1. Students who demonstrate understanding can:

**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: Examples of human problems that can be solved by mimicking plant or animal solutions include designing clothing or equipment to protect bicyclists by mimicking tortoise 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.*

**1-LS1.2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.**

*Clarification Statement: Examples of patterns of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring).*

The performance expectations above were developed using the following elements from the NRC document _A Framework for K-12 Science Education_: Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts. Scientific Knowledge is Based on Empirical Evidence.

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**Science and Engineering Practices**

1. 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.
   - Use materials to design a device that solves a specific problem or a solution to a specific problem. (1-LS1-1)
   - Obtain, 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.
     - Read grade-appropriate texts and use media to obtain scientific information to determine patterns in the natural world. (1-LS1-2)

2. Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-LS1-2)

3. Understand that constructing explanations and designing solutions in K-2 builds on prior experiences and progressively uses observations and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.

4. **Connections to Nature of Science**
   - Scientists look for patterns and order when making observations about the world. (1-LS1-2)

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**Disciplinary Core Ideas**

1. **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. (1-LS1-1)

2. **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. (1-LS1-2)

3. **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-LS1-1)

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**Crosscutting Concepts**

1. **Patterns**
   - Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. (1-LS1-2)

2. **Structure and Function**
   - The shape and stability of structures of natural and designed objects are related to their function(s). (1-LS1-1)

3. **Connections to Engineering, Technology, and Applications of Science**
   - Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world. (1-LS1-1)

**Connections to other DCIs in first grade:** N/A

**Articulation of DCIs across grade-levels:**

<table>
<thead>
<tr>
<th>ELA/Literacy</th>
<th>Mathematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>RI.1.1</td>
<td>1.NBT.B.3, 1.NBT.C.4, 1.NBT.C.5, 1.NBT.C.6</td>
</tr>
</tbody>
</table>

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*The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea. The section entitled “Disciplinary Core Ideas” is reproduced verbatim from A Framework for K-12 Science Education: Practices, Cross-Cutting Concepts, and Core Ideas. Integrated and reprinted with permission from the National Academy of Sciences.*