5E Lesson Plan

“It’s Alive . . . Or Is It?”

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BIOL 4583.02
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Lesson Objective(s):  
- Students will learn and understand the seven MRS. GREF characteristics of life.  
- Students will distinguish between living organisms and non-living objects.  
- Students are expected to group and compare living and non-living things.

Target Grade Level: First

Science TEKS: §112.12. Science

(2) Scientific investigation and reasoning. The student develops abilities to ask questions and seek answers in classroom and outdoor investigations. The student is expected to:
   (D) record and organize data using pictures, numbers, and words.

(9) Organisms and environments. The student knows that the living environment is composed of relationships between organisms and the life cycles that occur. The student is expected to:
   (A) sort and classify living and nonliving things based upon whether or not they have basic needs and produce offspring.

Other TEKS: §110.12. English Language Arts and Reading

(24) Research/Gathering Sources. Students determine, locate, and explore the full range of relevant sources addressing a research question and systematically record the information they gather. Students (with adult assistance) are expected to:
   (C) record basic information in simple visual formats (e.g., notes, charts, picture graphs, diagrams).
Materials Needed:

- Scissors
- MRS.GREF worksheet
- Rubric
- Construction Paper
- Black&Red markers
- “Get a Clue” handout/Clue Book
- Glue
- Old magazines
- Stapler
- Magnifying Glasses
- Writing Prompt

1. Engagement: Show students the “Living or Non-Living” Powerpoint presentation (page 6), followed by whole-group discussion.

2. Exploration: “Get a Clue” (page 7)
   Students will act as detectives to search for clues that identify living and nonliving objects in the classroom and on the school grounds and then draw them in their clue book.
   - How do you know if something is living or non-living?
   - What do living things need?

3. Explanation:
   - Identify the seven characteristics of a living thing using the MRS. GREF strategy.
   - Determine if an object can be both living and non-living and justify your thinking.

   The students will be creating a dot-matrix chart to determine if an item is living or nonliving using the MRS. GREF characteristics of life.

   Students will watch a short video “Is it Alive or Not” and fill out the MRS. GREF dot chart for each of the twelve objects shown. Students will proceed through the MRS. GREF characteristics of life (Movement, Reproduction, Sensitivity, Growth, Respiration, Excretion, and Feeding), coloring the circle red if the item possesses that characteristic or black if it doesn’t. After examining all seven characteristics, they will write whether they think the item is living or nonliving. (page 8)
4. **Elaboration:**

- Can an object have some living characteristics and still be classified as non-living? Explain.
- Can you identify non-living things in our classroom that have at least one living characteristic?

Explain to students that some objects can do many of the things that living things do. But, unless they do all seven, they are not living. With a partner, think about a car. A car can move, a car needs energy, a car makes waste, a car cycles the air inside it, and a car can even react to things (alarms). So, why is it not alive?

Have students work in pairs to search the classroom and find other non-living objects that show at least one trait of a living thing. Bring students back together and have each pair of students share one object that they found, identify its living traits, and explain why it is non-living.

5. **Evaluation:**

**FORMATIVE:**
- Teacher observations
- Class discussions
- MRS. GREF dot chart
- Clue Books

**SUMMATIVE:**
- Students will use a writing prompt to write about what they have learned about living and non-living things. (page 9)

**Background for Teacher:**

The criteria for classification of living or nonliving organisms are based on whether the object or organism exhibits certain processes. The object in question must show each of seven characteristics in order to be considered alive. Nonliving things may appear to exhibit some of these attributes; however, all seven characteristics must be present for an object to be classified as living.

The most obvious characteristic of living things is motion. Animals walk, run, hop, swim, jump, fly, and propel to find food and mates, build shelter, and defend and protect themselves from predators. Plants and animals move fluids throughout their systems for nourishment. Plants have the ability to move towards sunlight if confined to a dark place.
Although balls, water, and cars show movement, they do not possess the energy required to move independent of an outside force, nor do they exhibit the other six life processes.

The elimination of waste, in the form of scat, urine, or carbon dioxide gas from animals and oxygen from plants, is essential to life. A build-up of waste in an organism acts as a toxin and can even cause death. Dialysis is imperative for a person whose kidneys no longer function to remove waste efficiently. Respiration, the process whereby organisms exchange gasses (oxygen for animals and carbon dioxide for plants) is another process necessary for life.

Living things must reproduce, or generate copies of themselves, to ensure that the species will continue to perpetuate after the adult loses its ability to perform life processes. Pine trees make seeds to generate seedlings. Cows have calves, and dogs have puppies. Another attribute of living things is growth. With proper nutrients and energy, the pine tree seedlings, calves, and puppies will grow into adults. Size, height, and mass will increase as the organism matures.

Living things must engage in food-getting to satisfy energy needs for the other life processes: reproduction, growth, breathing, motion, and elimination of waste. Plants make their own food through photosynthesis, using the Sun’s energy to make sugar. Animals spend most of their waking hours looking for food, as do humans by shopping at markets and depending on farmers to grow crops or raise cattle.

A final life-process is sensitivity to environment. Living things have the life-sustaining ability to react to change. A rabbit hides or runs from a hawk. The hawk’s keen eyesight alerts its predator instinct about the meal below. The heron stands stock-still waiting for fish to disregard his threat. Mothers learn to distinguish their infants’ cries. Plants grow toward the sunlight. Living things, in order to maintain life, must be able to react to outside stimuli.

Living and nonliving things are characteristically different. Their requirements are not the same, nor do they perform the same functions. Nonliving things may appear to grow or move, but they do not truly perform the seven life processes. They do not have life. They are not alive. Living and nonliving things belong in two distinct categories.
LIVING/NON-LIVING POWERPOINT PRESENTATION
(ENGAGEMENT)

Double click the image below to view this powerpoint.

Living or Nonliving
CLUE BOOK INSTRUCTIONS:
(Exploration)

1. Provide students with a piece of paper to construct a booklet. Instruct students to fold the page in half hot dog style, then in half again hamburger style.

2. Students will cut the folded edges at the top of the booklet to form a four-page booklet. Staple the edges to hold the booklet together.

3. Tell students that they are going to be detectives in the classroom. They are to silently tip-toe around the room to search for four objects that are living or nonliving. Give each student a magnifying glass to enhance the detective play.

4. On each page of their booklet, have students sketch one item that they found in the classroom. They will then cut out and glue words from the old newspapers and magazines to describe each item. The words can include “moving,” “red,” “breathing,” or any other words that may or may not help in determining whether the item is living or nonliving.

5. As detectives, students will circle the descriptive words that help in deciding whether the item is living or nonliving (ex. "breathing" and "moving"). Some clues are more useful than others! Using their clues, they will finally classify each object as living or nonliving and write it below each picture.
MRS. GREF LIVING OR NON LIVING?

Watch the video “Is it Alive or Not?” For each item, color the circle RED if the item shows the characteristic listed and color it BLACK if it doesn’t. Determine whether each item is living or non-living.

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<th>Icicle</th>
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<th>Seed</th>
<th>Cloud</th>
<th>Clock</th>
<th>Coral</th>
<th>Fire</th>
<th>Bubbles</th>
<th>Chick</th>
<th>Cars</th>
<th>Jelly</th>
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Living or Non-living?

How many items were living? ________ Non-Living? ________

How Can you tell? _____________________________________________________________

On the back of this paper, draw a picture of a living organism that you have seen before.

"Is it Alive or Not?” Video

Is it Alive Video.mp4 (Double click icon to watch video or Click here to watch video)
Identify the living and non-living things in this picture. Write about what the living things in this picture can do.

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<table>
<thead>
<tr>
<th>Category</th>
<th>Exceeds Expectations (5)</th>
<th>Met  Expectations  (3)</th>
<th>Below Expectations  (1)</th>
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<tbody>
<tr>
<td>Focus and Coherence</td>
<td>Individual paragraphs and the composition as a whole are focused. The composition as a whole has a sense of completeness. The introduction and conclusion are meaningful because they add depth to the composition.</td>
<td>Individual paragraphs and/or the composition as a whole are somewhat focused. The composition as a whole has some sense of completeness. The writer includes an introduction and conclusion, but they may be superficial.</td>
<td>Individual paragraphs and/or the composition as a whole are not focused. The composition as a whole has little, or no, sense of completeness. The introduction and conclusion, if present, may be perfunctory.</td>
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<td>Organization</td>
<td>The writer’s progression of thought from sentence to sentence is smooth and controlled. The organizational strategy the writer chooses enhances the writer’s ability to present ideas clearly and effectively.</td>
<td>The writer’s progression of thought from sentence to sentence may not always be smooth or completely logical. The organizational strategy the writer chooses does not enable the writer to present ideas effectively.</td>
<td>The writer’s progression of thought from sentence to sentence is not logical. An organizational strategy is not evident.</td>
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<td>Voice</td>
<td>The writer engages the reader and sustains this connection throughout the composition. The composition sounds authentic and original.</td>
<td>There may be moments when the writer engages the reader but fails to sustain the connection. Individual paragraphs or sections of the composition may sound authentic or original.</td>
<td>The writer does not engage the reader, therefore failing to establish a connection. The composition does not sound authentic or original.</td>
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<td>Conventions</td>
<td>The writer demonstrates a consistent command of spelling, capitalization, punctuation, grammar, usage, and sentence structure. The words, phrases, and sentence structures the writer uses enhance the overall effectiveness of the communication of ideas</td>
<td>The writer generally demonstrates a good command of spelling, capitalization, punctuation, grammar, usage, and sentence structure. The words, phrases, and sentence structures the writer uses are generally appropriate and contribute to the communication of ideas</td>
<td>Severe or frequent errors in spelling, capitalization, punctuation, grammar, usage, and sentence structure may cause the writing to be unclear or difficult to read. The writer may misuse or omit words and phrases and may frequently write awkward sentences.</td>
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Books to go with this lesson include: