal spent the time in between the 5 and 10 minute intervals doing something else such as grooming or feeding, you would still only record the resting behavior.
5. After you finish your observations, look at your results. What does your ethogram tell us about this animal's behavior?

*Note: Always be respectful and observe wildlife from a distance.  
Remember, animals may behave differently if they notice you are there.*

# Ethogram Data Sheet

**Researcher:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Species:** \_\_\_\_\_ **Location:** \_\_\_\_\_

## Behaviors

*Feeding:* Animal is eating or drinking.

*Grooming:* Animal is doing self-cleaning.

*Social (same species):* Animal is interacting with other another animal of the same species.

*Interaction (different species):* Animal is interacting with another animal of a different species.

*Moving:* Animal is walking, running, hoping, flying, or moving in some way.

*Resting/Inactive:* Animal is sleeping or sitting and not doing any other behavior.

*Not Visible:* Animal is not currently visible.

Start Time: _____	Feeding	Grooming	Social	Interaction	Moving	Resting/ Inactive	Not Visible
0:00							
0:05							
0:10							
0:15							
0:20							
0:25							
0:30							
0:35							
0:40							
0:45							
End Time: _____	Total:	Total:	Total:	Total:	Total:	Total:	Total:

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# BOTANIST

A botanist studies plants. This can include flowers, seaweed, moss, algae, cactus, trees, fruits & vegetables. Plants are an important source of energy, as they photosynthesize the energy from the sun and convert it into sugars which becomes energy for us! In this activity, you can collect leaves of different sizes, shapes, colors and textures to compare how they may gather sunlight differently from one another.

### Materials Needed:

- Notebook (provided)
- Crayons (provided)
- Leaves

### Instructions:

1. Peel paper off of one of your crayons and recycle the scraps
2. Gather your freshly peeled crayon and notebook and head outside
3. Look for leaves with varying size, shape, color and texture and collect as many variations as you wish
4. Take notes about the thickness, color and texture (how it feels) of your plant
5. What do these features tell you about where these plants grow?

### Questions to ponder:

- *How much sunlight do you think this plant needs based on its thickness & color?*
- *What does the shape of your leaf tell you about the amount of sunlight it needs?*
- *What other leaf adaptations do you notice?*

*Note: Some plants may cause skin irritation. Gather leaves with an adult to make sure they are safe.*



Plants that grow in direct sunlight have **thin leaves**. This helps the plant to photosynthesize by easily passing gasses like CO<sub>2</sub>.

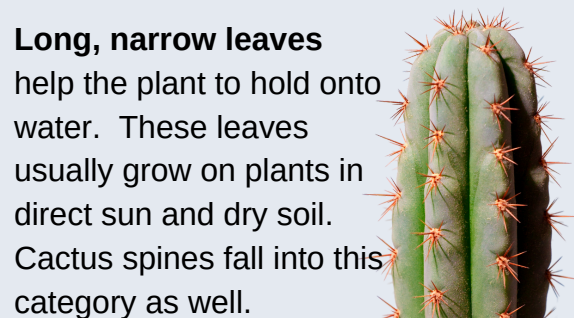


Plants that grow in shade are usually **bigger**, in order to gather more sunlight. They are also **thicker and greener** because they have more chlorophyll



**Thin, short, waxy needles** help to hold onto water.

Plants that have this adaptation can survive in windy, cold and dry climates.



**Long, narrow leaves** help the plant to hold onto water. These leaves usually grow on plants in direct sun and dry soil. Cactus spines fall into this category as well.



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# ENTOMOLOGIST

Entomologists study insects. They try to understand the life cycles of insects, the kinds of insects there are, and where insects live. This activity will challenge your building skills as you try to construct a home fit for a bug.

### Materials Needed:

- Observation notebook (provided)
- Pencil (provided)
- Clay (provided)
- STEM supplies (provided)



### Instructions:

1. First, spend some time exploring the area around where you live looking for insects homes.
2. As you explore, use your notebook to sketch what you observe. Why do you think the home is built the way it is? What are the most important features?
3. Select an insect home that you would like to recreate. Draw a plan for your design, noting which materials you will use. Some materials are provided in your kit, but you may also want to gather some extra supplies from nature to help you build.
4. Build your insect home!

*Note: While many insects are harmless, some may sting or bite. Always be careful when observing insects. Never touch an insect unless you know what it is and that it is safe to touch.*

### Get inspired by some insect architects:

Take a closer look at some homes built by bugs from around the world. What do you notice? How are they alike and different? What shapes do you see? What materials do you think the insects used?





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# GEOLOGIST

Geology is the study of the Earth. Geologists study land-forms, the processes that change the Earth over time, and the materials that make up the Earth, such as rocks and minerals. In this activity, build your geology skills as you create your own key to identify gemstones.

### Materials Needed:

- Dichotomous key template (provided)
- Hand lens (provided)
- Pencil (provided)
- Gemstones (provided)

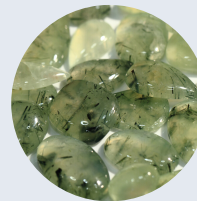
### Instructions:

1. Scientists sort things to better understand them. Select 5-6 of the gemstones, and take some time to look closely at each one with your hand lens. How would you describe each one? Try grouping your stones based on their characteristics.
2. Think of a question that you could ask to divide your stones into two groups. Record this as the first question on the Dichotomous Key Template. Remember that the groups do not need to be perfectly even.
3. Focusing on just one of the groups you created, think of a question that you could ask to divide this group into two groups. Record this question on your Dichotomous Key Template.
4. Repeat the same process until each stone is in a group containing only a single stone. Then, repeat the process with the second group of stones you created in Step 3.
5. Once you have completed your Dichotomous Key, see if a friend or family member can use your key to identify each stone in your collection.

*Note: The template provided is a guide, but you will likely need to modify it to fit your collection of gemstones.*



### Gemstone Guide



Prehnite



Rose  
Quartz



Amethyst



Quartz



Labradorite



Tiger's  
Eye



Ruby in  
Zoisite



Lapis  
Lazuli

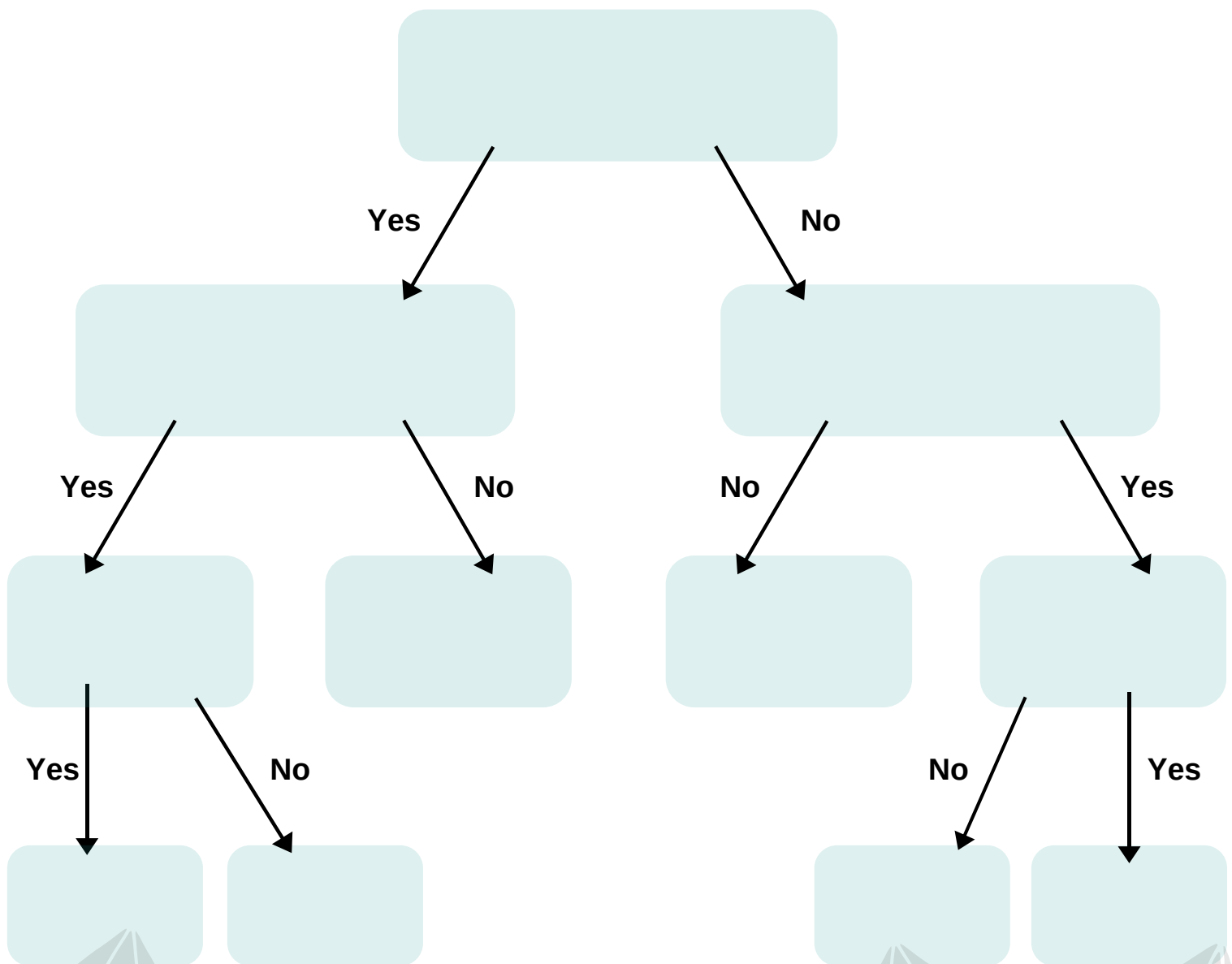


Red  
Jasper

**Caution! Contains small parts.**

# Dichotomous Key Template

Created by: \_\_\_\_\_ Date: \_\_\_\_\_



## The Environmental Learning Center

# DO YOU DREAM OF SCIENCE?

Oneirology is the science that studies dreams. Not a lot is known about *why* we dream but scientists are trying to find the answer by looking very closely at what parts of the brain are active and awake while we are sleeping. One thing that scientists are pretty certain of, is that dreaming helps us to sort new memories and strengthen old ones. In this activity, we encourage you to experiment with becoming a scientist *inside* your very own dreams by creating a Night Wall.

### Materials Needed:

- String (provided)
- Crayons (provided)
- Construction paper (Provided)
- Tape
- Magazine cutouts (optional)

### Instructions:

1. Cut your construction paper into the shape of your choice. The example given uses triangles similar to "Grand Opening" flags.
2. Think about all the things that Science has studied for us to better understand the world we live in.
3. Using your crayons, draw some of these things that you wonder about or that fascinate you on the shapes you created.
4. Gather any extra images you wish to add to your Night Wall and cut them to your desired shape.
5. With tape, hang your string on a wall. This will make it easier to hang your images.
6. Using 2 pieces of tape per image, add them to your string and arrange them to your liking.
7. Hang your Night Wall next to your bed and get to dreaming!

### What is a Night Wall?

- A Night Wall is a collection of special drawings or pictures.
- The location of where you hang your Night Wall is important, and should be in a place you can see when falling asleep.
- The purpose of the Night Wall is to give you things to think about as you fall asleep and things to remember in the morning when you wake up.
- There have been some reports that images from the Night Wall have ended up in dreamer's dreams.
- The Night Wall takes patience and persistence.
- This project was created by Adriel, a kindergartener obsessed with his drawings and his dreams.
- What do you want to dream about?

*Note: To learn more about the wild world of dreaming, visit <https://kids.kiddle.com/Dream>*