

# **RAEI: Kids!**

## **K-12 Children's Outreach Program**

**INTRODUCTION:** RAEI: Kids! school outreach program is designed to fit into any school, any classroom, anywhere, anytime. Our goal is to actively engage your students in the natural world that is right outside their school or home, and then connect their first-hand observations and questions with the scientific work that RAEI is doing in the tropical rainforest. Our highest purpose is to help foster a generation of citizens of this planet who are moved to play an active role in saving it.

After perusing these preliminary and extension outreach activities, please let us know of any way in which we could further customize or improve your particular outreach visit. We want to connect what your students are discovering directly and specifically to the discoveries we are making in the field. Also, please know that these lessons are meant as a general guide to allow your students to get the most out of our presentation. We encourage you to alter it in anyway that best suits your needs.

**PRE-OUTREACH:** Before visiting your classroom, we would like for your students to observe nature “in their own backyard” and derive some natural scientific questions based on those observations. We will connect the observations they share on the day of the presentation with the actual work we do in the field.

If your school is located within a natural setting, or even if there is just a courtyard with a tree and some grass, all that may be required is your students grabbing a notebook and a pencil and spending a few minutes or more quietly observing what can be seen. You may wish to do this as a whole-class, or small group activity, or you may find it most beneficial to give each child their own time and space alone. You may want to try this yourself, before your students, to decide how long they should try to observe and think of some ways you can help them focus for longer periods of observation. Perhaps several short observations will work better for your kids than one long session. Do what works for you.

If a natural space is inaccessible to your classroom, you will likely want your students to do this pre-outreach activity as homework a few days before we arrive.

### **SUGGESTED PRE-OUTREACH LESSON PLAN:**

#### **GOALS:**

- To employ the first two steps of the scientific method: Observing & Questioning
- To recognize that nature is close to you and all around you.

#### **OBJECTIVES:**

- To observe and record (visually and/or in writing) at least 3 observations of plants and/or animals in a natural setting.
- To develop at least 3 “what”, “why”, or “how” questions based on those observations.

**MATERIALS:**

- Notebook or Student Observation Sheet (as follows) with hard surface (mini whiteboard, clipboard, etc.) for bracing.
- Pencil or pen and preferred sketching/drawing materials.

**ANTICIPATORY SET:** Ask your students to define or explain what “nature” is to them. Assure them that there are no right or wrong answers. You may want to make a class list of their responses on the board to save for the day of RAEI’s visit. You may also want to ask them to write or journal about a memory they have of a time they spent in nature and how it made them feel.

You may notice that many kids associate “nature” with distant places and extreme organisms. It is common for our children today to conceive of nature as something “other” rather than something intimately closer to themselves.

Depending on the age of your class, you may find the discussion turning into a debate about what “nature” is. They may be encouraged to question such concepts as whether or not such things as animals in a zoo, weeds (invasive species), genetically modified organisms, clones, breeds of dog, and they themselves are indeed nature. Allow them to explore the different ideas with respect for differing viewpoints. Even young children will have thoughts regarding similar concepts.

**TRANSITION:** Ask your kids if they think nature is right outside their classroom door. (If doing as homework, ask if they think it’s in their back yard.) Tell them that they are going to go out there to find out. As scientists, they will make some observations and develop some questions based on what they observe.

Remind them that they can observe plants as well as animals, and that they can use other senses (such as hearing, touching, and smelling) besides sight for observing. Also, pre-literate students can focus solely on drawing to record their observation, while those skittish about drawing can rely on fuller, more detailed written descriptions.

Have the kids brainstorm things to look for that would be interesting to observe (ant hills, spider webs, flowering plants, under rocks, etc.). Also, encourage them to expand upon the details of what they observe. Descriptions should be simple, but pointed (“The web was the size of my hand with the fingers out and there was a white, spiral line woven from the center to the outside strands. The web was attached to two twigs, one on each side.” Rather than, “The web was kind of big with a funny squiggle.”)

**ACTIVITY:** Print out and copy the following observation sheet as a guide, create your own, or just use plain notebook or drawing paper:

## Scientific Nature Observation & Question Sheet

**DIRECTIONS:** Take this sheet and a pencil (and/or other materials your teacher has provided) and go outside to a “natural” place. Sit quietly for as long as your teacher suggested. As you sit, notice what you see (and perhaps even hear, touch, or smell). Then write and/or draw at least 3 different things you observed and then come up with at least one question you have based on each observation. Try to use “how” “why” and “what” in your questions.

### EXAMPLE 1:

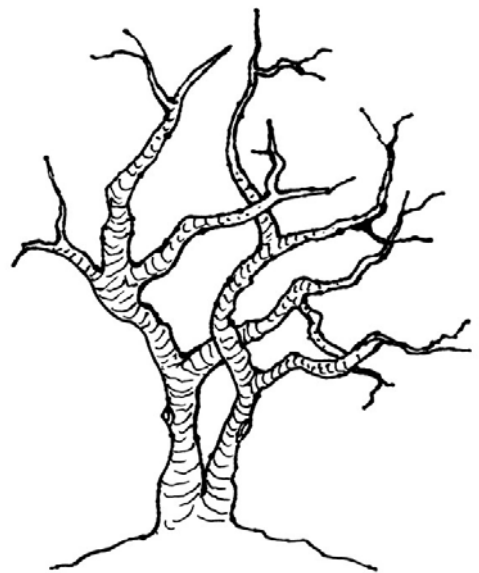
**Observation** – “A moth or butterfly sat still in a tree just above my shoulder. I didn’t notice it at first because its’ wings were a brownish grey color like the tree bark. The wings even had a texture that looked like the tree. It was about as big as a quarter. It looked like this:



**Question(s)** – “What is it, a moth or butterfly? I usually see moths only at night, but this seems like a moth to me.”

“Why does it look like the bark of the tree?”

**EXAMPLE 2: Observation** – I see a tree that has tiny leaves and green bark. I see them all over where I live. This one looks like this:



And its’ leaves look like this:



*Question – “Why are these trees green?”*

**NOW IT’S YOUR TURN:**

**Observation 1:**

**Question(s) 1:**

**Observation 2:**

**Question(s) 2:**

**Observation 3:**

**Question 3:**

When the students have completed their observations and questions, have them share them with each other or with the whole class. Try to make note of any particularly strong observations and/or good questions and encourage those kids to share their field work the day the RAEI scientist comes to visit. **PLEASE SAVE THE STUDENTS' WORK FOR SHARING THE DAY WE VISIT YOUR CLASS.** They should have their observations/questions and a pencil out when we arrive.

### **THE DAY OF OUR VISIT**

We will spend the amount of time you requested when we agreed to visit your class (usually about an hour) doing some mixture of the following, as appropriate for your age and interest of students:

- Sharing what RAEI is and what it we do and why we do it.
- Explaining geographically where we do our work and what makes a rainforest so special (biodiversity).
- Listening to and looking at your students' observation records and helping them make connections between the nature they found right next to them and the discoveries in nature we have found in the tropical rainforest.
- Telling stories about and showing slides of interesting animals in the field.
- Relating how such observing, questioning, and documenting like they just did is so important to science and the environment.
- Sharing ways in which ecosystems are in danger of loss.
- Asking students to brainstorm ways in which they can help preserve biodiversity around the world and in their own back yard.

### **SUGGESTED EXTENSION ACTIVITIES**

Here are some possible follow-up activities after our visit. Please share with us any other ideas you may have... we'd love to have even more to share!

- Have students choose one question of the 3 they generated, and have them do research to answer it.
- If no answer can be found, perhaps it's time to do science! They could develop a hypothesis and perform an experiment (following the scientific method) in order to find the answer them selves. These may even be used for a Science Fair project if you participate in that each year.
- You may want to get creative and expand the artistic element of the lesson by having the kids use pastels, colored pencils, paint, charcoal, etc. to create a larger, more detailed work based on their original sketch or sketches. Students could be free to use their artistic license and change the representation to reflect their own interpretation of it. Perhaps different artistic styles (Impressionism, Expressionism, Surrealism, etc.) and particular artists could be studied before students dive into their own work.
- You may be able to use this outreach lesson as a way to introduce a new science topic such as Ecology, Natural Selection, Genetics, etc.

- Your students may be inspired to do more observing in other natural settings... perhaps on a field trip, or on vacation somewhere.
- Students could be encouraged to contact local environmental organizations to see what they and/or their parents can do to get involved. The class could even participate in something like an invasive weed pull nearby, use GPS and photography to help evaluate the state of native species, be involved in a local bird count, or help monitor the state of a nearby watershed. Explore what is out there and help get the kids actively involved in something that makes a difference.

Here are some sites with such opportunities:

<http://www.dgif.virginia.gov/wildlifemapping/>  
<http://depts.washington.edu/natmap/>  
<http://www.extension.iastate.edu/naturemapping/>  
<http://undsci.berkeley.edu/index.php>  
<http://www.naherp.com/>

- They could plant a garden or native plants at their school and observe the nature that occurs within it.
- Students can learn to take photographs of the natural world around them, as an important way of documenting various species and sharing with others the beauty (in all forms) that surrounds them.