

Educational Resources from *Phenomenon Science Education*

Student Proficiency Goals for **NGSS 1-LS1-1**



Information about 1-LS1-1

NGSS Performance Expectation 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.*

Clarification Statement.

Clarification Statement: Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills; and, detecting intruders by mimicking eyes and ears.

Assessment Limits.

No specific assessment limits are listed for this Performance Expectation.

Science and Engineering Practice (Constructing Explanations and Designing Solutions)

- Use materials to design a device that solves a specific problem or a solution to a specific problem.

Disciplinary Core Idea (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.

Disciplinary Core Idea (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.

Crosscutting Concept (Structure and Function)

- The shape and stability of structures of natural and designed objects are related to their function(s).

* The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

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Student Proficiency Goals

SEP (Constructing Explanations and Designing Solutions):

- With guidance, students describe the human problem that they will solve with their design.
- With guidance, students identify how a type of plant or animal uses its external parts to perceive and respond to information that it receives from the environment.
- With guidance, students design a device or other solution that will solve a human problem by mimicking the way a plant or animal uses its external parts to meet its needs.
- Students use materials they choose to create a device or other solution to a specific human problem.

DCI (LS1.A Structure and Function):

- Students know that organisms have external parts.
- Students know that plants and animals have external parts that help them to survive and grow.
- Students know that different animals use their external parts in different ways to help them survive and grow.

DCI (LS1.D Information Processing):

- Students know that many animals have external parts that capture and convey information needed for growth and survival.
- Students know that animals respond to information with behaviors that help them survive and grow.
- Students know that plants respond to external inputs.

CCC (Structure and Function):

- Students consider how the presence and/or shapes of external parts are related to how those parts function in helping a plant or animal survive.
- Students consider how the presence and/or shapes of external parts are related to how those parts function in helping a plant or animal capture and convey information.
- Students consider how the presence and/or shapes of external parts are related to how those parts function in helping a plant or animal respond to information they receive from the environment.