

Investigation One – Introduction to Living and Non-living

Standard II Students will understand that organisms depend on living and non-living things within their environment.
Objective 1 Classify living and non-living things in an environment
Intended Learning Outcomes 1. Use science process and thinking skills 4. Communicate effectively using science and language and reasoning.

Standard II

Objective 1

Background Information

Your students may have trouble distinguishing between living, non-living, and once-living things. Children may consider everything that moves to be alive, including cars and clouds. Often children pretend that objects are alive so that they can talk to them. Children also have difficulty comparing once-living objects with objects that have never lived. Living and non-living are scientific terms. Children are more used to hearing living or dead. By exploring various objects and organisms, your students can begin to distinguish between things that are living, things that were once-living, and things that are non-living.

Pre-Assessment/Invitation to Learn

Tell the class that you are going to do two demonstrations. You want them to make close observations and be prepared to explain what they saw happen during each demonstration.

Demonstration 1

1. Fill the baking dish with about ½ inch of water and place it on the overhead projector. Use 2 opened file folders as a screen to block students' view of the baking dish sitting on the projector.
2. Out of view of the students, behind the screen made from the file folders, sprinkle enough pepper onto the surface of water so that it is pretty well covered. Turn on the overhead projector. Your students will see the pepper as shadows on the screen.
3. Place a drop of liquid dish soap on the surface of the water. Your Students should see the shadows of the pepper flakes immediately move away from the soap toward the sides of the dish.
4. Ask students to explain what they observed happening and what they think the things floating in the water are. Why did they move away? Do they think the little things are alive?

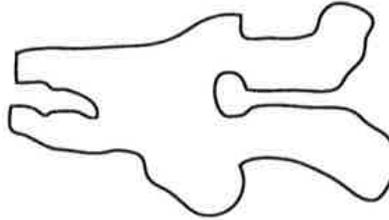
Materials

- Small, flat bottomed clear glass baking dish
- Overhead projector
- Pepper shaker
- Liquid dish soap
- File folders (2)

Demonstration 2

Thoroughly rise out the dish before beginning the second demonstration.

1. Place the dish on the overhead and fill it with $\frac{1}{2}$ inch of water. Again use the folders to screen your actions from your students.
2. After the water has stopped moving, place a shape similar to the one shown below cut from oaktag, on the surface of the water.



3. Place a drop of liquid dish washing soap in the center hole. Your students will see the shape move quickly across the water.
4. Discuss with the class what happened to the shape. Why do they think the shape moved? Is the shape alive?
5. Explain to the class that the demonstrations did not have any living things in them. Show them the pepper, oaktag shape, and soap. Explain that the pepper and the shape moved away from the soap because it broke the surface tension of the water. Not everything that moves is alive. Have the class list things that move that are not alive.

Instructional Procedure

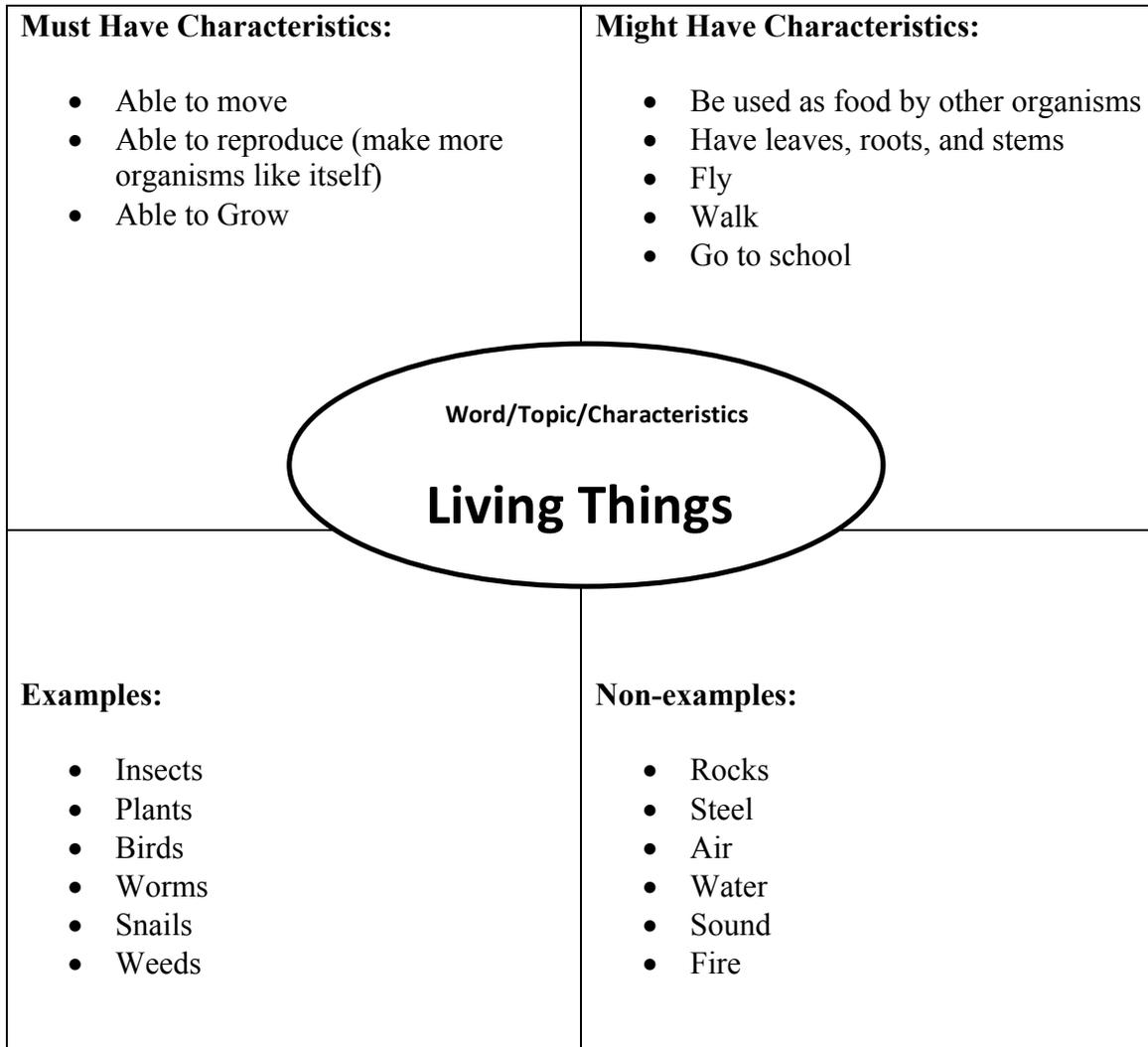
Materials

- Various objects and organisms, such as the following:
- Rocks
- Empty aluminum can
- Nails
- Sand
- Water
- Zip-lock bag with air sealed inside
- Seeds
- Apple
- Paper
- Wooden objects
- Potted Plants
- Live animals (insects, fish, hamsters, dog, cat, etc.)

This activity can be done with the whole class working together or in groups if enough objects can be obtained (see materials list). Students could work in cooperative teams of 3 to 5 students.

1. Begin by showing the students the objects. Allow students a few minutes to share observations and information about the objects.
2. Invite a student to move the objects into two different groups (or have each team arrange their objects into two groups). Have class members see if they can guess why the objects were grouped the way that they were.
3. Allow a few more students to form groups with the objects. Hopefully someone will group them as living and non-living. If not, suggest that someone try grouping them as living and non-living.
4. Discuss with the class what all living things have in common. (They are able to grow, reproduce, and move.) Make sure students understand that just because an object moves, does not mean it is alive. Also, something may grow and not be alive. To be alive, an object must do all three.
5. Discuss the difference between non-living and once-living. Ask the students which objects were once-living or were once a part of a living object, but are no longer alive (wood, paper, apple, etc.). What is the difference between these objects and the non-living objects such as the nail, rock, or aluminum can?

6. Give each team a set of the Word Cards and ask them to arrange them into three groups; living, once-living, and non-living.
7. Discuss team responses. Give students an opportunity to explain why they grouped the cards the way they did.
8. Make an overhead, or chart, of the Vocabulary Sheet for “Living Things” or copy it onto the board. Also provide a copy for each student. Working with the students, fill in the sheet. Some possible responses are listed below.



9. Provide copies of the vocabulary sheets for “Non-living Things”, “Once-Living Things”, and “Organisms” to students. (Or make larger copies that teams could fill out together.) Have students work with their team and fill out the vocabulary sheets.
10. Go over the vocabulary sheets with the class. Have students save the sheets in their journal so they can add them as they gain more knowledge about living and non-living things.

Curriculum Extensions

Science –

- Take the class outside for a walk around the neighborhood. Challenge students to find living, non-living and once-living things. Have students make lists and drawings of things they find to add to their journals. (*ILO 1*)

Art -

- Have students make a collage of living and non-living things by folding a paper in half and writing “Living Things” at the top of one half and “Non-Living Things” at the top of the other half. Students will cut pictures from old magazines of living and non-living things to glue onto the paper. Remind students that in a collage, pictures are overlapped and displayed in a creative way. (*Standard III, Objective 1*)

Language Arts

- Have students create an imaginary animal including the characteristics of movement, growth and reproduction. Then have them write and illustrate a story about their imaginary animal. (*Standard VIII, Objective 6*)

Assessment Suggestions

- Have students divide a piece of paper into three columns and title each column with “Living”, “Non-living”, or “Once-living”. Challenge the students to list as many things as they can for each category.

Resources

Web sites:

- www.fi.edu/tfi/units/life/
- www.science.glencoe.com

Homework & Family Connections

Ask students to look around their homes, yard, and neighborhoods and take notes on the living, once-living, and non-living things they can find. Have students add their notes to their science journals and share what they learned with their teams.

Word Cards

water	air	rocks
sunlight	heat	electricity
fire	sound	steel
butterfly	dog	apple tree
tiger	school teacher	grass
sea weed	crab	worm
elephant	flea	apple
tree branch	hot dog	bread
sugar	popcorn	hamburger
salt	clock	hair

Vocabulary Sheet

<p>Might Have Characteristics:</p>	<p>Non-examples</p>
<p>Must Have Characteristics:</p>	<p>Examples:</p>

Word/Topic/Concept
Living Things

