

## **Adaptations**

### **An Elementary Science Lesson Plan Designed For Group Inquiry Based On The 5E Inquiry Model**

**GRADE LEVEL:** 7<sup>th</sup> grade

**SCIENCE CONCEPT (the Main Idea or Enduring Understanding):** Animals and plants have adaptations that enable them to survive. Adaptation is a mechanism for survival. Organisms need to adapt their habitats, and there are many interesting way that they accomplish this.

**RELATIONSHIP TO CALIFORNIA SCIENCE CONTENT STANDARDS:**

7.3.a: Students know both genetic variation and environmental factors are causes of evolution and diversity of organisms.

**LEARNING OBJECTIVES:**

1. Students will describe 3 adaptation mechanisms that they'd like to have.

**EVALUATION IDEAS:**

1. formative:
  - Teacher records observations as students work in groups.
  - I wonder.....
  - I discovered...
  - I learned.....
2. summative:
  - Students creatively write 3 personal mechanisms of adaptations.

**CONCEPTUAL BACKGROUND:** Organisms have evolved to adapt to the environment. Some are able to camouflage to, others have special physical features that help them survive in extreme climate, such as in the desert. In this lesson, students will do an inquiry-based experiment to help them connect with the concept of adaptations. Students will be divided into groups of 5; each student in the group will assume the role of discussion leader, materials manager, safety assistant, recorder, and timekeeper.

**LESSON IMPLEMENTATION PLAN:**

ENGAGE – Making hypothesis.

1. Teacher holds up M&M's (Red, brown, green, yellow, and orange) and ask the class "Which color of M&M will be easier to pick up? Why?"
2. Students write down their hypotheses in science journal. "I hypothesize..." or "I think....."

3. Ask students to share their hypotheses.

EXPLORE – Test your hypothesis

1. Each group receives a bag of mixed-color M&M's (100/bag; 20 M&M's for each color)
2. Teacher prepares different “habitats” with colored papers; each group receives each of the following: white, yellow, red, green, blue, and brown paper.
3. Teacher explains the steps:
  - a. Pour the bag of M&M onto a piece of paper.
  - b. Count and record the number of M&M's for each color before starting the experiment. (Each group should have 20M&M's for each color to begin with.)
  - c. One person from your team will pick up as many M&M's as he/she can within 10 seconds (timer will be set). Use only 2 fingers and put the M&M's into a paper plate. Do not lose them as the other team members still need to use them.
  - d. After the time is up, count the M&M's you have picked up and record it in the data table.
  - e. Repeat steps a-c with a different piece of color paper.

EXPLAIN – Discuss your data.

1. Take about 10 minutes to look at your data. Do you notice any pattern?
2. Students write down “I discovered.....” in their science journal.
3. Teacher initiates a class discussion on this experiment.
4. “Think about your hypothesis, does it match with your results? Why or why not?”
5. Give students ample time to share their ideas, thoughts, and questions.
6. “What are some conclusions that you can draw from your results?”
7. “How does this experiment relate to what you know about animals and plants?” (Attempt to guide the discussion towards adaptations.)

ELABORATE – Adaptations in nature

1. “What are adaptations?” (students will pair-share their answers)
2. “Can you think of some examples in which animals and plants avoid being eaten by predators?”
3. Teacher records students’ responses on the board.
4. Students write down “I learned.....” in their science journal.

EVALUATE –

(a) summative -

- Students will provide responses to this question, “Think about 3 special features that you’d like to have that will help you better adapt to the environment. Be sure to explain why.”

(b) formative –

- Complete these sentence frames in science journal.

- I hypothesize...
- I discovered...
- I learned....

**DIFFERENTIATION PLANS:**

Behavioral for Student A

- Use nonverbal cues to direct student's attention.

Cognitive for Student B

- Student may create visuals to represent their 3 adaptations.
- Student may use Worksheet A (with larger print, simplified questions, and sentence starters) to complete their assignment.

Cognitive for Student C

- Student can generate an idea for further research related to learn more about evolution.

Affective for Student D

- Teacher reviews objective and directions with students. May assign student to be the recorder in the group.

Language Demands for Students E, F, G

- Student may complete Worksheet B to develop academic language.
- Teacher paraphrase instructions and check-in with students periodically to clarify questions.
- Student may use a bilingual dictionary.

**LIST OF MATERIALS (PER GROUP):**

- M&M's (20 each for these colors: Red, brown, green, yellow, and orange)\*
- A copy of the data table
- Color papers (white, yellow, red, green, blue, and brown)\*
- Paper plate

*\*color choices are flexible.*

**DIRECTIONS OR SPECIAL INSTRUCTIONS; SAFETY CONCERNS, ETC.**

1. All groups will begin and stop (10 seconds) at the same time.
2. The timekeeper in each group should take turns using the stopwatch and direct The groups to "Begin" and "Stop."
3. Teacher should remind students not to eat the M&M's during the experiment.

*\*This lesson is adapted from ScienceBuddies.org – M&M Survival Challenge*