Unit 4: Traits

Content Area: **Science**
Course(s): **Science 1**
Time Period: **Marking Period 4**
Length: **MP 4**
Status: **Published**

Essential Questions

- How do plants grow and develop?
- How do the external structures of a plant contribute to its survival?
- How do plants help their offspring survive?
- What is structure and function?
- How do animals use external structures to survive?
- What are some examples of external parts of a plant and animal?
- What behaviors do adult animals and offspring engage in that help the offspring to survive?
- Young organisms are very much, but not exactly, like their parents and also resemble other organisms of the same kind.

Big Ideas

- Parents and offspring often engage in behaviors that help the offspring survive.
- Plants use their external structures to adapt in their habitat.
- All organisms have external parts that they use to perform daily functions.
- Animals sense and communicate information and respond to inputs with behaviors that help them grow and survive.

Climate Change

K-2-ETS1-1: Ask questions, make observations, and gather information about a situation people want to change (e.g., climate change) to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-3: Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

- Activity: In this unit, design an umbrella using play-doh, a cup, a straw, and paper, to see how it would withstand a gust of wind. After stimulating a wind gust, students will then think about how to improve upon their umbrella design for the umbrella to not fall over when impacted by the wind gust. Students

will analyze the data from both umbrellas and compare their performances.

Career Readiness

9.1.2.CR.1: Recognize ways to volunteer in the classroom, school and community.

- Activity CR.1: Teachers and students will discuss the importance of planting in the community. Students will plant a seed and take it home to plant in the community.

CSDT Technology Integration

8.1.2.CS.1: Select and operate computing devices that perform a variety of tasks accurately and quickly based on user needs and preferences

Activity: Students will research a plant on Pebble Go.

8.1.2.CS.2: Explain the functions of common software and hardware components of computing

Activity: Students will complete the Mystery Science Birds Have Beaks.

CRLLKS- 21st Century

NJSL Standard/s: 9.1.2.CR.1: Recognize ways to volunteer in the classroom, school and community

Activity: Teachers and students will discuss the importance of planting in the community. Students will plant a seed and take it home to plant in the community

Cross-Curricular Integration

Integration Area: Math

1.M.A.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object.

Activity: Students will compare the length of different plants by using the words shorter and longer. Students

will work in pairs to compare the lengths of plants.

Integration Area: Language Arts

W.SE.1.6. With guidance and support from adults, gather and select information from multiple sources to answer a question or write about a topic

Activity: Students will write about how an animal uses one of it's external structures to survive in their All About Animal's book.

Science and Engineering Practices

Asking Questions and Defining Problems

- Asking questions and defining problems in K–2 builds on prior experiences and progresses to simple descriptive questions.

Analyzing and Interpreting Data

- Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations

Obtaining, Evaluating, and Communicating Information

- Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.

Constructing Explanations and Designing Solutions

- Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.

Career Education

NJSL Standards: 9.1.2.CR.1: Recognize ways to volunteer in the classroom, school and community

Activity: Teachers and students will discuss the importance of planting in the community. Students will plant a

seed and take it home to plant in the community

Science and Society

Sonia Ortega

- National Science Foundation program director and a marine biologist.
- Dr. Winifred Goldring
- New York State geologist and the first person to do exhaustive work on stromatolites

Enduring Understandings

New Jersey State Learning Standards

From Molecules to Organisms: Structure and Processes

- 1-LS1-1 Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.
    - LS1.A: Structure and Function All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow
    - LS1.D: Information Processing Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also respond to some external inputs.
- 1-LS1-2 Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.
    - LS1.B: Growth and Development of Organisms Adult plants and animals can have young. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive.

Heredity: Inheritance and Variation of Traits

- •1-LS3-1 Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.
    - LS3.A: Inheritance of Traits Young animals are very much, but not exactly like, their parents. Plants also are very much, but not exactly, like their parents.
    - LS3.B: Variation of Traits Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways.

Engineering Design

- K-2-ETS1-1 Ask questions, make observations, and gather information about a situation people want to change (e.g., climate change) to define a simple problem that can be solved through the development of a new or improved object or tool.
    - ETS1.A: Defining and Delimiting Engineering Problems: A situation that people want to change or create can be approached as a problem to be solved through engineering.
    - Ask questions, make observations, and gather information about a situation people want to change (e.g., climate change) to define a simple problem that can be solved through the development of a new or improved object or tool.
    - Before beginning to design a solution, it is important to clearly understand the problem.
- K-2-ETS1-3 Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.
    - ETS1.C: Optimizing the Design Solution Because there is always more than one possible solution to a problem, it is useful to compare and test designs
- K-2-ETS1-2 Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
    - ETS1.B: Developing Possible Solutions: Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions, such as climate change, to other people.

Focus Areas

Knowledge

- Adult plants can have young.
- Plant parents help their offspring by creating seed coats and dispersal methods.
- All organisms have external parts.
- Different animals use their body parts in different ways to see hear, grasp objects, protect themselves and survive.

Skills

- Describe the stages of life for plants.
- Describe how plants grow and develop.
- Describe how plant parents help their offspring survive.
- Describe how structure relates to function.
- Describe/list external parts of an animal.

Understandings

- Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.
- Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs

Resources

Primary Resources

- Mystery Science

Scientific Inquiry

Core

- Mystery Science: Plant survival and engineering Why don't trees blow down in the wind?
- Mystery Science: Plant movement and survival: What do sunflowers do when you're not looking?
- Mystery Science: Plant Traits and Offspring
- Mystery Science: Parent & Offspring Traits: How can you help a lost baby animal find its parents?
- Mystery Science: Animal Structures and Survival: Why do birds have beaks?
- Mystery Science: Animal Behavior and Offspring Survival: Why do baby ducks follow their mother?
- Mystery Science: Camouflage and Animal Survival: Why are polar bears White?
- Mystery Science: Inheritance and Variation of Traits: Why do family members look alike?

Supplemental

- BrainPop Jr. Camouflage
- PebbleGo
- Living Vs. Non-Living Sorts

- What do all living things need worksheet