

WHO IS IT FOR?

- ◆ Young Scientists . . .
- ◆ Evolving Mathematicians . . .
- ◆ Emerging Linguists . . .
- ◆ Sprouting Historians . . .
- ◆ Budding Artists . . .

TARGETED LEVEL:
(Kindergarten)

THE CHALLENGE:

The students will . . .

- ⇒ recognize and begin to analyze the differences between living and non-living things.
- ⇒ begin to recognize characteristics of a pond and of aquatic plants and animals.
- ⇒ learn about ecosystems.

SAFETY ISSUES & CONCERNS:

- * Students need to demonstrate care with sharp objects and writing utensils.

WHAT'CHA NEED?

1. Two large sheets of poster paper.
2. Various colored markers.
3. An easel or chalkboard to put the poster paper on.

TIME NEEDED FOR THE ADVENTURE:
Minimum of 45 minutes.

Counting on the Stream

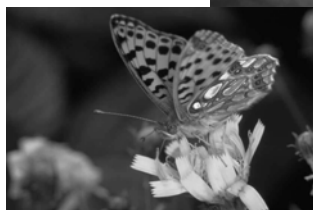
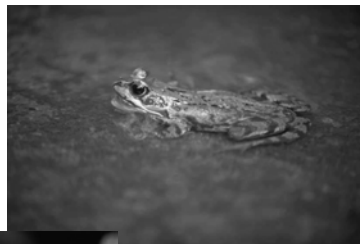
Pre-visit Activity

What is life? Webster defines it as the “active existence of plants and animals.” A biologist would tell you that one looks for certain characteristics of life and, if the organism has each of those characteristics, then that organism is living. Some scientists would say that if the object/organism contains the element Carbon then that organism was at least once living, even if it is not doing so now. Life is also a term that can be used to summarize the various activities of all species, from single-celled microscopic organisms to plants and animals. A discussion about life can be a complex one, however for this activity, we will confine ourselves to the following criteria for “life” and the absence of these criteria to signify lack of life or “nonliving”:

- ❖ Reproduction, in essence, is the ability to make a copy of oneself.
- ❖ Metabolism on the other hand, is comprised of both physical and chemical processes by which energy is used in order to perform basic activities like reproduction, growth, movement, and responsiveness to stimuli in the environment. The energy to be metabolized may come from the sun itself, a process known as photosynthesis for plants, or through the consumption of the chemical energy contained in food.

Is an insect alive? Yes, because it reproduces, grows, moves on its own and responds to stimuli in the environment. Is a rock alive, no because it does not reproduce, grow, move on its own or respond directly to any stimuli in the environment. Is a plant alive? Yes, even though it does not move itself the way an insect or animal does, it still very much moves in a myriad of other ways, it reproduces, grows throughout its life, and has definite responses to the environment.

In this activity, the students will have the opportunity to thoroughly discuss and analyze the characteristics of living and nonliving things.



WORDS TO KNOW?

1. Aquatics
2. Biology
3. Ecology
4. Ecosystem
5. Habitat
6. Pond
7. Stream
8. Waterfall

DID YOU KNOW . . .

A habitat is a natural place where organisms live?

Animals and other organisms depend on ponds and other bodies of water for their food and water?

No two ponds are exactly alike? Their water quality and the living conditions vary with their size, depth and shape?

Conditions in any pond can change according to the time of day, the weather and even the season?

EXTRA STUFF?

Related books/stories and on-line sources:

Trumbauer, Lisa, 1996, *Life in a Pond*.
Newbridge Early Science Program.

Downer, Ann, 1992, *Spring Pool: A guide to the Ecology of Temporary Ponds*.

Hamberger, John, 1975, *Birth of a Pond*.

Lvies, Bianca, 1989, *Lily Pad Pond*.

TEKS

CONNECTIONS:

Science TEKS - Kindergarten:

K.2 (A) – Students will ask questions about organisms, objects, and events.

K.4 (B) – Students will make observations.

K.8 (A) – Students will identify a particular organism or object as living or nonliving.

K.8 (B) – Students will group organisms and objects as living or nonliving

K.9 (A) – Students will identify basic needs of living organisms.

PROCEDURES:

Ready, Set, Go . . .

1. On a large sheet of poster paper, make four columns. One column heading to be “Living” the next heading to be “Why”, the third column to be “Nonliving” and the fourth to be “Why”.
2. Ask the children to call out the names of things that are living and write those under the “Living” column.
3. Ask the children to call out the names of things that are nonliving and write those under the “Nonliving” column.
4. When the list has been exhausted, ask the children to explain their answers and write their explanations in the “Why” columns.
5. Upon completion of the list, allow the students to analyze their answers. You should begin to ask questions such as, “Is brown grass still alive?” “When a leaf falls off a tree, is it nonliving or living?” “Are rocks alive?” “Were some rocks ever alive?” “Are nonliving things important?” “How do you know when something is alive or not?”
6. The students may suggest that breathing is a criterion for life – encourage the students to recognize those organisms that are very much alive (plants, for example) and yet do not breathe as we do.
7. Work through each of the students’ explanations of what constitutes life.
8. Lead the students to understand the basic criteria for life (see background information on first page).
9. When all of the students have grasped the basic concepts of living versus nonliving things, place another piece of poster paper on the board.
10. Draw an outline of a pond on the piece of paper.
11. Encourage the children to imagine the kinds of things they might see in and around a pond.
12. As the children name various organisms and/or objects, ask them to tell you where these things might be located at the pond. In the pond? Around the pond? Above the pond?
13. Draw the plants, animals, insects, rocks, dirt etc., on the poster board as the children call them out.
14. Work with the students in attempt to determine whether each of the organisms and/or objects they called out is living or nonliving.
15. Are there any items from the first list that could or would be found around a pond?
16. Are there any items from the first list that depend on a pond, or another water source to maintain or sustain its life?
17. Mention to the students that a pond is a complete ecosystem and that an ecosystem is very much like a small community, like Denton.



Procedures continued . . .

18. Explain that in an ecosystem, like a community, all of the plants, animals and insects work together to form a complete living environment.

19. A pond may provide, for some organisms, all that they need in order to survive and reproduce.

20. Ask the students if any have ever seen a Waterfall. Who has seen a Stream? A Wetland? How many have seen a Pond? What was it like?

21. Explain to the students that in the very near future, they will be observing a pond at the Elm Fork Education Center (EFEC), as well as a Waterfall, and stream.

22. While observing the pond at EFEC, they will be attempting to locate and identify living and nonliving things that are in around an aquatic environment.



Assessment

Teacher observation

The Bottom Line: The students will be able to use their senses and observational skills in order to recognize and analyze the differences between living and nonliving things.