

Educational Resources from *Phenomenon Science Education*
Student Proficiency Goals for **NGSS 4-LS1-2**



Information about 4-LS1-2

NGSS Performance Expectation 4-LS1-2.

Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.

Clarification Statement.

Emphasis is on systems of information transfer.

Assessment Limits.

Assessment does not include the mechanisms by which the brain stores and recalls information or the mechanisms of how sensory receptors function.

Science and Engineering Practice (Developing and Using Models)

- Use a model to test interactions concerning the functioning of a natural system.

Disciplinary Core Idea (LS1.D: Information Processing)

- Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal's brain. Animals are able to use their perceptions and memories to guide their actions.

Crosscutting Concept (Systems and System Models)

- A system can be described in terms of its components and their interactions.

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Student Proficiency Goals

SEP (Developing and Using Models):

- Students use a model to describe interactions among information, the sense organs, the brain, and specific behaviors in an animal.
- Students describe the transfer of information among the systems in an animal.
- Students use a model to describe the transfer of information from one animal system to another and from sensing to behavior.
- Students use a model to test interactions among sense receptors, the brain, and animal response to information.

DCI (LS1.D Information Processing):

- Students know that animals have specific sense receptors that are specialized for particular types of information.
- Students know that animals use their senses to collect information and that the information is then transferred to the brain.
- Students know that animals use their brains to process information collected by their senses.
- Students know that animals use their memories and perceived information to guide their actions.
- Students know that animal behaviors depend on the information perceived by an animal and how it is processed in the brain.

CCC (Systems and System Models):

- Students consider that animals have structures that allow them to perceive information.
- Students consider that animals transfer perceived information to their brains.
- Students consider that perceived information is used by animals to guide their actions and determine their behaviors.
- Students consider that multiple systems work together, allowing an animal to respond to perceived information appropriately.