

Unit Study 2

Living and Non-living

LESSON 1: EXPLORATORY WALK

Read to your child (or have your child read) the following paragraph.

We are going to go for a walk. On our walk, we will see many different things. We know that some of these things are living things. Other things are not living. Let us go out and see what we find!

Grab your spiral notebook, pencil, camera and head out for a walk around the block. During your walk, everything you see will fall into one of two categories – living or non-living. From experience we know what is living and what is not living. How we know this will be explored in the following lessons. For now, explore and see what you find.

Refer to Student Notebook Pages – Lesson 1 to help your child construct his notebook page for your walk. Your child can record items on the two lists provided. At the end of the walk, ask the following questions.

Discussion Questions:

Instructor: Which category did you see more of? Living or non-living.

Instructor: Is there a better way to present our data so that other people can quickly see how many living things we saw and how many non-living things? (Answer: construct a graph).

Turn to Notebook Page 1 and work on completing the bar graph. You can explain to your child how graphing works since making charts and graphs is critical for presenting data. The following excerpt can be read to the child if desired.

A graph is used to present our data to other people. Graphs help us communicate information. Putting data into a graph allow us to see patterns and help us to make comparisons. Graphs have two axes. We

write our categories on the horizontal axis. The data we have gathered for each category is on the vertical axis.

Construct the Bar Graph. You will need to count the number of objects in each list. On the horizontal (or x-axis) you will see the label, living and non-living. On the y-axis, you will have to label. Be consistent with your intervals. Label the lines as 1, 2, 3, 4, 5, etc. or 2, 4, 6, 8, etc. Above the living label, you can draw a rectangle extending upwards reaching the number on the y-axis that agrees with the number identified in your totals chart. Repeat for non-living.

Make sure you construct your notebook page in your spiral notebook.

LESSON 2: VOCABULARY

The vocabulary words found on Notebook Page 2 can be used for copywork exercises. These words are important for understanding the following reading selection as well as understanding you as you take the student through the remaining activities.

Sometimes you might be able to find a library book about living and non-living things. At the end of this unit study you will find a list of books that you might be able to find. If you don't have a book on living vs. nonliving, perhaps you could google images of the vocabulary words and discuss what each word means in relation to living things. Make sure to use the words throughout the day at opportunities that may arise. In the first column, have the student draw a picture to help him remember the meaning of the new word. In the last row, there is a space for the student to pick a word that he would like to know. Ideally, you may have used this word during Lesson 1. Make sure to construct notebook page 2 in your spiral notebook. Write the date and title "Vocabulary" at the top of the page. Paste or glue in the vocabulary chart.

Definitions can be found in any science text, though you may choose to use the following definitions listed below.

Biological – anything currently living, lived in the past and now dead, or byproducts of living things (food, beehives, honey, etc.)

Orientation – how an object sits in space (top, bottom, etc.)

Symmetry – having the same parts on either side of an axis

Reproduce – to make more of something

LESSON 3: HOW DO WE KNOW IF SOMETHING IS LIVING?

Read to your student (or have your student read aloud) the following selection:

Living things have some special qualities which help us to categorize them as living. Living things can grow. You might not be able to see this growth happen right in front of you, but growth does indeed happen. You were once only 20 inches tall. Look how tall you are now! Living things can also react or move. Plants can move and orient themselves to face the sunlight. Living things can breathe, eat and drink. This helps provide the energy necessary for life. Finally, living things can reproduce. They can make more of themselves. Growth, reaction, consuming food/drink/air, and reproduction are four special qualities of things that make them living.

Use the student notebook page 3 to help your child construct her notebook page. Help the child summarize the four major qualities of living things; 1) growth; 2) reproduction; 3) breathing/drinking/eating; and 4) movement. Once each are identified, the child and adult can go online to identify pictures that fit with each quality. Alternatively, the child can draw their own pictures. Make sure to date and title your notebook page.

LESSON 4: READING SELECTION AND ACTIVITY

Read to your student (or have your student read aloud) the following selection:

In our first lesson, we organized all things found on our walk into two groups: living and non-living. Trees, flowers, grass, people, and animals are all living things. Rocks, stones, dirt, water, and the air we breathe are all non-living things. Today we are going to look at a different way to group, or classify these things. We are going to use the terms, biological, natural earth, and human-made¹. Everything in our world can be classified into these groups. Biological items are all things that are currently living, were living in the past, or are byproducts of living things. Leaves fallen from a tree, are considered biological items. Honey, wool, and food are also biological. Natural earth items are all items that come from the earth

and were never living. Natural earth items would include water, air, stones, rocks, dirt, or sand. The third category is human-made. We can use items from the biological group and the natural earth group to construct items that are useful to us. Things like paper, appliances, jewelry, tools or furniture would fall into this final category.

Activity Correlated with Reading

Collect three boxes or mark off 3 areas of the room. Label these boxes/areas as biological, natural earth, and human-made. Give your student 10 minutes to explore the area and find 3-5 items to place in each category. Take pictures of each pile. Use Notebook page 4 to help you construct your notebook page. Paste/tape each picture into the notebook and have the child list the items on the page. Perhaps help the student identify a simple sentence describing a similarity between all objects in the box. (ex: All the human-made object I found are shiny.)

Discussion Questions

Instructor: What did you find that was biological? (Write the items that the child identified as biological next to the picture in his notebook.)

Instructor: Why is this item biological? (Listen to the child's answer, record his answer in the notebook. This question will be the subject of Lesson 5.)

Repeat this set of questions for the natural earth group and human-made group.

[†]These categories are identified in Nebel. Building Foundations of Scientific Understanding. Volume 1. 2014

LESSON 5: OBSERVING BIOLOGICAL OR LIVING THINGS

Read to your student (or have your student read aloud) the following selection:

In our last lesson, we learned that living, or biological things, are able to grow, reproduce, move/react, and eat/drink/breathe. Some of these traits are easy to see in living things. We can easily see a dog drink water,

therefore a dog is alive. But some of these traits are harder to see. Can you see a tree drink, eat, or breathe? Can you see a flower move? Or an ant reproduce? Can you see a redwood tree grow? These are hard traits to observe.

Living or biological things have traits that we can see that helps us to know that they are biological. We can observe symmetry in living things. A leaf has symmetry. If you draw a line down the middle of a leaf, you can see the same parts on each half. Living things also tend to have an orientation. A tree has a top and a bottom. Living things have fine details and repeating patterns. Look at your arm. Can you notice the little hairs, the structure of your skin, and changes in pigments? Finally living things can die. You can see a leaf crumble, or a fly die in your house².

Use the student notebook page 5 to help your child construct her notebook page. The child should be able to pick out the 4 observable qualities of living things. Have the child write each quality at the top of each box (1-symmetry; 2-orientation, 3- fine detail/structure, 4-able to die). The student can then draw a picture to illustrate the concept. Alternatively, the adult and child can go online to print images. Using the image feature on google, search for pictures that represent these ideas.

²This information is summarized from Nebel. [Building Foundations of Scientific Understanding](#). Volume 1. 2014.

LESSON 6: NARRATION

Choose a book that discusses living things. The library has many interesting non-fiction books that discuss living and non-living things. I have listed a few at the end of this Unit Study.

Have your child look through the book once by herself. When starting to read the book, ask her what she thinks the book is going to discuss. Read through the book taking time to look at the images and ask questions for comprehension. At the end of the story, ask her to tell you her favorite part. If she has difficulty, flip through the pages again to refresh her memory. Listen carefully to her response and write it down. If you wish, you can write it on a separate sheet of paper, and she can copy it onto lined paper, cut it out and paste it on her notebook page.

Make sure to write down the title and author of the book. The student can also illustrate her narration by drawing a picture or finding a picture. Notebook page 6 is provided for your convenience.

Note: You can repeat this lesson for as many books as you wish throughout the unit.

LESSON 7: ENRICHMENT ACTIVITY

In order to encourage discovery and investigative characteristics in your student, I have provided for an enrichment activity. This activity centers around technology – the branch of scientific engineering that deals with human-made products. The child should choose a human-made product that is of high interest. Together with the student research this product. Library, YouTube, manuals are all good resources. Let the child hold, manipulate and use the product. Then, together identify the following: (1) the resources needed to build this product; (2) the steps needed to assemble the product; and (3) an image or picture of the final product.

Although technology is thought of as a human product, animals throughout the world have their own technology. Bees make elaborate hives. Birds make nests. Spiders make webs. Have your child identify an “animal technology” that is of interest. Again research the technology identifying both the resources and steps needed to assemble the product. Find a picture or let the child draw a representation. If you need help designing your notebook page, use notebook page 7 and 8.

LESSON 8: ASSESSMENT – PERFORMANCE PRODUCT

For the assessment to this unit, the child or teacher should pick two items in the child’s environment. Take a picture of each item. Print the picture and place it in the correct spot on notebook page 9.

The student is to determine if each object is living or non-living using the observable set of criteria identified in Lesson 5. Ideally, a living thing will satisfy each observable characteristic. If one characteristic is not observed, the object is not likely to be living.

If the child is able, he should be instructed to first write down the four observable qualities (symmetry, orientation, fine detail and structure, able to die) on the space provided. If he is unable to remember all four qualities, help him to remember by returning to the notebook page he made for lesson 5. Next, examine the object and determine if it fulfills the observable criteria. If all 4 boxes are checked, then the object is most likely living. Color in the living option. If the student determines the object is non-living using the observable criteria, then non-living should be colored in.

Assessing for Understanding: Beginning, Emerging, Mastery.

Beginning – Student is able to correctly identify 1 object as living or nonliving

Emerging – The student is able to correctly identify both objects as either living or nonliving.

However, the student is unable to recall without prompting the four observable characteristics of living things.

Mastery – Student is able to recall the four observable characteristics of living things and correctly identify both items as living or non-living.

You can cut and paste your assessment into the child's notebook to save for evaluation purposes at the end of the year.

SUPPLEMENTAL READING

Hicks, Kelli. *Living or Nonliving? (My Science Library)*. 2011

Kalman, Bobbie. *What is a living thing? (Science of Living Things)*. 1998.

Nebel, Bernard, *Building Foundations of Scientific Understanding*. Volume 1. 2014.

Rissman, Rebecca. *Is it Living or Nonliving? (Living and Nonliving)*. 2009

Zoehfeld, Kathleen. *What's Alive? (Let's Read and Find Out Science 1)*. 1995

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