

**Time:**

45 minutes in the classroom
45 minutes of fieldwork
(desert environment if accessible, if not another classroom session is an option)

Level:

Grades 1-3
Standards selected for grade 3

Goals:

This lab will give students an opportunity to explore the characteristics of living things, and then classify items in their environment as living or non-living.

Objectives:

Students will be able to –

1. Work with team members to classify objects in a desert environment as living or non-living with 100% accuracy.
2. Use a 'list of requirements' for living things to determine whether various objects are living or non-living with 90% accuracy.

Materials listed with each individual activity.

Desert Living and Nonliving

by Teresa Anderson, Neicca Butts, and Mark Larese-Casanova

Correlations to Core Curriculum:**Third Grade**

- Standard 2: Students will understand that organisms depend on living and nonliving things within their environment.
 - Objective 1: Classify living and nonliving things in an environment.
 - Indicator a: Identify characteristics of living things (i.e., growth, movement, reproduction)
 - Indicator c: Classify living and nonliving things in an environment.

Background Information:

The topic of the characteristics of living things is highly debatable, even within the science world. For this reason, there are many different lists available defining what life is characterized by. For this lesson, the characteristics of living things have been chosen based on characteristics that are generally agreed on throughout the scientific world, as well as those characteristics which align with the Common Core Standards.

Materials:

Supplies --

- Science journals
- Writing utensils
- Classification cards (download free on www.utahnatureexplorers.org)
- Gummy worms (1 per student)
- Earth worms (1 per student or pair)
- Small paper plates (2 per student)
- Worm investigation worksheet (1 per student, download PDF free at www.utahnatureexplorers.org)

Equipment--

- Whiteboard, markers
- Magnets/tape

Activities:

Day 1 (Classroom)

Engage (10 minutes) – Tell students that they will be learning and exploring the concept of living things versus nonliving things. Start with the classification activity. Using the classification cards (these should be cut out and randomly put together before starting the activity), do a ‘Living vs. Nonliving sort’ with the students on the whiteboard. Make a large ‘T-chart’ on the board, with one side representing ‘Living Things’ and the other side representing ‘Nonliving Things.’ Show the students the picture on a classification card, tell them what it is if needed, and then ask the students if they think the object is living or nonliving.

If there is not a common consensus as to which side of the board the card should be placed on, you may choose to let students discuss their different points of view until a consensus is reached, or you may choose to do a vote, with the majority determining where the card should be placed. Remind students that you are not going to correct them at this point in the lesson.

Alternatively, you may choose to go around the room and let each student give an answer for one card. If you choose this option, this is a great time to ask students to defend why they think that card should be placed in a certain category.

Explore (15 minutes) – Introduce the ‘Worm Investigation’ activity. Tell students that they will be exploring the differences between living versus nonliving things by doing an activity with gummy worms and earth worms.

Remind the students that, although they probably already know which worm is living and which is nonliving, they are looking for *why* living things are different than nonliving things. Give each student two small paper plates, their ‘Worm Investigation’ worksheet, a gummy worm (on one plate), and an earthworm (on the other plate).

Give students 5-10 minutes to do the ‘Worm Investigation Activity.’ After they finish studying the difference between their gummy worm and their earthworm, ask them to turn to the back of the paper and write down at least 3 things that make living things different than nonliving things. If some of your students are not able to write down three differences, accommodate by allowing them to draw or write just a few words to describe what they are seeing.

Did you know?

Growth alone cannot determine whether an object is living or nonliving. For example, icicles "grow," yet they aren't alive. All living things grow at some point in their lives, but some nonliving things seem to get bigger too. For this reason, growth cannot by itself be used to classify something as living.

http://utah.pbslearningmedia.org/resource/tdc02.sci.life.colt.lp_living/living-vs-nonliving/



Materials:

Supplies --

- Water for students to drink (optional)
- Science notebooks
- Pencils
- Living or Nonliving worksheet (1 per student, download

Explain (10 minutes) – After all students have written down ideas for what makes living things different than nonliving things, have students share their ideas with a partner. Give the partnerships about 2 minutes to discuss, and then have the students share their ideas with the whole class. Write their ideas on the board.

After all of the ideas have been written on the board, ask students ‘What characteristics are *always* true of living things? Of Nonliving things?’ As they give correct answers, circle them on the board. If students are still having misconceptions at this point, do your best to clear the misconceptions up. Anticipate questions about growth. If you need help explaining why growing alone does not qualify something as living, see the first ‘Did you know?’ section of this lesson plan.

Elaborate (5-10 minutes) – Have students open their science journals. Tell them that you are going to give them 5 qualifying factors they should check to determine whether something is living or not. Remind the students that, in nearly all cases, all 5 factors need to be true in order for something to be living.

Have them write down the following list:

1. Does it **grow**?
2. Does it **breathe**?
3. Does it **eat**?
4. Does it **move**?
5. Does it **reproduce**?

Explain what each of these words mean, and why they are important and necessary for living things. If time is still available, you may choose to come up with an acronym or acrostic poem to help you remember the characteristics of living things.

One example: **G**regory’s **B**irds **E**at **M**ashed **R**adishes

Day Two (Field Activity or Classroom)

Engage (10 minutes) – Briefly review with students the characteristics of living things versus nonliving things. Explain that the students are going to have a chance to classify living and nonliving things in a specific environment now – a desert environment.

To introduce students into the desert environment classification activity, read the book *Living and Nonliving in the Desert* by Rebecca Rissman.

free at

www.utahnatureexplorers.org)

- Glue (optional)
- Classification cards

Equipment--

- *Living and Nonliving in the Desert* by Rebecca Rissman
- Desert Environment (if possible)
- Desert Living vs. Nonliving PowerPoint, if staying in the classroom (download free at www.utahnatureexplorers.org)
- Whiteboard (if staying in the classroom)

Did you know?

It is not always an easy thing to tell the difference between living, dead, and non-living things. Prior to the 1600's many people believed that nonliving things could spontaneously turn into living things. For example, it was believed that piles of straw could turn into mice!

<http://utahscience.oremjr.alpine.k12.ut.us/sciber00/7th/classify/living/2.htm>

Discuss some of the different things that the students may see in the desert environment during their field work experience.

Give students reminders of how to appropriately act while on their fieldwork experience. If you are going to an area with a trail, ask students to stay on the trail, and remind them that the desert environment does not want to be disturbed.

Make sure each student brings their science notebook and a pencil to record their observations. Before leaving for the fieldwork experience, have students glue the 'Living or Nonliving' worksheet into their science journals to ensure that they won't lose it. As you are working with young children, you probably will want to have water available for them to drink during the field trip.

Explore (15 minutes) – Have students take their science journals and pencils with them into the desert environment. Ask students to spread out and each find an area where they can observe the living and nonliving things around them in the desert. Ask students to sketch and label pictures of 10 objects – living or nonliving. Give students about 15 minutes to do their sketches.

If you are not visiting a desert environment, turn on the Desert Living vs. Nonliving PowerPoint. Give students about one minute per slide to sketch and label their scientific drawings.

Explain (10 minutes) – After students have finished sketching and labeling their sketches, divide the students into groups of 4-5 people. As a group, they should fill out the 'Living vs. Nonliving worksheet' with 10 of the items the group saw.

Together, they should be determining which objects are living and which are nonliving.

Elaborate (5-10 minutes) – Now that the students are aware of how to determine if something is living or nonliving, redo the classification activity. If you are still outside and don't have access to your whiteboard, just hold up the pictures and let the students determine if it is living or nonliving rather than putting it on the whiteboard.

Assessment:

This activity is only a small part of a larger unit on living versus nonliving things; therefore, no formal assessment has been created for this activity.

Did you know?

Defining "life" is a very difficult task, and scientists don't all agree on a common list of the characteristics of life. For example, fire uses energy, grows, and can reproduce, but it is not considered alive in part because it cannot evolve; its traits are necessary, but not sufficient, for life.

http://www.exploratorium.edu/imagining-station/activities/classroom/characteristics/ca_characteristics.php

Informal assessment should be performed as students do the final classification activity, and if desired, you may have students turn in their science notebooks after their fieldwork experience to perform further informal assessment. This may help you to know where student misconceptions lie and inform your future teaching.

Extensions:

- PBS has created a lesson plan on living vs. nonliving things. Within the lesson plan, there are many great videos to help your students learn about living vs. nonliving. To get access to these informative and helpful videos, visit the following link:
http://utah.pbslearningmedia.org/resource/tdc02.sci.life.colt.lp_living/living-vs-nonliving/.
- Create a Venn diagram comparing bears and teddy bears. See what is the same and what is different between this living and this nonliving thing.
- Create a 'Living vs. Nonliving' collage with pictures from magazines, posters, newspapers, etc.

Resources:

Books

- *What is a Living Thing?* by Bobbie Kalman
- *Living and Nonliving* by Angela Royston
- *Living and Nonliving in the Desert* by Rebecca Rissman